ANALYSIS OF ECONOMIC EFFECTS OF ECO -TOURISM ON WANG-AN ISLAND: A CASE STUDY OF GREEN TURTLE PROTECTED AREA IN PESCADORES

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ABSTRACT

With the expansion of transport, increasing car ownership, rapid increase in outbound travel and new interests in nature based eco-tourism, and the adoption of 5 work days, marine eco-tourism is expected to have a very promising future and need more detailed preparation and planning. While marine eco-tourism occupies 30% of the travel industry, leisure activities in coastal areas are concentrated on a few areas such as swimming and fishing, and are expected to become more diversified with the increase of income. Marine eco-tourism brings about an advance in region's economical output and is good options to provide much needed employment for rural community, such as fishing village. This paper aims to investigate how the Wang-An Island in the Pescadores archipelago can be developed as an eco-tourism site. We carried out surveys to estimate the recreational value of Wang-An island in 2002 and 2003. In this case study, both on-site travelers and local residents are interviewed. In order to understand the tourist behavior, the recreational value of the Wang-An Island, and the economic impacts caused by eco-tourism are investigated. The contingent valuation method is applied to evaluate the visitors' and residents' willingness-to-pay for preserving the Wang-An Island. We also identify those positive and negative crucial factors related to the development, operation and management of the eco-tourism in the Island. SWOT method is applied to analyze the Niche for developing a sustainable eco-tourism at the Wang-An Island. Finally, we construct an ideal model of eco-tourism community which can provide a decision support mechanism in building a sustainable island eco-tourism. The results of this research can also provide many insights on policies for developing the eco-tourism in other similar oceanic islands.

Keywords: Contingent valuation; Island eco-tourism; Pescadores; SWOT; Travel cost method; Tourist behavior; Community integration

I. INTRODUCTION

Tourism industry is one of the world's world largest employer, and accounting for around 11% of the global labor force in 2002 (World Tourism Organization, WTO), while Taiwan accounting for 650,000 or 6.9% of the labor force. According to the WTO (1999) international tourists increased from 429 million people in 1989 to 625 million people in 1998, an increase of 45.7% in the 10-year period. In terms of receipts, they increased from US$ 211 billion in 1989 to US$ 445 billion in 1998; it represents an increase of 101.4% in the same period (Mbaiwa, 2003). Nowadays, the global annual tourist more than 640 million, businesses benefits for recreation are more than 454,500 million dollar, In general, visit grows up 4-5% in the whole world every year, but the eco-tour grows up 14%. According to WTO estimation, the global number of people of tour will grow up to 1,602 million until 2020, and business revenue wills up to two trillion dollars. It also predict that East Asia and Pacific area will exceed America and become the second major market on the world, and many new destinations will emerge to meet the demand. Taiwan has shown particularly strong growth in the recent past, and marine eco-tourism is expected to play a major role in the rapidly growing nature-based travel industry.

Marine eco-tourism resources of Taiwan have been underutilized because of cultural and economic factors, insufficient tourism infrastructure, and visitors are not allowed to access coastal area due to military concern. In the recent years, number of tourists has increased due to the increasing leisure time and the growing national interest in the outdoors. Majority of Taiwan tourists have turned to off-shore islands for diversified recreational activities. This paper is aim to develop an eco-tourism site on Wang-An island, understand the tourist behavior, and the impacts caused by eco-tourism. The eco-tour brings about an advance in economy of fishing village, and is a new direction in fishing village development as it improves the region's economical output. Eco-tourism industry is one of the best option provide needed employment for a rapidly growing and already impoverished rural community (Watkeys; Mason; Goodman, 1993). Therefore, the Whole world development of eco-tour has high potentiality and has market ability.

