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## RESEARCH REPORT

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# **Towards the Development of a Sustainable Financing Mechanism for the Conservation of the Ifugao Rice Terraces in the Philippines**

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This EEPSEA study from the Philippines shows that tourism revenue could finance a significant part of the restoration and preservation work that is needed to save one of the country's most important cultural treasures. The study focuses on the key challenges that are facing the Ifugao Rice Terraces. The Ifugao Rice Terraces in the Philippines have been designated a UNESCO World Heritage Site since 1995. These terraces have been deteriorating steadily in recent years and they have been the subject of a number of under-funded and delayed 'action plans' that have failed to halt their decline. The challenges facing the terraces include a declining water and labour supply.

The study is the work of a research team led by Dr. Margaret Calderon from the University of the Philippines Los Banos. It finds that capturing tourists' willingness-to-pay for the conservation of the rice terraces could generate revenues of P 6.65 million or more a year. The study also finds that the water supply problems in the terraces would be reduced if deforestation was tackled and irrigation systems and damaged terrace walls were repaired. The study recommends that a labor subsidy payment should be introduced for Ifugao farmers. This would help them to continue to farm the terraces, would go some way to solving labour supply problems and would also help finance costly maintenance and terrace repair work.

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# **TOWARDS THE DEVELOPMENT OF A SUSTAINABLE FINANCING MECHANISM FOR THE CONSERVATION OF THE IFUGAO RICE TERRACES, THE PHILIPPINES**

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## **EXECUTIVE SUMMARY**

The rice terraces in four municipalities of Ifugao, namely, Banaue, Hungduan, Kiangan and Mayoyao, were first inscribed in the UNESCO World Heritage List in 1995 as the Rice Terraces of the Philippine Cordilleras under the category of organically evolved landscapes. This category includes landscapes that have developed as a result of an initial social, economic, administrative, or religious imperative, and by association with and in response to the natural environment. However, the Ifugao Rice Terraces have deteriorated over the years, and those inscribed in the World Heritage List were reclassified under the World Heritage in Danger List in 2001.

The study aimed to develop a sustainable financing mechanism for the conservation of the Ifugao Rice Terraces and was carried out in two phases. Phase 1 involved the determination of the socio-cultural factors that influence the Ifugao farmers' practices in relation to the terraces; the analysis of the water allocation system in Ifugao and how this was affecting the availability of water for irrigation; and the assessment of the availability of labor to undertake the restoration of the terraces. On the other hand, Phase 2 aimed at evaluating alternative approaches to capture tourists' willingness to pay to partly finance conservation efforts; estimate the extent and occurrence of abandonment and damage of the rice terraces in the four heritage Ifugao municipalities; and lay the groundwork for the institutionalization of a sustainable financing mechanism.

The activities under Phase 1 included focus group discussions, key informant interviews, a farmer survey (150 respondents), and a high school student survey (100 respondents), all of which were conducted in the heritage municipalities. For Phase 2, we conducted a contingent valuation survey among local (300 respondents) and foreign (250 respondents) tourists to estimate their willingness to pay for the conservation of the terraces. We used remote sensing as well as geo-referenced and other data from various sources to produce maps showing the area of the rice terraces in the heritage sites and the extent of damage. These were later validated by the farmers and local officials—the results are recorded in a separate report. The information generated from all these activities was used to estimate the cost of repairing/restoring the terraces and the potential revenues that could be collected from local and foreign tourists.

The study concluded that the Ifugao farmers' water supply problems in the terraces would be reduced considerably if the irrigation system and damaged terrace walls were repaired. Most of the respondents did not plan to abandon rice terrace farming. However, the majority indicated a need for a labor subsidy for terrace repair and maintenance because this was the costliest among the different terrace farming activities. The significant factors affecting the farmers' decision to abandon terrace farming in the future were poor irrigation facilities and farm size. The incentives that could strengthen the Ifugaos' resolve not to abandon the terraces, and lure back those

who had left, are the repair of the irrigation system, a labor subsidy for terrace repair and maintenance, and additional livelihood opportunities.

Meanwhile, the survey of high school students revealed that only about one-fourth of the students were likely to be involved in agriculture or farming in the future, and the majority would most likely be engaged in non-agricultural occupations.

Aside from the cultural and environmental fees from tourists, the other possible sources of funds for the conservation of the terraces included taxes and business permits for the business sector, permit fees for students and researchers, as well as donations from private corporations and individuals. The average willingness to pay (WTP) values for local and foreign tourists were P 440 (about USD 9) and USD 71, respectively. For local tourists, the significant factors affecting WTP were gender (male), knowledge about the present condition of the terraces, and bid amount. For foreign tourists, the significant factors affecting WTP were age, knowledge that the rice terraces were a UNESCO World Heritage Site, and bid amount.

The total area of the rice terraces in the heritage sites was estimated to be 10,324 ha while the estimated area of damaged terraces was 4.1 ha (low estimate) to 457 ha (high estimate), or 0.04% to 4.4% of the total area. These translate to total restoration costs of P 10.021 million to P 1.122 billion, respectively, or an annualised cost of P 1,630,880 million to P 184,243,410 million (at a 10% interest rate over a 10-year period). Collecting P 50 per local tourist and USD 20 per foreign tourist had the potential of generating as much as P 6.65 million per year. Revenues from tourist fees could thus be used to finance conservation activities for the rice terraces.

It is recommended that the irrigation systems in the Ifugao Rice Terraces be repaired to reduce the possibility of farmers abandoning their terraces. Farmers should also be given support for the repair and maintenance of terrace walls and for other livelihood activities to supplement their incomes from farming. Furthermore, the local government units (LGUs) should endeavor to develop tree plantations for the wood carving industry. This will ease the pressure on the woodlots supporting the watersheds of Ifugao and ensure sustainable wood sources for wood-carvers.

The value of the terraces should be integrated into the elementary and high school curricula in Ifugao. Furthermore, providing students with incentives such as scholarships and jobs may rekindle interest in agriculture and forestry-related courses.

The LGUs should review the fees they are collecting from tourists, and consider the possibility of increasing these and collecting different fees from local and foreign tourists. The same rates for local and foreign tourists should apply across municipalities. The revenues generated from tourists should be placed in a trust fund to be managed by a council that is not controlled by politicians to ensure continuity, and should be used mainly to support the activities of farmers such as the repair and maintenance of terrace walls and irrigation canals.

The possibility of collecting the cultural and environmental fee only once to gain access to all the rice terraces in the heritage municipalities and, eventually the whole province of Ifugao, should be studied. This may promote visits to non-heritage areas to benefit the communities and will make it easier to administer, monitor and control the implementation of the mechanism of fee collection; lower transaction costs; and reduce the inconvenience to tourists of having to pay each time they visit different sites.

Finally, support to farmers should be formalized through a memorandum of agreement (MOA) between an organized and functional farmers' organization and a multi-sectoral council in each municipality. The MOA should clearly specify the farmers' benefits, responsibilities of the parties concerned, sanctions for non-compliance, and incentives for complying with the terms of the MOA.

This report discusses the activities and results of Phases 1 and 2, except for the results of the estimation of the area of the terraces and the extent of damage and abandonment which are discussed in a separate report.

## **1.0 INTRODUCTION**

### **1.1 Background**

Many Filipinos take pride in the Ifugao Rice Terraces, which they often refer to as the 8<sup>th</sup> Wonder of the World. While there are similar terraces in other parts of the Asia-Pacific Region, the Ifugao Rice Terraces are the most famous because they reach the highest altitude of 1,600 m and are considered to be the best built and most extensive (Philippine Historical Commission 1940, cited by Gonzalez 2000). The use of traditional skills in the engineering and hydraulic works in constructing the terraces has also been marveled at. Alejandro Roces, a distinguished Filipino writer and educator (cited by Gonzalez 2000) notes that what puts the terraces above other wonders of the world is the fact that the terraces were constructed voluntarily by a free people, and not under a tyrannical rule that used slave labor.

The terraces are located in the province of Ifugao, a landlocked province under the Cordillera Administrative Region in Northern Luzon. Some of the terraces, particularly those in the municipalities of Banaue, Kiangan, Hungduan and Mayoyao, were inscribed in the World Heritage List of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1995 based on the following inscription criteria: "Criterion (iii): The rice terraces are a dramatic testimony to a community's sustainable and primarily communal system of rice production, based on harvesting water from the forest clad mountain tops and creating stone terraces and ponds, a system that has survived two millennia; Criterion (iv): The rice terraces are a memorial to the history and labor of more than a thousand generations of small-scale farmers who, working together as a community, have created a landscape based on a delicate and sustainable use of natural resources; and Criterion (v): The rice terraces are an outstanding example of land-use resulting from a harmonious interaction between people and their environment which has produced a steep terraced landscape of great aesthetic beauty, now vulnerable to social and economic changes" (UNESCO 2008). This category covers landscapes that developed as a result of an initial social, economic, administrative or religious imperative, and by association with and in response to the natural environment (UNESCO 1992).

### **1.2 The Terraces as a Heritage and Public Good**

There is no question about the great value of the Ifugao Rice Terraces as a heritage site, and they are important not only to Filipinos but also to the global community. While different clans privately own the rice paddies and woodlots on the terraces, the terraces as a whole can be considered as a public good.

Klamer and Zuidhof (1999) define cultural heritage as “objects, structures, and other products of cultures and individuals that have been passed from previous generations to the present and are valued because they are representative of a particular culture and are, at least partly, valued because of their age.” Cultural heritage goods are typically public goods (Navrud and Ready 2002). However, they possess varying degrees of the characteristics of public goods, i.e. non-excludability or the non-feasibility of keeping other users from enjoying the good, and non-rivalry. In the case of the Ifugao Rice Terraces, several consumers can enjoy the view at the same time without diminishing the value that each one gets from the experience.

Peacock (1994 as cited in Klamer and Zuidhof 1999) notes that heritage is not produced specifically to respond to a consumer demand, but is a by-product of other products. The heritage was usually created for a specific purpose and not to satisfy existing tastes. In the case of the Ifugao Rice Terraces, they were carved from the mountains by the Ifugaos to create areas to be planted to rice.

According to Pagiola (1996), two of the problems that commonly beset cultural heritage sites are: many of their services do not enter markets, or do so indirectly and imperfectly; and many benefits are intangible. The market may allow users of a heritage property to pay the property’s owners on a voluntary basis (Wills and Eves n.d.), but this is often not the case, resulting in market failure. Furthermore, the benefits from many heritage properties accrue not only to the residents, but also to those who visit or know about them.

### **1.3 Problems Plaguing the Terraces**

The Ifugao Rice Terraces have deteriorated over the years, and those inscribed in the World Heritage List were moved to the World Heritage in Danger List in 2001 (Rossler 2005). The Ifugao Rice Terraces and Cultural Heritage Office (IRTCHO 2004 as cited by Yap n.d.) identified the following factors as having contributed to the deterioration: loss of biodiversity due to bio-piracy, unregulated hunting, indiscriminate use of new technologies, the introduction of new varieties of rice, reduced farm labor because of out-migration, and accelerated erosion and siltation of the watershed.

On the other hand, a joint UNESCO World Heritage Centre/ICOMOS/IUCN Report of a Joint Reactive Monitoring Mission to the rice terraces of the Philippine Cordilleras (Jing et al. 2006) noted the following threats and dangers to the terraces: abandonment of the terraces due to the neglect of the irrigation system in the area; unregulated development; tourism needs not being addressed; and the lack of an effective management system.

Giant earthworms are also a menace in the terraces. While the earthworm problem is not new, it worsened in the 1990s as a result of dwindling water supply in the terraces (Malanes n.d.) The earthworms have been found to reproduce more rapidly with less water. They are believed to increase water losses because they burrow deeply into the soil as they seek moisture, leaving holes through which water seeps out. Eventually, the soil and terrace walls dry up and crack.

As a result, some of the terraces have already been abandoned because of water shortage (Hayama, n.d.). Rossler (2005) reports that about 25-30% of the terraces have already been abandoned. Instead of repairing the terraces, some owners opt to pursue other income-generating activities such as wood carving or serving as tourist guides.

