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AN EVALUATION OF LEISURE AGRICULTURE POLICY IN TAIWAN UTILIZING THE ANALYTIC HIERARCHY PROCESS (AHP)

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AN EVALUATION OF LEISURE AGRICULTURE POLICY IN TAIWAN UTILIZING THE ANALYTIC HIERARCHY PROCESS (AHP)

By

Hung-Hsu Yen

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ABSTRACT

AN EVALUATION OF LEISURE AGRICULTURE POLICY IN TAIWAN UTILIZING THE ANALYTIC HIERARCHY PROCESS (AHP)

By

Hung-Hsu Yen

The purpose of this study is to identify and measure the effectiveness of the Taiwanese Council of Agriculture's overall success in promoting "leisure agriculture" development. An 18-member expert panel, consisting of farm owners, scholars, and policy enforcers, was interviewed to identify the potential indicators for the performance evaluation. A panel of three researchers then reviewed these indicators and developed the evaluation framework. Thirty-three performance indicators for the performance evaluation were embedded within three dimensions: economy, enjoyment, and ecology. Using a mailed survey, 509 stakeholders (including farm owners, scholars, and policy enforcers) were asked how satisfied they were with each of these 33 performance indicators. Using confirmatory factor analysis, data were analyzed to confirm the content validity of these three dimensions as well as an evaluation framework developed for this study. After developing the evaluation framework, the Analytic Hierarchy Process

(AHP) was utilized to assign weights to selected evaluation indicators using the judgments of the 18-member expert panel. The AHP provided more useful quantitative information about group preferences, satisfaction levels, and an overall performance score then the importance-performance analysis did.

The results of this research show that the stakeholders deem these three dimensions of the evaluation framework as equally important. This suggests that future development should focus evenly on the economy, enjoyment, and ecology. On a scale of 0 (low) to 10 (high) these stakeholders gave an overall policy evaluation score of 5.9. The scholars assigned a slightly higher average rating (6.1) to the policy than did the farmers (5.8) and the policy enforcers (5.9). Thus, the policy was judged to be only marginally successful by all groups of stakeholders. From the micro view, the ratings of most economic indicators were below the average, indicating the economic performance needs to be enhanced.

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CHAPTER 1 INTRODUCTION

Problem Context

In developing and developed countries, manufacturing and service industries have gradually taken over the leading role from agriculture in most national economies. Taiwan is no exception; its economic development has also followed this global trend. Although agriculture no longer plays as significant a role as the manufacturing and service industries in economic development, no country can ignore its value. Today, the importance of agriculture is multifunctional. Agriculture provides services and outputs beyond food, fiber, and forestry. These outputs include goods desired by society such as open space, wildlife habitat, biodiversity, flood prevention, pleasing rural landscapes, cultural heritage, viable rural communities, and food security (Bohman et al., 1999; European Commission, 2001; Finland, 1997; Maier, Shobayashi, & Organisation for Economic Co-operation and Development., 2001; Prem & Michel, 1999; Suh, 2001)

From the data shown in Table 1, it can be seen that Taiwan's economy has evolved from agriculture to manufacturing and service industries. However, there are still about 3.5 million people (15% of population) who participate in agricultural related businesses, although they contribute less than 1% to the national income. This evidence reveals that agriculture is no longer a good way to make a living for most Taiwanese. Taiwan's entry into the World Trade Organization (WTO) makes the farmers' future even less promising than it otherwise would have been. Agriculture's future is also threatened by a lack of interest among Taiwanese youth in pursuing it as a career. The

1

older farmers that dominate the industry lack the energy and ability to adopt new technologies needed to remain competitive in modern agricultural enterprises.

Amou	nt (Unit: Mi	llion Taiwan D	% of Total Income				
Total	Agriculture	Manufacturing	Service	Agriculture	Manufacturing	Service	
1,940	397	554	989	20.46	28.56	50.98	
10,361	1,559	3,813	4,989	15.05	36.8	48.15	
49,054	3,308	23,441	22,305	6.74	47.79	45.47	
456,446	13,732	212,846	229,868	3.01	46.63	50.36	
965,580	24,072	356,986	584,522	2.49	36.97	60.54	
2,267,328	15,906	1,136,969	1,114,453	0.7	50.15	49.15	
	Amou Total 1,940 10,361 49,054 456,446 965,580 2,267,328	Amount (Unit: MiTotalAgriculture1,94039710,3611,55949,0543,308456,44613,732965,58024,0722,267,32815,906	Amount (Unit: Million Taiwan DTotalAgricultureManufacturing1,94039755410,3611,5593,81349,0543,30823,441456,44613,732212,846965,58024,072356,9862,267,32815,9061,136,969	Amount (Unit: Million Taiwan Dollars)TotalAgricultureManufacturingService1,94039755498910,3611,5593,8134,98949,0543,30823,44122,305456,44613,732212,846229,868965,58024,072356,986584,5222,267,32815,9061,136,9691,114,453	Amount (Unit: Million Taiwan Dollars)% ofTotalAgricultureManufacturingServiceAgriculture1,94039755498920.4610,3611,5593,8134,98915.0549,0543,30823,44122,3056.74456,44613,732212,846229,8683.01965,58024,072356,986584,5222.492,267,32815,9061,136,9691,114,4530.7	Amount (Unit: Million Taiwan Dollars) % of Total Income Total Agriculture Manufacturing Service Agriculture Manufacturing 1,940 397 554 989 20.46 28.56 10,361 1,559 3,813 4,989 15.05 36.8 49,054 3,308 23,441 22,305 6.74 47.79 456,446 13,732 212,846 229,868 3.01 46.63 965,580 24,072 356,986 584,522 2.49 36.97 2,267,328 15,906 1,136,969 1,114,453 0.7 50.15	

Table 1. Sources of nationa	l income in	Taiwan by	year.
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(Source: Directorate General of Budget Accounting and Statistics Executive Yuan, R.O.C.)

Other evidence of the challenge facing Taiwan's agricultural industry is evident in farmers' incomes. The main problem is that the majority of farmers' incomes no longer come from agricultural production. As can be seen in Table 2, 65.59% of farmers' incomes came from agricultural production in 1966. However, the percentage decreased from 65.59% to 17.56% by 2000. This indicates that most farmers cannot make a comfortable living in agriculture enterprises alone.

Table 2. Taiwanese farmers' incomes and source of income by year.

	Average incom	e per household	Average incon	ne per person	Farmers' income sources			
	(Unit: Taiv	van dollar)	(Unit: Taiw	van dollar)	(Unit: Taiwan dollar)			
Year	Farmer	Non-Farmer	Farmer	Non-Farmer	From Ag.	From other	% from Ag.	
1966	32,320	34,080	4,508	6,467	21,314	11,006	65.95	
1971	40,858	51,629	6,191	9,579	18,480	22,378	45.23	
1976	106,257	134,662	17,448	27,204	41,377	64,880	38.94	
1980	219,412	275,451	38,903	59,751	54,436	164,976	24.81	
1985	310,585	390,641	59,613	87,982	76,889	233,696	24.76	
1990	503,830	651,845	108,118	158,987	101,265	402,563	20.10	
1995	871,082	1,052,834	198,424	272,050	172,083	698,999	19.76	
2000	917,623	1,166,870	226,016	327,772	161,121	756,502	17.56	

(Source: Directorate General of Budget Accounting and Statistics Executive Yuan, R.O.C.)

Data from the Taiwan farming census survey that are presented in Table 3 and Table 4 show the decline of farming in Taiwan. For example:

- The "percentage of total households" was 45.7% in 1955, but it dropped to 13.6% in 1995.
- The farming population was 5.2 million people in 1955 and decreased to 3.9 million in 1995. As a percentage of the total population, farmers dropped from 57.6% to 18.4% over this period of time.
- The average number of persons per farming household engaged in farming was 7.03 in 1955 but decreased to 4.96 in 1995.
- The land in agriculture was 881,610 hectares in 1955 but decreased to 709,723 hectares in 1995.
- The agricultural employment population was 1.67 million in 1955 but decreased to 740 thousand in 1995. In 2001, only 7.5% of the total population was engaged in agriculture.

The above evidence shows agriculture is no longer a major industry in Taiwan. Many farmers have shifted their careers to other types of business or simply have retired.

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	1955	1960	1966	1970	1975	1980	5861	1990	1995
# of farming households	743,928	807,600	937,000	915,966	886,055	891,115	779,897	859,772	792,120
% of total households	45.66	41.63	38.68	34.96	28.89	23.80	17.88	16.88	13.64
Farming population (Persons)	5,227,375	5,863,381	6,647,340	6,214,042	5,702,676	5,388,597	4,685,113	4,288,774	3,930,028
% of total population	57.59	54.33	52.64	42.36	35.31	30.27	24.33	21.07	18.45
Average of persons per household	7.03	7.26	7.61	6.78	6.44	6.05	6.01	4.99	4.96
Land in agriculture (Hectares)	881,610	791,631	868,694	823,066	805,091	756,673	692,873	720,427	709,723
(Source: Directorate General of Bu	deet Acco	unting and	Statistics	Executive	Yuan R.(() ()			

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Table 4. Trends in employment by sector in Taiwan.

													.
	•	28.4%	29.3%	31.2%	35.4%	34.7%	38.0%	41.0%	46.3%	50.7%	55.0%	56.5%	uan, R.O.
	Service	881	1,018	1,176	1,617	1,913	2,487	3,044	3,837	4,587	5,218	5,298	ecutive Y
lds)	ing	18.0%	20.5%	22.3%	27.9%	34.9%	42.5%	41.6%	40.8%	38.7%	37.2%	36.0%	tatistics Ex
t (in thousar	Manufactur	560	713	839	1,278	1,927	2,784	3,088	3,382	3,504	3,534	3,377	ting and St
Employment	e	53.6%	50.2%	46.5%	36.7%	30.4%	19.5%	17.5%	12.9%	10.6%	7.8%	7.5%	get Accour
111	Agricultur	1667	1,742	1,748	1,681	1,681	1,277	1,297	1,064	954	740	708	ral of Bud
	Total	3,108	3,473	3,763	4,576	5,521	6,547	7,428	8,283	9,045	9,491	9,383	rectorate Gene
	Year	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2001	(Source: Dii

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How Can Leisure Agriculture Help?

Definition of leisure agriculture

There are several terms for this new farming enterprise. The terms *leisure* agriculture, agricultural tourism, agritourism, and farm tourism are used interchangeably, although regional preferences are evident in the literature. In Taiwan, the term leisure agriculture is used; in England, farm tourism is used; in the United States, agricultural tourism or agritourism are used. For consistency, the term *leisure* agriculture is used throughout this report.

Leisure agriculture is defined in the Leisure Agriculture Management Guidance Statute (1999) in Taiwan as: "a farming business which uses the resources of farming landscape, ecology, and natural environment combined with agricultural production, farming culture, farming activities, and farming living to provide leisure opportunities and farming experiences for the public."

Hilchey (1993) defines agritourism as a business model which "promotes the products of the farm, and thereby generates additional hospitality business, such as, farm tours, farm bed and breakfasts, wineries, petting zoos, fee hunting, fee fishing, farm vacations, horseback riding, hay rides, farm-based cross-country skiing, and camping." Lobo (2002) defines agricultural tourism as: "the act of visiting a working farm or any agricultural, horticultural or agribusiness operation for the purpose of enjoyment, education, or active involvement in the activities of the farm or operation." Gustafson (2002) defines agricultural tourism as: "a set of economic and social activities that occur and link travel with the products, services, and experiences of agriculture."

How Leisure Agriculture Can Help Agriculture Development in Taiwan

Agriculture plays a less significant role in the economic development of Taiwan now than it did before. Because of the free market pressures associated with entry into the WTO, the government published the Agriculture Policy White Book in 1995 in which future agricultural policies are outlined. It states that future agricultural development should focus on: (1) improvements in agricultural production, (2) improvements in the quality of life, and (3) protection of the environment.

Leisure agriculture is a way to reach these agricultural policy goals and help some farmers to maintain their farming enterprises. Leisure agriculture can benefit farmers by providing them with a large and relatively untapped market for their products. This is especially important in view of economic challenges facing small-scale farming operations. Improving the quality of life can benefit both farmers and travelers. Farmers can earn extra revenue from selling their products and services to travelers. Buying directly from the farmer enhances the traveler's experience by providing local particularity. The interaction between travelers and farmers can foster better understanding between urban and rural populations. The rural area can offer the urban population a more relaxed and uncrowded environment. The rural population can also get some fashion and hi-tech information from the urban population. To protect the environment, the development of leisure agriculture can help to reduce the loss of farmland. Rising land values put pressure on farmers to sell their farms for development. Leisure agriculture provides another source of income for farmers and thus may help preserve farmland (Normile & Bohman, 2002).

In 1995, the *Agriculture Policy White Book* clearly pointed out that promoting leisure agriculture development was an important goal of future agricultural development in Taiwan. Moreover, the policy document (Measures and Strategies in Response to the World Trade Organization Impacts on Taiwan's Agriculture) and the key speech from the Minister of Council of Agriculture in 2001 both emphasized that promoting leisure agriculture development was an important government goal.

Research Purpose

The U. S. Performance and Results Act, enacted in 1993, focuses agency oversight attention on the performance and results of government activities by requiring that all federal agencies measure and report on the results of their activities annually. The need for systematic performance measurement in governmental organizations is well documented in the literature (Brown & Pyers, 1988; Wholey & Harty, 1992). This indicates that the United State government has attached considerable importance on the evaluation of performance. Moreover, performance measurement has even become something of an international movement.

The focus of this research was to evaluate the Council of Agriculture's policies to promote leisure agriculture development in Taiwan. Specifically, this research addresses the following research questions:

- 1. What are the goals of leisure agriculture development in Taiwan?
- 2. What are the relative priorities of these goals?
- 3. How effective do stakeholders think the Council of Agriculture has been in developing leisure agriculture?

Problem Statement

"For public policy-making to satisfy the imperatives of a democratic political system, its decision-makers and their performance must be subject to external review. It is not sufficient that policies only are developed and implemented; those entrusted with these tasks must be held accountable, and in a democracy the threads of accountability lead to the general citizenry and their opinions of the merit or demerit of policymakers' performance...... Democracy requires multiple points of external review to assure that those who hold office and make policy are held responsible for their actions" (Koenig, 1986, p. 183).

Public policy makers and managers face four leadership challenges including: 1)

setting organizational goals; 2) ensuring that priorities among goals are clearly understood and agreed on; 3) providing continuous feedback on organizational performance in terms of those goals; and 4) stimulating improved organizational performance (Wholey & Newcomer, 1989). Therefore, an efficient and effective government should always check its policies and programs against the above four main leadership effectiveness criteria.

Promoting the development of leisure agriculture is one of the Taiwan government's agricultural policies. Since 1980, the Council of Agriculture has undertaken several projects and subsidized local governments and farmers' associations to promote leisure agriculture in order to stimulate development. During the past two decades, the government has encountered several problems and barriers to development. Modifications and improvements have been made to meet development needs. These will be discussed in detail in the literature review. However, no integrated evaluation of the performance of this policy has been conducted to date. Barriers to such a comprehensive analysis include:

- Minimization of managerial accountability during periods of rapid change- Evaluation always carries the risk that findings might reflect negatively or reveal unwanted outcomes. Such fears may be warranted in some circumstances. Negative results may lower the public's image of the policies and/or government officials and policymakers.
- 2. Lack of confidence that the findings will yield practical benefits exceeding their cost-Government officials argue that even valid information is difficult to use in affecting desired improvements during periods of sharply limited resources and significant changes in philosophy. They may not believe the evaluations can solve current problems.
- 3. Length of time required to produce results- Information needs are great, but time limitations compound the difficulty in meeting these needs. Three problems may

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arise while the assessment is in process: 1) the original questions may change, 2) other issues may assume a higher priority, and 3) policies themselves may change.

4. Unclear objectives for leisure agriculture development and a lack of objective criteria for evaluation- Leisure agriculture development policy has multiple objectives. The development of leisure agriculture can help to promote the sale of agricultural products, increase the income of farmers, improve development in rural communities, protect the environment, conserve the rural landscape, prevent the loss of agricultural land, and satisfy people's need for recreation opportunities. The multiple objects of leisure agriculture have never been clearly identified; moreover, the priorities of the objectives are also unclear. Not knowing the objectives or their relative priorities makes it hard to evaluate the outcomes of leisure agriculture policy and to make effective recommendations for future development. Therefore, a performance evaluation of leisure agriculture policy to include establishing its objectives and their priorities is necessary to improve government leisure agriculture policies. Objective adjustments to leisure agriculture development policy can only be made through deriving relevant objectives and their priorities and then conducting a performance evaluation of them based upon inputs from stakeholders.

The need for systematic performance measurement in governmental organizations has even become something of a movement. Even though there are some barriers in conducting the evaluation, evaluating the government's overall success in promoting leisure agriculture development and the effectiveness of specific elements of its leisure agriculture development policies are still necessary. Traditionally importanceperformance analysis has been used to evaluate policy as an approach. However, this approach has one drawback: the weights assigned to various elements affecting performance are not clear. There is a need to evaluate the policy with a holistic approach that make the relative weights of various elements visible.

The purpose of this chapter was to explain why the Council of Agriculture's performance (effectiveness) of the leisure agriculture development needed to be evaluated. In chapter two, more background information is presented, including a detailed discussion regarding the policies to be evaluated and the policy evaluation literature deemed most relevant for this research problem. The following categories of literature are discussed in chapter two: 1) leisure agriculture policy in Taiwan, 2) policy evaluation, and 3) approaches to dealing with multi-criteria analysis-with a focus on the Analytic Hierarchy Process (AHP). Chapter three provides a detailed discussion of the

research design used in this study, which included identifying criteria for evaluation and developing a hierarchical evaluation model, assessing performance across criteria, determining weights of criteria using AHP, refining the model, and calculating the performance score for leisure agriculture policy in Taiwan. In chapter four, the application of the overall evaluation strategy is discussed and results are reported and analyzed. The last chapter contains a summary of research results, suggestions for modifications to leisure agriculture policies in Taiwan and recommendations for future research.

CHAPTER 2 LITERATURE REVIEW

This review of literature is divided into three main parts. In the first section, an overview of leisure agriculture development in Taiwan is presented. It will include historic goals of leisure agriculture development in Taiwan. The second section contains an overview of the policy evaluation literature. In it, definitions of evaluation are discussed; the evaluation process is outlined, and alternative evaluation approaches are reviewed. In the last section, the analytic hierarchy process (AHP) for public policy evaluation is introduced and discussed in detail.

Leisure Agriculture Policy in Taiwan

Agriculture plays a less significant role in the economic development of Taiwan now than it did before. The development of leisure agriculture has the potential to benefit some farmers by providing them with a large and relatively untapped market for their products and helps them to shift from agriculture to a service-type of career. Leisure agriculture in Taiwan is not new; rather this industry has evolved over the last twenty years.

The Policy of Leisure Agriculture Development in Taiwan

There have been four major stages in the development of leisure agriculture in Taiwan. Each is discussed briefly below.

Before 1989

Discussion of farm-based recreation began in 1980 in Taipei. The farmers' association in Taipei first combined farm-based recreational activities with agriculture which allows tourists to experience a different type of recreational activity, while allowing farm owners to market their leisure agriculture products. Leisure agriculture then became highly valued by farm owners, tourists, and government. However, there was no clear policy from the Council of Agriculture to support its development in this stage.

1989 to 1994

Many new terms were created before 1989, such as "farm tourism," "farm tour," "farm leisure," "agricultural tourism," etc. This diversity of terms impeded the government's ability to manage the development of leisure agriculture. The term "leisure agriculture" was clearly defined by the Council of Agriculture during a conference in 1989. Now more organized, the development of leisure agriculture blossomed. In 1992, the initial Leisure Agriculture Management Guidance Statute was established. This statute clearly regulated the definitions of the terms used in leisure agriculture and the rules for the development. Leisure agriculture development then had its own standards to guide development and farm owners also had more clear regulations to follow. Additionally, a committee was formed to provide ongoing evaluation of the leisure agriculture industry. The National Bureau of Standards also approved the leisure agriculture logo. At this time, there were 31 leisure agriculture planning projects under way with government assistance.

In this stage, the Council of Agriculture realized leisure agriculture was important and had produced a clear policy to support its development. That policy included: establishment of regulations, promotion funding, development funding, and grants to farm owners, local governments, farmers' associations, and scholars. The Council of Agriculture assigned top priority to providing funding for individual farmers to improve their facilities.

1994 to 1999

Several problems with leisure agriculture were revealed after 15 years of experience. According to the Leisure Agriculture Management Guidance Statute, the establishment of a leisure agriculture area must be larger than 12.4 hectares. Most individual farms in Taiwan are smaller than 12.4 hectares in size. Therefore, adjacent farms had to merge to reach the mandated size limit. However, many conflicts have occurred when different agricultural enterprises were merged. In addition, other issues have surfaced and have been debated. These have revolved around tax problems, water and electricity rates, number of rooms for guests, establishment of restaurant on leisure farms, size of the farm, and the definition of recreational facilities on farmland.

In 1995, the Agriculture Policy White Book clearly indicated that promoting leisure agriculture development was one of government's important agricultural development goals. Leisure agriculture became very popular; however, several farms took advantage of the name "leisure agriculture" and developed non-agricultural businesses in order to obtain tax benefits. The government did the following to adjust the direction of leisure agriculture development to reduce the chaos that had emerged: 1) modified the Leisure Agriculture Management Guidance Statute to meet the real need of the development; such as, modified the limitation of farm size from 12.4 hectares to 1.2 hectares, defined in more detail the types of facilities that could be provided on leisure farms and 2) established leisure agriculture development associations to promote development.

During this timeframe, the Council of Agriculture refined policy regulations to better fit its leisure agriculture development goals. In addition, it continued to provide funding for promotion of leisure agriculture enterprises. It is also noteworthy that the Council of Agriculture began providing funding for counties or townships to develop master plans for leisure agriculture development and to build some public facilities to support their leisure agriculture enterprises.