In this paper, Wang-An Island is selected as a case study. It is the most important nesting area in the Pescadores for green sea turtles, and is the best place for set up the ecological of protection area. Though Wang-An Island has beautiful scenery and abundant aquatic products, the population on this island drops year by year. In order to preserve island natural resources, the government established the ecological protection area in 1990. Being has eco-tour potential, the government cost 100 million NT$ to built a green tortoise preserve centre in 1995. The set up of ecological protection area and green tortoise preserve centre bring great expectations for people at Wang-An Island. But, results did not satisfied community people, government official, and researcher at all. It is a kind of new experience in Taiwan to set up the ecological protection area and develop the eco-tour. Although eco-tourism is no panacea for economic ills (Burnett and Uysal, 1991), the eco-tourism has gained lots of popularity and also cause some influence economically in Taiwan recently. Due to 5 working days policy, the existing tourist sites can no longer meet tourists' needs; the majority of tourists have thus turned to off-shore islands for diversified recreational activities, close to the nature. This research takes two years to understand resident, visitor, government official, scholars and researchers' opinions. Questionnaires are used to understand the value of recreation and economic benefits of Wang-An Island. The study aims to understand conditions of Penghu archipelago to develop eco-tour, and to know tourists' suggestions who visit Wang-An island, and hope the results of this studied can provide the government for the policy-making reference. The paper is organized as follows: Section II presents materials and methods of this research. Section III discusses analysis of survey results. Section IV presents ideal model of eco-tourism community integration. Empirical survey result response to the island eco-tourism and conclusion are provided in final section.

II. MATERIALS AND METHODS

To achieve the above mentioned objectives, this research conducts a survey and select Wang-An island as a case study. The firsthand surveyed questionnaire data of this research are from the tourists and interview of the local, government official, corporations, fishermen, school teachers, Green Turtle researchers and visitors on the spot, etc. Totally, there are 520 samples are interviewed, which included 380 tourists and 240 others respectively. We conducted this survey on site between July 15-Aug 15, 2002, 2003. This survey helps to understand the tourist

behavior, the recreational value of the Wang-An Island, and the economic impacts caused by eco-tourism. The secondhand data of this research are collected government's relevant published documents. Followings are detail regarding the surveyed case study.

CASE STUDY

Pescadores Islands is an archipelago paradise in the Taiwan Strait. During the 16th and 17th century, foreigners referred to it as "Pescadores." The term was Portuguese, which meant "island of fishermen" and today it is simply called "Pescadores". The Pescadores is made up of 64 islands of various sizes, and has a total land area of 126.86 square meters and 97 villages. It has a population of more than 60,000, one-fourth of which live in Makung city, the seat of the county government. Travel in Piscadores is convenient, there are four airlines servicing routes between Taiwan and offshore islands of Makung, Wang-An, and Chimei. The Pescadores is an emerging Ecotourism attraction worthy of further development and currently actively developing its eco-tourism industry as it undergoes modernization (PNSAA, 2003). The archipelago's marine areas are suitable for sailing, fishing, and swimming, which also contains many historical and cultural sites. In addition, there are many tourist attractions on the island, such as peaceful fishing villages, majestic basalt reefs, fresh seafood, inexpensive curios, and hospitable residents etc.

The case of this research, Wang-An Island, is located south of the archipelago of Pescadores and has a very unique natural landscape. It is the fourth largest island in the archipelago with a total land area of 13.7824 square kilometers, located south of the Tropic of Cancer (23• 22 ' N, 119• 30 ' E) and subtropical weather with temperature average 27◦ C and winter months with average of 17◦ C. In general, the island is pretty flat, with most hills averaging about 30 meters above sea level, and even the island's highest elevation, Tiantai Hill, is only 54.2 meters above sea level. The island has a small population (1,406 residents) and its commercial and economic activities are slow (less than 20 retail stores, restaurants, and hotels). Its zigzagging coastline and sparkling, golden beaches spanning thousands of meters form the natural nesting grounds of the Green Turtle that remained unharmed by civilization. Statistics show Green Turtle lay dozens nests of eggs every year, with the female turtles laying 100 to 140 eggs each time (Cheng, 1996). During nesting season, the town's office hires trained conservation personnel to patrol the protected area at night and serve as guides for tourists. Because Green Turtle are endangered specie, the Pescadores county government, under the Taiwan Wild Animal Protect Act, declared the area as a protected area to preserve the habitat of the nesting turtles on January 17, 1995. On August 5, 2000, the Pescadores National Scenic Area Administration Office under the Ministry of Transportation and Communications Tourism Bureau allocated NT$100 million to construct a 3.8-square-hectare Wang-An Green Turtle Conservation Center with modern facilities. The Center was commissioned in June 2003 and brings eco-tourism opportunities to the Pescadores (The Ministry of Communications, 1992).