The tourism and wood carving industries in the area have also been identified as culprits in the deterioration of the terraces. Tourism has encouraged people to engage in wood carving, which has resulted in the rapid harvesting of trees from family-owned woodlots called “pinugo”. The “pinugo” is usually located above the rice terraces and is crucial in soil erosion control and terrace moisture retention. It is also a source of wood for house construction, fuel, and woodcarving. The tradition of selective cutting in the “pinugo” has given way to the pressure to harvest more trees from these woodlots due to the increasing demand for woodcarvings. With many of the trees gone, the water supply in the terraces has been adversely affected. Trees enhance the infiltration capacity of the soil and also help control soil erosion.

Aside from this, the active tourism industry itself is competing with the limited water resources in the area. Malanes (n.d.) cites the report of Alangui (1999) that much of the water that was originally allocated for irrigation is now being diverted to the growing number of hotels, lodges, and restaurants. Some residents have even converted their rice paddies to residential lots so that they can build lodging houses and stores.

Others have been attracted to livelihood opportunities in the lowlands (Balcita 1998), and many Ifugaos have migrated there (Daoas 1999), leaving the terraces untended. Many educated Ifugaos no longer want to engage in traditional farming and instead seek higher-paying jobs outside the province.

To address these problems, several offices were created (and later abolished) during the terms of three presidents (Yap n.d.). President Fidel V. Ramos created the Ifugao Terraces Commission (ITC) in 1994, which was abolished by President Joseph E. Estrada in 1999 to give way to the Banaue Rice Terraces Task Force (BRTTF). In 2002, President Gloria Macapagal-Arroyo abolished the BRTTF and transferred the responsibilities over the terraces to the provincial government.

The government initiatives towards the preservation of the terraces include the passage of two laws: the National Integrated Protected Areas System Act (NIPAS Law, Republic Act 7586) and the Indigenous Peoples Rights Act (IPRA Law, Republic Act 8731) (Yap n.d.). Funds have been released for the construction of schools, markets, health facilities, roads, and other infrastructure in the area as well as for the repair of collapsed terrace walls.

#### **1.4 Impacts of the UNESCO Declaration**

While there are rice terraces in most municipalities in the province of Ifugao, only five (5) clusters were inscribed in the World Heritage List. These are the clusters of Batad and Bangaan in the municipality of Banaue; Mayoyao Central; Hungduan; and Kiangan (Ifugao Rice Terraces Master Plan, PLGU, Ifugao 2002).

The declaration of the Ifugao Rice Terraces as a World Heritage Site in 1995 has brought both positive and negative impacts (Yap n.d.). The positive impacts include the heightened attention from the international community towards the terraces, more initiatives from the government, more economic activities, and enhanced cultural awareness.

However, Yap notes that there have been negative impacts as well. For example, some residents and local officials have come to expect UNESCO to release

funds for the preservation of the terraces. Furthermore, support from external agencies has focused mostly on addressing the physical aspects of the problem, but have paid little attention to the social organization that greatly affects the physical component. The increased tourism activities have also adversely affected the physical, social and natural environments. Some scholars believe that some aspects of the Ifugao culture have been compromised to give way to commercial interests. This is shown in the way some rituals have lost their solemnity and significance. The people also feel that UNESCO has restricted the use of their lands as follows: restriction on the types of structures that can be built on the terraces and where these structures can be located, as they can affect the view; and restriction on the use of cement to reinforce the terrace walls and foot paths, as these can dilute the authenticity of the terraces.

The selective inclusion of terraces in the World Heritage List has resulted in the more rapid deterioration of those terraces that were not included in the list. While funds poured in for the repair and maintenance of the listed terraces, the farmers of the excluded terraces were left to maintain their terraces on their own. As it is, the farmers' incomes from their once-a-year rice harvests are not even enough to cover the cost of planting and maintaining the terraces.

Finally, the last allocation of the P 50-million funds from UNESCO has already been released, and the question now is how funds will be sourced for future repair and maintenance of the terraces.

## **1.5 The Research Problem**

Klamer and Zuidhof (1999) ask the question of who cares enough for the continuous provision of public goods like cultural heritage to take responsibility for such. Even though many people may claim that they care, being potential beneficiaries, it is possible that no one may care enough to take on the responsibility. As a result, the government may become the default caretaker. Other organizations like UNESCO may also become involved, as well as other private non-profit organizations. However, Throsby (1997 as cited by Klamer and Zuidhof 1999) doubts if the market, together with voluntary and non-profit action, will be enough for the preservation of cultural heritage.

The World Heritage Committee (UNESCO 2005) identified the main threats to the terraces as: the lack of an effective site management authority and adequate legislation; the lack of a finalized strategic site management plan; declining interest of the Ifugaos in their culture and in maintaining the terraces; and the lack of human and financial resources. This study focuses on the last two threats.

There have been many initiatives towards the preservation of the Ifugao Rice Terraces. The World Heritage Committee (UNESCO 2005) listed these to be in the areas of water management, agricultural management, watershed management, hazard management, transport development, spatial restructuring and tourism development, cultural enhancement, and livelihood development. What appears to be lacking in all these efforts to save the terraces is the possibility of tapping the goodwill of Filipino people to provide incentives that will make the Ifugaos remain in the area to tend the rice terraces that their ancestors so painstakingly built more than 2,000 years ago.

This is especially important in the light of the report to the World Heritage Committee Secretariat that the existence of the Ifugao Rice Terraces Cultural Heritage

Office (IRTCHO) that was created in 2003 was threatened because the national government had terminated its funding support to the National Commission on Culture and the Arts (UNESCO 2005), which in turn provided funding support to the IRTCHO. The IRTCHO has funded some of the conservation programs for the terraces. The International Union for the Conservation of Nature (IUCN) has also expressed its concern about the lack of clear financing mechanisms in the terraces' 2004 Conservation and Management Plan (UNESCO 2006).

The 10-year Ifugao Rice Terraces Master Plan of 2002 identifies the potential funding sources to be national and local government agencies, multi-lateral and bilateral sources (e.g. official development assistance and other grants), private organizations, academic institutions, research centers, and overseas Filipino workers from Ifugao.

The Master Plan has three components: bio-physical, socio-cultural, and support systems. The funding requirements of the Master Plan are huge, as shown in Appendix 1. As proposed, the first year of implementation (which should have been in 2003) requires P 47.6 million, more than half of which will be used for the support systems, primarily infrastructure support (P 20 million), community-based agri-industry (P 5 million), sustainable tourism development (P 2.675 million), social welfare and development (P 2.15 million), and resource mobilization and institutionalization (P 0.1 million).

In response to the request of the 29<sup>th</sup> session of the World Heritage Community in July, 2005, a joint UNESCO World Heritage Centre/ICOMOS/IUCN Reactive Monitoring Mission to the Ifugao Rice Terraces in April 2006 was commissioned. The mission aimed at assessing the steps taken by the state party towards the implementation of the recommendations of the 2001 and 2005 missions, and also evaluated the feasibility of the 2004 Conservation and Management Plan of the Rice Terraces in the Philippine Cordilleras. The 2004 Plan had been developed by the Provincial Planning and Development Office with assistance from the World Heritage Fund, and was based on the 10-year Master Plan.

The 2006 mission found, among other things, that local government units (province, municipal) had provided short-term funding from their revenue allotments. Likewise, the national government had funded the repair of some irrigation systems and terraces. The mission noted, however, the need for more coordinated, long-term funding and a more sustained local resource generation mechanism which would include tourism revenues and the marketing of local products. The mission recommended that a financing mechanism both at the provincial and municipal levels be established between 2006 and 2008, and stressed the need to make available the human and financial resources required to implement the Conservation and Management Plan.

Ms. Rebecca Bumahit, Coordinator of the Ifugao Cultural Heritage Office (ICHO), confirmed that fund generation has been piecemeal at best, and sees the need to take a unified approach (personal communication, August 3, 2007). The 10-year Master Plan (2002) and the Conservation and Management Plan (2004) will remain plans on paper unless funds are generated for their implementation. Our evaluation of the financing plan is that it depends heavily on external donors and local government allocations. The potential of engaging tourists in the conservation of the terraces by capturing their willingness to pay appears to have been overlooked. The Master Plan



itself is very grand and ambitious, which perhaps it should be considering the scale of the rice terraces and their problems. From our point of view, however, the Master Plan was overly ambitious in the sense that it targeted 2003 as the first year of implementation when the funds needed had not yet been secured.

From the foregoing, it can be seen that the conservation of the Ifugao Rice Terraces depends not only on plans for the physical repair/restoration of the terraces and the provision of livelihood to the Ifugaos, but also on the development of a viable financing mechanism that will sustainably finance all conservation efforts.

## **1.6 Research Objectives**

This study aimed at developing a sustainable financing mechanism for the conservation of the Ifugao Rice Terraces and was carried out in two phases. Phase 1 was undertaken to identify the socio-cultural factors that influenced the Ifugao farmers' practices in relation to the terraces; analyze the water allocation system in Ifugao and how this was affecting the availability of water for irrigation; and assess the availability of labor to undertake the repair and protection of the terraces. Under Phase 2, the study evaluated alternative approaches to capture tourists' willingness to pay to partly finance conservation efforts, estimated the extent and occurrence of abandonment and damage of the rice terraces in the four heritage Ifugao municipalities, and laid the groundwork for the institutionalization of a sustainable financing mechanism.

## **1.7 Scope of the Report**

This report discusses the activities undertaken and the results of Phases 1 and 2. However, the results of the estimation of the area of the terraces and the extent of damage and abandonment are discussed in a separate report (available on the EEPSEA website).

## **2.0 CONCEPTUAL FRAMEWORK**

This study was guided by the conceptual framework shown in Figure 1. However, this report focuses only on the results of Phase 1. In Phase 1, we conducted a farmer survey to look into the socio-cultural and bio-physical factors that affected the condition of the terraces, particularly those that contributed to their deterioration.

We investigated two of the factors that have contributed to the deterioration of the terraces, namely, unstable water supply and a disinterested or inadequate labor force. We wanted to assess whether water and labor, which were necessary inputs in the conservation of the terraces, could be realistically secured. We first ascertained if the Ifugao farmers would be interested in continuing to tend the rice terraces if the water allocation problem was addressed, and what kinds of incentives could lure them back to farming the terraces.

Likewise, we looked into the possibility of tapping the tourism industry to generate funds for the terraces. Government officials and representatives of the business sector admitted that almost all the economic activities in Ifugao, particularly in the Municipality of Banaue, could be linked to tourism. As such, almost everyone benefited from the existence of the terraces. That is, everyone but the farmers who

toiled to make the terraces beautiful for the tourists to enjoy. They, together with other stakeholders like wood carvers and transportation and tour guide operators, depend solely on the terraces for their livelihoods.

The socio-cultural factors affecting farming and the values generated from the Contingent Valuation (CV) study we conducted as well as other information gathered from interviews were used to develop a viable and sustainable financing mechanism for the conservation of the terraces. While there are several possible sources of conservation funds, we focused on entrance fees from tourists. Finally, we recommend policies and programs that will institutionalize the proposed financing mechanism for the terraces.

This study also estimated the area of the Ifugao Rice Terraces (IRT) and the extent of damage to them, focusing on the four heritage municipalities. These results are, however, discussed in a separate report.