After 1999

The modified Leisure Agriculture Management Guidance Statute and related legislation announced in 1999 put the industry under direct supervision of the government. Moreover, the government also formed a committee to examine and consider the further development of leisure agriculture. Since 1999, the Council of Agriculture finally has the regulation basis to manage leisure agriculture development. Promotion funding is still providing annually. A major remaining task is to integrate the potential resources of leisure agriculture in each region and to develop unique identities (brand images) for each region.

The Goals of Leisure Agriculture Development in Taiwan

Several Taiwanese scholars have discussed goals for leisure agriculture (Cheng, 1996; Chiang, 1997; Jeng, Liu, & Chen, 1995; J.-Y. Li, 1996; M.-H. Li, 1996; Liu, 1994, 1997; Yu, 1991); however, no one has clearly articulated specific goals for leisure agriculture development. Even though the goals have not been clearly defined, they can be divided into three general categories: *economic (生產 Sheng Chan), enjoyment (生活 Sheng Huo), and ecology (生態 Sheng Tai)*. The objectives under each goal are outlined below.

- Economic goal: The major objectives of the economic goal are to "improve farmers" income," "diversify farm business," and "improve farm management."
- 2. Enjoyment goal: The major objectives of the enjoyment goal are to "improve quality of life," "make more recreation opportunities available," "provide opportunities to learn about agriculture," and "increase interaction between rural and urban residents."
- 3. Ecology goal: The major objectives of the ecology goal are to "maintain agricultural environments" and "protect farm land."

Performance Evaluation

Performance evaluation has been used by the U.S. governments for many years in order to improve public management and program outcomes. The Government Performance and Results Act of 1993 requires the federal government, most states, and many local governments to develop measurable outcomes for their programs (Kravchuk & Schack, 1996; Poister & Streib, 1999). Performance evaluation research has been conducted by U.S. government agencies (Centers for Disease Control and Prevention Office on Smoking and Health, 1999; Hornik et al., 2003; MacDonald et al., 2001; United States Department of Agriculture & Service, 2002; United States Department of Education, 2004). There is no such act in Taiwan forcing government agencies to measure their performance; however, more and more researchers have begun to address this issue (Chen, 2003; Kao, 2000; Lin & Yang, 2002; Lu & Hsiao, 2003; Shen, Huang, & Chu, 2003; Wang, 2004).

Evaluation is an important part of both the policy making process, as illustrated in Figure 1 (Dunn, 1994) and the program delivery cycle, as illustrated in Figure 2 (DeGraaf, Jordan, & DeGraaf, 1999). Evaluation yields policy-relevant knowledge about discrepancies between expected and actual policy/program performance, thus it will help the decision maker in the assessment phase of policymaking process and the program

delivery cycle.



Figure 1. Policy-analytic procedures associated with different phases of policymaking. (Dunn, 1994, p.17)



Figure 2. The program delivery cycle. (DeGraaf et al., 1999, p.53)

The basis of the policy-analytic procedure is that outcomes of policies or programs should be evaluated: that is, they should be examined to assess the extent to which they are achieving what they were intended to achieve (effectiveness) or whether they are doing so at an acceptable cost (efficiency). Evaluation is also seen as an important part of the program delivery cycle. Results from evaluation can feed into subsequent rounds of decision-making, thereby enhancing policy outcomes.

Performance evaluation is discussed further in the following sections. First, the definition of performance evaluation is presented. Second, the steps in a typical performance evaluation process are outlined. Third, the types of evaluation models and approaches are discussed.

Defining Evaluation

Suchman stated, "an evaluation is basically a judgment of worth-an appraisal of value." Similarly, Worthen and Sanders stated " evaluation is the determination of the worth of a thing" (Rossman & Schlatter, 2003, p.355). They indicate that *worth* is the benchmark of evaluation, and evaluation is about judging the value or worth of the policy/program.

Koenig stated (1986, p.184), "An evaluation in its most formal sense is an examination of the effect of policies and programs on their targets in terms of the goals they are intended to achieve. (p.184)" DeGraaf, Jordan, and Degraaf (1999, p.246) stated "The other common definition of evaluation is that evaluation is a way to determine if program goals and objectives have been met. (p.246)" Henderson and Bialeschki (2002, p.5) stated that evaluation was "assessing where we are, where we want to be, and how we can reach our desired goals" (p.5). Thus, there appears to be a consensus that the purpose of an evaluation is to determine if the goals of policy have been met.

Patton stated (1997, p.23), "Evaluation is a systematic process of collecting information about activities, characteristics, and outcomes of programs: to make judgments about programs, improve program effectiveness and/or inform decisionmaking about future programming.(p.23)" The International Organization for Standardization has defined performance evaluation as "the process of informing a company's managers and stakeholders on its performance by selecting indicators, collecting and analyzing data, assessing information against performance criteria, reporting and communicating, and periodically reviewing and improving the process" (Bennett, James, & Klinkers, 1999). Thus, evaluation is a systematic process of collecting information/outcomes for a program or policy.

After reviewing different authors' definitions, the definition of evaluation to be used in this study is that evaluation is judging the worth of or improvement from a policy/program based on a set of criteria and an analysis of systematically-collected evidence/data.

The Performance Evaluation Process

There are three steps in the performance evaluation process (DeGraaf et al., 1999; Henderson & Bialeschki, 2002; Posavac & Carey, 2003; Rossman & Schlatter, 2003):

1. Missions /Objectives Statement

Establishing a performance evaluation process begins with the identification of the mission and its objectives. What does the policy/ program intend to accomplish? Performance information should flow from, and be based on, the answer to this fundamental question.

2. Outcomes and Outcome Indicators

It is necessary to develop a specific list of important outcomes associated with the policy to be evaluated. Public agencies always have multiple objectives which reflect

categories of public concern. Thus, those making the selection of desired policy outcomes should attempt to include all relevant public perspectives and concerns. Selecting the appropriate indicators to be measured is a key part of developing a performance evaluation.

Each outcome to be tracked needs to be translated into one or more outcome indicators. Efficiency indicators should meet the following criteria: 1) Relevance to the missions/ objectives, 2) Importance to the outcome, 3) Understandability to users, 4) Feasibility of collecting relevant data, 5) Uniqueness, 6) Manipulability, and 7) Comprehensiveness (Hatry & Wholey, 1999).

3. Data Collection and Analysis

Finalizing a set of performance indicators requires that a data collection method be chosen. Cost, feasibility, accuracy, understandability, and credibility are the five criteria for developing data collection procedures. After the data have been collected, analysis is required in order to identify the appropriate actions that may be needed.

Evaluation Methods

A number of different approaches to evaluation have been developed to guide the evaluation process. In the following, the most prevalent models and approaches used for evaluation will be described (Henderson & Bialeschki, 2002; Posavac & Carey, 2003; Russ-Eft & Preskill, 2001; Stufflebeam & American Evaluation Association., 2001). The Traditional Model: Evaluation was made by impressionistic evaluation or selfevaluation.

Industrial Inspection Model: This evaluation involves inspecting the product at the end of the production line.

Objectives-Based Evaluation: This approach emphasizes that the evaluator should work with clearly stated goals and objectives and then measure the degree to which such goals and objectives are achieved.

Goal-Free Evaluation: This approach involves identifying all the positive and negative impacts of a program.

Fiscal Evaluation: This approach involves projecting the financial investment needed to support a program and the return on that investment.

Expert Opinion Model: This approach involves engaging outside experts to conduct the evaluation. It is most often used when the entity being evaluated is large, complex, and unique.
Collaborative Evaluation: Stakeholders are included in the decision-making and evaluation processes (Worthen, Sanders, & Fitzpatric, 1997).

Empowerment Evaluation: In this approach, evaluators give voice to the people they work with and bring their concerns to policymakers.

Theory-Driven Evaluation: This evaluation depends on key stakeholders' needs, resources available for research, and the evaluators' judgment (Chen, 1994).

An Improvement-Focused Model: Evaluators help discover discrepancies between program objectives and the needs of the target population, between program implementation and program plans, between expectations of the target population and the services actually delivered, or between outcomes achieved and outcomes projected (Posavac & Carey, 2003).

These ten evaluation models and approaches are most typical. They have been developed in the field of evaluation in response to several issues that concern evaluation researchers about the design, implementation, and concept of evaluation. In order to achieve a better evaluation, the basic concepts from three approaches *Objectives-Based Evaluation*, *Collaborative Evaluation*, and *Objective-Based Evaluation* will be adopted in this research.

In the following section, the discussion will focus on various performance evaluation research designs commonly used in recreation and tourism. They include *indicator analysis, economic analysis, the benefit approach to leisure, satisfaction-based analysis, and importance-performance analysis* (Henderson & Bialeschki, 2002; Rossman & Schlatter, 2003; Veal, 2002).

Indicators Analysis

Indicators analysis involves developing and identifying a set of performance indicators based on the goals and objectives of the policy/program and analyses of changes in these indicators. This approach requires the availability of a set of secondary data that can be used to represent performance. A typical example is the United Nations Commission on Sustainable Development and Organization for Economic Co-operation and Development which uses a DSR (Driving Force-State-Response) framework to identify a set of indicators to monitor sustainable development (Huan & O'Leary, 1999; Organisation for Economic Co-operation and Development., 1999; Organisation for Economic Co-operation and Development. Directorate for Food Agriculture and Fisheries. Policies and Environment Division., 2000).

Economic Analysis

Economic evaluation is another approach for policy/program evaluation. Costbenefit analysis and economic impact analysis are commonly used techniques as aids to decision-making at the planning stage or part of the evaluation of projects when they are implemented or completed. The two most commonly used techniques are discussed below:

1. Cost-Benefit Analysis: Cost-benefit analysis can be used to measure how effective a policy is in terms of how much it costs and how the benefits received relate to the evaluator's investment. It measures a policy's efficiency in monetary terms and is expressed as a ratio of the present net values of benefits to costs. It can be used in three different situations: 1) to study a single proposed project; 2) to compare alternative proposed projects, and 3) to study an existing project or projects. This is a well-known quantitative approach to measure a program's inputs and outcomes and has been discussed by many authors in books and professional journal articles (DeGraaf et al., 1999; Fleischer & Felsenstein, 2000; Henderson & Bialeschki, 2002;

Lundegren & Farrell, 1985; Posavac & Carey, 2003; Purdon, Lessof, Woodfield, & Bryson, 2001; Veal, 2002).

2. *Economic Impact Analysis*: Economic impact studies are not concerned with the costs of a project but only with its effects in terms of the direct and indirect financial benefits to a geographic region. This approach is used to assess the importance to an economy of a program or policy (Henderson & Bialeschki, 2002; Veal, 2002).

The Benefit Approach to Leisure (BAL)

Driver and Bruns developed the BAL to provide a framework for the management of natural recreation areas (Jackson & Burton, 1999). Driver and Bruns outlined over one hundred types of benefits that have been identified by research as arising from leisure participation. Each benefit is potentially capable of being evaluated by means of one or more performance indicators.

Satisfaction-Based Analysis

Satisfaction-based analysis provides data about participant satisfaction with the program. These satisfaction data can be used to judge the value of the program. Two

successful examples of satisfaction-based analysis are the SERVQUAL and ACSI programs discussed below:

- SERVQUAL: SERVQUAL, developed by Parasuraman and his colleagues, is a typical example of the performance evaluations used in service-type businesses (Parasuraman, Zeithaml, & Berry, 1985, 1988). SERVQUAL assesses performance by comparing peoples' expectations of policy outcomes with the level of satisfaction actually experienced.
- 2. American Customer Satisfaction Index (ACSI)*: The ACSI is a national economic indicator of customer evaluation of the quality of goods and services acquired/received from companies and government agencies that produce approximately half of the U.S. Gross Domestic Product (GNP), plus foreign companies with substantial market shares in the United States. The index is produced and the data housed at the National Quality Research Center (NQRC) at the University of Michigan Business School.

[•] For a more in-depth discussion of the American Customer Satisfaction Index, see ACSI Methodology Report (Fornell, Bryant, Cha, Johnson, Anderson, and Ettlie, 1998) or visit the ACSI website at http://www.theacsi.org.

Importance-Performance Analysis

Several researchers have adopted importance-performance analysis to measure a program's performance in the tourism and recreation fields (Hollenhorst, Olson, & Fortney, 1992; Hudson & Shephard, 1998; Siegenthaler, 1994). Importance-performance analysis uses a measurement instrument to quantify user satisfaction with performance by combining importance with satisfaction. This leads to a useful visual tool for assessing performance, in that the component scores on the two scales (importance and performance) can be plotted on a graph, as shown in Figure 3. The plot gives administrators a clear view of priorities for improvements (Henderson & Bialeschki, 2002; Veal, 2002).



Figure 3. An example of importance-performance analysis graphic.

Importance-performance analysis is an easy and popular way to evaluate the performance of policy. However, this approach has one drawback: the weights assigned to various elements affecting performance are not clear. Therefore, there is a need to evaluate the policy with a holistic approach that make the relative weights of various elements visible. The following paragraph will discuss a logical approach (the analytic hierarchy process) which will help to assign weights to a group of elements.

The Analytic Hierarchy Process (AHP)

What Is the Analytic Hierarchy Process?

The analytic hierarchy process model was developed by Saaty in response to the scarce resources allocation challenges and planning needs of the military (Saaty, 1980). He described AHP as a multi-objective decision making approach that employs a pairwise comparison procedure to arrive at a scale of preferences among a set of alternatives (Braunschweig & International Service for National Agricultural Research., 2000). AHP considers both qualitative and quantitative approaches to research and combines them into a single empirical inquiry. It uses a qualitative method to decompose an unstructured problem into a systematic decision hierarchy. In the quantitative sense, it

employs a pair-wise comparison to execute a consistency test to validate the consistency of responses. In practice, AHP focuses on assigning weights to program/policy elements. Therefore, it can help to identify the key elements in a program/policy and help to make more efficient decisions.

How Does the AHP Work?

The AHP procedure is based on three principles of analytic thinking: 1) constructing hierarchies, 2) establishing priorities, and 3) logical consistency (Saaty, 1995).

1. Structuring Hierarchies

The first step in AHP is to decompose the decision problem into a hierarchical structure. Saaty recommended the following steps when designing a hierarchy:

(1) Identify the overall goal.

- (2) Identify the sub-goals of the overall goal.
- (3) Identify criteria that must be satisfied to fulfill the sub-goals of the overall goal.
- (4) Identify sub-criteria under each criterion.
- (5) Identify the actors involved.

- (6) Identify the actors' goals.
- (7) Identify the actors' policies.
- (8) Identify the options or outcomes (Saaty & Vargas, 1994).

A basic hierarchical structure is illustrated in Figure 4. The above steps are the guidelines within a structured hierarchical model. Different approaches can be used to build the hierarchical structure; however, the most successful way to structure a hierarchy is *brainstorming* by the stakeholders.



Figure 4. An example of the basic structure of a hierarchy framework design.

2. Setting Priorities

The second step in using AHP is to set the priorities and weights for each element.

The elements of each level of the hierarchy are rated using the pair-wise comparison

approach. As Mendoza stated, "The basic principle of the procedure involves setting up a matrix consisting of observations or judgments based on pair-wise comparisons of the relative importance between and among the elements. (p. 484)" (Mendoza & Sprouse, 1989) The basic pair-wise comparison method is based on the actors' comparative judgment between paired goals according to the importance of one goal over the other. Within goals, there are n(n-1)/2 possible paired comparisons to be made (Basarir, 2002; Torgerson, 1958). The subject is provided with the pairs and asked to define which goal in the pair is more important to him/her. Saaty's scale of measurement uses verbal comparisons to determine the weight of criteria. Once the verbal comparisons are made, they are translated into the numerical value of the scale (Braunschweig & International Service for National Agricultural Research., 2000; Cheng & Li, 2001). The scale of measurement, which is used to elicit the comparisons recommended by Saaty, are presented in Table 5. After all elements have been compared with the priority scale pair by pair, a paired comparison matrix is formed (Saaty, 1990). The matrix is given as:

The entries are defined by the following two entry rules.

Rule 1: If $a_{ij} = \alpha$, then $a_{ji} = 1/\alpha$, $\alpha \neq 0$

Rule 2: If element i is judged to be of equal important as element j, then $a_{ij} = a_{ji} = 1$

A vector of weights $[w=(w_1, w_2, ..., w_n)]$ is then computed. If the judgments were

perfectly consistent $(a_{ik}a_{kj} = a_{ij})$ then the entire matrix would contain no error, and could

be expressed as $a_{ij}=w_i/w_j$. In this case, the final weights can be expressed as:

$$W_i = a_{ij} / \sum_{k=1}^{n} a_{kj}$$
 for all i=1,2,...,n

Table 5. Saaty's scale of measurement for pair-wise comparisons.

Numerical Value	Verbal Scale	Explanation
1.0	Equal importance of both elements	Two elements contribute equally
3.0	Moderate importance of one element over another	Experience and judgment favor one element over another
5.0	Strong importance of one element over another	An element is strongly favored
7.0	Very strong importance of one element over another	An element is very strongly dominant
9.0	Extreme importance of one element over another	An element is favored by at least an order of magnitude
2.0, 4.0, 6.0, 8.0	Intermediate values	Used to compromise between two judgments

(Forman & Selly, 2002; Saaty, 1980)

3. Logical Consistency

In the evaluation process, it is important to assess the consistency of inputs

provided by participants to the analyst. However, people are often inconsistent when

answering questions. Errors in judgment are common; therefore, the consistency ratio (CR) is used to measure the consistency in pair-wise comparisons (Cheng & Li, 2001; Saaty, 1994). Generally speaking, the smaller the value of CR, the smaller is the deviation from consistency (Ong, Koh, & Nee, 2001). Satty also recommends acceptable CR values for different matrix sizes; these CR values are (Saaty, 1995):

(1) For a 3 by 3 matrix, the CR value should be equal to or less than 5%

(2) For a 4 by 4 matrix, the CR value should be equal to or less than 9%

(3) For a larger matrix, the CR value should be equal to or less than 10%

If the CR value is more than 10 percent, the judgments are somewhat random and should be revised. There are three ways to make these revisions:

- (1) One way to improve the CR value is to request participants to improve the quality of their judgments in making pair-wise comparisons by providing another set of answers.
- (2) Another way to improve the CR value to improve consistency is the arithmetic method (compute the geometric mean of the element in each row) as suggested by Saaty (1980) or provide an algorithm to modify the given matrix as suggested by Xu and Wei (1999). However, using these methods may alter

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the initial logic used by the respondents. Therefore, if the results of the original consistency test are too far away from the acceptable consistency, this method should not be used.

(3) If the above two methods fail, then the last resort is to redevelop the decision hierarchy. The goal here is to develop a new hierarchy structure which results in more consistency in the pair-wise comparisons of elements in the decision hierarchy.

Group Preference Aggregation with the AHP

The procedures described above are for assessment situations involving only one decision-maker. However, a substantial number of stakeholders, interest groups, and other public entities must be involved in the program evaluation process in most cases. Hence, there is a need to develop a group program evaluation process.

Forman and Peniwati (1998) suggest the following two major ways to aggregate information when more than one individual participates in an evaluation process: 1) aggregating the individual judgments for each set of pair-wise comparisons into an "aggregate hierarchy" [Forman and Peniwati called this method Aggregating Individual Judgments (AIJ)]; and (2) synthesizing each of the individual's hierarchies and aggregating the resulting priorities [Forman and Peniwati called this method Aggregating Individual Priorities (AIP)].

Applications of the AHP

The AHP has been applied to a wide range of problem situations including: selecting among competing alternatives in a multi-objective environment, the allocation of scarce resources, and forecasting (Forman & Gass, 2001). The AHP has been widely applied in many areas, such as: prioritization (Bernadette, Krishnamurty, & Karen, 1998; Deng, King, & Bauer, 2002; Easley, Valacich, & Venkataramanan, 2000; Leung, Muraoka, Nakamoto, & Pooley, 1998; Radcliffe & Schiederjans, 2003; Swiercz & Ezzedeen, 2001; Tzeng, Teng, Chen, & Opricovic, 2002; Ye, Jin, Zhang, Ling, & Barnes, 2000), resource allocation (Curry & Moutinho, 1992; Ong et al., 2001; Ridgley & Rijsberman, 1994; Schmoldt & Peterson, 2000), quality management(Albayrak & Erensal, 2004; Cheng & Li, 2001; Lee, Kwak, & Han, 1995; Partovi, Withers, & Brafford II, 2002; Reisinger, Cravens, & Tell, 2003; Wang, Xie, & Goh, 1998; Yurdakul, 2002), and strategic planning (Dinc, Haynes, & Tarimcilar, 2003; Kajanus, Kangas, & Kurttila, 2004; Pesonen, Kurttila, Kangas, Kajanus, & Heinonen, 2001).

CHAPTER 3 METHODOLOGY AND PROCEDURES

Research Design

"Criteria + Evidence + Judgment = Evaluation" (Henderson & Bialeschki, 2002)

The methodology employed in this study is a combination of qualitative and quantitative research involving five steps. The first step was to identify the criteria for the evaluation of leisure agriculture development policy in Taiwan and build an evaluation model using a qualitative approach. The second step was to validate criteria in the evaluation model by using Confirmatory Factor Analysis. This step is necessary to make sure that items of an assessment instrument are relevant and representative of the intended construct for the assessment purpose. The third step was to ask stakeholders to assess performance across criteria. The fourth step was to determine the priorities and weights of the criteria by using the AHP approach. The fifth step was to calculate a performance score for leisure agriculture development policy in Taiwan. The above linear step-by-step procedure is the ideal design for this research. However, population size[•] and time^{••} constraints required modifications to this ideal design. Step three (assess performance across criteria) and step four (determine weights of criteria using AHP) were processed before step two (validate criteria). In other words, a more advanced assessment of the content validity for this evaluation model was made only after data were gathered from stakeholders to perform steps three and four. After the evaluation model was refined, weights of criteria were recalculated based on the refined evaluation model. The overall approach employed is presented in Figure 5 and is discussed more fully in the following section.

^{*} See page 46 for details.

^{**} The Council of Agriculture funded this one-year project. There was not enough time to collect the data for validating criteria.



Figure 5. The flow chart of this research.