Green Turtle has a long history of human exploitation with some stocks extinct, a circum tropical distribution with distinct regional population structures, and is the most abundant large marine herbivore (Frazier, 1980; Bowen et al., 1992; Witzell, 1994; Bjorndal, 1997; Balazs, 2004). Despite being recognized as globally threatened creature, there are few reliable assessments of abundance status and trend of any Green Turtle stock (Chaloupka and Limpus, 2001; National Research Council, 1990). Reliable long-term estimates of population abundance trends and model seaturtle demography are needed to support recovery planning, and are essential for developing a better understanding of long-term ecological processes (Chaloupka, 2002; Inchausti and Halley, 2001; Foin et al., 1998). Nowadays, many countries have legislated law to protect Green Turtle, and in 1989, the Taiwan Wild Animal Protect Act was legislated to protect Green Turtles (*Chelonia mydas*) in Taiwan waters (Cheng and Weng, 1996).

MODEL SPECIFICATION

Recreational resources are generally treated as non-market assets, and their demand is determined by their ability to satisfy the strongest desire of the consumers. It is difficult to assess the economic value of non-market assets through market prices. In methodology, the contingent valuation method is applied to evaluate the visitors' and residents' willingness-to-pay for preserving the Wang-An Island. The demand function for non-market value can

be calculated theoretically through TCM and CVM methods. Questionnaires containing hypothetical questions are used to directly ask the respondents the price they are willing to pay (Brown and Mendelssohn, 1984; Hanemann, 1984; Cameron, 1992; Hanley and Spash, 1989; Chuang, 1999). We also identify those positive and negative crucial factors related to the development, operation and management of the eco-tourism in the Wan-An Island. The construction of the theoretical model as following:

a. Travel cost model

To maximize the consumer's utility, we have the consumer's behavior as:
Max U(R, E)…
St $I = cR + p_E E$…….(1)
Where I represents tourist's income; R is trip; E is goods consumption; C represents travel cost; P_E is the price of E. Assume the individual preference is normal, through first order condition we have the demand function of tourist as:

$R = R(c, p_E, I)$……. (2)

Consumer surplus are then used to measure the leisure benefits

$$CS = \int_{c''}^{c'} R(c, p_E, I)\, dc \text{……..} \quad (3)$$

here $R(c, p_E, I)$ is individual demand function, C' is the lowest travel cost among tourist while C" is the highest

b. Contingent valuation model

This model uses the Willingness to Pay (WTP) to reflect the tourist's benefit when change the tour quality (Mitchell and Carson, 1989). We obtain the individual WTP function as follow:

$WTP = f(X, G)$……... (4)

here, X and G represent trips and social-economic variables respectively. In CVM model, compensated variation is used to measure the leisure benefits. Maximum Likelihood Method (MLE) is applied and results will be discussed in the following section.

III. ANALYSIS OF SURVEY RESULTS

In response to the site survey, a total of 353 effective tourist responses and 236 others residents are collected. Among respondents, female (51%) is more than male, and their occupations are mainly students, public servants, business and service industry (40.84%, 16.79%, 19.16%, and 16.49%respectively); 59.16% of tourists have college degree and 62.98% aged between 20-29 ; majority of tourists come from southern part of Taiwan (49.63%) and their yearly trip is 1.43 with standard 1.05; female consumption (NT$284.82) is higher than male; 81.52% is first trip; average local expense is NT$ 1,797.47. In addition, 64.5% will come again which show a great potential tourist market in the future (see Table 1). Regarding to respondents' WTP, the average willing to pay is NT$ 1,074.35 in Wang-An Island.

Table 1 Characters of Tourist Respondent

character result	mean	%
female	180	(51%)
male	173	(49%)
students	144	(40.8%)
public servants	59	(16.71%)
business	68	(19.26%)
service industry	58	(16.43%)
travel times	1.43	1.05
Will tour again? Yes	210	(59.5%)
No	143	(40.5%)
WTP(dollar)		
0~ 500	7	(2.0%)
1,000~1,500	127	(36.0%)
1,500~2,000	67	(19.0%)
2,000~2,500	109	(30.9%)
2,500~3,000	3	(0.8%)
3,000~3,500	10	(2.8%)
3,500~7,000	18	(5.1%)

Source: Survey conducted by this study

The Liker-type is applied to analyze the recreational satisfaction for tourists, and statistics results present the most satisfying factors accordingly are uniqueness of natural landscape (73%), uniqueness of cultural landscape (68%), and whole satisfaction degree (49%); On the other hand, the most unsatisfying factors which are Hotel facilities and conditions (62%), Water activity (48%) and the island recreational facilities (41%) (see Table 2).