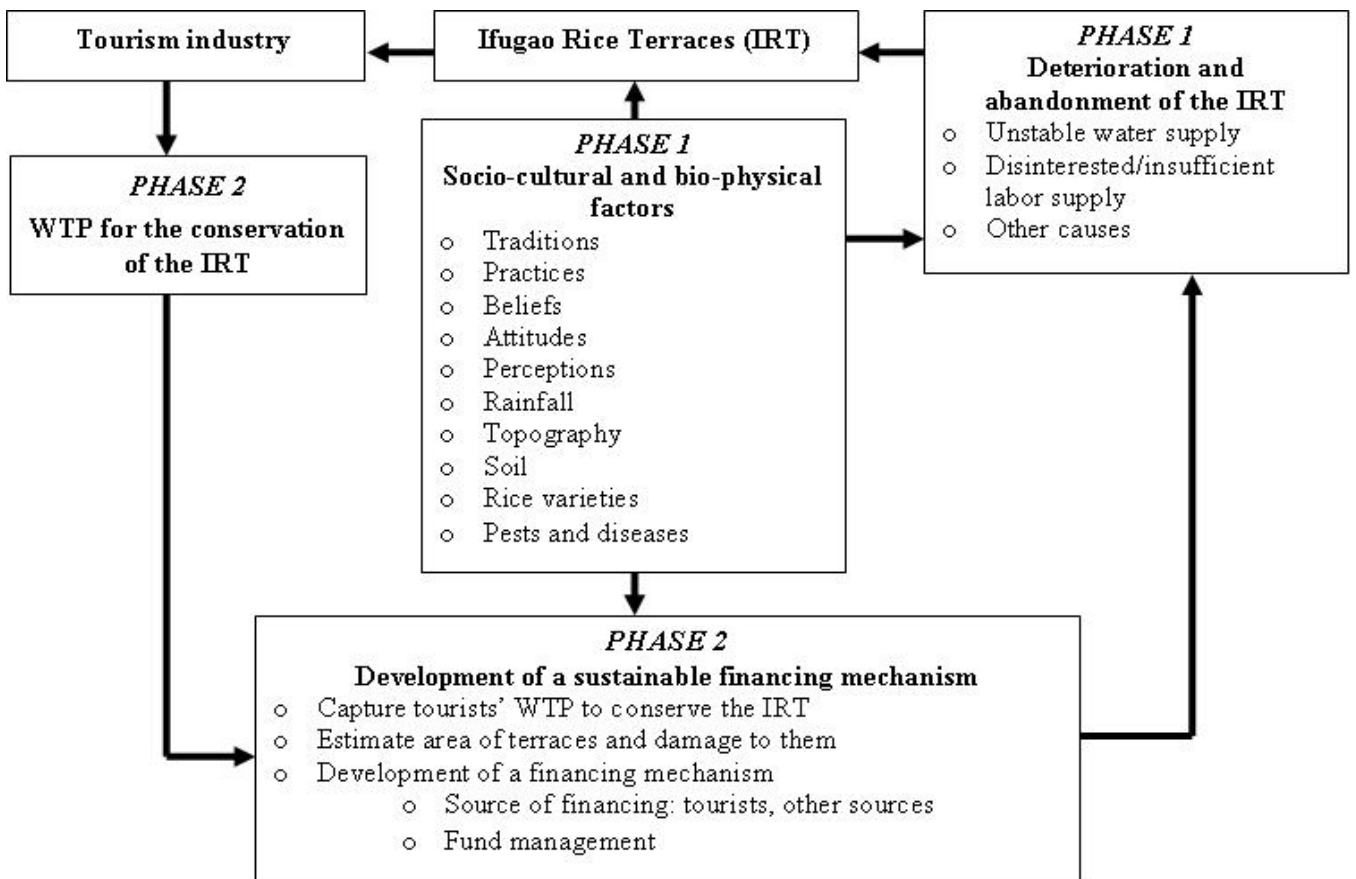


Figure 1. Conceptual Framework

### **3. RESEARCH METHODS**

#### **3.1 Research Questions**

This study sought to answer the following questions:

- a. What are the socio-cultural and bio-physical factors that affect the Ifugao farmers' practices in the terraces?
- b. What is the water supply situation in the Ifugao municipalities where the rice terraces are found?
- c. Is there adequate labor to undertake conservation and protection activities?
- d. How can tourists' willingness to pay (WTP) for the conservation of the terraces is captured?
- e. What are the institutional requirements (e.g. legislation, collection, allocation, and implementation of project activities) for the successful implementation of a financing mechanism for the conservation of the IRT?

#### **3.2 Exploratory Study**

EEPSEA awarded the research team a grant to conduct an initial exploratory study to gather basic information and assess the practical viability (including potential problems) of conducting the research. The duration of the exploratory study was from January to July 2007. The team undertook the following activities:

- a) A review of literature about the terraces, particularly on their management and conservation, as well as anthropological studies on their inhabitants and property rights regimes.
- b) The team validated the information gathered from the literature review through focus group discussions (FGDs) and key informant (KI) interviews. Four FGDs were conducted with farmers, government officials, the business sector, and wood carvers. On the other hand, the key informants included Banaue's Mayor, the Municipal Agriculture Officer, the Municipal Tourism Officer, and local and foreign tourists.

The information gathered from the literature review, FGDs, and KI interviews was used in the development of the proposal for the full-fledged study.

#### **3.3 Phase 1**

Phase 1 focused on two of the causes of the deterioration of the terraces, namely, the unstable water supply and a disinterested or inadequate labor force. We conducted a FGD, KI interviews, and surveys among farmers and high school students from the four heritage municipalities of Banaue, Kiangan, Hungduan and Mayoyao.

##### **3.3.1 Focus group discussion**

A focus group discussion (FGD) was conducted on December 8, 2007, in Banaue, Ifugao. Through the FGD, we gathered information regarding the water supply situation in the terraces, specific farming practices in the different heritage sites,

availability and sufficiency of labor for the different farming activities, reasons for abandoning the terraces, possible incentives to lure farmers back to terrace farming, and how the farmers instilled an appreciation of the value of the terraces in their children.

### 3.3.2 Survey of farmers

#### (a) Training of enumerators

The enumerators to be involved in the farmer survey underwent a short training on December 8, 2007, in Banaue, Ifugao. Ten persons participated in the training and the pre-test that was conducted in barangay Bocos, Banaue, on December 9, 2007. However, only seven persons qualified to be enumerators in the project. The questionnaire was improved using inputs from the enumerators and the results of the FGD<sup>1</sup>.

#### (b) Sample

The sample for the farmer survey consisted of farmers from the heritage municipalities of Banaue, Mayoyao, Hungduan, and Kiangan. A total of 150 respondents were interviewed, and were distributed equally, i.e. 30 respondents each, among barangays Batad and Bangaan in Banaue, which are inscribed in the Heritage List and the three other municipalities. Table 1 shows the distribution of the respondents.

Table 1. Distribution of respondents among the four heritage municipalities

Municipality/Barangay	No. of Respondents	Date Surveyed
Banaue	60	
<i>Batad</i>	30	January 26-27, 2008
<i>Bangaan</i>	30	February 2-3, 2008
Hungduan	30	
<i>Hapao</i>	11	January 13, 2008
<i>Ba-ang</i>	4	December 23, 2007
<i>Poblacion</i>	9	January 19, 2008
<i>Bokiawan</i>	6	December 24, 2007
Kiangan	30	
<i>Nagacadan</i>	30	December 15-16, 2007
Mayoyao	30	
<i>Mayoyao Proper</i>	5	January 19, 2008
<i>Bongan</i>	7	January 19, 2008
<i>Chaya</i>	9	January 20, 2008
<i>Bato-Alatbang</i>	9	January 19, 2008
<b>Total</b>	<b>150</b>	

The respondents were chosen through stratified sampling. In the first stratum, municipalities were chosen based on whether a significant portion of the rice terraces

<sup>1</sup> A copy of the questionnaire is available upon request from the corresponding author.

was found in them. The next stratum consisted of barangays within each municipality. Populated barangays were chosen first to minimize the cost of the survey. There were some barangays that were far flung and sparsely populated and were thus not chosen because these areas would significantly increase the cost of the survey and might also put the research team in danger.

### **3.3.3 Survey of youths' perceptions of and attitudes towards the Ifugao Rice Terraces**

As the farmer surveys were undertaken during weekends, the research team decided to make use of the research assistant's time during the weekdays to conduct a survey among the young people. The survey aimed at looking into the perceptions and attitudes of the youth in the survey areas towards the IRT, they being the next generation to whom the terraces will be bequeathed<sup>2</sup>.

The schools chosen for the survey were the national high schools in the four municipalities: Banaue National High School in Ducligan, Banaue; Mayoyao National High School in Balangbang, Mayoyao; Hungduan National High School in Hapao, Hungduan; and Kiangang National High School in Ala-Baguinge, Kiangang. For each school, 25 respondents were selected using systematic sampling, with the class list of fourth year high school students as the sampling frame. In the case of Hungduan National High School, some third year students were included in the sample because the fourth year class size was small. The research assistant first explained to the students the objectives of the survey, after which they were asked to answer the questionnaire inside the classroom.

### **3.3.4 Analysis of the water supply situation**

The availability of irrigation water is critical to the maintenance of the rice terraces and the sustainability of rice farming in the area. To assess this, we gathered secondary data about water availability, the water allocation system, problems regarding the water supply, present and projected demands for water, and the investment needs for the irrigation and domestic water supply.

Furthermore, we conducted KI interviews with the officer in charge of the National Irrigation Administration (office) in Ifugao, provincial and municipal planning officers, the Ifugao Cultural Heritage Office, and municipal agriculturists, among others.

### **3.3.5 Labor availability, water scarcity and future decisions to abandon the rice terraces**

The data from the survey was used to identify the factors that could affect future decisions by farmers to abandon the terraces. In particular, we tested whether this decision was affected by water and labor availability, and the viability of rice farming, and other correlates. It would have been ideal to compare farmers who had already abandoned their farm lots against those who stayed; however, time and resources did

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<sup>2</sup> A copy of the questionnaire is available upon request from the corresponding author.

not allow us to collect this information. So instead, we analyzed the stated “threat” of abandonment and the factors that were likely to affect it. An underlying assumption here was that farmers perceived labor and water scarcity to be a persistent problem in the future. A simple logit regression was developed to check the hypothesis that farmers who experienced labor and water scarcity today were more likely to abandon the terraces in the future.

### **3.4 Phase 2**

Phase 2 focused on the estimation of tourists’ willingness to pay for the conservation of the terraces and ways by which this may be captured, the estimation of the area of the terraces as well as the extent of damage, and the development of a sustainable financing mechanism for their conservation of the IRT.

#### **3.4.1 Estimation of values and sampling method**

##### *Contingent valuation method*

Stated preference (SP) techniques refer to any technique that makes use of a questionnaire to discover people’s preferences, particularly those concerning their monetary valuations of costs and benefits (Bateman et al. 2002). The use of SP techniques is justified when people’s willingness to pay (WTP) cannot be inferred from markets. Furthermore, only SP techniques can detect non-use values (NUVs), and they are particularly useful in estimating the NUVs of resources that are important at national and local levels.

The contingent valuation (CV) method is a stated preference technique that can be used to value non-market goods. It involves directly asking people, in a survey, how much their WTP for a good is, or their willingness to accept (WTA) giving up a good. Bateman et al. (2002) write that CV is more appropriate to use when the WTP for the environmental good or service in total is needed, as differentiated from choice modeling (CM) which is more applicable if the WTP for individual attributes is required. In the case of the IRT, we envisaged that it would be difficult for the respondents to distinguish among the various attributes of the terraces, but it would be easier for them to relate to the value of the terraces as a whole. As such, the use of CV in this study was favored.

However, since the tourist respondents would be asked the CV question when they were already in Ifugao, they were requested to go back, in their minds, to the time when they were still going to make a decision regarding the places they would visit. They were then asked if they would still have visited Ifugao had they known that they would be made to pay a certain fee. We recognize that the use of the contingent behavior question had limitations because the tourists were already in the area at the time of the interview, and possibly, had already seen the terraces. This could sway the WTP estimates upwards. Ideally, the interviews should have been held outside the IRT. However, interviewing tourists at the airport or hotel was not a feasible option because of security restrictions. Tuan and Navrud (2006) also used this approach to determine foreign tourists’ WTP to visit the My Son world cultural heritage site in Vietnam. They noted that asking tourists about their WTP when they had already

arrived in the country placed them in a *fait accompli* situation, with no options to look for substitute sites.

Since the study aimed to develop a financing mechanism that would contribute to the conservation of the IRT, the single-bound dichotomous choice method was used. This method minimizes the incidence of non-responses and avoids outliers (Bateman et al. 2002). The disadvantages that the method suffers include generating larger values compared to open-ended elicitation methods, and providing less information thus requiring bigger samples and stronger statistical assumptions. However, Bateman et al. (2002) recommend this method, together with the payment card method, because the dichotomous choice format is incentive-compatible and facilitates the respondents' valuation task.