Identify Criteria for Evaluation and Develop a Hierarchical Evaluation Model

"Evaluative criteria are the specific dimensions of policy objectives that can be used to weight policy options and judge the merits of existing policies or programs. Evaluative criteria can also be thought of as justifications or rationales for a policy or government action" (Kraft & Furlong, 2004). The first step in this research design was to identify the dimensions of policy objectives to be evaluated. Identifying the evaluative criteria, categorizing them, and developing a hierarchical evaluation model for applying them are the three major tasks involved in this step. Each is discussed below.

 Criteria identification: A number of articles have identified the purposes of leisure agriculture development policy in Taiwan (Andreoli & Tellarini, 2000; Bosshard, 2000; Cheng, 1996; Chiang, 1997; Jeng et al., 1995; J.-Y. Li, 1996; M.-H. Li, 1996; Liu, 1994, 1997; Prem & Michel, 1999; Yu, 1991). However, no article has clearly identified the criteria for evaluating this leisure agriculture development policy. Therefore, it was necessary to conduct personal interviews of experts (the advisory panel) to identify the criteria relevant for this evaluation.

- 2. Criteria categorization: Content analysis was used to capture the criteria for evaluation identified previously (interviews of the advisory panel members) and place them into categories. A three-person expert panel was employed to create the criteria response categories that were used.
- 3. Develop the hierarchical evaluation model: Saaty (1990) recommends limiting the number of items at any evaluation level to a maximum of nine. The reason for this is that people cannot be consistent in judging long listings of pair-wise comparisons. Therefore, it was necessary to develop a hierarchical evaluation model to limit the number of required paired comparisons at any one level of criteria comparison. Again, a three-person expert panel was employed in developing the hierarchical model used in this study.

Sample

"The purpose of sampling is usually to study a representative subsection of a precisely defined population in order to make inferences about the whole population" (Silverman, 2000, p. 102). The leisure agriculture policy stakeholders relevant to this study belong to the following groups: scholars (population=52)^{*}, farm owners (population=198)^{**}, and policy enforcers (population=698)^{***}. Purposive sampling was used to select the experts from each group of stakeholders to participate in this study. Selection of participants was based on their reputation, experience, and knowledge in the leisure agriculture field. Due to budget limitations, in-depth interviews of only seven experts from each group were conducted.

Data Collection Procedures

The in-depth interview was adopted to complete step one of the research design for the following reasons: 1) no peer pressures, 2) no potential influence or contamination by other respondents, 3) some respondents find it easier to deal with sensitive issues in a one-on-one clinical setting, 4) each respondent gets equal time, and 5) easier to schedule

^{*} Since 2001, the Council of Agriculture has been hiring scholars to evaluate the development of leisure agriculture. The list of scholars employed by the Council of Agriculture in 2001 to 2003 was obtained. After deleting duplicates, **52** scholars were identified.

^{**} The farm owner list was obtained from the Council of Agriculture. The total farm owner population is 198.

^{Policy enforcers are those who carry out leisure agriculture policy. There are two types of organizations, which carry out this policy: local government and farmers' association. There are in total, 389 local government and 309 farmers' associations in Taiwan. The total policy enforcer population is 698.}

interviews at offices (Mariampolski, 2001, pp.46-54). Selected respondents were first contacted by telephone to determine their willingness to participate in this project. Those willing to participate were given the consent form that is provided in Appendix I before being interviewed. It described the purpose of the research and relevant ethical issues.

Tape recorders were not used during interviews because Wolcott (2001) suggested that they distract both the respondent and the researcher during the interview. Moreover, some respondents simply do not like any kind of recorder to be used (Carson, 2001), especially when the topic of this research is related to criticizing government's performance. Notes were taken to record responses. In order to reduce possibilities of bias and error, two interviewers taking separate notes were employed. The two interviewers met immediately after the interview to compare and finalize their notes.

Data Analysis Procedures

Content analysis was used to code groups of words contained in transcripts of the interviews into categories. Two steps were involved. First, category codes were assigned to words, phrases, sentences, or paragraphs initially linked to the three goals of leisure agriculture development (economic (生產 Sheng Chan), enjoyment (生活 Sheng Huo), and ecology (生態 Sheng Tai)). Second, the coded materials were compared and

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contrasted. The purpose of the latter was to organize the data according to the topics and sub-topics related to the evaluation criteria. The first step is sometimes called "axial coding" and the second "selective coding" (Carson, 2001).

Limitations Associated with Identifying Criteria for Evaluation and Developing

a Hierarchical Evaluation Model

In this section, concerns about how this research was designed to obtain the criteria for evaluation that were used and the strategies used to mitigate them will be discussed.

- Issue 1: "Awareness of being tested" and "Role selection" might be sources of errors in some measures. The respondents' awareness of the research process might influence their responses (i.e. inaccuracy, defensiveness, or dishonesty) (Campbell & Russo, 2001).
- *Issue 2:* There is no sure way to replicate results either with the same interviewers or different interviewers. Interview limitations include the potential for distorted responses due to personal biases such as anger, anxiety, politics, and a simple lack of awareness of the topic. Interviews can also be greatly affected by the emotional state of the interviewee at the time of the interview. Interview data

are also potentially impacted by: recall error on the part of the interviewer, the nature of the rapport between the interviewee and the interviewer and self-serving responses (Patton, 2002).

- Mitigation 1: Sensitive issues were avoided in the interview and tape recorders weren't used. In order to reduce interviewer bias or miscommunications, two interviewers were used to take notes.
- Mitigation 2: Respondents were allowed to choose the time and place for the interview in order to reduce distractions and create optimal conditions for obtaining inputs from respondents.

Assess Performance across Criteria

In this step (i.e., step two), respondents were asked to assess performance across criteria based on their attitudes toward each criterion. The criteria were derived using the approach noted earlier in the first step of criteria identification.

Sample

The population identified to be interviewed numbered 948 individual stakeholders including: 52 scholars, 198 farm owners, and 698 policy enforcers^{*}. Questionnaires were mailed to all the stakeholders identified; hence this research plan can be described as a census rather than as a sample.

Data Collection Procedures

Research packets were distributed and mailed to stakeholders which consisted of an introductory cover letter, an informed consent form, the questionnaire, and a selfaddressed stamped envelope (Please see Appendix II for consent form and questionnaire). One follow-up mailing was sent a week later.

Limitations Associated with Assessing Performance across Criteria

In this section, issues related to the approaches used to assess performance along with approaches employed to mitigate them are discussed.

Issue 1: "Content validity is a necessary but not a sufficient form of evidence to support

the validity of scores produced from the scale. (p.331)" (Nugent, Sieppert, &

^{*} Please see footnote on page 46 for details.

Hudson, 2001). The essential concepts of content validity are that items of an assessment instrument should be relevant and representative of the intended construct for a particular assessment purpose.

Issue 2: It was not possible to test the item analysis in the pilot test because of the limited population size. According to a "rule of thumb" suggested by Nunnally, the number of responses needed for item analysis is about five responses for each item on the scale (Nunnally & Bernstein, 1994). Kline also suggested that the ideal sample size for the Confirmatory Factor Analysis (CFA) model should be assessed in terms of the ratio of subjects to free model parameters (i.e., 10:1, or even better, 20:1) (Kline, 1998, p.211). There were 33 items in the instrument used in this study. Kline's guideline would require a sample of 330 (or even 660) to sufficiently test the goodness of fit of the CFA model by using the Analysis of Moment Structures program (AMOS). Thus, the recommended sample size for the pilot test is equal to or greater than the total population of about 900 available to conduct the overall study. Thus, it was impossible to conduct an item analysis in the pilot test.

Issue 3: Reliability refers to the extent to which a scale produces consistent results if repeated measurements are made (Malhotra, 2002, p.292). Due to time and budget limitations, it was not possible to use the test-retest procedure to assess reliability of the scales used in this study.

Issue 4: Non-response bias might influence study results.

Mitigation 1: Experts were asked to review the questionnaire for content validity.

Mitigation 2: After the survey was completed, statistical analyses were conducted to extract useful information from the data collected and to assess the quality of the outputs. Confirmatory Factor Analysis was used to assess what each item represents and whether the items measure what they were expected to measure at each content level (Ding & Hershberger, 2002).

Mitigation 3: The Cronbach's alpha was used to assess internal consistency reliability.

Mitigation 4: All respondents were contacted twice to increase response rate. However, the confidential nature of the surveys made it impossible to track or analyze differences between the response and non-response groups.

Determine Weights of Criteria Using AHP

The Analytic Hierarchy Process (AHP) was used to develop criteria weights. All of the survey responses were entered into an AHP computer implementation program called *Expert Choice*^{*}. Three alternative AHP software packages are available to perform this analysis including: *AutoMan, Expert Choice, and HIPRE 3*+. Ossadnik and Lange (1999) conducted an "AHP-based evaluation of AHP Software" and found that *Expert Choice* had the best overall performance. This analysis consists of the following threestep process:

Collect input data (judgments) by pair-wise comparisons of the evaluation
elements. These pair-wise comparisons were made by asking the question:
 "Which of the two elements is more important with respect to a higher level
criterion, and how strong is the differences in importance, using a 1-9 scale shown
in Table 5 (page 37) for the elements on the left over the element on the right of
the matrix?" Pair-wise comparisons allowed the relative weight of elements to be

[•] Forman, E. H., Saaty, T. L., Selly, M.A., & Waldron, R, (1983) Expert Choice 2000, Decision Support Software, McLean, VA.

obtained by having decision-makers focus on a single pair of two elements at a time.

- 2. Check the consistency ratio (CR) of each matrix using Satty's guideline for the acceptable CR values for different matrix sizes (See page 38.)
- Calculate relative weights (local priorities and global priorities)^{**} of the evaluation elements (The global weight of the evaluation elements will add up to one).

Data Collection Procedures

Research packets were distributed and mailed to the 18-member advisory panel (the experts who were interviewed to develop the evaluation criteria) which consisted of an introductory cover letter, an informed consent form, the AHP questionnaire (please see Appendix III for the questionnaire), and a stamped envelope for returning the

^{** &}quot;The priority of a node is a numerical value represented as a percentage of one. It is derived from pairwise comparisons with respect to the parent node. The local priorities of the children of a node add up to one. The global priorities of a node represent the portion of the parent's priority inherited by the child. The global priorities of the children also sum to the parent's global priority. The global priority of a child equals the local priority of the child times the global priority of the parent" (abstracted from the Expert Choice software package user manual).

questionnaire. Follow-up reminder phone calls were made later to increase rate of response.

Limitations Associated with Determining Weights of Criteria Using AHP

Issues involving criteria weighting design and strategies for mitigating them are discussed below.

Issue 1: Non-response bias might influence results.

Issue 2: It is important to know how consistent respondents were in assigning weights to the criteria. If respondents were not consistent with their answers, then the resulting weights would not accurately reflect their true values.

Mitigation 1: The AHP questionnaire used in this study was very long and complicated. In order to increase the response rate and accuracy, a detailed explanation of how to answer the AHP questionnaire was conducted earlier when the indepth person interviews were conducted. The questionnaire also included an example to illustrate how to complete it properly. Moreover, a follow-up telephone call was used to remind panelists to complete and return the

questionnaire.

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Mitigation 2: The consistency ratio (CR) value of each paired comparison set was calculated for each respondent's rating. If it fell outside of the acceptable range as recommended by Satty (See page 38), respondents were asked to complete the pair-wise comparison a second time. If it still fell outside of the acceptable range, a mathematical approach (computing the geometric mean of the element in each row) was adopted to improve consistency.

Validate Criteria (Refine Evaluation Model)

The development of the evaluation model was based on a qualitative approach. An additional quantitative approach was used to assess and enhance the content validity of the initial evaluation model developed. This quantitative approach involved: 1) examining what each item (criterion) represents, and 2) determining whether the items (criteria) measure what they were designed to measure (Ding & Hershberger, 2002; William, Eaves, & Cox, 2002). The content validity of the evaluation model was examined based on data derived from a census of the stakeholder population through *confirmatory factor analysis* (CFA) using the computer software AMOS 4.0 (Arbuckle, 1996).

Sample

The same dataset obtained from implementing step three of the research design (assessing performance across criteria) was used to examine the content validity of the evaluation model.

Limitations Associated with Validating Criteria (Refining Model)

Issues involving model refining and strategies for mitigating them are discussed below.

Issue 1: Non-response bias might influence results.

Mitigation 1: All respondents were contacted twice to increase the response rate.

However, the confidential nature of the survey made it impossible to track

or analyze differences between respondents and non-respondents.

Calculate Performance Score

The equation for calculating the total performance score of peoples' attitudes toward leisure agriculture used in this study is:

Total performance score=
$$\sum_{i=1}^{n} \left(\frac{\overline{Xs_i} \times Ws_i \times Ns_i + \overline{Xf_i} \times Wf_i \times Nf_i + \overline{Xp_i} \times Wp_i \times Np_i}{Ns_i + Nf_i + Np_i} \right)$$
Equation 1

For	
$\overline{Xs_i} =$	The sample mean of scholars for the i th indicator
$Ws_i =$	Scholars' weighted mean for the i th indicator
$Ns_i =$	Scholars' total number of cases for the i th indicator
$\overline{Xf}_i =$	The sample mean of farm owners for the i th indicator
$Wf_i =$	Farm owners' weighted mean for the i th indicator
$Nf_i =$	Farm owners' total number of cases for the i th indicator
$\overline{Xp_i} =$	The sample mean of policy enforcers for the i th indicator
$Wp_i =$	Policy enforcers' weighted mean for the i th indicator
Np _i =	Policy enforcers' total number of cases for the i th indicator

This equation could yield values between 0 and 10. The higher the score

obtained, the more successful is leisure agriculture policy in Taiwan.

CHAPTER 4 RESULTS AND DISCUSSION

Criteria for Evaluation and the Evaluation Model

The first step in the design of this research was to identify criteria for evaluation and develop a hierarchical evaluation model. The elements in this step are to: *Identify the potential criteria, categorize the criteria,* and *develop the hierarchical evaluation model.* Results obtained for each of these elements are presented below:

1. Identify the potential criteria

A total of 21 individual experts were contacted to participate in this phase of the study. Three declined to participate, and the remaining eighteen were interviewed to obtain inputs needed to develop the criteria for evaluation. They are identified in Table 6. Two interviewers took notes independently during the personal interviews. After the interview, the interviewers discussed the respondents' answers to reach a consensus about what the subjects had said. All content (words, phrases, or sentences) related to potential criteria for the evaluation were extracted. A total of 335 potential indicators* were

identified (please see Appendix VI).

	Name	Title
	Chao-Lang Chen, Ph.D.	Professor
		National Taiwan University
		Department of Agricultural Extension
		Professor
	Chao-Lin Tuan, Ph.D.	National Pingtung University of Science and
		Technology
		Department of Agribusiness Management
	Chien-Hsing Cheng, Ph.D.	Associate Professor, Chairperson
Scholars		Taichung Healthcare and Management University
		Department of Leisure and Recreation Management
	Mei-Hsiu Yeh, Ph.D.	Associate Professor
		Fu-Jen Catholic University
		Department of Landscape Architecture
	Tsung-Chiung Wu, Ph.D.	Associate Professor, Chairperson
		National Chiayi University
		The Graduate Institute of Leisure, Recreation, and
		Tourism Management
	Ch-Hung Chuo	Farm Owner
		Toucheng Leisure Farm
	Ching-Lai Cheng	Farm Owner
		Shangrilas Leisure Farm
Form	I-Fung Hwung	Farm Owner
Owners		Da-Ann Exploration Park
	Mike M.C. Wu	Project Manager (Farm owner's son)
		Central Youth Dairy Farm
		Flying Cow Ranch
	Shih-Shih Chen	Farm Manager
		Shin Kong Chao Feng Recreation Farm

Table 6. List of experts interviewed.

[•] The 335 potential indicators were not all mutually exclusive. The same or similar indicators appeared more than one time on the initial list of 335 potential indicators (please see Appendix VI).

Table 6 (cont'd)

	Name	Title
	Yung Ching, Chen	Business Director
		Nan Yuan Resort Farm
Policy Enforcers	Ch-Hwei Hwung	Director
		Hsin-Yi County Farmers' Association
	Fu-Cheng Kuo	Director of Agricultural Division
		Nan-Tou County Government
	Hung-Cheng Cheng	Vice Director
		Chuo-Lan County Farmers' Association
	Jui-Hsiang Hwung	Project Manager
		Da-Chia County Farmers' Association
	Nancy Chou	Farmers' Service Department
		Council of Agriculture, Executive Yuan
	Tsai-Kun Lin	Director
		I-Lan County Farmers' Association
	Joseph Cheng	Deputy Secretary General
		Taiwan Leisure Farming Development Association

2. Categorize the potential indicators-content analysis

After identifying the potential indicators, they had to be categorized. Three

hundred and thirty five indicators are not a small number for categorizing. Therefore, the first task was to determine how to categorize them in a systematic way.

"Leisure agriculture is an industry that combines economic (生產 Sheng Chan),

enjoyment (生活 Sheng Huo), and ecology (生態 Sheng Tai) together" (Chen, 2002).

This concept was very popular in the agriculture field, and the government, scholar, and

farm owner stakeholders engaged in this study all accepted this three faceted concept of

the purposes of leisure agriculture. Therefore, the potential indicators were first grouped

into these three categories: "economic, enjoyment, and ecology." Judgments of which

categories the indicators belonged to were based on the opinions of a three-person expert panel. The three-person panel determined that the 335 indicators should be grouped as follows: 209 economic indicators, 69 enjoyment indicators, and 57 ecology indicators.

3. <u>Develop the hierarchical evaluation model</u>

After grouping the 335 indicators into the three groups, it was observed that the indicators under each goal were very diverse^{*}. Therefore, it is necessary to develop a hierarchy of sub-categories by sorting these indicators into different dimensions.

The three-person expert panel recoded: the 209 economic indicators into six dimensions (Assist Farm Management, Educate Farmers, Improve Farmers' Economic, Use Farm Resources Wisely, Diversify Farm, and Business Make Farming Attractive,) the 69 enjoyment indicators into four dimensions (Retain Traditional Culture, Making Recreational Opportunities Available, Improve Quality of Life, Maintain Community Structure,) and the 57 ecology indicators into three dimensions (Protect Environment, Maintain Agricultural Environment, Educate Environmental Protection.)

^{*}Saaty recommended limiting the number of pair-wise comparison to a maximum of nine (Saaty, 1990).
The above step sorted the indicators into a hierarchy of interrelated elements, which can be described as a tree containing the overall goal at its top with many levels of dimensions in between and the indicators at the bottom. The indicators under each dimension are discussed in detail below.

Economic Indicators

The economic dimension "Assist Farm Management" consists of the following three indicators: assist marketing, assist cooperation, and assist farm operation; the dimension "Educate Farmers" consists of the following five indicators: adjust temperament, increase receptiveness, assist farmers' interpretative ability, develop farmers' creativity, and change farmers' thinking; the dimension "Improve Farmers' Economic" consists of two indicators: increase farmers' income resources, and increase farmers' income; the dimension "Use Farm Resources Wisely" also consists of two indicators: reveal agricultural uniqueness, and maintain current agriculture; the dimension "Diversify Farm Business" consists of two indicators: attract new investments, and expand traditional agriculture; the dimension "Make Farming Attractive" consists of the following three indicators: increase number of tourists, increase tourists' satisfaction, and promote the image of leisure agriculture.

Enjoyment Indicators

The enjoyment dimension "Retain Traditional Culture" consists of two indicators: preserve the current culture, and educate the current culture; the dimension "Making Recreational Opportunities Available" consists of two indicators: supply recreational activities, and supply recreational locations; the dimension "Improve Quality of Life" consists of two indicators: improve infrastructure of rural areas, and improve spiritual life of farmers; the dimension "Maintain Community Structure" consists of three indicators: improve demographic composition of rural areas, increase community vitality, and increase interaction between rural and urban areas.

Ecology Indicators

The dimension "Protect Environment" consists of three indicators: preserve environment, repair environmental damages, and reduce negative impacts of development; the dimension "Maintain Agricultural Environment" consists of two indicators: preserve agricultural landscape, and preserve rural community; the dimension "Educate Environmental Protection" also consists of two indicators: environmental education of farm owner, and environmental education of tourists. This structure of the evaluation hierarchy was also presented to several scholars for their feedback. Figure 6 shows the final structure of the hierarchical evaluation model that was developed.



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Results of Assessing Performance across Criteria

Nine hundred and forty eight questionnaires were mailed out to the stakeholders for evaluating the Council of Agriculture's performance of leisure agriculture. The valid response rate was 53.7% as can be seen in Table 7.

Table 7. The response rate to the performance assessment survey by stakeholder

		Farm	Policy	
	Scholars	Owners	Enforcers	Total
# of Questionnaire Mailed	52	198	698	948
# of Response	33	68	440	541
Response Rate	63.5%	34.3%	63.0%	57.1%
# of Valid Response	25	62	422	509
Valid Response Rate	48.1%	31.3%	60.5%	53.7%

groups.

Table 8 shows the results of the performance rating by stakeholder groups across criteria. Generally speaking, the participants' ratings in each stakeholder group^{*} were quite consistent. However, these initial results showed that farm owners tended to assess the performance of Council of Agriculture's leisure agriculture policy lower than did

^{*} This research used coefficient of variation (CV=standard deviation/mean) to indicate the consensus of the group of performance assessments by the participants. The CV value of the criteria is small, which means the responses within the group were consistent.

policy enforcers and scholars did. In order to evaluate the differences, one-way ANOVA was used to assess the statistical significant of the mean differences across the three stakeholder groups. The results are presented in Table 8 and indicate significant differences for the following nine indicators: "assist cooperation," "assist farm operation," "adjust temperament," "increase farmers' income sources," "increase farmers' income," and "reveal agricultural uniqueness," "maintain current agriculture," "increase number of tourists," "supply of recreational locations." Eight of the nine are indicators linked to the economic goal. The mean rating for scholars is more frequently higher than for the other two groups, especially for the indicators under the general economic category. Farmers, those most directly economically impacted by the Council of Agriculture's leisure agriculture policy, typically rate its economic indicators lower than do either of the other two stakeholder groups. However, it should noted that the nominal mean performance rating differences proved to be statistically significant for only 9 of the 33 indicators that were evaluated.