Table 2 Rank of Environmental Satisfaction

satisfactory			type	unsatisfactory		
rank.	number	percent		percent	number	rank
	152	43%	restaurant conditions	20%	71	
	81	23%	hotel facilities and conditions	62%	219	1
	137	39%	road facilities and traffic conditions	13%	46	
	81	23%	water activity	48%	169	2
	81	23%	island recreational facilities	41%	145	3
2	240	68%	uniqueness of cultural landscape	7%	25	
1	258	73%	uniqueness of natural landscape	10%	35	
3	173	49%	whole satisfaction degree	13%	46	

Source: Survey conducted by this study

The suggestions of residents from the site survey are a total of 236 effective responses. Among residents responses, (62.71 %) consider that establish the policy of reservation area and preserve center is correct policy; (65.25 %) consider that the government carries out the policy ability is Unsatisfied; (81.86%) consider that residents organize the reservation is not effective; (55.08%) consider that the government accept residents' suggestion and realize it; (60.67%) consider that residents organize the board of management of reservation area, and participate in management project with the government is the ideal model. Other surveyed results can be seen in Table 3.

Table 3 Suggestions of the Residents

View on the thing that establish the policy of reservation area and preserve center.	exactly correct policy	(16.95 %)
	correct policy	(62.71 %)
	mistake policy	(4.66 %)
	complete mistake policy	(3.39 %)
	no idea policy	(12.29 %)
The government carries out the policy ability	satisfied	(34.75%)
	unsatisfied	(65.25 %)
Is it helpful that the residents reservation group is organized?	yes	(18.14 %)
	no	(81.86%)
Does the government accept residents' suggestion and realize it?	all accept	(7.20%)
	accept partly	(55.08%)
	have not accepted	(32.20%)
	have not accepted at all	(5.51%)
Which one is an ideal interaction model between the government and resident?	The government holds the policies explain meeting.	(13.39%)
	Residents organize the consultative committee of Reservation Area, the government discuss with committee.	(19.67%)
	Residents organize the board of management of reservation area; participate in management project with the government together.	(60.67%)
	Residents organize the board of management of Reservation Area full authorizes.	(5. 44%)
	The government and resident are not interaction at all.	(0 %)
	others.	(2 %)

Source: Survey conducted by this study

In order to estimate the recreational benefit of Wan-An island eco-tourism, demand functions for TCM and CVM are derived first based on the surveyed data. The empirical regression results as followings:

a. Demand Function for TCM

Table 4 shows, fewer than 5% significant level, SEX and AGE are negatively related; while monthly income (INC), trips times (Q) have positive sign. According to results of Table 4, the leisure demand function for TCM can be derived as:

$$Q = 0.413 - 0.002512SEX - 0.001082AGE + 0.0028INC - 0.000159TR \quad \text{.....(5)}$$

Table 4 Estimated Demand Function for TCM

parameters	coefficients	t-value	p-value
CONSTANT	0.413	1.938	0.001***
SEX	-0.002512	-3.938	0.000***
AGE	-0.001082	-2.605	0.006***
INC	0.0028	3.401	0.000***
TR	-0.000159	-2.793	0.006***
R^2 =0.183	Adj. R^2=0.106	F-Value =6.853	P-Value =0.0001***

Note：*** means 1% of significance level

b. Demand Function for CVM

In table 5, empirical results show under 5% significant level, SEX and WILL has positive sign which indicate male and Person who like to come again (WILL) are willingness to spend more than female; While education has negative sign which imply they have higher expectation since they are willing to pay more when the facility are expected to improve, see the sign of variables SPEND. According to results of Table 5, the leisure demand function for CVM can be derived as:

$$WTP = 1601.817 + 4.108SEX + 19.944AGE - 0.723I - 63.994EDU + 182.740\ WILLQ + 0.02826END \ldots\ldots \quad (6)$$

Table 5 Estimated Demand Function for CVM

parameters	coefficients	t-value	p-value
CONSTANT	1601.817	3.286	0.002***
SEX	4.108	3.185	0.002***
AGE	19.944	2.562	0.016**
I	-0.723	-1.608	0.09**
EDU	-63.994	-1.762	0.083*
WILL	182.740	3.755	0.001***
SPEND	0.02826	3.101	0.002***
R^2 =0.26	Adj. R^2=0.186	F-Value =10.853	P-Value =0.0001***