The following steps in conducting a CV study, as described by Boyle 2003 (in Champs, Boyle and Brown 2003), were adopted:

- a) *Identifying the change in the quality to be valued.* In this case, the improvement in the management and conservation of the IRT was valued.
- b) *Identifying whose values will be estimated.* The method was used to estimate the domestic and foreign tourists' willingness to pay for the conservation of the terraces.
- c) *Selecting a data collection method.* Data was collected through personal interviews.
- d) *Choosing a sample size.* The population of interest in this study consisted of tourists visiting the site(s) since they were a good potential source of funds for the repair/restoration of degraded portions of the terraces. Due to financial and time constraints, the total sample size (n) was set at 550.
- e) *Designing the information component of the survey instrument.* This included a detailed description of the IRT as the resource to be valued, how the enhanced conservation program was proposed to take place, the payment vehicle, and the time frame of the payment, among other things.
- f) *Designing the CV question.* As mentioned earlier, the dichotomous choice format was used.
- g) *Developing auxiliary questions.* These are questions that generate data to be used in analyzing the CV responses, like socio-economic data. Follow-up questions were also included to ensure that the respondents understood the questions asked. The interview schedule used for the CV survey is available from the corresponding author upon request.
- h) *Pre-testing and implementing the survey.* The survey instrument was first pre-tested to assess its strengths and weaknesses, and revised based on the feedback generated. Three pre-tests were conducted, involving a total of 140 respondents, 75 of whom were interviewed in Laguna and 65 in Banaue. There were 112 Filipinos and 28 foreigners, who came from Australia, Canada, China, France, the United States of America, Vietnam, Great Britain, East Timor, Indonesia, Burma, and Germany. The bid amounts used in the survey were generated from the pre-tests using an open-ended question to elicit WTP. The following bid amounts were used in the final survey: P 30, 50, 100, 200, 500, and 1,000 per visit for local tourists; and USD 10, 20, 50, 100 and 200 for foreign tourists.

After the revisions, the instrument was used in the actual survey. The survey was conducted from May 18 to July 8, 2008, in the municipality of Banaue. The respondents were chosen systematically. They were requested to sign a consent form before the interview.

- i) *Data analysis.* Since the dichotomous choice format generated binary data, maximum likelihood techniques were used to estimate the log likelihood function and parameters. The theoretical framework used for model specification was based on Haab and McConnell (2002).

### **3.4.2 Institutionalization of the financing mechanism**

The research team presented the results of Phase 1 to the Governor of Ifugao, Teodoro B. Baguilat, Jr., on June 2, 2008, to enlist his support to institutionalize a financing mechanism for the conservation of the rice terraces. Governor Baguilat noted that the study provided empirical results to support the causes of abandonment that it identified, such as low productivity, irrigation problems, other livelihood opportunities, and education. He suggested that the team talk to the Sangguniang Bayan, the law-making body of the municipality because if the financing mechanism was instituted at the municipal level, an ordinance would be needed to put it into effect as well as to create a trust fund. He also noted that at the initial stage, the collection of conservation fees may have to be handled by the local government unit (LGU) and the funds would have to go to the municipal treasury. However, he said that it was possible to set up a conservation trust fund. An independent council could handle the management of the trust fund (including fund generation and utilization) after the collection system had stabilized.

For this reason, the team decided to go back to the heritage municipalities and explore the possibility of institutionalizing the financing mechanism at their level. When the project was proposed, only the municipality of Hungduan was known to be collecting entrance fees from tourists. During the project implementation, the municipality of Banaue also issued a municipal ordinance (effective January 16, 2008) authorizing, among other things, the collection of an environmental fee from local and foreign tourists. Given these developments, the team endeavored to review the ordinances already issued, with the end-view of contributing to their improvement.

Workshops were conducted in each of the heritage municipalities, namely Hungduan (August 19, 2008), Kiangnan (August 20, 2008), Banaue (August 21, 2008), and Mayoyao (August 22, 2008). These workshops were attended by local executives such as the municipal mayor, vice-mayor, Sangguniang Bayan (municipal councilors), municipal agriculture and tourism officers, farmers, and other stakeholders.

For each workshop, the project team first presented the background of the study, preliminary results, and workshop objectives. The workshop was divided into two parts: the first focused on the financing mechanism, while the second focused on the validation of the maps showing the rice terraces of the heritage municipalities or barangays.



## 4.0 RESULTS AND DISCUSSION

### 4.1 Phase 1

#### 4.1.1 Insights from the FGD

The main sources of water for irrigation in the four municipalities are creeks and rivers, and water is brought to the terraces through irrigation systems that were built by the Ifugaos' ancestors. However, many of the irrigation systems have deteriorated and are now abandoned, mainly due to erosion and landslides. As a result, the farmers have insufficient water supply during the dry season, which is also the reason why they can only have one cropping a year.

The farmers recognize the need to repair the irrigation systems, possibly by using concrete to stabilize the irrigation canals or replacing them with PVC pipes. However, the big earthworms that abound in the area, and which are now considered pests, are capable of boring through concrete. They create channels for the water to drain away during the dry season. On the other hand, the use of PVC pipes as conduits also poses a problem because the pipes easily fill up with sediments.

The main sources of labor for the different activities involved in rice terrace farming (terrace maintenance, land preparation, planting, harvesting, and rituals) are hired labor, family, *ubbu* (exchange labor or farmers who work in other farms, after which the owners will reciprocate by helping them)), *uhat* (practiced in the non-heritage municipalities of Asipulo, Hingyon and Hungduan, where a tenant will get all the harvest from an abandoned lot), and *loda*. *Loda* is a practice unique to Kiangnan where a rice field that has been idle for some time is recultivated by a tenant, who will be then given all the harvest for three years, while the owner shares the maintenance costs.

The farmers were in agreement that labor was generally sufficient for all activities. For most farming activities, the farmers relied mainly on family labor, *ubbu* and hired labor. Terrace repair and maintenance however, required highly skilled labor, which the farmers usually had to hire. In hiring labor, there was a preference for male laborers because of the nature of work. Men were paid more than women (P 150–250 per day with food for men; P 120–150 per day with food for women). The tasks assigned to women were usually limited to cleaning and lifting stones.

The rates for harvesting were generally lower, ranging from P 100–200 per day for men, and P100–150 per day for women. It is common practice also to pay workers with rice bundles during harvest time (1–3 bundles per day depending on the size of the bundle). The results of the FGD were used to fine-tune the questionnaire used in the farmer survey.

#### 4.1.2 Survey of farmers

In terms of their socio-economic profile, the respondents were predominantly male (93%), married and living with their spouses (83%), and their ages ranged from

26 to 85 years. The primary occupation was farming, with 85% of the respondents cultivating their own farm. Kiangnan had the highest average monthly family income at P 5,019 while Batad had the lowest at P 1, 690. The highest proportion of respondents (38%) had elementary school education.

The availability of water for irrigation appeared to be a problem to more respondents in Kiangnan than in the other sites possibly because of the lack of irrigation facilities to channel water to the rice farms. Water was generally sufficient during the rainy season, but insufficient during the dry season. The main reasons given for the insufficient water supply during the dry season were the drying up of creeks/rivers, damage of the irrigation canals due to erosion and landslides, and destruction of terrace walls and irrigation canals by earthworms. According to the respondents, the insufficient water supply resulted in low harvests, collapse of terrace walls, earthworm infestation, and eventual abandonment of the terraces. On the other hand, the farmers believed that the best ways to increase the water supply to the terraces were to repair the existing irrigation canals (79%) and reforest the woodlots (63%).

On average, the farmers had been farming the terraces for about 24 years, with a range of 1–67 yrs. Almost all the respondents planted rice only once a year using traditional rice varieties and mostly organic fertilizer. Almost everyone also allowed their fields to be fallowed. The respondents combined different kinds of labor to carry out their farming activities. In general, the respondents said labor was sufficient for their activities in the terraces, such as terrace maintenance, land preparation, rice planting, and rice harvesting. The most common combination of labor sources for all activities was family plus hired labor.

According to the farmers, the main problems in the terraces were damaged terraces due to landslides and earthworms; inadequate water supply and poor irrigation systems; and pest infestation (e.g. rodents and golden snails which damaged the rice plants). Their perception was that, on average, about 16% of the terraces in the four municipalities had been damaged. Almost all respondents indicated that they did not have enough funds to repair the terraces. This is understandable because terrace restoration is costly; for example, one cubic meter of wall restoration costs about P 200–300, depending on the extent of damage.

Eighty-seven percent (87%) of the respondents said that they did not intend to abandon the terraces in the near future, mainly because they were their only source of rice; also because they had inherited the terraces from their ancestors and they were the embodiment of the Ifugao culture, and lastly because of their tourism value. To instill the importance of the terraces in their children, most of the respondents advised them to take care of the terraces and let them help out in the farm during weekends and vacations. On the other hand, the main reasons why 13% of the respondents will possibly abandon the terraces in the near future were poor harvests (not even enough for home consumption), lack of funds to repair and maintain terraces, water shortage, and old age.

About 70% of the respondents said that a good incentive to lure farmers back to the terraces was to repair the irrigation system, while 57% indicated the need to subsidize labor to repair and maintain the terraces, and provide additional livelihood sources to augment their income from farming. The respondents favored the leasing of abandoned terraces to other farmers in the area (67%), and requiring the owners who had abandoned their terraces to be the ones to restore them (57%).

### ***(a) Farmers' perceptions of and attitudes towards the Ifugao Rice Terraces***

The farmers' perceptions and attitudes about the terraces were also assessed. The questionnaire statements were aimed at ascertaining the respondents' perception of the importance of the IRT, current state of the IRT, management and governance of the IRT, availability of irrigation water, role of youth, and payment of conservation fees by tourists, among others<sup>3</sup>. On the other hand, questions on attitude were aimed at determining the respondents' attitudes towards the IRT, how parents instilled in their children the latter's role in the conservation of the terraces, and the possible participation of other non-Ifugao sectors in the maintenance of the IRT, among others. These groups of variables (perceptions and attitudes) were used as explanatory variables affecting the abandonment of the rice terraces.

### ***Farmers' perceptions of the terraces***

The farmers agreed to six of the nine statements which measured their perception of the IRT (Table 2). More than one-third (67%) of them agreed with the statement that the lives of the Ifugaos were closely linked to the rice terraces, which means that if the terraces are destroyed, the Ifugao culture will likewise be destroyed. Those who strongly agreed with this statement (23%) felt that their lives were practically attached to the land. A few (7%) who disagreed believed that not all of the Ifugao culture would be destroyed; only those cultural aspects which were associated with rice farming would be affected.

About two-thirds (61%) of the farmers strongly agreed that the terraces were not as beautiful as before because they had been damaged and neglected. They reasoned that unlike in the past, today there were many houses on the terraces; there were many more earthworms which destroyed the terrace walls; people had left farming for greener pastures; and the present generation preferred to work far from home, outside Ifugao. One farmer who agreed with the statement explained that while it was true that the terraces were damaged, they were not neglected; it was just that there was insufficient manpower to repair the damaged terraces.

Despite the general observation that the present young generation of Ifugao was no longer interested in farming, about half (51%) of the farmer-respondents agreed that the present generation of youth will continue farming in the years to come<sup>4</sup>. They perceived that the youth and children who were not able to go to school and would therefore end up jobless would be the ones to continue farming as long as they had a rice farm. Some farmers believed that farming was a must since it was the source of food for the local people. Besides, the government was giving attention to the rice terraces. The farmers (25%) who were neutral to the statement about the disinterest of the youth reasoned that the youth and children who were interested in farming may go into farming; but those who had other sources of livelihood (because they had been able to go to school) may look for other jobs. Thus, they believed that "the educated

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<sup>3</sup> A copy of the questionnaire is available upon request from the corresponding author.

<sup>4</sup> A parallel survey among 100 high students in the four municipalities covered by the heritage sites showed that only 25% of the students surveyed had agriculture as a desired future occupation.

will not go into farming, only the uneducated will continue farming”. Those who disagreed about the disinterest of the youth (about 11%) thought that the youth preferred to work abroad and that most children were lazy and did not like to work on rice farms. Others stated that they sent their children to school for a better future.

Realizing the scarcity of resources for the repair of the terraces, 61% of the farmer-respondents agreed that the local government unit (LGU) should maintain the abandoned terraces by hiring laborers. They emphasized the importance of assistance from the local government in the restoration of the terraces so that they would be attractive again. Those who strongly supported this statement (18%) reasoned that the abandoned terraces were owned by non-farmers. Meanwhile, those who disagreed (18%) had many apprehensions; if the LGU hired laborers to maintain the abandoned terraces, where would the harvest go? They claimed that even if the LGU hired laborers, the harvest should still go to the farmers. They were also concerned about whether the laborers had the skills to repair the terraces and if they would do a good job. Hence, the farmers suggested that the LGU provide them with financial assistance or a subsidy for the repairs instead of hiring laborers. They added that the government should repair the irrigation systems so that they could make the farms productive.