(Related Goal)		N	Maria	e	AN	OVA	Kruskal Wallis Test		
Indicator		N	Mean	5	F	Sig.	Chi ²	Sig.	
(Economic)	Farm Owners	62	5.15	1.91					
 Assist Marketing 	Policy Enforcers	420	5.62	1.72	2645	0.072	7 224	0.041	
	Scholars	25	5.96	1.65	2.045	0.072	7.334	0.041	
	Total	507	5.58	1.75	1				
(Economic)	Farm Owners	62	5.10	2.06					
2. Assist Cooperation	Policy Enforcers	421	5.55	1.61	4 104	0.017	0.401	0.000	
	Scholars	25	6.20	1.73	4.104	0.017	9.491	0.009	
	Total	508	5.53	1.69					
(Economic)	Farm Owners	62	4.90	2.01					
3. Assist Farm Operation	Policy Enforcers	421	5.56	1.65	1 167	0.012	7.045	0.010	
	Scholars	25	5.84	1.95	4.407	0.012	1.945	0.019	
a stand and a stand	Total	508	5.49	1.73					
(Economic)	Farm Owners	62	4.74	2.14					
4. Adjust Temperament	Policy Enforcers	419	5.40	1.76	2 0 6 0	0.022	7.875	0.010	
	Scholars	25	5.04	1.86	3.808	0.022		0.019	
	Total	506	5.30	1.82					
(Economic)	Farm Owners	61	5.44	1.95					
5. Increase Receptiveness	Policy Enforcers	417	5.56	1.74	0.140	0.000	0.075	0.0(2	
	Scholars	25	5.44	1.89	0.149	0.862	0.075	0.963	
and the state of the	Total	503	5.54	1.77					
(Economic)	Farm Owners	62	5.60	2.22					
6. Assist Farmers'	Policy Enforcers	421	5.73	1.74			0.910	0.664	
Interpretative Ability	Scholars	25	6.04	1.70			0.819	0.004	
	Total	508	5.73	1.80					
(Economic)	Farm Owners	62	5.15	2.27					
7. Develop Farmers'	Policy Enforcers	421	5.58	1.80	2 200	0.002	5 226	0.070	
Creativity	Scholars	25	6.04	1.65	2.399	0.092	3.320	0.070	
	Total	508	5.55	1.86					
(Economic)	Farm Owners	62	5.65	2.10					
Change Farmers'	Policy Enforcers	422	5.87	1.79	0.070	0 277	0.172	0.172	
Thinking	Scholars	25	6.24	1.81	0.979	0.377	0.175	0.175	
	Total	509	5.86	1.83					
(Economic)	Farm Owners	62	5.89	2.07					
9. Increase Farmers'	Policy Enforcers	422	5.54	1.83	2 0 00	0.040	0 105	0.017	
Income Sources	Scholars	25	6.36	1.35	35 3.060	0.048	0.185	0.017	
	Total	509	5.62	1.85					

Table 8. Mean performance evaluation ratings by stakeholder group for 33 program performance indicators.

(Footnote 1. Scale: 10=Superior; 0= Failing)

(Footnote 2. The Nonparametric test (Kruskal Wallis Test) was used if the variable did not meet the assumption of "homogeneity-of-variance" when running the One-Way ANOVA test.)

Table 8 (cont'd)

(Related Goal)		N		G	ANG	OVA	Kruskal Wallis Tes			
Indicator		N	Mean	3	F	Sig.	Chi²	Sig.		
(Economic)	Farm Owners	61	5.90	2.21						
10. Increase Farmers'	Policy Enforcers	420	5.55	1.81	2 4 1 1	0.024	0.62	0 000		
Income	Scholars	25	6.44	1.50	5.411	0.034	9.05	0.000		
	Total	506	5.64	1.86						
(Economic)	Farm Owners	62	5.95	2.11						
11. Reveal Agricultural	Policy Enforcers	419	6.24	1.55			6 560	0.037		
Uniqueness	Scholars	24	6.88	1.45			0.509	0.037		
	Total	505	6.24	1.63						
(Economic)	Farm Owners	62	5.39	2.06						
12. Maintain Current	Policy Enforcers	419	5.88	1.61	2 001	0.046	7 012	0.030		
Agriculture	Scholars	25	6.24	1.56	5.091	0.040	7.015	0.030		
	Total	506	5.83	1.68						
(Economic)	Farm Owners	62	5.19	2.30						
13. Attract New	Policy Enforcers	418	5.55	1.75			3 218	0 200		
Investment	Scholars	25	6.00	1.41			5.210	0.200		
	Total	505	5.53	1.82						
(Economic)	Farm Owners	62	6.10	2.04						
14. Expand Traditional	Policy Enforcers	417	5.88	1.83	1 220	0 294	3 565	0.168		
Agriculture	Scholars	25	6.40	1.53	1.229	0.294	3.505	0.100		
	Total	504	5.93	1.85						
(Economic)	Farm Owners	61	6.52	2.07			9 790			
15. Increase Number of	Policy Enforcers	419	6.23	1.71				0.012		
Tourists	Scholars	24	7.08	1.25			0.700	0.012		
	Total	504	6.31	1.75						
(Economic)	Farm Owners	61	6.08	2.06						
16. Increase Tourists'	Policy Enforcers	420	5.98	1.53			2 544	0.280		
Satisfaction	Scholars	25	6.40	1.41			2.544	0.200		
	Total	506	6.01	1.60						
(Economic)	Farm Owners	62	6.18	2.06						
17. Promote the Image of	Policy Enforcers	421	6.11	1.63	1 164	0 3 1 3	2 5 2 1	0 1 7 1		
Leisure Agriculture	Scholars	25	6.64	1.52	1.104	0.515	5.551	0.171		
	Total	508	6.15	1.68						
(Enjoyment)	Farm Owners	62	5.65	2.07						
18. Preserve the Current	Policy Enforcers	421	6.06	1.67			3 701	0157		
Culture	Scholars	25	5.84	1.80	80		 9.63 6.569 7.013 3.218 3.565 8.780 2.544 3.531 3.701 	0.157		
	Total	508	6.00	1.73						

Table 8 (cont'd)

(Related Goal)		RT.		c.	AN	DVA	Kruskal Wallis Te		
Indicator			iviean	Э	F	Sig.	Chi ²	Sig.	
(Enjoyment)	Farm Owners	62	5.56	2.06					
19. Educate the Current	Policy Enforcers	420	6.00	1.74	1 061	0 142	2 726	0.154	
Culture	Scholars	25	5.64	1.75	1.901	0.142	3.750	0.154	
	Total	507	5.93	1.78					
(Enjoyment)	Farm Owners	62	5.71	2.11					
20. Supply of	Policy Enforcers	421	6.08	1.67	1 276	0.280	2 205	0.102	
Recreational Activities	Scholars	25	6.16	1.77	1.270	0.280	5.505	0.192	
	Total	508	6.04	1.73					
(Enjoyment)	Farm Owners	62	4.79	2.41					
21. Supply of	Policy Enforcers	421	5.76	1.63			12 845	0.002	
Recreational Locations	Scholars	24	6.08	1.25			12.045	0.002	
	Total	507	5.65	1.75					
(Enjoyment)	Farm Owners	62	5.85	2.10					
22. Improve Infrastructure	Policy Enforcers	421	5.89	1.77	0 1 6 1	0.951	0.160	0.022	
of Rural Areas	Scholars	25	5.68	1.65	0.101	0.851	0.100	0.923	
	Total	508	5.87	1.80					
(Enjoyment)	Farm Owners	62	5.63	2.26					
23. Improve Spiritual Life	Policy Enforcers	421	5.41	1.76			1 744	0 419	
of Farmers	Scholars	24	5.13	1.57			1./44	0.410	
	Total	507	5.42	1.82					
(Enjoyment)	Farm Owners	62	5.56	2.09					
24.Improve Demographic	Policy Enforcers	421	5.30	1.73			1 270	0118	
Composition of Rural	Scholars	25	5.92	1.29			4.270	0.110	
Areas	Total	508	5.36	1.76					
(Enjoyment)	Farm Owners	62	5.84	2.14					
25. Increases Community	Policy Enforcers	420	5.96	1.67			2 201	0 2 2 2	
Vitality	Scholars	25	6.36	1.52			2.201	0.333	
	Total	507	5.96	1.73					
(Enjoyment)	Farm Owners	62	6.29	2.15					
26. Increases Interaction	Policy Enforcers	421	6.35	1.61			1 657	0 427	
between Rural and	Scholars	25	6.68	1.49			1.057	0.437	
Urban Areas	Total	508	6.36	1.68					
(Ecology)	Farm Owners	62	5.94	2.25					
27. Preserve Environment	Policy Enforcers	420	6.10	1.73			2 212	0 201	
	Scholars	25	5.52	1.66			5.215	0.201	
	Total	507	6.06	1.80					

Table 8 (cont'd)

(Related Goal)		NI		G	AN	OVA	Kruskal Wallis Test			
Indicator		N	Nean	3	F	Sig.	Chi ²	Sig.		
(Ecology)	Farm Owners	62	5.92	2.25						
28. Repair Environmental	Policy Enforcers	420	6.00	1.77			2 570	0 277		
Damages	Scholars	25	5.44	1.69			2.570	0.277		
	Total	507	5.96	1.83						
(Ecology)	Farm Owners	60	5.28	2.32						
29. Reduce Negative	Policy Enforcers	420	5.50	1.69			1 910	0.405		
Impacts of	Scholars	24	4.92	1.86			1.810	0.405		
Development	Total	504	5.44	1.78						
(Ecology)	Farm Owners	61	5.97	2.28						
30. Preserve Agricultural	Policy Enforcers	420	6.11	1.63			1 776	0.411		
Landscape	Scholars	25	6.36	1.58			1.//0	0.411		
	Total	506	6.10	1.71						
(Ecology)	Farm Owners	62	5.65	2.11						
31. Preserve Rural	Policy Enforcers	420	6.20	1.74	2 807	0.056	5 6 4 1	0.06		
Community	Scholars	25	5.84	1.84	2.07/	0.050	5.041	0.00		
	Total	507	6.11	1.80						
(Ecology)	Farm Owners	62	6.02	2.20						
32. Environmental	Policy Enforcers	419	6.05	1.59			0.247	0.884		
Education of Farm	Scholars	25	5.84	1.75]		0.247	0.004		
Owners	Total	506	6.03	1.68						
(Ecology)	Farm Owners	62	5.19	2.33						
33. Environmental	Policy Enforcers	421	5.82	1.71			1 050	0.084		
Education of Tourists	Scholars	25	5.56	1.66			4.950	0.004		
	Total	508	5.73	1.80						

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Results of Determining Weights of Criteria using AHP

The 18-member advisory panel interviewed initially to collect data for implementing step 1 of the study design was contacted again and invited to judge the pair-wise comparison results for each evaluation element. Fourteen agreed to participate including: five scholars, four farm owners, and five policy enforcers. All of their responses were entered into AHP computer implementation software called *Expert Choice*. This analysis consists of the following three-step process:

- Collecting input data (judgments) by pair-wise comparisons of the evaluation elements.
- 2. Checking the consistency ratio (CR) of each matrix.
- Calculating relative weights (local priorities and global priorities) of the evaluation elements.

After collecting responses from the experts, the CR value of each matrix and each respondent was first examined to determine the consistency of his/her responses. The respondents were asked to provide new sets of pair-wise comparison answers if their responses failed to meet the criteria recommended by Saaty (See page 38). After calculating the CR values, each of these fourteen respondents was found to have provided

at least one CR value which failed to meet the criteria. For these cases, respondents were asked to provide another and more consistent set of answers. Most problem cases were resolved by respondents in their second time through the process. Only two respondents, with one case each, failed to meet the Saaty's criteria on their second attempts. Since the deviation from Satty's criteria was minimal in both cases, no action was taken to further refine them.

The experts in the 18-member advisory panel were from three different stakeholder groups with different value systems. However, this research is not concerned with each individual's resulting alternative priorities. Hence, aggregating individual priorities (AIP) was deemed appropriate in this case. The arithmetic mean was used to aggregate individual priorities (for more details about the mathematical procedure, see references below to Aczel and Roberts (1989); Ramanathan and Ganesh (1994); Forman and Peniwait (1998); Chwolka and Raith (2001). The results of the relative weights (local priorities and global priorities) of the evaluation elements are shown in Table 9 and Table 10. Since the evaluation criteria still need to be validated, the weightings of criteria will be presented after discussion of validation of the evaluation model.

Table 9. Relative weights (local priorities) of evaluation elements by stakeholder group.

Level 1				
Cosl (Local Prioritics)	S	FO	PE	Total
	Mean	Mean	Mean	Mean
Economic	0.503	0.236	0.236	0.331
Enjoyment	0.263	0.282	0.413	0.322
Ecology	0.234	0.482	0.351	0.347
Total	1.000	1.000	1.000	1.000
Level 2				
Dimension (Local Priorities)	S	FO	PE	Total
	Mean	Mean	Mean	Mean
(Economic) Assist Farm Management	0.136	0.131	0.110	0.125
(Economic) Educate Farmers	0.081	0.099	0.265	0.152
(Economic) Improve Farmers' Economic	0.228	0.122	0.094	0.150
(Economic) Use Farm Resources Wisely	0.233	0.242	0.255	0.243
(Economic) Diversify Farm Business	0.106	0.221	0.156	0.157
(Economic) Make Farming Attractive	0.216	0.185	0.120	0.173
Total	1.000	1.000	1.000	1.000
(Enjoyment) Retain Traditional Culture	0.304	0.283	0.256	0.281
(Enjoyment) Making Rec. Opportunities Available	0.192	0.273	0.218	0.224
(Enjoyment) Improve Quality of Life	0.228	0.289	0.396	0.306
(Enjoyment) Maintain Community Structure	0.276	0.155	0.130	0.189
Total	1.000	1.000	1.000	1.000
(Ecology) Protect Environment	0.486	0.330	0.354	0.394
(Ecology) Maintain Agricultural Environment	0.218	0.284	0.288	0.262
(Ecology) Educate Environmental Protection	0.296	0.386	0.358	0.344
Total	1.000	1.000	1.000	1.000

(S: Scholars, FO: Farm Owners, PE: Policy Enforcers)

Table 9 (cont'd) (S: Scholars, FO: F	arm Own	ers, PE:	Policy Er	nforcers)
Level 3				
Indicator (Local Priorities)	S	FO	PE	Total
indicator (Local Friorities)	Mean	Mean	Mean	Mean
(Assist Farm Management) 1. Assist Marketing	0.362	0.497	0.335	0.391
(Assist Farm Management) 2. Assist Cooperation	0.150	0.214	0.352	0.241
(Assist Farm Management) 3. Assist Farm Operation	0.488	0.289	0.313	0.368
Sum	1.000	1.000	1.000	1.000
(Educate Farmers) 4. Adjust Temperament	0.150	0.127	0.093	0.123
(Educate Farmers) 5. Increase Receptiveness	0.110	0.100	0.107	0.106
(Educate Farmers) 6. Assist Farmers' Interpretative Ability	0.148	0.096	0.081	0.109
(Educate Farmers) 7. Develop Farmers' Creativity	0.178	0.343	0.249	0.251
(Educate Farmers) 8. Change Farmers' Thinking	0.414	0.334	0.470	0.411
Sum	1.000	1.000	1.000	1.000
(Improve Farmers' Economic) 9. Increase Farmers' Income Sources	0.423	0.250	0.583	0.431
(Improve Farmers' Economic) 10. Increase Farmers' Income	0.577	0.750	0.417	0.569
Sum	1.000	1.000	1.000	1.000
(Use Farm Resources Wisely) 11. Reveal Agricultural Uniqueness	0.701	0.766	0.692	0.716
(Use Farm Resources Wisely) 12. Maintain Current Agriculture	0.299	0.234	0.308	0.284
Sum	1.000	1.000	1.000	1.000
(Diversify Farm Business) 13. Attract New Investment	0.292	0.483	0.283	0.344
(Diversify Farm Business) 14. Expand Traditional Agriculture	0.708	0.517	0.717	0.656
Sum	1.000	1.000	1.000	1.000
(Make Farming Attractive) 15. Increase Number of Tourists	0.308	0.159	0.213	0.231
(Make Farming Attractive) 16. Increase Tourists' Satisfaction	0.199	0.461	0.440	0.360
(Make Farming Attractive) 17. Promote the Image of Leisure Agriculture	0.493	0.380	0.347	0.409
Sum	1.000	1.000	1.000	1.000
(Retain Traditional Culture) 18. Preserve the Current Culture	0.608	0.459	0.320	0.463
(Retain Traditional Culture) 19. Educate the Current Culture	0.392	0.541	0.680	0.537
Sum	1.000	1.000	1.000	1.000

Table 9 (cont'd) (S: Scholars, FO: F	arm Own	ers, PE:	Policy Er	nforcers)
Level 3				
Indicator (Local Priorities)	S	FO	PE	Total
indicator (Local Friorities)	Mean	Mean	Mean	Mean
(Making Rec. Opportunities Available) 20. Supply of Recreational Activities	0.792	0.583	0.533	0.640
(Making Rec. Opportunities Available) 21. Supply of Recreational Locations	0.208	0.417	0.467	0.360
Sum	1.000	1.000	1.000	1.000
(Improve Quality of Life) 22. Improve Infrastructure of Rural Areas	0.500	0.562	0.378	0.474
(Improve Quality of Life) 23. Improve Spiritual Life of Farmers	0.500	0.438	0.622	0.526
Sum	1.000	1.000	1.000	1.000
(Maintain Community Structure) 24. Improves Demographic Composition of Rural Areas	0.141	0.305	0.491	0.313
(Maintain Community Structure) 25. Increases Community Vitality	0.522	0.414	0.253	0.395
(Maintain Community Structure) 26. Increases Interaction between Rural and Urban Areas	0.337	0.281	0.256	0.292
Sum	1.000	1.000	1.000	1.000
(Protect Environment) 27. Preserve Environment	0.436	0.383	0.304	0.374
(Protect Environment) 28. Repair Environmental Damages	0.247	0.418	0.201	0.279
(Protect Environment) 29. Reduce Negative Impacts of Development	0.317	0.199	0.495	0.347
Sum	1.000	1.000	1.000	1.000
(Maintain Agricultural Environment) 30. Preserve Agricultural Landscape	0.527	0.500	0.300	0.438
(Maintain Agricultural Environment) 31. Preserve Rural Community	0.473	0.500	0.700	0.562
Sum	1.000	1.000	1.000	1.000
(Educate Environmental Protection) 32. Environmental Education of Farm Owners	0.633	0.562	0.750	0.655
(Educate Environmental Protection) 33. Environmental Education of Tourists	0.367	0.438	0.250	0.345
Sum	1.000	1.000	1.000	1.000

Table 10. Relative weights (global priorities) of evaluation elements by stakeholder group.

l.c	vel 1								
Cool (Clobal Drivetics)	S		FO		PE		Tota	d	
Goau (Gilocau P filoriuks)	Mean	r	Mean	r	Mean	r	Mean	r	
Economic	0.503	1	0.236	3	0.236	3	0.331	2	
Enjoyment	0.263	2	0.282	2	0.413	1	0.322	3	
Ecology	0.234	3	0.482	1	0.351	2	0.347	1	
Sum	1.000		1.000		1.000		1.000		
l.e.	vel 2								
Dimension (Clobal Priorities)	S		FO		PE		Total		
Dimension (Global Fliornies)	Mean	r	Mean	r	Mean	r	Mean	r	
(Economic) Assist Farm Management	0.066	8	0.033	11	0.026	12	0.042	<i>13</i>	
(Economic) Educate Farmers	0.046	12	0.026	13	0.055	7	0.044	12	
(Economic) Improve Farmers' Economic	0.090	4	0.027	12	0.024	<i>13</i>	0.049	10	
(Economic) Use Farm Resources Wisely	0.128	1	0.061	7	0.044	9	0.079	6	
(Economic) Diversify Farm Business	0.058	10	0.041	10	0.043	11	0.048	11	
(Economic) Make Farming Attractive	0.115	2	0.047	8	0.044	10	0.070	7	
(Enjoyment) Retain Traditional Culture	0.063	9	0.084	4	0.119	3	0.089	5	
(Enjoyment) Making Rec. Opportunities Available	0.039	13	0.078	6	0.082	6	0.065	8	
(Enjoyment) Improve Quality of Life	0.084	5	0.078	5	0.167	1	0.112	3	
(Enjoyment) Maintain Community Structure	0.076	7	0.042	9	0.045	8	0.055	9	
(Ecology) Protect Environment	0.107	3	0.142	2	0.142	2	0.130	1	
(Ecology) Maintain Agricultural Environment	0.048	11	0.138	3	0.095	5	0.090	4	
(Ecology) Educate Environmental Protection	0.080	6	0.203	1	0.114	4	0.127	2	
Sum	1.000		1.000		1.000		1.000		

(S: Scholars, FO: Farm Owners, PE: Policy Enforcers)

(r denotes the rank according to its weight)

Table 10 (cont'd)(S: Sche	olars, FO : F	Farm Owi	ners, PE:	Policy E	nforcers)
Level 3					
Indicator (Global Priorities)		S	FO	PE	Total
		Mean	Mean	Mean	Mean
(Economic) 1. Assist Marketing		0.030	0.017	0.009	0.019
(Economic) 2. Assist Cooperation		0.011	0.007	0.010	0.010
(Economic) 3. Assist Farm Operation		0.024	0.01	0.007	0.014
(Economic) 4. Adjust Temperament		0.010	0.003	0.003	0.006
(Economic) 5. Increase Receptiveness	0.003	0.004	0.007	0.005	
(Economic) 6. Assist Farmers' Interpretative Ability	0.007	0.003	0.006	0.005	
(Economic) 7. Develop Farmers' Creativity		0.008	0.008	0.014	0.010
(Economic) 8. Change Farmers' Thinking		0.018	0.009	0.025	0.018
(Economic) 9. Increase Farmers' Income Sources		0.028	0.007	0.009	0.015
(Economic) 10. Increase Farmers' Income		0.062	0.02	0.015	0.033
(Economic) 11. Reveal Agricultural Uniqueness		0.091	0.053	0.028	0.057
(Economic) 12. Maintain Current Agriculture		0.038	0.009	0.016	0.021
(Economic) 13. Attract New Investment		0.013	0.022	0.023	0.019
(Economic) 14. Expand Traditional Agriculture		0.045	0.019	0.020	0.029
(Economic) 15. Increase Number of Tourists		0.056	0.008	0.005	0.024
(Economic) 16. Increase Tourists' Satisfaction		0.018	0.02	0.015	0.017
(Economic) 17. Promote the Image of Leisure Agriculture		0.042	0.02	0.023	0.029
(Enjoyment) 18. Preserve the Current Culture		0.038	0.047	0.034	0.039
(Enjoyment) 19. Educates about the Current Culture		0.026	0.037	0.085	0.050
(Enjoyment) 20. Supply of Recreational Activities		0.031	0.045	0.046	0.040
(Enjoyment) 21. Supply of Recreational Locations		0.007	0.034	0.037	0.025
(Enjoyment) 22. Improve Infrastructure of Rural Areas		0.027	0.048	0.054	0.043
(Enjoyment) 23. Improve Spiritual Life of Farmers		0.057	0.03	0.112	0.069
(Enjoyment) 24. Improve Demographic Composition of Run	al Areas	0.012	0.011	0.022	0.015
(Enjoyment) 25. Increases Community Vitality		0.042	0.017	0.012	0.024
(Enjoyment) 26. Increases Interaction between Rural and Urb	an Areas	0.022	0.015	0.012	0.016
(Ecology) 27. Preserve Environment		0.047	0.056	0.031	0.044
(Ecology) 28. Repair Environmental Damages		0.030	0.054	0.023	0.034
(Ecology) 29. Reduce Negative Impacts of Development		0.030	0.029	0.089	0.051
(Ecology) 30. Preserve Agricultural Landscape		0.025	0.077	0.028	0.041
(Ecology) 31. Preserve Rural Community		0.023	0.06	0.067	0.050
(Ecology) 32. Environmental Education of Farm Owners		0.040	0.107	0.089	0.076
(Ecology) 33. Environmental Education of Tourists		0.039	0.094	0.024	0.050
	Sum	1.000	1.000	1.000	1.000

(S: Scholars, FO: Farm Owners, PE: Policy Enforcers)

Criteria Validation (Model Refinement)

The initial development of the evaluation model was based on the qualitative research approach. However, the appropriateness of the model was assessed using a quantitative research approach. Confirmatory factor analysis was employed to assess and refine the initial model. The procedure that was followed is discussed below.