Note：*, **, *** mean 10%, 5%, and 1% of significance level respectively

3) Estimated Recreational Benefit

Based on the above empirical results, this study then estimate the Recreational benefit with demand function of TCM and CVM.

a. TCM

$$Q = 0.4613 + 0.000159TR \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

$$CS = \int_{100}^{6000} (0.4613 + 0.000159TR)dTR \ldots\ldots\ldots\ldots\ldots\ldots (8)$$

The recreation benefits is NT$8,443.91 annually, the value divide three to get the annual average visiting frequency is 1.43, the recreational benefits are NT$5,904.83 per tourist.

b. VCM

This study puts the average value of variables in the sampling to WTP regression model. The annual Recreational benefits of the tourist are NT$ 6,978.95, the value divide three to get the annual average visiting frequency is 1.43, the recreational benefits are NT$4,880.38 per tourist. (see Table 6).

Table 6 Estimated Recreational Benefit **NT$/person**

estimated method	TCM	WTP
recreational benefits	5,904.83	4,880.38

According to the construction of implementation at Pescadores County, 2002, the second data are the practice tickets of recreational site in Wang-An Island. With the number of 48,995 for tourists in 2002, the economic benefits are about NT$28,930.71 ten thousand for TCM model (see Table 7). In addition, the economic benefits are about NT$23,911.42 ten thousand for CVM model. Making a comprehensive survey, developing recreation not only can provide a recreational place, but also create the eco-tourism for Wang-An Island.

Table7 Estimated Leisure Benefit ***Unit: 10,000NT$***

estimated method	TCM	WTP
recreational benefits	28,930.71	23,911.42

The Pescadores National Scenic Area Administration Office under the Ministry of Transportation and Communications Tourism Bureau allocated NT$100 million for the construction of a 3.8-square-hectare Wang-An Green Turtle Conservation Center replete with modern facilities. But from above analysis data we find those things go contrary to one's wishes; the suggestions of community people, government official, and researcher have nothing in common with each other, the aim to find the crux factors. This research creates a reference model through the SWOT analysis and visited residents, tourists, official, and researchers. The model will be discussed in the following section.

IV. IDEAL MODEL OF ECO-TOURISM COMMUNITY INTEGRATION

In order to develop a sustainable ecotourism for Wang-An Island, the SWOT method is applied to analyze the Niche first. From the result of resident's questionnaire investigation, obviously, government spends lots money to set up the Green Turtle protected area, but majority of residents do not appreciate. As regards the whole situation, the establishment of this ecological protected area does not success. The main reason is set up the procedure does not let residents participate in fully, and lots of questions happened afterwards. These negative crucial factors related to the development, operation and management of the eco-tourism in this research have found. Based on our survey and in-depth interview, Table 8 shows the Strength, Weakness, Opportunity and Threat for developing the recreational eco-tourism for Wang-An Island.

Table 8 SWOT Analysis of Develop Recreation for Wang-An Island

Strengths	**Opportunities**
1. The archipelago has good geographic conditions, beautiful beaches, and scenic coastline. With unpolluted seawater, Wang-An Island can attract tourists interested in ocean tours. 2. Ridge basalts, sea bird, dolphins, and sea turtle protection area, and exotic vegetations are found all over the Wang-An Island, which are suitable for short-term ecological theme tours. 3. Tour vessels and recreational fishing boats are available at fishing port. 4. The coastal villages have the class-1 and class-2 historical sites are well maintained to offer excellent touring pleasure.	1. As the leisure time of the people increased due to the two-day weekends, off-shore island eco-tourism offers more diversity and has a huge potential market. 2. The government encourages foreign investments in the Pescadores eco-tourism industry to stimulate local economy and increase employment opportunities for its residents. 3. The fishing authority promotes for the prosperity of the fishing villages and the multi-function use of the fishing harbors. It also supports the development of recreational fishing activities.
Weaknesses	**Threats**
1. Northeasterly winds blow from October to March, and the archipelago is not recommended for tour during this time. 2. Development and investments in the archipelago will incur huge risks due to the number of administrative agencies involved and the absence of comprehensive laws and regulations. 3. Insufficient complementary industries in the fishing villages; and problem of manpower degeneration.	1. Number of tourists to the Pescadores decrease substantially due to open of Kinmen and Machu to tourists and direct links between Taiwan and mainland China. 2. Diversity of leisure industry and fierce competition with its substitute industries causes the leisure industry to be easily affected by the economic downturn. 3. People lack the proper leisure and tourism habits, which can harm the ecology in the archipelago. Consequently, an influx of tourists will also adversely affect the local culture and society.