Table 2. Farmers' perceptions of the rice terraces

STATEMENT	FARMERS' PERCEPTION (%)					Mean Score
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1. The lives of the Ifugaos are closely linked to the rice terraces, which means that if the terraces are destroyed, the Ifugao culture will likewise be destroyed.	0	6.7	3.3	66.7	23.3	4.1 (Agree)
2. The terraces are not as beautiful as before because they have been destroyed and neglected.	3.3	2.0	0.7	33.3	60.7	4.5 (Agree)
3. The only way to restore the terraces is to practice the rituals associated with rice farming activities.	13.3	52.0	12.0	15.3	7.3	2.5 (Disagree)
4. The present generation of youth and children will continue farming on the terraces in the years to come.	0	10.7	25.3	50.7	13.3	3.7 (Agree)
5. The local government unit should maintain the abandoned terraces by hiring laborers.	0.7	17.3	3.3	60.7	18.0	3.8 (Agree)
6. The terraces contribute a lot to the income of our municipality; therefore the local government unit should provide the funds for their maintenance.	0	0	0.7	60.7	38.7	4.4 (Agree)
7. It is all right for local and international tourists to pay a conservation fee because they benefit from the view of the terraces.	0.7	1.3	0.7	49.3	47.3	4.4 (Agree)
8. I don't care if the Ifugao Rice Terraces are removed from the UNESCO World Heritage List.	46.7	30.0	2.0	0	0	4.6 (Strongly Disagree)
9. In the absence of local labor to repair the destroyed terrace walls, it is all right to hire non-Ifugaos to do the repair.	45.3	44.7	4.0	4.7	1.3	1.7 (Disagree)
Overall Perception						3.8 (Agree)

Likewise, about 61% and 39% of the farmer-respondents agreed and strongly agreed, respectively, that the terraces contributed a lot to the income of their municipality; therefore the LGU should provide the funds for their maintenance. Those

who strongly agreed believed that the restoration of the terraces should be a priority project of the government. Others were amenable to the idea of government providing funds for the maintenance of the terraces provided that the harvests go to the farmers and not to the government. Some espoused the idea that the government should give the farmers salaries for their labor in maintaining the terraces.

With regard to the collection of conservation fees from local and international tourists, about 97% of the respondents were on the positive side. They felt that it was all right for local and international tourists to pay conservation fees because they benefitted from the view of the terraces. One of those who strongly agreed said that there should be an ordinance to this effect. Some farmers expressed the idea that every barangay within the heritage municipalities should collect conservation fees, although donations and other forms of help like farm inputs would be welcomed. One farmer who disagreed felt that the LGU should be the one to finance the maintenance of the terraces.

Contrary to what some elders believe, about 52% of the farmers disagreed that the only way to restore the terraces was to practice the rituals associated with rice farming. These farmers explained that it was not possible for the farmers to go back to the old rituals now that they have been Christianized; but as long as the farmers were industrious, they could restore and make the rice terraces productive. According to them, the *baki* (songs and rituals of Ifugao) alone cannot restore the terraces. Others stated that there were no *mumbakis* (native priests) anymore and that the rituals were quite expensive. While some 23% of the farmers agreed with the statement because their forefathers had done the rituals in the past and their terraces were beautiful, they were also apprehensive because these older people had died, there are very few *mumbakis* left, and nobody would perform the rituals.

Before proceeding to the last two perception statements, the respondents were first asked whether they were aware that the rice terraces were included in the UNESCO World Heritage List. About 79% of the farmers responded positively.

About 90% of the respondents disagreed with the idea that in the absence of local labor to repair the destroyed terrace walls, it was all right to hire non-Ifugaos. They strongly believed that only the Ifugaos had the skills while non-Ifugaos did not. Hence, they were apprehensive that the laborers might do the work haphazardly. Those who agreed said that if hiring non-Ifugaos was the only way to maintain the terraces and Ifugaos were not available to do the work, then they were amenable to the idea.

The farmers expressed strong disagreement to the statement that they did not care if the IRT were to be removed from the UNESCO World Heritage List. They believed that the terraces should be maintained since they were the source of livelihood for the people. They felt that if not for the rice terraces, the Ifugaos in particular and Filipinos in general, would not be recognized worldwide.

### ***Farmers' attitudes towards the terraces***

The farmers agreed with five of the seven attitudinal statements presented to them, namely, Statements 1, 2, 4, 5, and 7 (Table 3). They, however, disagreed with Statements 3 and 6 which were presented in the negative form.

They agreed that every Filipino should be proud of the IRT because they were a living testimony to Filipino ingenuity. The IRT were synonymous with the Filipino people's identity, hence they should be maintained. They also believed that the IRT were the lifeblood of the Ifugaos, therefore everyone should help in their protection and conservation. The terraces should be maintained as a source of food and all Filipinos must be involved.

The people know very well the relationship between the condition of the *pinugo* (private forests owned by the clans) and the productivity of the rice terraces; therefore they will help in maintaining both. They know that if there are no trees, there will be no water for the terraces.

Again, majority of the respondents (95%) agreed that as parents, they would instill in the minds of the children that the continuous existence of the terraces depended on them. But they felt they could not do anything if the children were not interested in farming. Lastly, the respondents agreed that the local government should prioritize the repair the irrigation system of the terraces. For them, the poor irrigation system was the number one problem and they mentioned that if there was a good irrigation system, the abandoned terraces might be cultivated again. Others complained that they were already old and could no longer do manual work.

About 96% of the farmers expressed disagreement with the statement that they were not affected even if the terraces were being continuously degraded. A similar level of disagreement (95%) was expressed with the idea that the IRT were just a physical landscape and did not mean anything to them. The terraces meant a lot to them because they were a living legacy of their ancestors and their pride as a people. Aside from the sentimental value, the terraces also had economic importance being the main source of food for the people. Taken as a whole, the respondents had very favorable attitudes towards the rice terraces.

Table 3. Farmers' attitudes towards the terraces

STATEMENT	FARMERS' ATTITUDE (%)					Mean Score
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1. Every Filipino should be proud of the Ifugao Rice Terraces because they are a living testimony to Filipino ingenuity.	0	0	0	53.3	46.7	4.5 (Agree)
2. The terraces are the lifeblood of the Ifugaos, therefore everyone should help in their protection and conservation.	0	0	0	54.7	45.3	4.5 (Agree)
3. I am not affected even if the terraces are continuously being degraded.	54.7	41.3	2.0	1.3	0.7	4.5 (Disagree)
4. The condition of the <i>pinugo</i> affects the productivity of the rice terraces; therefore I will help in maintaining it.	0.7	0.7	0.7	63.3	34.7	4.3 (Agree)
5. As a parent, I will instill in the minds of my children that the continuous existence of the terraces depends on them.	0	0.7	3.3	67.3	28.0	4.2 (Agree)
6. The Ifugao Rice Terraces are just a physical landscape; they do not mean anything to me.	53.3	42.0	0	2.0	2.7	4.4 (Disagree)
7. The local government unit should prioritize the rehabilitation of the Ifugao Rice Terraces.	1.3	1.3	0	44.7	52.7	4.5 (Agree)
Overall Attitude						4.4 (Agree)

***(b) Relationship between perceptions and attitudes and the possibility of abandoning the rice terraces***

Among the nine perception statements, only Statements 4, 5, and 9 were found to be significantly associated with the possibility of abandonment (Table 4). The negative sign indicates that those who strongly agreed with the statements would not abandon their farms. For instance, those who strongly believed that the present generation of youth and children would continue farming on the terraces in the years to come would not abandon their farms. Likewise, those who strongly believed that the LGU should maintain the abandoned terraces by hiring laborers would also not abandon their farms. The respondents' overall perception was significantly associated with abandonment.



On the other hand, none of the attitudinal statements was significantly associated with the possibility of farmers' abandoning their farms (Table 5). The overall attitude score was also not significantly associated with the abandonment of rice farms.

Table 4. Relationship between the respondents' perceptions of the terraces and the possibility of abandoning their rice farms

STATEMENT	Spearman's rho
1. The lives of the Ifugaos are closely linked to the rice terraces, which means that if the terraces are destroyed, the Ifugao culture will likewise be destroyed.	0.087 <sup>ns</sup>
2. The terraces are not as beautiful as before because they have been destroyed and neglected.	0.125 <sup>ns</sup>
3. The only way to restore the terraces is to practice the rituals associated with rice farming activities.	-0.057 <sup>ns</sup>
4. The present generation of youth and children will continue farming on the terraces in the years to come.	-0.169 <sup>*</sup>
5. The local government unit should maintain abandoned terraces by hiring laborers.	-0.337 <sup>**</sup>
6. The terraces contribute a lot to the income of our municipality; therefore the local government unit should provide the funds for their maintenance.	-0.130 <sup>ns</sup>
7. It is all right for local and international tourists to pay a conservation fee because they benefit from the view of the terraces.	-0.067 <sup>ns</sup>
8. I don't care if the Ifugao Rice Terraces are removed from the UNESCO World Heritage List.	-0.187 <sup>ns</sup>
9. In the absence of local labor to repair the destroyed terrace walls, it is all right to hire non-Ifugaos to do the repair.	-0.176 <sup>*</sup>
Overall Perception	-0.170 <sup>*</sup>

Note: \* = significant at 5%; \*\* = significant at 1%; and ns = not significant at 5%

Table 5. Relationship between the respondents' attitudes towards the terraces and the possibility of abandoning their rice farms

STATEMENT	Spearman's rho
1. Every Filipino should be proud of the Ifugao Rice Terraces because they are a living testimony to Filipino ingenuity.	-0.013 <sup>ns</sup>
2. The terraces are the lifeblood of the Ifugaos, therefore everyone should help in their protection and conservation.	0.037 <sup>ns</sup>
3. I am not affected even if the terraces are continuously being degraded.	-0.038 <sup>ns</sup>
4. The condition of the <i>pinugo</i> affects the productivity of the rice terraces; therefore I will help in maintaining it.	-0.132 <sup>ns</sup>
5. As a parent, I will instill in the minds of my children that the continuous existence of the terraces depends on them.	0.103 <sup>ns</sup>
6. The Ifugao Rice Terraces are just a physical landscape; they do not mean anything to me.	0.067 <sup>ns</sup>
7. The local government unit should prioritize the rehabilitation of the Ifugao Rice Terraces.	-0.124 <sup>ns</sup>
Overall Attitude	-0.074 <sup>ns</sup>

Note: ns = not significant at 5%

### **4.1.3 Survey of high school students**

#### ***(a) Socio-demographic characteristics***

The respondents for this survey were third year and fourth year high school students from the national high schools in the four study municipalities of Ifugao, namely, Banaue, Hungduan, Mayoyao, and Kiangan. Thirty-four per cent of them resided in Mayoyao, 24 per cent came from Hungduan, and 25 per cent from Kiangan. Sixteen per cent came from Banaue while one per cent was from Lagawe, the capital town. The majority (87%) of the respondents were fourth year students while 13% were in the third year. Female students constituted two-thirds of the respondents while the males comprised one-third. Their ages ranged from 14–24 years, with a mean age of 16.57 years. Among the respondents, students from Hungduan National High School (HNHS) had the lowest mean age (15.48 years) since more than half of them were third year students. Students from Kiangan National High School (KNHS) had the highest mean age at 17.52 years.

More than half (55%) of the respondents were Roman Catholic while 41% belonged to various Christian groups. Two per cent did not claim any religious affiliation. The majority (84%) of the respondents were Ifugaos while 12% belonged to other ethnic groups. Four per cent were not members of any ethnic group.

#### ***(b) Economic characteristics***

There was wide disparity in the reported annual household incomes of the respondents. Some respondents from Mayoyao National High School (MNHS) and HNHS declared annual incomes of P 300 and P 500, respectively, while one respondent reported an annual household income of one million pesos. The respondents' mean annual household income was P 37,766.

In general, the students came from farming households as most of the parents (74% of the fathers and 81% of the mothers) were farmers cultivating their own farms. The father of one student from MNHS worked abroad while the rest were service providers, landless agricultural laborers, handicraft-makers, transport operators, a construction worker, and a trader. Since farming in the terraces was a household activity, the wives were greatly involved (81%) although some of them also worked as agricultural laborers and in handicraft-making, trading, services, and gardening.