The preparation of the data for structural equation modeling should employ the following screening procedures: *Missing Data*, *Multicollinearity*, *Outliers*, *Normality* (Kline, 1998).

- Missing Data: Very little data were missing from the data set analyzed. Each variable had no more than 5 missing cases; most of the variables had only one or two missing cases. Thus, missing data would not be expected to significantly influence the results. Where necessary the mean substitution procedure was used to fill data voids.
- 2. Multicollinearity: The variance Inflation Factor (VIF) was adopted to examine for multicollinearity. Myers suggested that if VIF>10, then the variable may be redundant with others in the data set. As can be seen in Table 11, all of the calculated VIF values are small; therefore, multicollinearity is not a relevant issue in the results from this study.

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- 3. Outliers: There is no absolute definition of what is an extremely large or small entry in a given data set. A common rule of thumb is that if the datum is more than three standard deviations away from the mean, then that datum may be an outlier. In this data set, all data items are within three standard deviations of the mean. In other words, there are no extremely high or low data in this data set.
- 4. Normality: The absolute values of skew and kurtosis can be used to interpret the distribution of the individual variables.

"There are few clear guidelines about how much non-normality is problematic. Data sets with absolute values of skew indexes greater than 3.0 seem to be described as extremely skewed by some authors..., absolute values of the kurtosis index form 8.0 to 20.0 have been described as indicating extreme kurtosis" (Kline, 1998, p 82).

The values of skewness and kurtosis presented in Table 12 indicate that the

distributions of all the variables are not perfectly normal; however, the absolute value

of all variables' skewness and kurtosis are below some scholars' recommended values.

This suggests that the distributions of the data analyzed should not significantly,

negatively impact the quality of results obtained from the analyses performed.

Table 11. Table of variance inflation factor	(VIF*) values.
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	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	C33
C1		2.42	2.27	1.68	1.62	1.42	1.61	1.47	1.41	1.41	1.48	1.56	1.57	1.34	1.37	1.45	1.48	1.38	1.38	1.44	1.40	1.43	1.42	1.45	1.41	1.36	1.36	1.39	1.42	1.39	1.28	1.37	1.33
C2			2.43	1.65	1.72	1.58	1.68	1.59	1.41	1.45	1.62	1.61	1.63	1.41	1.36	1.44	1.47	1.44	1.51	1.52	1.64	1.46	1.52	1.52	1.48	1.33	1.44	1.43	1.50	1.43	1.33	1.41	1.35
C3				2.10	1.76	1.63	1.72	1.53	1.49	1.60	1.55	1.90	1.67	1.58	1.47	1.61	1.75	1.50	1.54	1.52	1.62	1.67	1.74	1.71	1.54	1.32	1.39	1.42	1.62	1.48	1.39	1.43	1.46
C4					2.40	1.68	1.94	1.57	1.44	1.50	1.36	1.67	1.57	1.39	1.36	1.54	1.49	1.33	1.42	1.41	1.43	1.59	1.66	1.62	1.53	1.31	1.33	1.36	1.44	1.33	1.25	1.45	1.35
C5						1.94	1.88	2.19	1.68	1.69	1.41	1.64	1.61	1.61	1.43	1.64	1.64	1.41	1.47	1.47	1.51	1.68	1.68	1.64	1.74	1.39	1.42	1.43	1.60	1.53	1.32	1.46	1.34
C6							2.14	1.93	1.50	1.54	1.56	1.56	1.47	1.56	1.42	1.47	1.66	1.46	1.49	1.43	1.40	1.45	1.49	1.53	1.57	1.30	1.50	1.47	1.42	1.54	1.37	1.62	1.41
C7								2.44	1.50	1.48	1.58	1.61	1.66	1.59	1.40	1.61	1.65	1.46	1.55	1.48	1.54	1.58	1.62	1.64	1.67	1.37	1.39	1.44	1.43	1.49	1.40	1.51	1.39
C8									1.79	1.68	1.60	1.59	1.52	1.86	1.48	1.66	1.69	1.44	1.47	1.54	1.50	1.48	1.53	1.55	1.64	1.34	1.32	1.37	1.42	1.64	1.31	1.44	1.36
C9										3.74	1.36	1.47	1.58	1.63	1.66	1.57	1.61	1.28	1.38	1.44	1.31	1.54	1.51	1.80	1.63	1.40	1.27	1.37	1.39	1.45	1.24	1.30	1.27
C10											1.48	1.43	1.62	1.65	1.82	1.62	1.66	1.29	1.35	1.42	1.31	1.61	1.58	1.94	1.61	1.41	1.31	1.38	1.44	1.53	1.28	1.38	1.29
C11												1.75	1.67	1.55	1.55	1.71	1.71	1.62	1.58	1.69	1.56	1.63	1.53	1.49	1.57	1.45	1.50	1.54	1.44	1.65	1.46	1.53	1.48
C12													1.73	1.60	1.57	1.78	1.82	1.58	1.69	1.51	1.53	1.78	1.62	1.48	1.54	1.36	1.46	1.44	1.55	1.63	1.48	1.56	1.52
C13														1.87	1.65	1.77	1.86	1.69	1.78	1.54	1.84	1.74	1.87	1.92	1.86	1.54	1.45	1.51	1.61	1.80	1.52	1.65	1.73
C14					1										1.86	1.72	2.05	1.67	1.76	1.73	1.57	1.69	1.64	1.69	1.83	1.47	1.33	1.42	1.40	1.74	1.44	1.38	1.36
C15																2.17	2.18	1.57	1.58	1.59	1.37	1.61	1.52	1.60	1.57	1.64	1.29	1.31	1.31	1.55	1.37	1.40	1.30
C16																	2.73	1.65	1.65	1.69	1.55	1.68	1.69	1.79	1.69	1.60	1.37	1.38	1.47	1.61	1.44	1.49	1.42
C17																		1.93	1.95	2.08	1.74	1.90	1.85	1.86	1.90	1.60	1.44	1.52	1.54	1.85	1.52	1.54	1.57
C18																			4.20	1.89	1.78	1.65	1.72	1.50	1.65	1.43	1.77	1.77	1.47	1.86	1.88	1.71	1.65
C19										1.0										2.18	1.86	1.80	1.88	1.58	1.72	1.48	1.76	1.88	1.50	1.83	1.84	1.79	1.75
C20																					1.99	1.69	1.55	1.49	1.59	1.53	1.54	1.66	1.41	1.76	1.49	1.61	1.58
C21																						1.62	1.74	1.55	1.82	1.40	1.53	1.59	1.70	1.79	1.70	1.51	1.65
C22																							2.82	2.05	2.15	1.54	1.67	1.69	1.71	1.70	1.54	1.74	1.51
C23																								2.49	2.31	1.55	1.58	1.69	1.81	1.72	1.51	1.61	1.55
C24																									2.73	1.80	1.42	1.50	1.72	1.61	1.50	1.43	1.36
C25							1																			2.08	1.76	1.77	1.82	2.03	1.72	1.61	1.59
C26			1																								1.47	1.41	1.41	1.57	1.48	1.40	1.33
C27					-																							4.08	1.66	1.74	1.97	2.20	1.90
C28																													1.78	1.91	1.96	2.00	2.06
C29	1	-	-	-	-	-	-																							1.78	1.63	1.56	1.67
C30	1	-	-																												2.17	1.92	1.99
C31	-	-	-	-				-			-																					1.83	1.88
C32	-	-	-	_						-																							2.58
C33																																	

[* VIF=1/(1-R²)] (Kline, 1998, p 78) ("C" is the abridgment of Criteria e.g. C1= Criteria 1)

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Table 12.	Examination	of data fo	r normali	ty.	
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	Mean	S	Skewness	Kurtosis
(Economic) 1. Assist Marketing	5.58	1.75	-0.82	1.34
(Economic) 2. Assist Cooperation	5.53	1.69	-0.81	1.06
(Economic) 3. Assist Farm Operation	5.49	1.73	-0.81	0.91
(Economic) 4. Adjust Temperament	5.30	1.82	-0.74	1.00
(Economic) 5. Increase Receptiveness	5.54	1.77	-0.70	0.97
(Economic) 6. Assist Farmers' Interpretative Ability	5.73	1.80	-0.67	0.85
(Economic) 7. Develop Farmers' Creativity	5.55	1.86	-0.71	0.81
(Economic) 8. Change Farmers' Thinking	5.86	1.83	-0.78	1.25
(Economic) 9. Increase Farmers' Income Sources	5.62	1.85	-0.61	0.84
(Economic) 10. Increase Farmers' Income	5.64	1.86	-0.70	1.06
(Economic) 11. Reveal Agricultural Uniqueness	6.24	1.63	-0.70	1.53
(Economic) 12. Maintain Current Agriculture	5.83	1.68	-0.79	1.85
(Economic) 13. Attract New Investment	5.53	1.82	-0.74	0.88
(Economic) 14. Expand Traditional Agriculture	5.93	1.85	-0.85	1.82
(Economic) 15. Increase Number of Tourists	6.31	1.75	-0.82	1.61
(Economic) 16. Increase Tourists' Satisfaction	6.01	1.60	-0.75	1.74
(Economic) 17. Promote the Image of Leisure Agriculture	6.15	1.68	-0.75	1.77
(Enjoyment) 18. Preserve the Current Culture	6.00	1.73	-0.76	1.37
(Enjoyment) 19. Educate the Current Culture	5.93	1.78	-0.69	1.09
(Enjoyment) 20. Supply of Recreational Activities	6.04	1.73	-0.67	1.60
(Enjoyment) 21. Supply of Recreational Locations	5.65	1.75	-0.90	1.84
(Enjoyment) 22. Improve Infrastructure of Rural Areas	5.87	1.80	-0.65	1.14
(Enjoyment) 23. Improve Spiritual Life of Farmers	5.42	1.82	-0.72	1.07
(Enjoyment) 24. Improve Demographic Composition of Rural Areas	5.36	1.76	-0.84	1.29
(Enjoyment) 25. Increases Community Vitality	5.96	1.73	-0.85	1.63
(Enjoyment) 26. Increases Interaction between Rural and Urban Areas	6.36	1.68	-0.84	1.89
(Ecology) 27. Preserve Environment	6.06	1.80	-0.74	1.16
(Ecology) 28. Repairs Environmental Damage	5.96	1.83	-0.67	1.10
(Ecology) 29. Reduce Negative Impacts of Development	5.44	1.78	-0.88	1.20
(Ecology) 30. Preserve Agricultural Landscape	6.10	1.71	-0.80	1.57
(Ecology) 31. Preserve Rural Community	6.11	1.80	-0.87	1.34
(Ecology) 32. Environmental Education of Farm Owners	6.03	1.68	-0.83	1.70
(Ecology) 33. Environmental Education of Tourists	5.73	1.80	-0.86	1.29

Data screening indicated that this data set is acceptable for structure equation modeling analysis. In order to test the factorial validity of the evaluation model, a Confirmatory Factor Analysis (CFA), utilizing maximum likelihood procedures with the covariance matrix as input, was performed using AMOS 4.0 (Arbuckle, 1996). In order for a Confirmatory Factor Analysis (CFA) model to be identified, there must be at least three factors. Also, each first-order factor should have at least two indicators (Kline, 1998, pp. 203-207). The model shown in Figure 6 (page 62) satisfies both of these requirements. To evaluate the fit of the model to the data, the chi-square statistic (χ^2), the Normed Fit Index (NFI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA) were examined. These indices were chosen because some adjust for sample size (CFI), and all are appropriate for CFAs with maximumlikelihood procedures (Tabachnick & Fidell, 2001). Additionally, the Goodness of Fit Index (GFI) and the Root Mean Residual (RMR) were assessed.

The results revealed a generally satisfactory fit of the evaluation model to the data. The chi-square for the initial evaluation model was, $\chi^2_{(216)} = 1730.64$, p < .01. $(\chi^2/df = 3.613)$, and the following other goodness of fit statistics were found to be satisfactory : NFI = .902, CFI = .927, RMSEA = .072, GFI = .821, RMR = .138 (The

acceptable level of fit index for χ^2 /df is less than 3. The acceptable level of fit indices for NFI, CFI, and GFI is .90. The acceptable value of the RMSEA is about .08 or less. An RMR of zero indicates a perfect fit. The smaller the RMR is, the better (Arbuckle & Wothke, 1999; Byrne, 2001; Kline, 1998)

Modification indices and residual covariance from the analysis indicated that the following 12 indicators were correlated with a subscale: Adjust Temperament, Increase Receptiveness, Change Farmers' Thinking, Attract New Investment, Expand Traditional Agriculture, Increase Number of Tourists, Preserve the Current Culture, Educate the Current Culture, Supply Recreational Activities, Supply Recreational Locations, Improve Demographic Composition of Rural Areas, and Reduce Negative Impacts of Development. It seemed desirable to remove these items from the evaluation model to obtain a better model-data fit. When they were removed, CFA was estimated with the remaining 21 indicators resulting in a good fit of the model to the data, as all the fit indices met statistical criteria, $\chi^2_{(176)} = 463.43$, p < .01. ($\chi^2/df = 2.633$), NFI = .954, CFI = .971, RMSEA = .057, GFI = .922, RMR = .082. In other words, the item-content structure and relations between each content area for the evaluation is better than in the original model. Figure 7 displays the structure of the refined evaluation model.



Note: The unstandardized versions of the above estimates are significant at the .01 level except for those designated "ns," which means not significant. The standaridized values for the disturbances of the unobserved (latent) variables and for the measurement errors of the indicators are proportions of unexplained variance.

Figure 7. The modified evaluation model and the standardized solution.

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prog	
minin	
Weigh	

The internal consistency reliability for each of the factors was calculated using Cronbach's coefficient alpha (Cronbach, 1951). To be acceptable, alpha values showed be greater than .70; the α value of all items (21 indicators) is .97; the α value of economic goal indicators (11 indicators) is .95; the α value of enjoyment indicators (6 indicators) is .90; and the α value of ecology goal indicators (6 indicators) is .94.

Since several indicators and dimensions were deleted from the initial evaluation model based on the analysis of confirmatory factor analysis, the weights assessment procedure needs to be recalculated using the Expert Choice software one more time. The modified hierarchy in Figure 7 was used to determine refined weightings of the remaining criteria. The results of the recalculated relative weights (local priorities and global priorities) of the evaluation elements are shown in Table 13 and Table 14.

The ranking by goal weights ("Total" global priorities of goal in Table 14) is as follows: ecology (.347), economic (.331), and enjoyment (.322). This indicates that ecology is considered to be the most important goal for Taiwan's leisure agriculture program and enjoyment is the least important goal. The differences across goals in minimal, so one can conclude that each of the three is equally important. However, goal weight differences exist across the three stakeholder groups queried in this study. Scholars feel that the economic goal is the most important goal; farm owners place greatest importance on the ecology goal; and policy enforcers think that the enjoyment goal is the most important goal. Global priorities of the 21 indicators are also shown in Table 14. The results show the top five most important indicators are: (Enjoyment) Improve Spiritual Life of Farmers (weight= 0.126); (Enjoyment) Improve Infrastructure of Rural Areas (weight= 0.080); (Ecology) Preserve Environment (weight= 0.078); (Ecology) Environmental Education of Farm Owners (weight= 0.077); and (Enjoyment) Increase Community Vitality (weight= 0.069).

Table 13. Recalculated relative weights (local priorities) of evaluation elements by stakeholder group.

Level 1				
Cool (Loop) Drivitin)	S	FO	PE	Total
	Mean	Mean	Mean	Mean
Economic	0.503	0.236	0.236	0.331
Enjoyment	0.263	0.282	0.413	0.322
Ecology	0.234	0.482	0.351	0.347
Sum	1.000	1.000	1.000	1.000
Level 2				
Dimension (Local Priorities)	S	FO	PE	Total
Dimension (Local Phonnes)		Mean	Mean	Mean
(Economic) Assist Farm Management	0.157	0.165	0.131	0.150
(Economic) Educate Farmers	0.096	0.122	0.312	0.181
(Economic) Improve Farmers' Economic	0.251	0.158	0.101	0.171
(Economic) Use Farm Resources Wisely	0.256	0.322	0.312	0.294
(Economic) Make Farming Attractive	0.240	0.233	0.144	0.204
Sum	1.000	1.000	1.000	1.000
(Enjoyment) Improve Quality of Life	0.440	0.646	0.686	0.587
(Enjoyment) Maintain Community Structure	0.560	0.354	0.314	0.413
Sum	1.000	1.000	1.000	1.000
(Ecology) Protect Environment	0.486	0.330	0.354	0.394
(Ecology) Maintain Agricultural Environment	0.218	0.284	0.288	0.262
(Ecology) Educate Environmental Protection	0.296	0.386	0.358	0.344
Sum	1.000	1.000	1.000	1.000

(S: Scholars, FO: Farm Owners, PE: Policy Enforcers)

Table 13 (cont'd)(S	(S: Scholars, FO: Farm Owners, PE: Policy Enforcers)						
Lev	rel 3						
Indicator (Local Priorities)		S	FO	PE	Total		
indicator (Local Friorities)		Mean	Mean	Mean	Mean		
(Assist Farm Management) 1. Assist Marketing		0.362	0.497	0.335	0.391		
(Assist Farm Management) 2. Assist Cooperation		0.150	0.214	0.352	0.241		
(Assist Farm Management) 3. Assist Farm Operation		0.488	0.289	0.293	0.368		
	Sum	1.000	1.000	1.000	1.000		
(Educate Farmers) 6. Assist Farmers' Interpretative Abi	lity	0.507	0.173	0.233	0.314		
(Educate Farmers) 7. Develop Farmers' Creativity		0.493	0.827	0.767	0.686		
	Sum	1.000	1.000	1.000	1.000		
(Improve Farmers' Economic) 9. Increase Farmers' Inc	ome Sources	0.423	0.250	0.583	0.431		
(Improve Farmers' Economic) 10. Increase Farmers' In	come	0.577	0.750	0.417	0.569		
	Sum	1.000	1.000	1.000	1.000		
(Use Farm Resources Wisely) 11. Reveal Agricultural	Uniqueness	0.701	0.766	0.692	0.716		
(Use Farm Resources Wisely) 12. Maintain Current Ag	riculture	0.299	0.234	0.308	0.284		
	Sum	1.000	1.000	1.000	1.000		
(Make Farming Attractive) 16. Increase Tourists' Satisf	action	0.292	0.542	0.583	0.467		
(Make Farming Attractive) 17. Promote the Image of L	eisure	0 708	0.458	0 417	0 533		
Agriculture			0.750	V.TI/			
	Sum	1.000	1.000	1.000	1.000		

Table 13 (cont'd) (S: Scholars, FO: Farm Owners, PE: Policy Enforce					
Level 3					
Indiantar (Land Driaritian)	S	FO	PE	Total	
indicator (Local Priorities)	Mean	Mean	Mean	Mean	
(Improve Quality of Life) 22. Improve Infrastructure of Rural Areas	0.500	0.562	0.378	0.474	
(Improve Quality of Life) 23. Improve Spiritual Life of Farmers	0.500	0.438	0.622	0.526	
Sum	1.000	1.000	1.000	1.000	
(Maintain Community Structure) 25. Increases Community Vitality	0.594	0.625	0.560	0.591	
(Maintain Community Structure) 26. Increases Interaction between Rural and Urban Areas	0.406	0.375	0.440	0.409	
Sum	1.000	1.000	1.000	1.000	
(Protect Environment) 27. Preserve Environment	0.658	0.494	0.617	0.596	
(Protect Environment) 28. Repair Environmental Damages	0.342	0.506	0.383	0.404	
Sum	1.000	1.000	1.000	1.000	
(Maintain Agricultural Environment) 30. Preserve Agricultural Landscape	0.527	0.500	0.300	0.438	
(Maintain Agricultural Environment) 31. Preserve Rural Community	0.473	0.500	0.700	0.562	
Sum	1.000	1.000	1.000	1.000	
(Educate Environmental Protection) 32. Environmental Education of Farm Owners	0.633	0.562	0.750	0.655	
(Educate Environmental Protection) 33. Environmental Education of Tourists	0.367	0.438	0.250	0.345	
Sum	1.000	1.000	1.000	1.000	

Table 14. Recalculated weights (global priorities) of the evaluation elements by stakeholder group.