Source: Survey conducted by this study

Eco-tourism around the globe and particularly in the developing world, suffers from uneven development that often produces disproportionate distribution of returns. Communities, particularly rural ones, are often at the front line in service provision but last to receive benefits from that effort. Eco-tourism in the developing world has frequently been a double-edged sword; while it may provide a venue for communities and people to augment their income or livelihood, the majority of benefits tend to flow out of them. Additionally, real power and decision-making regularly resides outside of community control and influence (Reid and Sindiga, 1999). Most decisions affecting eco-tourism communities are driven by the industry in concert with national governments; in other words, local people and their communities have become the objects of development but not the subjects of it.

In fact, the effectiveness of the community based management system for the marine resources sustainability is caused by the bottom up planning and participative approach that led to the increasing of the local fishers' sense of stewardship over the resources (Satria and Matsuda, 2004). This system must be implemented on the community that fisherman's life belongs to. Some developing country governments are creating institutional mechanisms for this purpose, like Kenya, Zimbabwe, Indonesia which stresses local involvement in the planning and management of the local natural resource base on which these communities depend (Thomas, 1995). A community's integration may be equated with its empowerment (Friedmann,1987, 1992), or "the ability of a community to ‘take charge’ of its development goals on an equitable basis" (Mitchell 1998), and it implies that locals take an active and significant

role in decision-making affecting their socioeconomic situation. Hence, it suggests "real" as opposed to "token" power (Arnstein, 1969). A community with a high level of eco-tourism control and management would ideally have, among other characteristics, a broad-based and open democratic structure; an equitable and efficient decision-making process; a high degree of individual participation (including influence) in decision-making; and a high amount of local ownership (Mitchell,1998). Synthesize the above-mentioned results of study and apply a planning and analytical framework to guide or assess the integration of eco-tourism in the overall socioeconomic makeup of small, fishing communities. The basic premise of this framework is that this process should lead to positive impacts or outcomes and, hence, satisfaction for the local residents. The main objectives of developing this framework are to explore and describe power relationships, public unity, and collective awareness of eco-tourism opportunities and management in Eco-tourism community.