With regard to the respondents' desired occupation in the future, 26% of them wanted to be service providers (chefs, mechanics, welders, etc); 22% planned to be in the agriculture sector; 16% wanted to be professionals (engineers, teachers accountants, etc.); and another 16% hoped enter the medical profession as either doctors, nurses or midwives. This data shows that only about one-fourth of the students will likely be involved in agriculture or farming while the majority will engage in non-agriculture occupations.

#### ***(c) Basic farming information***

The families of all the respondents owned a rice farm on the terraces, ranging from 1–50 paddies. The families of students from MNHS and KNHS had the highest

average number of rice paddies at 13 while those from Banaue National High School (BNHS) had the lowest at 8. The majority of the farms (98%) were currently planted to rice and tilled by the fathers, mothers, and relatives of the students. Some households (18%) used hired labor while children were involved in farming to some extent (6%). One of the two farms are not planted to rice planted citrus trees while the other farm was no longer cultivated since the family members were engaged in other occupations.

The majority (98%) of the respondents reported that they helped out in farm activities namely, planting (78%), harvesting (84%), and weeding (65%). Only a few of them helped in seed germination, repair and maintenance of terrace walls, and construction of dikes.

The importance of the rice terraces to the Ifugao culture had been instilled in the majority of the students (80%) during their childhood. When asked about the problems farmers encountered in farming on the terraces, most (77% and 74%) cited the lack of irrigation water and earthworms, respectively. Other problems cited were lack of capital (47%), dilapidated terrace walls (37%), low yields (35%), abandonment of farms (29%), small farm size (27%), and lack of interest in farming (22%).

#### ***(d) Students' perceptions of the terraces***

The students were given the same set of statements as the farmers. On average, the students agreed with six of the ten statements which measured their perceptions of the rice terraces. They agreed with the following statements: (a) The lives of the Ifugaos are closely linked to the rice terraces, which means that if the terraces are destroyed, the Ifugao culture will likewise be destroyed; (b) The terraces are not as beautiful as before because they have been destroyed and neglected; (c) The only way to restore the terraces is to practice the rituals associated with rice farming activities; (d) The present generation of youth and children will continue farming on the terraces in the years to come; (e) The terraces contribute a lot to the income of our municipality; therefore the local government unit should provide the funds for their maintenance; and (f) It is all right for local and international tourists to pay a conservation fee because they benefit from the view of the terraces.

However, they disagreed with the idea that in the absence of local labor to repair the destroyed terrace walls, it was all right to hire non-Ifugaos to do the repair. They also disagreed with the statement saying that when the youth finished their higher education, they would not go into farming in the rice terraces. The students expressed a strong disagreement with the statement which stated that they did not care if the IRT were removed from the UNESCO World Heritage List. However, they took a neutral stand on the idea that the LGU should hire laborers to maintain the abandoned terraces.

#### ***(e) Students' attitudes towards the terraces***

The students agreed with five of the attitudinal statements presented to them, namely: (a) I plan to take a college course that is related to agriculture which I can apply in farming rice on the terraces; (b) As a student, I will help to maintain the terraces because their continuous existence depends on the youth and children; (c) The local government unit should prioritize the rehabilitation of the Ifugao Rice Terraces; (d) Love and concern for the Ifugao Rice Terraces can be best inculcated in children by

their parents at home; and (e) The school can help in the conservation of the Ifugao Rice Terraces by integrating this topic into school subjects.

They expressed strong agreement with the statement that every Filipino should be proud of the IRT because they were a living testimony to Filipino ingenuity. They also strongly believed that the terraces were the lifeblood of the Ifugaos, therefore everyone should help in their protection and conservation.

However, they disagreed with the idea that they were not affected even if the terraces were continuously being degraded. The same disagreement was expressed with the idea that the IRT were just a physical landscape and they did not mean anything to them. They were quite undecided on the statement that only the children who were directly involved in rice farming in the terraces developed a strong attachment to the terraces. The overall mean score indicated that in general, the students had a favorable attitude towards the IRT.

#### ***(f) Relationship between socio-economic factors and future occupations***

Using a chi-square test, seven variables were tested for their association with the respondents' choice of future occupation. The results are shown in Table 6. Three factors which were significantly associated with choice of future occupation based on the phi values were identified, namely, sex, ethnic group, and school. Male respondents were found to be more likely to be involved in agriculture than female students. The data showed, however, that in the family, both the husband (father) and wife (mother) were involved in farming. Women were also involved in farming but only the husband's farming occupation was reported.

The other factor was ethnic group, meaning that the Ifugaos, as compared to the other ethnic groups, were more likely to be involved in farming. In addition, students from the Mayoyao National High School were more likely to be involved in agriculture as indicated by the significant phi value at 5% level of significance. Compared with the other three municipalities, Mayoyao was further away from the urban center and therefore, the respondents were more exposed to rural life. Hence, their choice of occupation for the future was limited.

Based on the phi values, the occupations of the fathers and mothers were not associated with their children's decision to be engaged in farming or not in the future. Based on Fisher's exact test, awareness of the importance of the rice terraces and whether the students helped out in farm activities were not associated with the desired occupation in the future.

Three variables, namely, income, age and academic standing, had significant association with desired future occupation as indicated by Spearman's rho results at the 5% level of significance. Income and desired occupation had a negative correlation which indicated that students from high income families were less likely to choose agriculture as a future occupation. The same negative correlation was observed with academic standing. Students with high academic standing (as measured by their average in the last grading period) were not likely to be involved in agriculture. Meanwhile, age was directly correlated with desired future occupation.

Table 6. Relationship between students' socio-economic characteristics and choice of future occupation (whether agriculture or non-agriculture)

Characteristics	Measure of Association		
	Phi	Fisher's Exact Test	Spearman's Rho
Sex	0.569 <sup>*</sup>		
Ethnic group	0.211 <sup>*</sup>		
School	0.446 <sup>*</sup>		
Father's occupation	0.070 <sup>ns</sup>		
Mother's occupation	0.080 <sup>ns</sup>		
Awareness of the importance of the rice terraces		0.567 <sup>ns</sup>	
Help out in farm activities		0.585 <sup>ns</sup>	
Income			-0.221 <sup>*</sup>
Age			0.200 <sup>*</sup>
Academic standing			-0.184 <sup>*</sup>

Note: \* = significant at 5%

**(g) Relationship between perceptions and attitudes and future occupation**

The students' perceptions of the IRT were not associated with their choice of occupation in the future, i.e. whether agriculture or non-agriculture (Table 7). Students' attitudes as measured by Statements 4 and 10 were significantly associated with choice of future occupation (Table 8). This means that the students who strongly agreed with Statements 4 and 10 were more likely to choose agriculture as a future profession. However, there was no association between overall attitude and choice of future occupation.

Table 7. Relationship between students' perceptions of the terraces and choice of future occupation (whether agriculture or non-agriculture)

STATEMENT	Spearman's rho
1. The lives of the Ifugaos are closely linked to the rice terraces, which means that if the terraces are destroyed, the Ifugao culture will likewise be destroyed.	-0.106 <sup>ns</sup>
2. The terraces are not as beautiful as before because they have been destroyed and neglected.	0.099 <sup>ns</sup>
3. The only way to restore the terraces is to practice the rituals associated with rice farming activities.	-0.057 <sup>ns</sup>
4. The present generation of youth and children will continue farming on the terraces in the years to come.	0.070 <sup>ns</sup>
5. The local government unit should maintain abandoned terraces by hiring laborers.	-0.153 <sup>ns</sup>
6. The terraces contribute a lot to the income of our municipality; therefore the local government unit should provide the funds for their maintenance.	-0.087 <sup>ns</sup>
7. It is all right for local and international tourists to pay a conservation fee because they benefit from the view of the terraces.	-0.077 <sup>ns</sup>
8. I don't care if the Ifugao Rice Terraces are removed from the UNESCO World Heritage List.	-0.1408 <sup>ns</sup>
9. In the absence of local labor to repair the destroyed terrace walls, it is all right to hire non-Ifugaos to do the repair.	-0.045 <sup>ns</sup>
10. When the youth finish higher education, they will not go into farming in the rice terraces anymore.	0.073 <sup>ns</sup>
Overall Perception	-0.132 <sup>ns</sup>

Note: ns = not significant at 5%

Table 8. Relationship between students' attitudes towards the terraces and choice of future occupation (whether agriculture or non-agriculture)

STATEMENT	Spearman's rho
1. Every Filipino should be proud of the Ifugao Rice Terraces because they are a living testimony to Filipino ingenuity.	-0.129 <sup>ns</sup>
2. The terraces are the lifeblood of the Ifugaos, therefore everyone should help in their protection and conservation.	-0.124 <sup>ns</sup>
3. I am not affected even if the terraces are continuously being degraded.	-0.044 <sup>ns</sup>
4. I plan to take a college course that is related to agriculture which I can apply in farming rice on the terraces.	0.338 <sup>**</sup>
5. As a student, I will help to maintain the terraces because their continuous existence depends on the youth and children.	-0.036 <sup>ns</sup>
6. The Ifugao Rice Terraces are just a physical landscape; they do not mean anything to me.	-0.179 <sup>ns</sup>
7. The local government unit should prioritize the rehabilitation of the Ifugao Rice Terraces.	-0.131 <sup>ns</sup>
8. Love and concern for the Ifugao Rice Terraces can be best inculcated among children by their parents at home.	-0.086 <sup>ns</sup>
9. The school can help in the conservation of the Ifugao Rice Terraces by integrating the topic into school subjects.	-0.046 <sup>ns</sup>
10. Only the youth and children who are directly involved in rice farming in the terraces develop a strong attachment to the terraces.	0.225 <sup>*</sup>
Overall Attitude	-0.041 <sup>ns</sup>

Note: \* = significant at 5%; \*\* = significant at 1%; and ns = not significant at 5%

#### 4.1.4 Analysis of the water supply situation

##### (a) Water availability

Of the 11 municipalities in Ifugao, nine have rice terraces, namely Aguinardo, Asipulo, Banaue, Hingyon, Hungduan, Kiangan, Lagawe, Mayoyao, and Tinoc. Of these, only four were included in the UNESCO World Heritage List. Based on the inventory of irrigation systems in Ifugao conducted by the National Irrigation Administration (NIA), the majority of the irrigation systems that cover the municipalities of Ifugao with rice terraces are of the communal type. A communal irrigation system (CIS) is an irrigation system that is built or repaired by the NIA or other concerned government agencies and is turned over to the beneficiary farmers for management and maintenance. Presently, the management of these communal irrigation systems is either delegated to the various local irrigation associations or run privately by farming clans. Table 9 provides a breakdown of the number of CIS for the municipalities with rice terraces and their corresponding service areas.

Table 9. Number and service area of existing communal irrigation systems serving municipalities with rice terraces as of June 2007

<b>Municipality</b>	<b>No. of Communal Irrigation Systems</b>	<b>Service Area (ha)</b>
Aguinaldo	17	605.0
Asipulo	19	548.0
Banaue*	101	1,648.5
Hingyon	26	484.0
Hungduan*	49	1,152.0
Kiangan*	21	738.5
Lagawe	13	447.0
Mayoyao*	35	734.0
Tinoc	8	165.0
<b>Total</b>	<b>289</b>	<b>6,522.0</b>

Note: \* = Municipalities with rice terraces under the UNESCO World Heritage List

There are 289 CIS that are currently operating in the nine municipalities listed in the table. These CIS provide water to a total of 6,522 ha of rice paddies. Generally, water from these irrigation systems is controlled during the rainy season and is free flowing during the dry season as part of the flood control measures of the province. In addition to the CIS in Asipulo, Lagawe and Mayoyao, each of these three municipalities also has a pump system that irrigates an additional 30 ha (10 ha in each municipality) of rice lands.

***(b) Water allocation***

All the municipalities in Ifugao have separate physical set-ups that supply irrigation and domestic water, thus allocation is not a problem for these areas. For domestic water, developed springs and wells are tapped and distribution is through a network of water tubes connected to private or communal faucets. According to the 2005-2010 Ifugao provincial development plan, 86% of the province's total number of households in 2003 have constant water supply.

On the other hand, irrigation water is sourced from creeks, rivers and streams through a network of canals and other similar waterways. Similarly, the Ifugao provincial development plan states that about 44% of the total potential agricultural areas in the province are serviced by various irrigation projects.