Level 1									
Cash (Clabel Drivertien)		S		FO		PE		Total	
Goau (Giodau Prioniuis)	M	an	r	Mean	r	Mean	r	Mean	r
Economic	0.5	03	1	0.236	3	0.236	3	0.331	2
Enjoyment	0.2	63	2	0.282	2	0.413	1	0.322	3
Ecology	0.2	34	3	0.482	1	0.351	2	0.347	1
Su	m 1.0	00		1.000		1.000		1.000	
	Level 2								
Dimension (Clabel Priorities)		S		FO		PE		Total	
Dimension (Global Priorities)	M	an	r	Mean	r	Mean	r	Mean	r
(Economic) Assist Farm Management	0.0	77	8	0.040	8	0.032	9	0.050	10
(Economic) Educate Farmers	0.0	55	9	0.031	10	0.067	6	0.053	9
(Economic) Improve Farmers' Economic	0.1	00	6	0.034	9	0.029	10	0.056	8
(Economic) Use Farm Resources Wisely	0.1	41	1	0.074	6	0.054	8	0.091	5
(Economic) Make Farming Attractive	0.1	30	3	0.057	7	0.055	7	0.083	7
(Enjoyment) Improve Quality of Life	0.1	34	2	0.184	2	0.298	1	0.206	1
(Enjoyment) Maintain Community Structure	0.1	29	4	0.099	5	0.115	3	0.115	4
(Ecology) Protect Environment	0.1	07	5	0.141	3	0.142	2	0.129	2
(Ecology) Maintain Agricultural Environment	0.0	47	10	0.138	4	0.094	5	0.090	6
(Ecology) Educate Environmental Protection	0.0	80	7	0.202	1	0.114	4	0.127	3
Su	m 1.0	00		1.000		1.000		1.000	

(S: Scholars, FO: Farm Owners, PE: Policy Enforcers)

(r denotes the rank according to its weight)

ble 14 (cont'd) (S: Scholars, FO: Farm Owners, PE: Policy Enforcers)							
Level	3						
Indicator (Global Prioritics)		S	FO	PE	Total		
		Mean	Mean	Mean	Mean		
(Economic) 1. Assist Marketing		0.033	0.020	0.011	0.021		
(Economic) 2. Assist Cooperation		0.014	0.008	0.012	0.010		
(Economic) 3. Assist Farm Operation		0.029	0.012	0.008	0.017		
(Economic) 6. Assist Farmers' Interpretative Ability		0.027	0.006	0.017	0.018		
(Economic) 7. Develop Farmers' Creativity		0.028	0.026	0.048	0.035		
(Economic) 9. Increase Farmers' Income Sources		0.031	0.008	0.010	0.017		
(Economic) 10. Increase Farmers' Income		0.069	0.026	0.018	0.038		
(Economic) 11. Reveal Agricultural Uniqueness		0.098	0.063	0.034	0.065		
(Economic) 12. Maintain Current Agriculture		0.043	0.011	0.019	0.025		
(Economic) 16. Increase Tourists' Satisfaction		0.048	0.029	0.021	0.033		
(Economic) 17. Promote the Image of Leisure Agricultur	e	0.083	0.029	0.034	0.050		
(Enjoyment) 22. Improve Infrastructure of Rural Areas		0.047	0.105	0.093	0.080		
(Enjoyment) 23. Improve Spiritual Life of Farmers		0.087	0.078	0.204	0.126		
(Enjoyment) 25. Increases Community Vitality		0.080	0.057	0.067	0.069		
(Enjoyment) 26. Increases Interaction between Rural and	Urban Areas	0.049	0.041	0.056	0.049		
(Ecology) 27. Preserve Environment		0.067	0.074	0.092	0.078		
(Ecology) 28. Repair Environmental Damages		0.039	0.067	0.049	0.051		
(Ecology) 30. Preserve Agricultural Landscape		0.025	0.077	0.028	0.041		
(Ecology) 31. Preserve Rural Community		0.024	0.061	0.066	0.050		
(Ecology) 32. Environmental Education of Farm Owners		0.040	0.107	0.089	0.077		
(Ecology) 33. Environmental Education of Tourists		0.039	0.095	0.024	0.050		
	Sum	1.000	1.000	1.000	1.000		

The weights' mean differences within the three stakeholder groups (scholars, farm owners, and policy enforcer) were also examined for statistical significance. Table 15 shows that the observed differences are statistically significant for only one goal (Ecology, $F_{(2)}=4.066$, p=.048; $X^2_{(2)}=7.346$, p=.025) and one indicator (Increase Farmers' Income Sources, $X^2_{(2)}=6.615$, p=.037) at the .05 level of significance. This indicates that scholars, farm owners, and policy enforcers on the 18-member advisory panel are in agreement in how they view the importance of each indicator.

Table 15. Results of recalculated weights' mean comparisons within the three

	One- ANO	One-Way ANOVA		skal s Test
	F	Sig.	X ²	Sig.
Economic	3.002	0.091	4.897	0.086
Enjoyment	1.261	0.321	3.056	0.217
Ecology	4.066	0.048	7.346	0.025
(Economic) Assist Farm Management			1.003	0.606
(Economic) Educate Farmers	0.825	0.463	2.006	0.367
(Economic) Improve Farmers' Economic			4.043	0.132
(Economic) Use Farm Resources Wisely	1.128	0.358	1.003	0.606
(Economic) Make Farming Attractive	0.904	0.433	2.306	0.316
(Enjoyment) Improve Quality of Life			4.376	0.112
(Enjoyment) Maintain Community Structure	0.262	0.774	0.522	0.770
(Ecology) Protect Environment	0.230	0.798	0.642	0.725
(Ecology) Maintain Agricultural Environment	3.114	0.085	5.773	0.056
(Ecology) Educate Environmental Protection	1.839	0.205	3.105	0.212

stakeholder groups.

(Note: Nonparametric test (Kruskal Wallis Test) was adopted if the variable did not meet the assumption of

"normality" or "homogeneity-of-variance" when running the One-Way ANOVA test.)

Table 15 (cont'd)

	One-Way		/ Kruskal		
	AN	OVA	Walli	s Test	
	F	Sig.	\mathbf{X}^2	Sig.	
(Economic) 1. Assist Marketing			1.182	0.554	
(Economic) 2. Assist Cooperation	0.134	0.876	0.052	0.974	
(Economic) 3. Assist Farm Operation	1.452	0.276	3.038	0.219	
(Economic) 6. Assist Farmers' Interpretative Ability			1.913	0.384	
(Economic) 7. Develop Farmers' Creativity	0.959	0.413	1.501	0.472	
(Economic) 9. Increase Farmers' Income Sources			6.615	0.037	
(Economic) 10. Increase Farmers' Income			3.036	0.219	
(Economic) 11. Reveal Agricultural Uniqueness			0.043	0.979	
(Economic) 12. Maintain Current Agriculture	0.979	0.406	0.274	0.872	
(Economic) 16. Increase Tourists' Satisfaction			1.140	0.565	
(Economic) 17. Promote the Image of Leisure Agriculture			3.215	0.200	
(Enjoyment) 22. Improve Infrastructure of Rural Areas	1.201	0.338	2.853	0.240	
(Enjoyment) 23. Improve Spiritual Life of Farmers			2.951	0.229	
(Enjoyment) 25. Increases Community Vitality	0.273	0.766	0.758	0.685	
(Enjoyment) 26. Increases Interaction between Rural and Urban Areas	0.187	0.832	0.465	0.793	
(Ecology) 27. Preserve Environment			0.463	0.793	
(Ecology) 28. Repair Environmental Damages			1.560	0.458	
(Ecology) 30. Preserve Agricultural Landscape			3.133	0.209	
(Ecology) 31. Preserve Rural Community			4.456	0.108	
(Ecology) 32. Environmental Education of Farm Owners	1.939	0.190	3.987	0.136	
(Ecology) 33. Environmental Education of Tourists			4.250	0.119	

(Note: Nonparametric test (Kruskal Wallis Test) was adopted if the variable did not meet the assumption of

"normality" or "homogeneity-of-variance" when running the One-Way ANOVA test.)
Performance Score Results

The total performance score was calculated by using Equation 1 as introduced on page 58. Results are presented in Table 20. The performance score for scholars is 6.106^{*} (The probability is 0.95 that the interval 5.449 to 6.761 includes the true mean for the performance score) which is the highest score within the three stakeholder groups. The performance score for the farm owners is 5.782 (The probability is 0.95 that the interval 5.226 to 6.337 includes the true mean for the performance score) which is the lowest score within three groups. The performance score for the policy enforcers is 5.924 (The probability is 0.95 that the interval 5.759 to 6.090 includes the true mean for the performance score). The overall performance score for the three stakeholder groups combined is 5.916 (The probability is 0.95 that the interval 5.679 to 6.153 includes the true mean for the performance score). These results indicate that the stakeholders' attitudes toward the performance of leisure agriculture policy are marginally positive. However, there are also clearly weakness in many dimensions of the policy and **c**onsiderable room for improvement.

[•] Scale: 10=Superior; 0= Failing

		Schola	r	Fa	rm Ov	vner	Policy Enforcer			Total
	\overline{X}_s	Ws	$W_s.S$	\overline{X}_f	W_{f}	$W_f.S$	\overline{X}_p	W _p	$W_p.S$	Weighted P.S.
1. Assist Marketing	5.96	0.033	0.198	5.15	0.020	0.100	5.62	0.011	0.063	0.074
2. Assist Cooperation	6.20	0.013	0.082	5.10	0.008	0.042	5.55	0.012	0.068	0.065
3. Assist Farm Operation	5.84	0.029	0.172	4.90	0.012	0.059	5.56	0.008	0.046	0.053
4. Adjust Temperament	5.04		0.000	4.74		0.000	5.40		0.000	0.000
5. Increase Receptiveness	5.44		0.000	5.44		0.000	5.56		0.000	0.000
6. Assist Farmers' Interpretative Ability	6.04	0.027	0.165	5.60	0.006	0.035	5.73	0.017	0.099	0.094
7. Develop Farmers' Creativity	6.04	0.028	0.168	5.15	0.026	0.133	5.58	0.049	0.276	0.253
8. Change Farmers' Thinking	6.24		0.000	5.65		0.000	5.87		0.000	0.000
9. Increase Farmers' Income Sources	6.36	0.031	0.197	5.89	0.008	0.049	5.54	0.010	0.058	0.063
10. Increase Farmers' Income	6.44	0.069	0.442	5.90	0.026	0.152	5.55	0.018	0.100	0.123
11. Reveal Agricultural Uniqueness	6.88	0.098	0.677	5.95	0.063	0.372	6.24	0.034	0.215	0.256
12. Maintain Current Agriculture	6.24	0.043	0.271	5.39	0.011	0.057	5.88	0.019	0.113	0.114
13. Attract New Investment	6.00		0.000	5.19		0.000	5.55		0.000	0.000
14. Expand Traditional Agriculture	6.40		0.000	6.10		0.000	5.88		0.000	0.000
15. Increase Number of Tourists	7.08		0.000	6.52		0.000	6.23		0.000	0.000
16. Increase Tourists' Satisfaction	6.40	0.048	0.306	6.08	0.029	0.178	5.98	0.021	0.123	0.139
17. Promote the Image of Leisure	6.64	0.083	0.550	6.18	0.029	0.176	6.11	0.034	0.210	0.223
(Economic) Subtotal			3.2278			1.352			1.369	1.458
18. Preserve the Current Culture	5.84		0.000	5.65		0.000	6.06		0.000	0.000
19. Educate the Current Culture	5.64		0.000	5.56		0.000	6.00		0.000	0.000
20. Supply of Recreational Activities	6.16		0.000	5.71		0.000	6.08		0.000	0.000
21. Supply of Recreational Locations	6.08		0.000	4.79		0.000	5.76		0.000	0.000
22. Improve Infrastructure of Rural Areas	5.68	0.047	0.266	5.85	0.106	0.617	5.89	0.093	0.550	0.544
23. Improve Spiritual Life of Farmers	5.13	0.087	0.445	5.63	0.078	0.441	5.41	0.205	1.111	0.998
24. Improve Demographic Composition of Rural Areas	5.92		0.000	5.56		0.000	5.30		0.000	0.000
25. Increases Community Vitality	6.36	0.080	0.511	5.84	0.057	0.334	5.96	0.068	0.404	0.401
26. Increases Interaction between Rural and Urban Areas	6.68	0.049	0.327	6.29	0.041	0.259	6.35	0.056	0.353	0.340
(Enjoyment) Subtotal			1.550			1.652			2.418	2.283
27. Preserve Environment	5.52	0.067	0.371	5.94	0.074	0.437	6.10	0.093	0.567	0.542
28. Repair Environmental Damages	5.44	0.039	0.214	5.92	0.067	0.397	6.00	0.050	0.299	0.307
29. Reduce Negative Impacts of Development	4.92		0.000	5.28		0.000	5.50		0.000	0.000
O. Preserve Agricultural Landscape	6.36	0.025	0.156	5.97	0.077	0.461	6.11	0.028	0.169	0.203
1. Preserve Rural Community	5.84	0.023	0.134	5.65	0.061	0.342	6.20	0.067	0.417	0.394
2. Environmental Education of Farm Owners	5.84	0.040	0.235	6.02	0.108	0.652	6.05	0.090	0.545	0.542
3. Environmental Education of Tourists	5.56	0.039	0.218	5.19	0.095	0.490	5.82	0.024	0.141	0.187
(Ecology) Subtotal			1.329			2.778			2.137	2.175
(Scale: 10=Superior, 0= Failing)			6.106			5.782			5.924	5.916
95% C.L=		(5.449	-6.761)		(5.226	~6.337)		(5.759-	~6.090)	(5.679-6.153)

 Table 16. Accumulative weighted performance score by stakeholder group.

CHAPTER 5 CONCLUSIONS

This chapter is divided into three parts. The first part presents a summary of study results. The second part contains conclusions and their implications. The last part includes recommendations for future research.

Summary of Study Results

The main purpose of this research was to develop and apply a systematic process for collecting and analyzing information from stakeholders that were needed to evaluate the performance of Taiwan's leisure agriculture development policy. The following three specific questions were addressed. What are the goals of leisure agriculture development in Taiwan? What are the relative priorities of these goals? And, how effective do stakeholders think the Council of Agriculture has been in developing leisure agriculture?

In this first section, findings pertaining to these three research questions are summarized and discussed.

1. What are the goals of leisure agriculture development in Taiwan?

An 18-member advisory panel, including scholars, farm owners, and policy enforcers, were interviewed in order to identify the goals of leisure agriculture development in Taiwan. The panelists identified 33 relevant performance indicators including: seventeen economic indicators, nine enjoyment indicators, and seven ecology indicators. Confirmatory Factor Analysis (CFA) was used to refine the content validity of the assessment instrument. The refined performance evaluation instrument included 21 performance indicators including: eleven economic indicators, four enjoyment indicators, and six ecology indicators.

2. What are the relative priorities of these goals?

The Analytic Hierarchy Process (AHP) was used to determine the priorities of the

evaluation criteria. The ranking by broad goal weights is as follows: ecology (.347),

economic (.331), and enjoyment (.322). Thus, these three broad goals are considered to

be almost equally important.

The five most heavily weighted/important performance indicators and their

related broad goals are:

Related Broad Goal	Performance Indicator
Enjoyment	Improve Spiritual Life of Farmers (weight= 0.126)
Enjoyment	Improve Infrastructure of Rural Areas (weight= 0.080)
Ecology	Preserve Environment (weight= 0.078)
Ecology	Environmental Education of Farm Owners (weight= 0.077)
Enjoyment	Increase Community Vitality (weight= 0.069)

The weighted mean differences for the indicators across the scholars, farm

owners, and policy enforcers were also analyzed for statistical significance. The results

indicate that all three groups of participants were quite consistent in how they viewed the importance of each indicator.

3. How effective do stakeholders think the Council of Agriculture has been in

developing leisure agriculture?

The overall performance score assigned by scholars is 6.106[•], which is the highest score within the three stakeholder groups. The lowest performance score 5.782 was assigned by the farm owners. The performance score assigned by policy enforcers is 5.924. The overall performance score from the three groups is 5.916. These results indicate that stakeholders' attitudes toward the performance of leisure agriculture policy were marginally positive, but there is clearly considerable room to make improvements in the program. For the broad economic goal, the Council of Agriculture should focus more on assisting farm management, continuing farmers' education, and improving farmers' economic well-being. For the broad enjoyment goal, the Council of Agriculture should concentrate on improving quality of life. For the broad ecology goal, the Council of Agriculture should focus more on environmental protection.

Scale: 10=Superior; 0= Failing

Limitations of the Study

- The Council of Agriculture provided the list of farm owners and scholars for this study. However, there is no guarantee that these two lists will include all the farm owners and scholars who were in the leisure agriculture enterprise in Taiwan.
- Non-response bias might influence results. Especially, the response rate of the farm owners was only 34%. However, the confidential nature of the survey made it impossible to track or analyze differences between respondents and nonrespondents.
- 3. The AHP needs to do the pair-wise comparisons of the indicators. This is a very complex questionnaire and the respondents need patience and attention to complete the survey. It was very likely to get the inconsistency responses, if the respondents did not pay full attention to answer the questions. Moreover, the long questionnaire would also cause a low response rate. Therefore, this study just asked the members in advisory panel to answer the AHP questionnaire. Although the members in advisory panel are experts in the leisure agriculture filed and their opinions are very valuable, this may still limit the generalizability of research findings.

Conclusions and Implications

This research has demonstrated a systematic process for collecting and analyzing information about the stakeholders' perceptions of leisure agriculture development in Taiwan. Results provide insight to the Council of Agriculture concerning how well the current policy is perceived to be working; and focusing on the detailed results reveals information potentially useful in guiding future policy development.

From a macro view, the overall performance score (5.916) indicates that stakeholders believe that the current policy for leisure agriculture development is only marginally positive and they were definitely not satisfied with specific outcomes of the policy. Moreover, scholars, farm owners, and policy enforcers all hold very similar attitudes about program performance.

From a micro view, one can check the performance assessment of each indicator. No indicator's assessment was higher than seven, which might be deemed fair to good performance; and several were assigned values less than five which might be deemed to equal to poor performance. Generally, the three groups' assessments for most of the criteria were quite close; although statistical tests showed that some scholars' score were significantly higher, especially for some economic indicators. This means the Council of Agriculture needs to work on improving policy performance across most of the indicators identified in this study as being important. Finally, scholars emphasized economic goals; farm owners and the policy enforcers focused more on ecology and enjoyment goals.

Based on the results of this study, the following recommendations should be considered by the Council of Agriculture:

- 1. From the priority analysis, the outcomes show the importance weightings for the broad economic (生產), enjoyment (生活), and ecology (生態) goals are essentially equal. That means that future leisure agriculture development should focus equally on these goals.
- 2. The performance scores, especially the economic indicators, show dissatisfaction with the council's performance. This indicates that the Council of Agriculture still needs to work more on assisting farmers to operate this service type of business (e.g. identifying the potential market/customer, providing educational program for farmers to learn how to operate a leisure agriculture farm, improve service quality.)

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Recommendations for Future Research

This study was the first to evaluate the Taiwanese government's performance with respect to leisure agriculture development policy. As with any first effort, there is room for improvement. Some recommendations for future research on this topic follow.

First, this research confirmed that there are three major goals (Economic,

Enjoyment, and Ecology) for evaluating leisure agriculture in Taiwan. If the Council of Agriculture wants to monitor performance annually, the number of indicators tracked could reduce in order to shorten the time required to complete the evaluation questionnaire and thereby increase response rate. Moreover, if a shorter instrument were developed, it would result in a shorter AHP questionnaire. Therefore, a more advanced analysis of the instrument is suggested. The dimensions under each broad goal built in this research would be a good place to start to develop a briefer instrument.

Second, the focus of this study was on measuring the satisfaction of stakeholders who were most directly impacted by leisure agriculture policy. However, other groups such as consumers are impacted as well. Future studies could include inputs from a broader range of stakeholders. Third, future studies could try to evaluate the efficiency of this policy to determine if what the government has been doing is being accomplished at an acceptable cost. Cost-benefit analysis and economic impact analysis are the techniques that could be used for future studies.

Fourth, this study used a panel of content experts to design the assessment instrument. Subjective judgments are involved in deciding what each content area measures and what items should be used for that content. Although this approach takes a lot of effort to implement this work, it does help to verify the criteria for evaluation.

Fifth, this study used Confirmatory Factor Analysis to assess content validity and content equivalence in terms of item-content structures and content area constructs. This approach offers an alternative way to assess content validity and support the findings from the qualitative research element. A combination of qualitative and quantitative approach is suggested if future research was going to develop a new instrument.

Finally, Analytic Hierarchy Process decomposes the complex evaluation criteria into smaller sub-dimension that can be better managed in terms of scaling, weighting, and combining the scores obtained from each criterion. This allows the policy decisionmaker or policy evaluator to satisfactorily aggregate each of the various attributes into a

105

single measure of overall performance score. The AHP can be a valuable tool for further applications in policy evaluation.

APPENDICES

-

APPENDIX I: Consent Form I

Leisure Agriculture Performance Evaluation Survey

Date
Name
Address
City, State Zip

Dear_____,

The purpose of this letter/phone call is to ask for your participation in my study "Analytic Hierarchy Process (AHP): A Method of Quantifying the Performance Indicators of a Tourism-Based Industry". This study is being conducted to evaluate the performance of leisure agriculture development in Taiwan. You are being asked to participate in this study because of your expertise and experience regarding leisure agriculture development. If you agree to participate, you will be contacted twice:

First for a personal Interview

This will be a one-hour personal interview (the date and time of the meeting will be arranged). The topics will cover: (1) what are the objectives of leisure agriculture development? (2) what is/are the performance indicator(s) of each objective (3) What is the priority of the objectives?