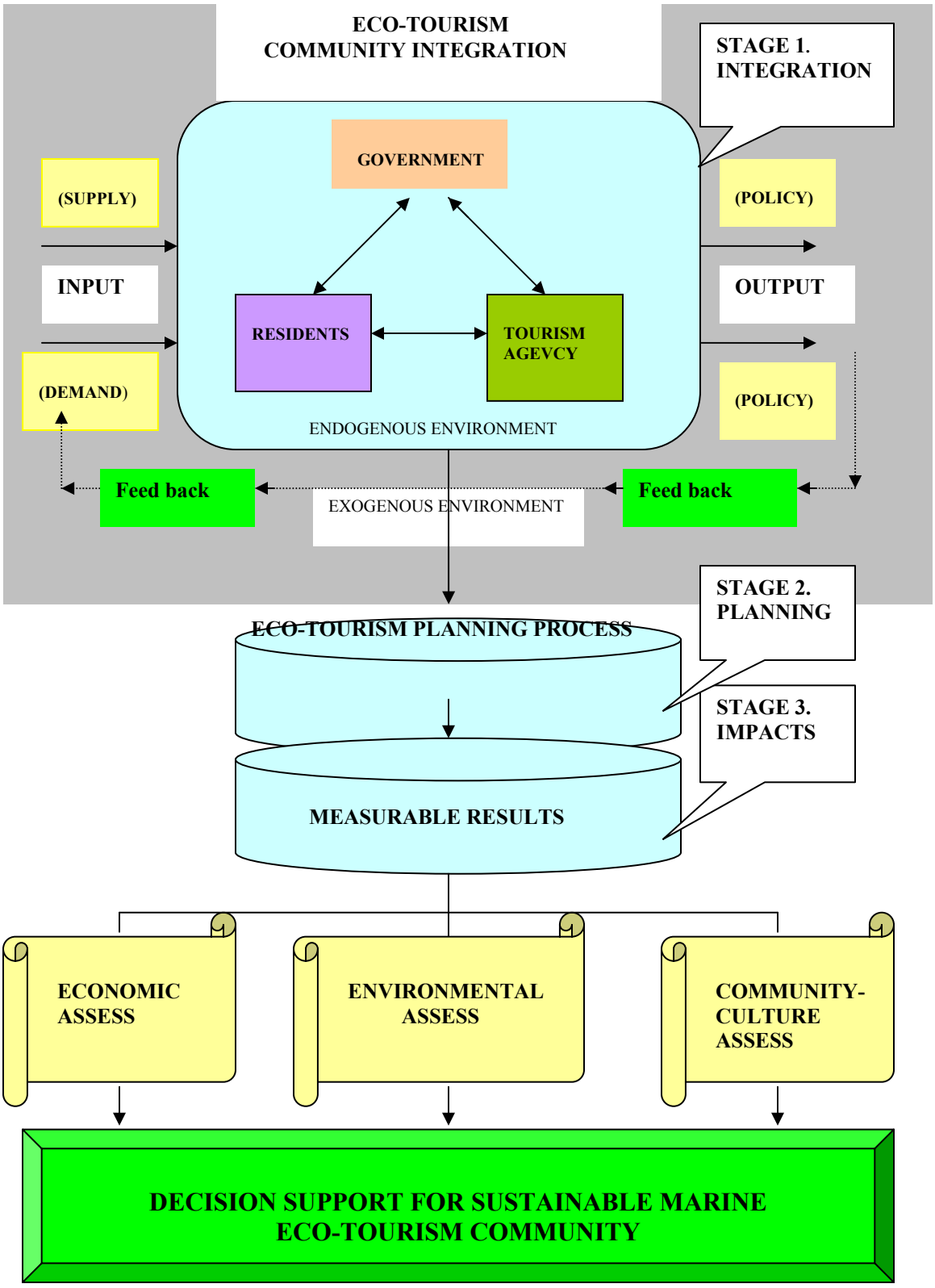

Fig.1. Ideal Model of Eco-Tourism Community Integration

Source: this study

V. CONCLUSION

Tourists and travelers in Taiwan have increased in recent years with the increasing leisure time and income. Although researches on domestic eco-tourism are many, discussions on selection eco-tourism leisure activities are few. Tourism industry is one of the world's world largest employers, and accounting for around 11% of the global labor force in 2002, while Taiwan accounting for 650,000 or 6.9% of the labor force. The global annual tourist more than 640 million, businesses benefits for recreation are more than 454,500 million dollar. The improvement of the region's economical output and eco-tourism industry are the best options to pursue in order to provide much needed employment for a rapidly growing and already impoverished rural community. Taiwan has shown particularly strong growth in tourism recently, and marine ecotourism is expected to play a major role in the rapidly growing nature-based travel industry. In addition, a balanced development between economic activities and environmental concern are profound in public and emphasized by the government policy. This paper focuses on the economic effects of eco-tourism on Wang-An island, where fishing industry and marine based eco-tourism have been major industries, and the Green Turtle Protected Area is selected. In this study, we examine the potential and value of developing a sustainable eco-tourism in Wang-An Island. Questionnaires and on-site surveys are carried out to analyze the different challenges and issues facing the development of sustainable eco-tourism. Other issues addressed include environmental and cultural concern, landscape maintenance, garbage disposal, and the quality of the leisure and recreation. Results of the non-market price valuation experiments used in the research indicated that although eco-tourists have great expectations on the development of eco-tourism enterprise, they suggest that transportation and lodging issues should first be resolved during development. In addition, most local entrepreneurs and community organizations interested in the eco-tourism market do not have the necessary skill sets and the know-how to operate successful eco-tourism establishments. This study indicated there is a great potential and recreation value for Wang-An island, and suggestions with survey results are then provided a guide for planners and managers. Finally, to build an eco-tourism enterprise, we recommend a community-based entrepreneur to ensure a sustainable and profitable eco-tourism for local residents. The ideal model of eco-tourism community integration suggested in this study includes three stages; first stage is eco-tourism community integration, then eco-tourism planning process, and the final stage is providing measurable results. Theses recommendations can then offer to the government for decision support in setting up the next eco-tourism zone.

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