There was no available data on water demand from the Municipal Agricultural Offices, Banaue Water and Allied Services Association, National Irrigation Administration, and Ifugao Cultural Heritage Office (ICHO).

***(c) Water supply problems***

There has been no report yet of a major water supply shortage in the four heritage municipalities. Generally, water supply is only cut off when water tubes or irrigation canals are damaged, and usually these are immediately repaired by private individuals or irrigation associations if the damage is not very extensive.

Despite the absence of a major water shortage in the heritage sites, the municipal local government units have expressed the need to repair existing communal irrigation systems either for maintenance or expansion to increase their service area. In a consultation workshop conducted by ICHO in 2007, priority water development projects were identified (Table 10).

Table 10. Priority water development projects in the municipalities encompassing the four world heritage sites in Ifugao

<b>Restoration Projects</b>	<b>Location</b>	<b>Cooperating agency</b>	<b>Amount (P)</b>
Bagnit, Langpo, Pulitang Tang-il, and Inlutob CIS	Kiangnan	NCCA, MLGU	No estimate yet
Bolbol Bangaan, Pohna Pinnug, Lower Napungtan, Badangan, Arnis, and Aparnga-o CIS	Banaue	NCCA, MLGU	800,000
Buyong, Pulla Lubina, Pikdot-Lamag, Liyang, Dayucong, Hulongna, Mukgo, Andop-a, Datucong-Tano, Pidipid-Baang, Tano-Napinitan, Duyong, Bulon, Kibuhungan, CIS	Hungduan	NCCA, NIA, DPWH, MLGU, PLGU	3,780,000
Upper Hapao Irrigation	Hungduan	NIA	1,700,000
Tao, Aywigan, Bukig, Amajaw, Ambuhac, Chajotchot-Ha'mang, Locha-Boy-boy, Bananao, and Halajud	Mayoyao	NCCA, NIA, MLGU, PLGU	No estimate yet

The cooperating agencies mentioned in Table 10 include the Department of Public Works and Highways (DPWH), the National Commission on Culture and the Arts (NCCA), the National Irrigation Administration (NIA), the Municipal Local Government Unit (MLGU), and the Provincial Local Government Unit (PLGU). These agencies are tasked to source for funds and implement the restoration projects listed in the table.

***(d) Investment needs for irrigation and domestic water supply***

Based on the 2005-2010 Provincial Development Plan for the province of Ifugao drafted in 2004, there is still a need for big investments to increase the service areas of existing irrigation systems either through maintenance or expansion, and to increase the number of households with domestic water supply systems. Furthermore, damaged irrigation canals also require funds for their repair.



#### 4.1.5 Determinants of future abandonment of farms in the rice terraces

This section discusses the results of a logit regression on the determinants of future abandonment of rice farms by current farmers. Farmers were asked whether they had plans to abandon their current farms in the future. Eighty-seven percent (87%) of the respondents answered in the negative while the remaining 13% admitted they had plans to abandon their farms in the future. The primary reason for abandonment in the future was low harvests (see Table 11) which jeopardize the food security of the households since rice grown in the terraces is primarily used for home consumption. Other noteworthy reasons were lack of capital for wall/dike maintenance and water shortages.

Table 11. Reasons for plans to abandon rice terraces in the future

Reason	Number of farmers who answered "Yes" (n = 20)	
	No.	%
Low harvests from farms	13	65
No capital for wall/dike maintenance	7	35
Old age	6	30
Lack of interest in farming among my children	7	35
Water shortages	7	35
Farming too laborious	2	10
Presence of alternative sources of income	2	10

To determine the factors that affected the probability of future abandonment, a logit regression was run, the results of which are shown in Table 12. Several specification tests were conducted to determine the variables to be included in the empirical model. In particular, likelihood ratio tests and link tests were done to pinpoint the structure of the empirical equation. Although farmers indicated that rice was mainly used for household consumption, the consumption of rice output was not included as this would be an endogenous variable. This means that this variable is correlated with the error term of the regression and thus would lead to inconsistent estimates.

Table 12. Results of the logit regression on the possibility of abandoning terrace rice farming in the future

Variable	Coefficient	Standard Errors	Marginal Effects	Standard Errors
Poor irrigation facilities	1.43*	0.57	0.13*	0.05
Percentage of farms planted in a season	0.59	2.56	0.05	0.22
Percentage of farms damaged	2.17	1.48	0.19	0.13
Farm size	-0.15**	0.08	-0.13*	0.01
Age of household head	1.50	1.49	0.13	0.13
Squared age of household head	-0.14	0.14	-0.01	0.01
Household size	0.05	0.13	0.00	0.01
Number of children in college	-0.13	0.22	-0.01	0.02
Constant	-6.93	4.55		
Log likelihood = -51.86				
Prob>chi2 = 0.08				

Note: \* = significant at 5%; and \*\* = significant at 10%

The model results show that only poor irrigation facilities and farm size were significant factors that affected the future decision to abandon. None of the demographic factors were found to be significant for this sample. Based on these results, households that perceived irrigation facilities to be a major problem in rice farming had higher predicted log odds of abandoning their farms in the future than households which thought otherwise. The computation of the marginal effects of this variable showed that households experiencing problems with irrigation were 12% more likely to abandon their farms in the future should this perception or experience persist. An implication of this could be that investments in the restoration of irrigation facilities could reduce the probability of future abandonment.

A square meter change in farm size, on the other hand, reduces the predicted log odds. This implies that households with large farms are less likely to abandon their farms in the future. Likewise, the marginal effects imply that a 100 square meter increase in farm holdings reduces the probability of abandonment by 1%. An implication of this result would be that the establishment of land markets or land trading could be a prudent policy. Furthermore, consolidating land holdings could also reduce abandonment. Overall, the model was found to be significant at the 5% confidence level.

## **4.2 Phase 2**

### **4.2.1 Contingent valuation survey**

#### ***(a) Characteristics of respondents***

All in all, 550 respondents were interviewed in the final survey; 300 locals and 250 foreigners. The minimum age set for respondents was 18 years, but the oldest respondent interviewed was 74 years old. The average age of the respondents was about 35 years. The proportion of male and female was almost the same, with 58% of the respondents single. In terms of educational attainment, the biggest group comprised college graduates. Unemployed respondents were a minority and most of them were students. On the other hand, about 80% of the local tourists and 76% of the foreign tourists were employed. The annual income ranged from zero (0) for students to P 4.33 million, with a mean of P 71,359 and P 459,297 per year for local and foreign tourists, respectively. However, the undergraduate students were dropped from the sample, as will be discussed in sub-section (c) below.

#### ***(b) Knowledge and perception about the terraces***

Understandably, school was where 75% of the local tourists first learned about the IRT, this being discussed in elementary school as one of the country's beautiful spots and an important part of its national heritage. In the case of foreign tourists, the major sources of information were friends, guide books and the internet. On average, 85.5% of all respondents were aware that the rice terraces had been inscribed in the UNESCO World Heritage List.

The rice terraces in Barangay Viewpoint, Banaue, were the most visited (93% local, 66% foreign) even though they were not a heritage site. This is because the best views of the terraces can be found at Viewpoint. Among the heritage sites, Batad had the highest proportion of both local and foreign tourists. It is interesting to note that Viewpoint and Batad had almost the same proportion of foreign tourists, despite the fact that going to Batad entailed a one-hour travel by jeepney or tricycle and another hour's walk to the barangay. Less than 15% of the visitors visited Bangaan, Hapao

(Hungduan), Kiangan and Mayoyao, with the last having the least proportion at 6.5% of all tourists.

These results confirmed that most tourists visited only Banaue among the four heritage municipalities, and the Batad was the most popular heritage site in it. We personally observed that tour guides were more aggressive in promoting Batad, although it is not the most accessible. Hungduan is easier to reach and does not require tourists to walk. Perhaps the trek to Batad is in itself part of its selling point. The results also show the need to promote the other heritage sites, and that Viewpoint is the most popular destination among local tourists.

Many tourists (44% local, 76% foreign) perceived the terraces to be in excellent condition, and 46% and 22%, respectively, thought that they were in fair condition. On average, only 6% thought that the condition of the terraces was poor. These findings are further reflected in their response as to whether their expectations were met, where 79% and 95% of local and foreign tourists, respectively, answered in the affirmative.

Both local and foreign tourists would like their grandchildren to see the terraces, and disagreed with the statement that they did not care if the terraces were destroyed (Table 13). Furthermore, many of them hoped that the Ifugaos would continue planting rice on the terraces, and affirmed that they took pride in them. Eighty-two percent (82%) of the local tourists strongly agreed with the latter sentiment compared to 61% of the foreign tourists. None of the respondents strongly disagreed with the first, third and fourth statements, and none strongly agreed with the second statement (Table 13).

Table 13. Tourists' perceptions of and attitudes towards the IRT

Statement	Local (n=300)		Foreign (n=250)		Total (n=550)	
	No.	%	No.	%	No.	%
<b>1. I would like my children and grandchildren to see the terraces</b>						
Strongly Agree	232	77.3	169	67.6	401	72.9
Agree	66	22.0	76	30.4	142	25.8
Disagree	1	0.3	0	0.0	1	0.2
Strongly Disagree	0	0.0	0	0.0	0	0.0
No Opinion	1	0.3	5	2.0	6	1.1
<b>2. I don't care if the terraces are destroyed</b>						
Strongly Agree	0	0.0	0	0.0	0	0.0
Agree	0	0.0	1	0.4	1	0.2
Disagree	103	34.3	70	28.0	173	31.5
Strongly Disagree	193	64.3	175	70.0	368	66.9
No Opinion	4	1.3	4	1.6	8	1.5
<b>3. I hope the Ifugaos will continue planting rice in the terraces</b>						
Strongly Agree	231	77.0	182	72.8	413	75.1
Agree	66	22.0	63	25.2	129	23.5
Disagree	2	0.7	0	0.0	2	0.4
Strongly Disagree	0	0.0	0	0.0	0	0.0
No Opinion	1	0.3	5	2.0	6	1.1
<b>4. I take pride in the existence of the terraces</b>						
Strongly Agree	245	81.7	152	60.8	397	72.2
Agree	53	17.7	81	32.4	134	24.4
Disagree	1	0.3	4	1.6	5	0.9
Strongly Disagree	0	0.0	0	0.0	0	0.0
No Opinion	1	0.3	13	5.2	14	2.5

**(c) Responses to the contingent valuation question**

The CV question that was posed to the respondents was:

*Suppose you are still in your country (province) of origin contemplating a visit to the Philippines (Cordillera Region). Would you have decided to visit the Ifugao Rice Terraces if you knew that you would be made to pay P\_\_\_\_/visit, which will go to a fund for the conservation of the terraces?*

Several observations were dropped from the original survey data. In particular, respondents that had the following characteristics were removed from the data set before analysis:

- a) Respondents who agreed to a bid that was higher than their stated income.
- b) Undergraduate students that reported allowances rather than incomes. Graduate students that were earning incomes were however retained.
- c) Respondents that had unusually high incomes (as compared to other respondents of similar age, education, location, and occupation). These were considered either as outliers and/ or erroneous data. The per capita income (PPP adjusted) in the country of origin was used as the basis in deciding to drop these observations.

These data corrections led to a final sample size of 210 foreign respondents and 241 Filipino respondents.

Likewise, the standard protest vote and certainty corrections were also made. These response corrections, however, affected only 11 observations. Respondents who signified that they were not sure about their answers or whether they were able to decide on the payment had their ‘yes’ votes converted to ‘no’ votes. The results of the various runs are shown in Tables 14 and 15.

For the final sample of 241 local tourists, 93% said “yes” to the above CV question at a bid amount of P 30/visit. As expected, the number of respondents who answered “yes” decreased as the bid amount increased, and only 23% of the respondents said they would have still come to visit the terraces even if they had to pay P 1,000 (Table 14). On the other hand, 72% of the foreign tourists answered in the affirmative at a bid amount of USD 10, and the proportion of “yes” answers decreased as the bid amount increased. At the highest bid amount of USD 200, only 10% answered “yes” (Table 15).