Follow-up survey by mail order

You will be mailed the questionnaire survey and be asked to assess the importance of a set of performance indicators. It will take about 30 minutes to complete this mail survey.

All your data gathered during this study will be treated with strict confidence. Your confidentiality will be protected to maximum extent allowable by law, and to ensure confidentiality, your identity will only be known to my advising professor and me. Any reports of research findings that result from this study will not associate your identity with specific responses. Participation in this study is voluntary. You may choose not to participate at all, may refuse to answer certain questions, or may discontinue participation at any time.

If you have any questions or concerns regarding your participation in this study, please contact:

Sheng-Jung Ou	Hung-Hsu Yen	Donald F. Holecek
250 Kuo-Kuang Rd.	250 Kuo-Kuang Rd.	172 Natural Resources
Department of Horticulture	Department of Horticulture	Building
National Chung-Hsing	National Chung-Hsing	East Lansing, MI, 48824
University	University	PHONE: 002-1-517-
PHONE: (04)22850395	PHONE: (04)22850395	3530793
E-Mail: Sjou@nchu.edu.tw	E-Mail: yenhungh@msu.edu	E-Mail:
		dholecek@msu.edu

If you have any questions about your right as a human subject of research, please contact:

University Committee on Research Involving Human Subjects

Ashir Kumar, MD, Chair 202 Olds Hall, Michigan State University East Lansing, MI 48824-1046 PHONE: 002-1-517-3552180 FAX: 002-1-517-4324503 E-Mail: UCRIHS@msu.edu

If you freely consent to participate, please sign below and mail this entire document to me in the envelope provide.

Signature

Date

Thank you,

Sheng-Jung Ou Department of Horticulture, National Chung-Hsing University

Hung-Hsu Yen Michigan State University

APPENDIX II: Consent Form II and Performance Assessment

Questionnaire

Leisure Agriculture Performance Evaluation Survey

Date
Name
Address
City, State Zip

Dear_____,

You have received this survey because you have been identified as an expert, who can provide valuable information for my study "Analytic Hierarchy Process (AHP): A Method of Quantifying the Performance Indicators of a Tourism-Based Industry". My study is being conducted to evaluate the performance of leisure agriculture development in Taiwan. Over the past two months, experts form Council of Agriculture, universities/colleges, local governments, farmers' associations, farmers have been interviewed to identified the performance indicators of leisure agriculture development. These performance indicators have been incorporated into the attached survey and distributed to a broader group of experts from the stakeholder groups, of which you are apart. I would appreciate your taking the next 15 minutes to complete the attached questionnaire.

Participation in this study is voluntary. You may choose not to participate at all, may refuse to answer certain questions, or may discontinue participation at any time. You indicate your voluntary agreement to participate by completing and returning the questionnaire.

The survey is **anonymity**. It means that <u>no one</u> is able to associate responses or other data with individual subjects. Moreover, only aggregate data will be shown in the reports. All your data gathered during my study will be treated with strict confidence and your right TO PRIVACY will be protected to maximum extent allowable by law.

If you have any questions or concerns regarding your participation in this study, please contact:

Sheng-Jung Ou	Hung-Hsu Yen	Donald F. Holecek
250 Kuo-Kuang Rd.	250 Kuo-Kuang Rd.	172 Natural Resources
Department of Horticulture	Department of Horticulture	Building
National Chung-Hsing	National Chung-Hsing	East Lansing, MI, 48824
University	University	PHONE: 002-1-517-
PHONE: (04)22850395	PHONE: (04)22850395	3530793
E-Mail: Sjou@nchu.edu.tw	E-Mail:	E-Mail:
	yenhungh@msu.edu	dholecek@msu.edu

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Your assistance in this research is very much appreciated.

Sheng-Jung Ou

Department of Horticulture, National Chung-Hsing University

Hung-Hsu Yen

Michigan State University

Leisure Agriculture Performance Evaluation Survey

Using a scale of 0 to 10, please evaluate the government's leisure agriculture policy. (10="Superior or Outstanding"; 6="Passing", 0="Failing or Unacceptable")

Performance Evaluation

Evaluation Indicators				G	ra	de					
	Failing										Superior
1. How well do you think the government "Assists Marketing"?	0	0	0	3	4	\$	6	0	8	9	10
2. How well do you think the government "Assists Cooperation"?	0	1	0	3	4	\$	6	Ø	8	9	0
3. How well do you think the government provides "Farm Operation Assistant"?	0	0	0	3	4	\$	6	Ø	8	9	0
4. How well do you think the government "Adjust Temperament"?	0	0	0	3	4	\$	6	Ø	8	9	0
5. How well do you think the government "Increases Receptiveness"?	0	0	0	3	4	\$	6	Ø	8	9	0
6. How well do you think the government "Assists Farmers' Interpretative Ability"?	0	0	0	3	4	\$	6	Ø	8	9	0
7. How well do you think the government "Develops Farmers' Creativity"?	0	0	0	3	4	\$	6	Ø	8	9	0
8. How well do you think the government "Changes Farmers' Thinking"?	0	0	0	3	4	\$	6	Ø	8	9	0
9. How well do you think the government "Increases Farmers' Income Sources"?	0	0	0	3	4	\$	6	Ø	8	9	0
10. How well do you think the government "Increases Farmers' Income "?	0	0	0	3	4	\$	6	Ø	8	9	0

Evaluation Indicators				G	rae	le					
	Failing			<u>, , , , , , , , , , , , , , , , , , , </u>							Superior
	0										10
11. How well do you think the government "Reveals Agricultural Uniqueness"?	0	0	2	3	4	\$	6	0	8	9	0
12. How well do you think the government "Maintains Current Agriculture"?	0	1	2	3	4	\$	6	Ø	8	9	0
13. How well do you think the government "Attracts New Investment"?	0	1	2	3	4	\$	6	Ø	8	9	0
14. How well do you think the government "Expands Traditional Agriculture"?	0	1	2	3	4	\$	6	Ø	8	9	0
15. How well do you think the government "Increases Number of Tourists"?	0	1	0	3	4	\$	6	Ø	8	9	0
16. How well do you think the government "Increases Tourists' Satisfaction"?	0	0	2	3	4	\$	6	Ø	8	9	0
17. How well do you think the government "Promotes the Image of Leisure Agriculture"?	0	1	2	3	4	\$	6	Ø	8	9	0
18. How well do you think the government "Preserves the Current Culture"?	0	1	2	3	4	\$	6	Ø	8	9	0
19. How well do you think the government "Educates the Current Culture"?	0	0	0	3	4	\$	6	Ø	8	9	10
20. How well do you think the government "Supplies of Recreational Activities"?	0	0	0	3	4	\$	6	Ø	8	9	0
21. How well do you think the government "Supplies of Recreational Locations"?	0	0	0	3	4	\$	6	0	8	9	0
22. How well do you think the government "Improves Infrastructure of Rural Areas"?	0	1	0	3	4	\$	6	Ø	8	9	0
23. How well do you think the government "Improves Spiritual Life of Farmers"?	0	0	0	3	4	\$	6	Ø	8	9	10
24. How well do you think the government "Improves Demographic Composition of	0	1	2	3	4	\$	6	Ø	8	9	0
25. How well do you think the government "Increases Community Vitality"?	0	1	0	3	4	\$	6	Ø	8	9	0

Evaluation Indicators	Grade										
	• Failing										1 Superior
26. How well do you think the government "Increases Interaction between Rural and Urban Areas"?	0	0	0	3	4	\$	6	Ø	8	9	0
27. How well do you think the government "Preserves Environment"?	0	0	0	3	4	5	6	Ø	8	9	0
28. How well do you think the government "Repairs Environmental Damages"?	0	1	0	3	4	\$	6	Ø	8	9	0
29. How well do you think the government "Reduces Negative Impacts of Development"?	0	0	0	3	4	\$	6	Ø	8	9	0
30. How well do you think the government "Preserves Agricultural Landscape"?	0	0	0	3	4	\$	6	Ø	8	9	0
31. How well do you think the government "Preserves Rural Community"?	0	0	0	3	4	\$	6	0	8	9	0
32. How well do you think the government promotes "Environmental Education of Farm	0	1	0	3	4	\$	6	Ø	8	9	0
33. How well do you think the government encourages "Environmental Education of	0	0	2	3	4	\$	6	Ø	8	9	0

A Few Questions to Help Us Classify Your Answers

1.Your Age is

- \square Below 25 years old \square 26~35 years old \square 36~45 years old \square 46~55 years old \square 56~65 years old \square Above 65 years old
- 2. Where is your farm located?
 - □North: Ilan County, Keelung City 、 Taipei County(City), Taoyuan County(City), Hsinchu County(City)
 - Central: Miaoli County, Taichung County(City), Naitou County(City) · Changhua County(City), Yunlin County(City)
 - □South: Chiyi County(City), Tainan County(City), Kaohsiung County(City), Pingtung County(City)
 - East: Tatung County(City), Hwalien County(City)

----- Thank you for your participation! ------

APPENDIX III: Consent Form III and AHP Questionnaire

Leisure Agriculture Performance Evaluation Survey

Date Name Address City, State Zip

Dear_____,

You have received this survey because you have shown your willing to participate my study "Analytic Hierarchy Process (AHP): A Method of Quantifying the Performance Indicators of a Tourism-Based Industry". My study is being conducted to evaluate the performance of leisure agriculture development in Taiwan. The purpose of my survey is to get the relative importance you place on each performance indicator when evaluating different performance indicators. Once the data collected, the information will be analyzed to identify the priority and weight of each indicator. I would appreciate your taking the 30 minutes to complete the attached questionnaire.

Participation in this study is voluntary. You may choose not to participate at all, may refuse to answer certain questions, or may discontinue participation at any time. You indicate your voluntary agreement to participate by completing and returning the questionnaire.

The survey is **anonymous**. It means that <u>no one</u> is able to associate responses or other data with individual subjects. Moreover, only aggregate data will be shown in the reports. All your data gathered during my study will be treated with strict confidence and your right TO PRIVACY will be protected to maximum extent allowable by law.

If you have any questions or concerns regarding your participation in this study, please contact:

Sheng-Jung Ou	Hung-Hsu Yen	Donald F. Holecek
250 Kuo-Kuang Rd.	250 Kuo-Kuang Rd.	172 Natural Resources
Department of Horticulture	Department of	Building
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University	National Chung-Hsing	PHONE: 002-1-517-
PHONE: (04)22850395	ersity	3530793
E-Mail: Sjou@nchu.edu.tw	PHONE: (04)22850395	E-Mail:
	E-Mail:	dholecek@msu.edu
	yennungn@msu.edu	

If you have any questions about your right as a human subject of research, please contact:

University Committee on Research Involving Human Subjects

Ashir Kumar, MD, Chair 202 Olds Hall, Michigan State University East Lansing, MI 48824-1046 PHONE: 002-1-517-3552180 FAX: 002-1-517-4324503 E-Mail: UCRIHS@msu.edu

Your assistance in this research is very much appreciated.

Sheng-Jung Ou Department of Horticulture, National Chung-Hsing University

Hung-Hsu Yen Michigan State University Leisure Agriculture Performance Evaluation Survey Utilizing the Analytic Hierarchy Process (AHP)

Thank you for taking the time to complete this survey. Please indicate to which organization/sector you belong Earm Owner University (Check one)

□ Farmers' Association □ Government Agency

Explanation

Last summer, I talked to you about leisure agriculture. In this survey, I would like you to evaluate the relative importance of various aspects of that industry. Please compare the importance of various sets of factors by marking the scales in this survey. The scales measure your opinions by what is known as pair-wise comparisons.

over another; 5= Strong importance of one element over another; 7= Very strong importance of one element over another; 9= Extreme importance of one element over another. 2, 4, 6 and 8 (In these scales, 1=Equal importance of both elements; 3= Moderate importance of one element mean intermediate values.)

you to compare (say, for example, "Economic" and "Enjoyment") and you think "Economic" is of Example: The following is an example of a pair-wise comparison. When there are two criteria for moderate importance over "enjoyment," then you should mark the 3 on the left side (closer to the side of "Economic").





♦The Comparison of three leisure agriculture goals:

◆Please rank the importance of these three leisure agriculture goals by 1-3 (<u>"1" means the MOST IMPORTANT</u>)

- Economic, which is the economic goal of leisure agriculture
 - · Enjoyment, which is the social goal of leisure agriculture
- Ecology, which is the environmental goal of leisure agriculture

1 ------C 41- --- 41----* DI

				Enjoyment	Ecology	Ecology
		Ехиете Ітроналсе		6	6	6
				0	0	0
::		Very Strong Importance		0	6	6
goa				9	9	0
ture		Strong Importance		ଡ	ଡ	ଡ
InoL	als			4	4	4
e agi	e Go	Moderate Importance		0	0	0
ISUL	Iture			0	0	0
ee le	ricu	Equal Importance		Θ	Θ	Θ
thr	e Ag			0	0	0
these	isur	Moderate Importance		0	0	0
10 2	Le			4	4	4
anci		Strong Importance		ଡ	ଡ	ଡ
ipori				9	9	0
ui au		Very Strong Importance		0	6	6
elati				0	0	0
her		Extreme Importance	۲	6	6	0
* Please compare t				Economic	Economic	Enjoyment
			_	_	_	

	sT IMPORTANT) d sensus		ural —	estment.	image of	
	yoals by 1~6 (<u>''1'' means the MO</u> ers to increase their marketing a er farmers. ersonalities, and encouraging co	opportunities and income.	aracteristics and maintain agricu	business types and to attract inv	isitors, their satisfaction, and the	
sions of "Economic" goal:	these six dimensions of "Economic" g <i>m</i> , which is assisting and guiding farme encourage them to collaborate with oth as such as creativity, improving their pe	<i>iomic</i> in order to increase farmers' job (<i>isely</i> , which is to reveal agricultural ch	s, to assist and guide farmers to change	e, which will increase the number of v	
The Comparison of six dimer	 Please rank the importance of Assist Farm Management operating ability and to Educate Farmers in area 	iormauon. ◆ Improve Farmers' Econ	• Use Farm Resources Wi	 Diversify Farm Busines. 	Make Farming Attractiv	leisure agriculture.

			Educate Farmers	Improve Farmers' Economic	Use Farm Resources Wisely	Diversify Farm Business	Make Farming Attractive	Improve Farmers' Economic	Use Farm Resources Wisely	Diversify Farm Business	Make Farming Attractive	Use Farm Resources Wisely	Diversify Farm Business	Make Farming Attractive	Diversify Farm Business	Make Farming Attractive	Make Farming Attractive
		Extreme Importance	▲	0	6	6	0	0	6	0	0	0	0	0	0	6	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Very Strong Importance	6	0	0	6	0	6	0	0	6	6	6	6	6	6	6
gua	~		9	0	0	0	9	0	0	0	9	0	0	0	0	9	9
	oal	Strong Importance	0	0	0	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	0	ଡ
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3	mon	Moderate Importance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	"J0	Equal Importance	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
	ions		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nens	Moderate Importance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Din		•	€	€	€	4	4	4	4	4	4	€	4	€	4	Ð
	Six	Strong Importance	9	0	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	ଡ	6
			9	0	0	0	9	0	9	9	9	9	9	9	0	9	0
		Very Strong Importance	0	0	0	0	6	6	6	6	0	6	6	0	6	6	0
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Extreme Importance	0	0	6	6	6	6	6	6	0	0	6	0	0	6	0
n a undanna acent I +			Assist Farm Management	Assist Farm Management	Assist Farm Management	Assist Farm Management	Assist Farm Management	Educate Farmers	Educate Farmers	Educate Farmers	Educate Farmers	Improve Farmers' Economic	Improve Farmers' Economic	Improve Farmers' Economic	Use Farm Resources Wisely	Use Farm Resources Wisely	Diversify Farm Business

.... ** Plaa

بة الج 		ssist Cooperation	ssist Farm Operation	ssist Farm Operation
indust	Extreme Importance	@ A	@ 8	@ 9
and and "din	1	6	0	0
limer cets. ssses sses nent	Very Strong Importance	0	0	0
ent" o mark mark usine ineso ineso ineso ineso Dime		9	9	9
geme heir her b r bus r bus	Strong Importance	6	ଡ	6
fana ping th oth thei farm		Ð	Ð	Ð
rm N velor e wit e wit on of ssist	Moderate Importance	0	0	0
st Fa n der borat erati f "As m M		0	0	0
Assi bers i collal te op ors o	Equal Importance	Θ	Θ	Θ
s of " s to c in th in th licato		0	0	0
ators uide mers mers e ind	Moderate Importance	0	0	0
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nree sist a urag ussist ussist licat	Strong Importance	9	ଡ	0
ese the set of the set		9	9	9
of the <u>XTA</u> sh is hich i, wh <i>i</i> , wh	Very Strong Importance	0	0	0
nce of the second secon		0	0	0
porta T IN ting, Dper	 Extreme Importance 	0	6	0
 ◆Please rank the im ("1" means the MOS ("1" Markes 4.4sist Markes 4.4sist Coope. 4.4sist Farm (Assist Marketing	Assist Marketing	Assist Cooperation

♦ The Comparison of three indicators of "Assist Farm Management" dimension:

 policies and regulations. Develop Farmers' Creativity, which helps them to diversify agricultural-related products. Change Farmers' Thinking, which changes their perceptions of operating leisure agriculture 	agriculture. • Assist Farmers' Interpretative Ability, which helps farmers to learn, understands and interprets those	 Adjust Temperament, which encourages farmers to adjust their attitudes and skills. Increase Receptiveness, which helps the farmers understand the policies and regulation of leisure 	("1" means the MOST IMPORTANT)	Please rank the importance of these five indicators of "Educate Farmers" dimension by 1~5
--	--	---	--------------------------------	---

in:		Contract of	Increase Receptiveness	Assist Farmers' Interpretative Ability	Develop Farmers' Creativity	Change Fanners' Thinking	Assist Farmers' Interpretative Ability	Develop Farmers' Creativity	Change Farmers' Thinking	Develop Farmers' Creativity	Change Farmers' Thinking	Change Farmers' Thinking
SUSIO		Extreme Importance	0	0	6	0	0	0	6	0	0	0
min			0	0	0	0	0	0	0	0	0	0
LS	sion	Very Strong Importance	6	0	6	0	0	6	6	0	0	0
E L	men		0	9	0	0	9	0	0	0	9	9
e ra	" Di	Strong Importance	ଡ	6	ଡ	ଡ	ଡ	ଡ	ଡ	6	0	9
ucat	ners		Ð	4	4	4	•	4	4	•	4	4
	Farr	Moderate Importance	0	0	0	0	0	0	0	0	0	0
10 S	ate	1.3	0	0	0	0	0	0	0	0	0	0
ator	duc	Equal Importance	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
	I., Jo	e e	0	0	0	0	0	0	0	0	0	0
Ive	SIO	Moderate Importance	0	0	0	0	0	0	0	0	0	0
5	licat	· · · ·	4	4	4	4	4	4	4	4	4	4
ance	e Inc	Strong Importance	୭	0	ଡ	9	0	ଡ	ଡ	ଡ	Ø	0
Lod	Fiv		9	0	9	9	0	0	9	9	9	9
2		Very Strong Importance	6	0	6	6	0	6	6	6	Ø	0
			0	0	0	0	0	0	0	0	0	0
2		 Extreme Importance 	6	0	6	6	0	6	6	0	6	0
* I lease compare t		-	Adjust Temperament	Adjust Temperament	Adjust Temperament	Adjust Temperament	Increase Receptiveness	Increase Receptiveness	Increase Receptiveness	Assist Farmers' Interpretative Ability	Assist Farmers' Interpretative Ability	Develop Farmers' Creativity

A DIA



♦Please rank the importance of these two indicators of "Improve Farmers' Economic" dimension by 1 and 2

("1" means the MOST IMPORTANT)

- Increase Farmers' Income Resources, which increases the job opportunities for farmers.
 - Increase Farmers' Income, which Increase Farmers' Income in leisure agriculture.



Please compare the *relative importance* of two indicators of "Improve Farmers' Economic" dimension:



	sion by 1 and 2	e agriculture	imension:			Expand Traditional	Agriculture
	aens	isur	s" d		Extreme Importance	0)
	din	e le	nes	u		6	
	ess"	io th	Busi	nsio	Very Strong Importance	6)
inoi:	asin	lge t	E E	ime		6	
iensi	n B	char	y Fa	() ()	Strong Importance	e)
dim	Far	s to	rsif	ines		6)
ess"	sify	men	Dive	Bus	Moderate Importance	C)
usin	iver	:ss. Il fau	" Jo	arm		6)
n B	f"D	isine	tors	fy F:	Equal Importance	E)
Far	0 510	re bu tradi	dica	ersi		6)
rsify	icato	cultur dps t	in o'	"Div	Moderate Importance	e)
Dive	ind	agric ih he	oftw	s of		•)
I., Jo	itwo UTN	sure whic	nce	ator	Strong Importance	e	•
510	hese RTA	e lei: ure,	orta	ndic		6)
licat	e of t IPOI	to th iculn	imp	wo I	Very Strong Importance	6	;
o inc	ance [IM	ents Agri	ıtive	L		6)
f tw	port [OS]	estme onal	e reli		Ехиете Ітропалсе	6)
The Comparison o	Please rank the im ("1" means the M	 Attract New Invi Expand Traditi business. 	Please compare the			Attract New	Investments
•	*		*				

♦The Comparison of three indicators of "Make Farming Attractive" dimension:

\diamond Please rank the importance of these three indicators of "Make Farming Attractive" dimension by 1~3

("1" means the MOST IMPORTANT)

- Increase Number of Tourists.
- Increase Tourists' Satisfaction with their leisure agriculture experience.
 - Promote the Image of Leisure Agriculture.

*Please compare the relative importance of three indicators of "Make Farming Attractive" dimension on:

	_		
	rists'	of	of
	Tou	mage Tre	mage Te
		re L Icultu	re I
	tion e	A Brit	P Bi
	creas tisfac	omot	omot
	& P	ድ ጌ	ድ ጌ
Extreme Importance	0	0	0
	0	0	9
Very Strong Importance	0	0	0
	9	0	0
Strong Importance	ଡ	0	0
	•	€	€
Moderate Importance	0	0	0
	0	0	0
Equal Importance	Θ	Θ	Θ
	0	0	0
Moderate Importance	0	0	0
	€	€	€
Strong Importance	9	0	0
	0	0	6
Very Strong Importance	0	0	0
	0	0	0
Extreme Importance	0	0	0
	r of ists	r of ists	ion 'sts'
	Tour	Tour	l ouri isfact
	N N N	Ž a	S S
	CCC	CCC	Incr
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	Extreme Importance Very Strong Importance Strong Importance Moderate Importance Strong Importance Strong Importance Moderate Importance Strong Importance	Lourists Louri	Increase Number of Lourists Increase Number of Lourists Increase Number of Lourists Increase Number of Contrasts O Very Strong Importance Increase Number of Contrasts O O Increase Number of Contrasts O O Increase Number of C

◆The Comparison of four dimensions of "Enjoyment" goal:

♦Please rank the importance of these four dimensions of "Enjoyment" goal by 1~4

("1" means the MOST IMPORTANT)

- Retain Traditional Culture, which is to preserve and teach traditional agriculture.
- Making Rec. Opportunities Available, which is offer the recreational opportunities to meet people's needs.
 - Improve Quality of Life, which improves the physical environment and enriches farmers' mental health.
 - Maintain Community Structure, to prevent aging of the population in rural communities, revitalize rural communities, and balance urban and rural development.

		Ехиеме Ітроталсе	Making Recreational Opportunities Available	Improve Quality of Life	Maintain Community Structure	 Improve Quality of Life 	Maintain Community Structure	Maintain Community Structure
		T	0	0	0	0	0	0
ls:		Very Strong Importance	0	6	0	0	6	0
, gos	s		9	9	9	9	9	9
nent'	Goa	Strong Importance	6	ଡ	6	6	6	9
joyn	nt"		4	4	4	4	4	(1)
"En	yme	Moderate Importance	0	0	0	0	0	0
s of	Enjo		0	0	0	0	0	0
sion	•f •	Equal Importance	Θ	Θ	Θ	Θ	Θ	Θ
men	ions		0	0	0	0	0	0
ur di	nens	Moderate Importance	0	0	0	0	0	0
of for	· Din		•	4	4	4	•	4
) acu	Four	Strong Importance	0	ଡ	6	6	ଡ	6
orta			9	9	9	0	9	9
imp		Very Strong Importance	0	0	0	0	0	0
ative			0	0	0	0	0	0
e rela		Extreme Importance	0	0	0	0	6	0
Please compare the			Retain Traditional Culture	Retain Traditional Culture	Retain Traditional Culture	Making Rec. Opportunities Available	Making Recreationa Opportunities Available	Improve Quality of Life





♦ Please rank the importance of these two indicators of "Retain Traditional Culture" dimension by 1 and 2

- ("1" means the MOST IMPORTANT
- Preserve the Current Culture, which is to preserve the current agricultural culture.
- Educate the Current Culture, which is to educate new generation about the value of agriculture.
| | nsion by | | limension: | | | Recreational |
|--------------------|---------------------------------|--|----------------------|--------|------------------------|-----------------------------------|
| | ble" dimer | culture. | vailable" (| | | Supply
Location |
| ion: | aila | agric | es A | sion | Extreme Importance | 0 |
| ensi | s Av | aure | Initi | men | | 0 |
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ation | Opp | able | | 9 |
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| s Av |) . | expe | I gu | cs A | | • |
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| 13 O | lese 1 | to sa to sa | rtan | ors | | 6 |
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| two | orta | OST
nal A
nal I | rela | - M I | Extreme Importance | 0 |
| ◆The Comparison of | ♣Please rank the imp
1 and 2 | ⁽⁴¹) means the M Supply Recreation | Please compare the | | | Supply Recreational
Activities |



Comparison of three indicators o	rank the importance of these th means the MOST IMPORTANT prove Demographic Composition	blem of population decline. <i>rease Community Vitality</i> , by assi- <i>crease Interaction between Rural</i> an areas and increases people's in seompare the <i>relative importance</i> .	Three Indicators	Ехиете Ітропалсе Баленов Ітропалсе	e Demographic sition of Rural (3) (3) (5) Area	e Demographic stition of Rural (2) (6) Area	ase Community (a) (a) (b) (c) (c)
"Maintai	ree indicat Of Rural ,	ting the de and Urbar eraction. of three i	of "Maint	Уголд ітрогалсе Моdегаtе Ітрогалсе	0 0	0 0 0	9 Ø
n Commu	iors of "Mi lrea, in or	velopment 1 Area, wh ndicators o	ain Comm	Equal Importance	0	0 0	0 0
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ture" din	ommunit; vent aging	ommunitions the de	ucture" I	Strong Importance	0	0	0
iension:	y Structui g of popul	es. velopmen nunity Sti	Dimension	Very Strong Importance	©	©	® ©
	e" dimension by $1 \sim 3$ ation and the	of rural and ucture" dimension on:		Suiteme importance	 Increase Community Vitality 	 Increase Interaction between Rural and Urban Areas 	 Increase Interaction between Rural and Urban Areas

The Comparison of three indicators of "Protect Environment" dimension:

$^{\circ}$ Please rank the importance of these three dimensions of "Ecology" goal by 1 $^{\sim}3$

("1" means the MOST IMPORTANT)

- Preserve Environment, which is environmental preservation.
- Repair Environmental Damages, which is to repair the damages to the agricultural environment.
- Reduce Negative Impacts of Development, which is to reduce the negative impacts of development.







No.	Indicator	Goal
I-1	人力資源管理與訓練	Economic
I-2	人格特質的輔導	Economic
I-3	不能面積太小	Economic
I-4	之前的農業要予以持續地經營	Economic
I-5	公共設施創意	Economic
I-6	以服務業的評估標準為主	Economic
I-7	以農業生產爲主的農業轉型	Economic
I-8	可改善地力情況不佳的農業土地,提昇土地利用經濟效益	Economic
I-9	可使農業能抗衡外來進口的衝擊	Economic
I-10	必須具有核心的特色	Economic
I-11	必須掌握農業資源爲核心	Economic
I-12	生物科技	Economic
I-13	生產	Economic
I-14	生產力:一公頃土地為休閒農業創造多少利潤。	Economic
I-15	生產的收入比率	Economic
I-16	由原來的農業轉型而成	Economic
I-17	休閒事業發展	Economic
I-18	休閒所佔營收比率	Economic
I-19	休閒農場設施完備性	Economic
I-20	企業發展	Economic
I-21	先有認知的改變,才能經由協商產生共識	Economic
I-22	合法民宿業者的增加比率	Economic
I-23	吃的東西需具特色	Economic
I-24	因應加入 WTO 的衝擊	Economic
I-25	因應未來休閒產業之趨勢	Economic
I-26	地方人力的強化	Economic
I-27	農民轉型休閒農業對其經濟生活的改善	Economic
I-28	在規模上以 20-25 甲最適合,不要只是 1-2 甲地的農場	Economic
	多樣性(如各自的休閒農業硬體設施,不應導入過多人工化的設	
I-29	計,應由業者自行導入創意,產生具特色且多元化的休閒農業景	Economic
<u>I-30</u>	安定刀:即看財務結構、負債桯度、流動資產等	Economic
1-31	版長刀·今牛相去牛比的成長白分比。	Economic
1-32	灰具参與皮	Economic
1-33		Economic
1-34	收益刀:即看利润的比举	Economic
1-35	怕多少晨氏 故做休閒農業	Economic

APPENDIX VI: List of Potential Indicators

No.	Indicator	Goal
I-36	有創新的產品	Economic
I-37	行銷的專業化程度	Economic
I-38	行銷規劃	Economic
I-39	行銷部分的專業性	Economic
I-40	利益多元化	Economic
I-41	吸引遊客	Economic
I-42	扶植農業	Economic
I-43	良好的解說	Economic
I-44	使農民收入更好	Economic
I-45	使農家有第二收入	Economic
I-46	具有創新研發的能力	Economic
I-47	性格上必須喜歡與人互動	Economic
I-48	服務品質	Economic
I-49	服務專業與否	Economic
I-50	保存生產性的模式	Economic
I-51	保有農業生產	Economic
I-52	保持原來的生產方式	Economic
I-53	促使傳統農業轉型	Economic
I-54	促進產業發展	Economic
I-55	促進進農業轉型	Economic
I-56	前後遊客量差異	Economic
I-57	是不是保存一個農場的原貌	Economic
I-58	是否因爲休閒農業而增加產值	Economic
I-59	是否有組織推動	Economic
I-60	是否有導遊人員或導覽解說手冊、看板	Economic
I-61	是否具共同性的行銷、策略聯盟	Economic
I-62	是否創造商機	Economic
I-63	是否增加整體產值	Economic
I-64	是否轉型	Economic
I-65	活化農村經濟	Economic
I-66	活用農村豐富的資源	Economic
I-67	活動力:土地及資金的周轉速度	Economic
I-68	活動行銷	Economic
I-69	活動與風格過於類似,無法創新	Economic
I-70	相關之認證或受訓證明或紀錄	Economic
I-71	看農民之收入是否增加	Economic
I-72	紀念商品的多元化與特色化	Economic
I-73	個別經營體設施創意	Economic
I-74	特色活動的安排	Economic
I-75	能否掌握產業的核心價值	Economic
I-76	能改善原有困難的農業經營方式	Economic

No.	Indicator	Goal
I-77	能策略聯盟	Economic
I-78	配合觀光休閒趨勢逐漸的調整發展的腳步	Economic
I-79	區域性計畫導入共識的形成	Economic
I-80	商品的多寡	Economic
I-81	商品的開發	Economic
I-82	國際形象	Economic
I-83	強化產品質的部分	Economic
I-84	推廣教育上,要改變經營的觀念	Economic
I-85	教育與輔導業者之觀念	Economic
I-86	產品多元化	Economic
I-87	產品定位	Economic
I-88	產品創意與開發	Economic
I-89	產品與市場	Economic
I-90	產值	Economic
I-91	產值	Economic
I-92	產值比是否比原來僅經營農業來得多	Economic
I-93	產值做爲指標,就是收益的數字	Economic
I-94	產值變化的比較	Economic
I-95	產業的定位	Economic
I-96	產業的轉型	Economic
I-97	疏解農產品銷售壓力(可增加銷售管道,減少農產品滯銷的壓力)	Economic
I-98	組織性的長遠性計畫	Economic
I-99	組織架構	Economic
I-100	組織運作	Economic
I-101	組織運作	Economic
I-102	設施量	Economic
I-103	設置無障礙空間設施或提供特殊服務	Economic
I-104	販賣有特色的紀念品及產品	Economic
I-105	貨幣(個人所得)	Economic
I-106	透過聯盟結合,以增加多元性	Economic
I-107	創造多少的就業機會	Economic
I-108	創造附加價值	Economic
I-109	創造商機	Economic
I-110	創造就業機會	Economic
I-111	創新農業價值	Economic
I-112	場所具有當地的特色	Economic
I-113	媒體行銷	Economic
I-114	就業人口是否增加	Economic
I-115	就業人數	Economic
I-116	就業機率結構變化	Economic
I-117	就業機會	Economic

No.	Indicator	Goal
I-118	提供另一種農業經營之方式	Economic
I-119	提供在品質上能滿足遊客的食宿與設施	Economic
I-120	提供在數量上皆能滿足遊客的食宿與設施	Economic
I-121	提供能體驗農家生活的活動	Economic
I-122	促進當地的農特產銷售	Economic
I-123	提供遊客申訴之管道及遊客意見表	Economic
I-124	提供優雅的住宿空間	Economic
I-125	提昇農民的收益	Economic
I-126	提昇農業價值	Economic
I-127	策略聯盟	Economic
I-128	結合小規模的休閒農場資源	Economic
I-129	結合教育、觀光、休養來作轉型	Economic
I-130	傳統產業改造	Economic
I-131	園區的內容	Economic
I-132	園區的管理	Economic
I-133	園區整體特色展現	Economic
I-134	圓區外遊憩動線的整合	Economic
I-135	經濟的利益有多少	Economic
I-136	經營者的性格十分重要,是否適合經營休閒農業是推廣教育上的	Economic
I 127	里和	Economic
I-137	228日生 级	Economic
I-130	应告快入时以及	Economic
I-139	解动门始 解沿动眼路之是質及特色	Economic
I-140	解剖斑菌发育成为有限	Economic
I-147	资源服核心特色结合	Economic
I-142	農民人格特性、生活方式	Economic
I-144	農民不知如何經營	Economic
I-145	農民在概念上仍無法配合	Economic
I-146	農民並沒有服務的概念	Economic
I-147	農民於法令上多不了解	Economic
I-148	農民的收入是否增加	Economic
I-149	農民的能力與意願上亦有極大的落差	Economic
I-150	農民的配合意願	Economic
I-151		Economic
I-152	農民的觀念	Economic
I-153		Economic
I-154	農民缺乏商品開發經營的能力	Economic
I-155		Economic
I-156	農民無法自行產生特色	Economic
I-157	農民會從生產層面逐漸注重生活周遭的環境資源	Economic

No.	Indicator	
I-158	農民經濟改善	Economic
I-159	農民經驗不夠	Economic
I-160	農民對市場不了解	Economic
I-161	農民對休閒農業經營的信心不足	Economic
I-162	農民對發展休閒農業前後是否有受益的感覺	Economic
I-163	農民轉型休閒農業人數	Economic
I-164	農民觀念上並不容易接受休閒農業的觀念	Economic
I-165	農民觀念的改變	Economic
I-166	農村的就業人口	Economic
I-167	農產品能在地直銷	Economic
I-168	農產品進行產品形態的變化與包裝	Economic
I-169	農場主服務的親切度	Economic
I-170	農場主的經營管理能力	Economic
I-171	農場的安全性	Economic
I-172	農場的資源	Economic
I-173	農場的整體形象	Economic
I-174	農場設立的數目	Economic
I-175	農業經營結合高科技的技術	Economic
I-176	農業資源整合	Economic
I-177	遊客直接到產地採購,減少中間剝削	Economic
I-178	遊客重遊率	Economic
I-179	遊客能體驗不同於都市地區的休閒空間	Economic
I-180	遊客量	Economic
I-181	遊客量	Economic
I-182	遊憩規劃的創意	Economic
I-183	預算執行(如花費多少經費能產生多少就業機會)	Economic
I-184	對共同的區域計畫與維護計畫是否具有共識	Economic
I-185	與其他產業互動的情形是否增加	Economic
I-186	製造就業機會	Economic
I-187	需考量組織的發展	Economic
I-188	需考量報酬率	Economic
I-189	增加工作機會	Economic
I-190	增加收入	Economic
I-191	增加原住民之收入	Economic
I-192	增加農民收入	Economic
I-193	增加農民的經濟收益	Economic
I-194	增加農村子弟回鄉就業之機會,增加地方民眾就業的機會	Economic
I-195	增加農村就業之機會	Economic
I-196	增加農產品的通路	Economic
I-197	廠商數目	Economic
I-198	導入能引發產生質變的活動	Economic

No.	Indicator	Goal
I-199	機能上的指標(如停車場、廁所等設施機能的提供)	Economic
I-200	幫助傳統農業轉型	Economic
I-201	幫助農民轉型	Economic
I-202	幫助農民轉型	Economic
I-203	營造在地的品牌形象	Economic
I-204	營業的財務報表	Economic
I-205	營業額	Economic
I-206	營運方針	Economic
I-207	顧客服務創意與開發	Economic
I-208	觀光	Economic
I-209	觀光農場、教育農園及簡易休閒農場的增加	Economic
I-210	人口回流	Enjoyment
I-211	人際的互動成長	Enjoyment
I-212	心情是否開心	Enjoyment
I-213	文化的保存	Enjoyment
I-214	文化的傳承	Enjoyment
I-215	加深對本土及土地的認識	Enjoyment
I-216	生活品質	Enjoyment
I-217	生活品質是否提高	Enjoyment
I-218	生活教育上	Enjoyment
I-219	目前廣大之休閒需求	Enjoyment
I-220	休閒時間的增加	Enjoyment
I-221	老人安養	Enjoyment
I-222	改善其生活環境	Enjoyment
I-223	改善原有的生活	Enjoyment
I-224	改善農民的生活	Enjoyment
I-225	改變一般民眾的休閒與消費習慣	Enjoyment
I-226	社區的繁榮	Enjoyment
I-227	社區發展	Enjoyment
Í-228	青壯年進入農村數目的增加	Enjoyment
I-229	非貨幣(社會所得)	Enjoyment
I-230	保存農村傳統價值	Enjoyment
I-231	保存農業文化	Enjoyment
I-232	促進鄉土文化的教育	Enjoyment
I-233	促進農村的發展	Enjoyment
I-234	是否能提供遊客農業體驗	Enjoyment
I-235	是否帶給農民生活上充實快樂的感覺	Enjoyment
I-236	美學上	Enjoyment
I-237	要提供農業生產的環境與體驗	Enjoyment
I-238	要讓人民習慣上配合政策	Enjoyment
I-239	展示或體驗等活動之獨特性及與環境的融合性	Enjoyment

No.	Indicator	Goal
I-240	展示或體驗等活動內容之深度	Enjoyment
I-241	展示或體驗等活動空間之適合性及設備之配合性	Enjoyment
I-242	展現台灣農業的傳統價值	Enjoyment
I-243	健康的目的	Enjoyment
I-244	國人休閒的好地方	Enjoyment
I-245	國民休閒	Enjoyment
I-246	教育台灣民眾休閒的觀念	Enjoyment
I-247	教育推廣	Enjoyment
I-248	教育體驗	Enjoyment
I-249	符合社會休閒需求	Enjoyment
I-250	符合國人郊外旅遊的需求	Enjoyment
I-251	提供民眾文化體驗	Enjoyment
I-252	提供多元化的活動	Enjoyment
I-253	提供良好的生活環境	Enjoyment
I-254	提供國人旅遊新去處	Enjoyment
I-255	提供國民休閒	Enjoyment
I-256	提供國民休閒旅遊之去處	Enjoyment
I-257	提供教育之意涵	Enjoyment
I-258	提供都市人認識鄉土	Enjoyment
I-259	提高生活品質	Enjoyment
I-260	給予遊客餐飲、住宿、活動、紀念品等服務	Enjoyment
I-261	解說性(解說上可包括生態上、文化上等方面)	Enjoyment
I-262	農村社區產生質變	Enjoyment
I-263	農村社區會漸漸沒落	Enjoyment
I-264	農村輔導、活化整個農村	Enjoyment
I-265	農村體驗	Enjoyment
I-266	農家子弟逐漸回到農家經營休閒農業	Enjoyment
I-267	遊客的滿意度(如是否愉快、是否符合需求等)	Enjoyment
I-268	遊客體驗在心靈上充實之滿足指標	Enjoyment
I-269	滿足國人對旅遊的需求	Enjoyment
I-270	維持基本的生活水準	Enjoyment
I-271	增進國民對農業及農村之體驗	Enjoyment
I-272	衛生	Enjoyment
I-273	讓供給者與需求者皆得到良好的生活品質	Enjoyment
I-274	讓都市人釋放壓力的空間	Enjoyment
I-275	人工設施物或人工化的程度	Ecology
I-276	不要有機械設施	Ecology
I-277	化學肥料的時機控制	Ecology
I-278	文化	Ecology
I-279	文化上的傳承保存	Ecology
I-280	水土保持衝擊	Ecology

No.	Indicator	Goal
I-281	民眾重視農場環境	Ecology
I-282	生態	Ecology
I-283	生態工法	Ecology
I-284	生態的物種指標	Ecology
I-285	生態環境的維護上	Ecology
I-286	生態環境是否有更好的保護	Ecology
I-287	生態環境景觀的維護	Ecology
I-288	合理地利用農村資源	Ecology
I-289	使用水量的控制	Ecology
I-290	使用自然材質的傢俱	Ecology
I-291	使用環保標章的產品	Ecology
I-292	具有綠地空間	Ecology
I-293	注重生態環境	Ecology
I-294	空間環境景觀是否保持農業的根本	Ecology
I-295	保存文化	Ecology
I-296	保存農村風貌	Ecology
I-297	保存農場的資源	Ecology
I-298	保存環境生態	Ecology
I-299	保育	Ecology
I-300	保留休閒的綠地空間	Ecology
I-301	促進自然生態的教育	Ecology
I-302	是不是留存較多的天然環境	Ecology
I-303	是不是較少人工設施	Ecology
I-304	是否有使用環境用具	Ecology
I-305	是否有垃圾分類	Ecology
I-306	是否有廚餘回收	Ecology
I-307	是否保持農業環境	Ecology
I-308	是否繼續有計畫地維持被破壞的資源	Ecology
I-309	原住民文化的保存	Ecology
I-310	動物、昆蟲的數量可做生態上的評估指標	Ecology
I-311	動植物的復育	Ecology
I-312	教導農民如何正確使用農藥	Ecology
I-313	深耕地區幼兒的自然生態教育	Ecology
I-314	提供足夠的戶外休憩空間及設備	Ecology
I-315	景觀環境的營造	Ecology
I-316	硬體或公共設施的整體感	Ecology
I-317	硬體或公共設施施工	Ecology
I-318	農田旁的環境	Ecology
I-319	農地荒廢流失	Ecology
I-320	農地發展是否對生態造成破壞	Ecology
I-321	農村風貌的保存(廢棄農田回復爲生產地)	Ecology

No.	Indicator	Goal
I-322	農業與環境資源結合	Ecology
I-323	農藥用量的時機控制	Ecology
I-324	遊客是否得到教育(生態與文化的教育)	Ecology
I-325	對中小學生進行生態之解說教育	Ecology
I-326	廢水排放符合放流水標準	Ecology
I-327	導致綠地喪失	Ecology
I-328	整個景觀環境	Ecology
I-329	營造自然舒適的環境	Ecology
I-330	環境	Ecology
I-331	環境的好壞	Ecology
I-332	環境保育上	Ecology
I-333	環境品質	Ecology
I-334	環境品質	Ecology
I-335	避免過度開發,破壞環境	Ecology

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