Table 14. Distribution of “yes” and “no” responses to the CV question (local tourists)

Bid Amount (P)	Original Sample (n=300)				Sample Without Outliers, With No Correction (n=241)				Sample Without Outliers, With Correction (n=241)			
	Yes		No		Yes		No		Yes		No	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
30	47	94	3	6	43	93	3	7	43	93	3	7
50	46	92	4	8	32	91	3	9	31	89	4	11
100	40	80	10	20	32	84	6	16	30	79	8	21
200	31	62	19	38	23	59	16	41	22	56	17	44
500	23	46	27	54	20	47	23	53	20	47	23	53
1,000	13	26	37	74	11	28	29	73	9	23	31	78
<b>Total</b>	<b>200</b>		<b>100</b>		<b>161</b>		<b>80</b>		<b>155</b>		<b>86</b>	

Table 15. Distribution of “yes” and “no” responses to the CV question (foreign tourists)

Bid Amount (USD)	Original Sample (n=250)				Sample Without Outliers, With No Correction (n=210)				Sample Without Outliers, With Correction (n=210)			
	Yes		No		Yes		No		Yes		No	
	No.		No.	%	No.	%	No.	%	No.	%	No.	%
10	37	74	13	26	28	78	8	22	26	72	10	28
20	30	60	20	40	25	57	19	43	24	55	20	45
50	23	46	27	54	20	45	24	55	19	43	25	57
100	22	44	28	56	20	43	27	57	20	43	27	57
200	7	14	43	86	5	13	34	87	4	10	35	90
<b>Total</b>	<b>119</b>		<b>131</b>		<b>98</b>		<b>112</b>		<b>93</b>		<b>117</b>	

All in all, there were 155 local and 93 foreign respondents who said “yes” to the WTP question, representing 64% and 44%, respectively. The top reason given was that they would like the terraces to be conserved. More than 50% also said that they would like to help the Ifugao farmers, they derived satisfaction knowing that they were contributing to a good cause, they would like their children and grandchildren to see the terraces, they cared a lot about the terraces, and they appreciated the efforts of the Ifugao forefathers in building the terraces.

For both local and foreign respondents who answered in the negative, the top two reasons given were that they could not afford the payment, and that it was the government’s responsibility to conserve the terraces.

We also asked the tourists whether they found the proposal to create a trust fund for the conservation of the terraces important. Almost all the local and foreign respondents said that the proposal was indeed important, with an average of 98% for all respondents. Furthermore, 87% of all respondents said that they were in a position to decide whether or not to pay the conservation fee.

**(d) Logit results**

As discussed earlier, a split sample logit was used to analyze the willingness to pay of local and foreign tourists. Two models were used: a constant marginal utility of income (CMUI) and a varying parameters (VP) model. Furthermore, the respondents’ incomes were classified into four (4) categories, as shown in Table 16.

Table 16. Income categories used in the logit regression

Income Category	Local Tourists (P/month)	Foreign Tourists (USD/month)
I	0-5,000	0-550
II	5,001-13,500	551-1,450
III	13,501-24,500	1,451-2,800
IV	24,501-300,000	2,801-8,000

For all models and for both the local and foreign tourists, the income variable was not a significant determinant of willingness to pay (Tables 17 and 18). In terms of the foreign tourists' demographic variables, age seemed to be a consistent factor in determining the probability of saying 'yes' to a particular bid level. All four models showed that for foreign tourists, the likelihood of visiting the IRT increased with the respondent's age. In contrast, age was not a determinant for local tourists. For them, the retrospective probability of visiting the IRT for a given offered bid was related to gender. Local male tourists were more likely to not change their travel plans given an offered bid than local female tourists. This result was robust across the different models except for the certainty and protest corrected CMUI model.

Knowledge variables were found to be significant determinants of the probability of agreeing to offered bid amounts. Like the demographic variables, there were differences between local and foreign tourists. For local tourists, knowing that the terraces were in poor condition reduced the probability of going to the IRT at a given bid price. This result, however, was not evident for both the uncorrected CMUI and VP models. This means that protests and uncertainty among Filipino respondents resulted in biased estimates, in particular, an upward bias. For foreign tourists, on the other hand, knowing that the terraces were UNESCO Heritage Sites increased the probability of visiting the IRT. This result was robust for all four models.

Finally, the bid levels for all four models were highly significant. The sign of this variable was also theoretically consistent. However, a Wald<sup>5</sup> test for the corrected and uncorrected VP models for the Filipino sub-sample showed that the coefficients of the interaction between bids and income categories were not significantly different from each other. This might imply that in terms of specification, the CMUI model was more appropriate for this sub-sample. A similar Wald Test for the foreign tourist sub-sample and for both the corrected and uncorrected VP models was done. The test reveals that the interaction terms for the bid and income category II and the bid and income category IV were found to be significantly different at the 5%. This means that for a given bid level, foreigners with higher incomes were less likely to visit the IRT.

The logit regression results also offer some directions for future policy. The results that different demographic and information variables determine the willingness to visit the IRT given a bid offer may help in defining ways of advertising and packaging the IRT for tourism. To attract foreign tourists, the heritage site status of the IRT should be highlighted in advertising. The IRT should be developed to become a niche destination for say, foreign retirees, offering activities other than viewing the IRT that would be of interest to the older generation.

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<sup>5</sup> The Wald Test is different from the t-test shown in Tables 17 and 18. This test looks for joint significance of variables as opposed to the t-test which assesses the significance of single variables. It is in essence, a model specification test.

Table 17. Logit results for factors affecting local tourists' WTP

Explanatory Variable	No Correction		Protest and Certainty Corrected	
	Constant Marginal Utility Model	Varying Parameters Model	Constant Marginal Utility Model	Varying Parameters Model
Bid	-0.003* (0.00)		-0.003* (0.00)	
Knowledge of UNESCO Listing	-0.008 (0.57)	-0.305 (0.58)	0.213 (0.57)	-0.098 (0.56)
Knowledge of IRT Condition <sup>a</sup>	-0.428 (0.37)	-0.470 (0.36)	-0.664*** (0.36)	-0.691*** (0.36)
Age	0.012 (0.01)	0.013 (0.01)	0.008 (0.01)	0.010 (0.01)
Education	-0.113 (0.15)	0.110 (0.33)	-0.073 (0.014)	-0.074 (0.14)
Sex	0.536*** (0.33)	0.567*** (0.33)	0.507 (0.33)	0.540*** (0.32)
Income Category I x Bid		-0.003* (0.00)		-0.003* (0.00)
Income Category II x Bid		-0.003* (0.00)		-0.004* (0.00)
Income Category III x Bid		-0.004* (0.00)		-0.003* (0.00)
Income Category IV x Bid		-0.003* (0.00)		-0.003* (0.00)
Constant	1.704** (0.87)	0.159** (0.89)	1.601*** (0.84)	1.522*** (0.85)
Sample Size	241	241	241	241
% of Correct Predictions	54	76	53	76
Likelihood Ratio	-121.93	-123.30	-124.16	-125.53

Notes: (1) 0 = None; 1= Fair; 2 = Excellent

(2) \* = significant at 1%; \*\* = significant at 5%; and \*\*\* = significant at 10%

Table 18. Logit results for factors affecting foreign tourists' WTP

Explanatory Variable	No Correction		Protest and Certainty Corrected	
	Constant Marginal Utility Model	Varying Parameters Model	Constant Marginal Utility Model	Varying Parameters Model
Bid	-0.014* (0.00)		-0.013* (0.00)	
Knowledge of UNESCO Listing	0.755** (0.38)	0.908** (0.38)	0.628*** (0.36)	0.754** (0.36)
Knowledge of IRT Condition <sup>a</sup>	0.029 (0.34)	0.007 (0.33)	-0.008 (0.34)	-0.015 (0.33)
Age	0.031** (0.01)	0.023*** (0.01)	0.031** (0.01)	0.024*** (0.01)
Education	0.133 (0.16)	0.099 (0.10)	0.024 (0.159)	-0.003 (0.16)
Sex	-0.599*** (0.31)	-0.494 (0.32)	-0.536 (0.31)	-0.474 (0.32)
Income Category I x Bid		-0.018** (0.01)		-0.0152*** (0.01)
Income Category II x Bid		-0.006* (0.00)		-0.007** (0.00)
Income Category III x Bid		-0.012* (0.00)		-0.011* (0.00)
Income Category IV x Bid		-0.017* (0.00)		-0.016* (0.00)
Constant	-0.772 (0.92)	-0.581 (0.91)	-0.400 (0.91)	-0.275 (0.90)
Sample Size	210	210	210	210
% of Correct Predictions	65	63	65	62
Likelihood Ratio	-123.04	-124.69	-123.58	-125.87

Notes: (1) 0 = None; 1 = Fair; 2 = Excellent

(2) \* = significant at 1%; \*\* = significant at 5%; and \*\*\* = significant at 10%

**(e) Estimates of the WTP of local and foreign tourists**

Both non-parametric (Turnbull) estimation and parametric estimation were used to compute the respondents' WTP. As expected, several WTP estimates were derived depending on the procedure that was used as well as on the corrections for certainty and protest votes. These estimates are shown in Tables 19 and 20.

In general, the average parametric WTPs were higher compared to the non-parametric estimates. Certainty and protest-corrected WTPs were consistently lower compared to the uncorrected estimates for the Filipino sub-sample. However, this was not true for the foreign tourist estimates. Certainty and protest-corrected parametric estimates were (oddly), in general, not lower than their uncorrected counterparts. However, the overall average WTP estimate for both the corrected CMUI and VP models (column (h) of Table 20) turned out to be lower than the uncorrected average parametric estimate.



Without the protest and certainty corrections, the CMUI estimates were on average higher than VP model estimates for local tourists. This relationship was however reversed once these corrections were made. Similar results were found for foreign tourists.

The estimated WTP of local tourists ranged from a low of P 394 to a high of P 655 per person. On average, local tourists' WTP fell between P 440 and P 506 per person. On the other hand, the WTP of foreign tourists was estimated to range from USD 41 to USD 176 per person. The average WTP of foreign tourists was between USD 71 and USD 77 per person. For both local and foreign tourists, there seemed to be a U-shaped relationship between income (categories) and estimated WTP, thus suggesting that WTP first decreases as income increases and afterwards a positive relationship becomes evident.

Considering that the respondents were already in Ifugao when they were interviewed and could have already seen the rice terraces, it is highly possible that the WTP estimates generated by the models have some bias in the upward direction. Different WTP estimates may have been arrived at had the tourists been interviewed before going to Ifugao. As such, recommendations based on these estimates should be conservative.

Table 19. Non-parametric (Turnbull) and parametric estimates of local tourists' WTP

	Local (P/person)							Average [(a)+(g)]/2 (h)
	Turnbull (a)	Parametric						
		Constant MU of Income (b)	Varying Parameters				Average Parametric (g)	
			Income Category I (c)	Income Category II (d)	Income Category III (e)	Income Category IV (f)		
No Correction	424	605	583	567	533	655	589	506
Certainty and Protest Corrected	394	435	532	453	478	532	486	440

Table 20. Non-parametric (Turnbull) and parametric estimates of foreign tourists' WTP

	Foreign (USD/person)							Average [(a)+(g)]/2 (h)
	Turnbull (a)	Parametric						
		Constant MU of Income (b)	Varying Parameters				Average Parametric (g)	
			Income Category I (c)	Income Category II (d)	Income Category III (e)	Income Category IV (f)		
No Correction	61	73	61	176	90	63	93	77
Certainty and Protest Corrected	41	119	70	153	98	67	101	71

#### 4.2.2 Extent of damage and estimated cost of repair

The extent of damage and abandonment of the rice terraces varies depending on the purpose and method of analysis used to ascertain this. According to a UNESCO mission report (UNESCO 2001), the extent of abandonment/damage of the rice terraces was quoted between 25% and 30%. However, a more recent report in 2004 by the Japan Bank for International Cooperation's (JBIC) pilot study on a rural revitalization project for the conservation of the IRT reported 5% based on two sampling points, related to the entire area. No research has been done specifically for the purpose of getting an indication of the size of the rice terraces and the amount of abandonment/damage to them.

One of the studies under this project, the results of which are discussed in a separate report, estimated that there were about 10,324 ha of rice terraces within the inscribed heritage sites (Table 21). In a mapping activity that involved stakeholders from the different heritage municipalities, about 816 damage points were identified, most of which were located in Mayoyao. Based on our observations, long spans of the Mayoyao rice terraces had been abandoned and already showed signs of forest renewal. On the other hand, Nagacadan in Kiangnan had the least damage points. On the basis of the range of damage size per damage point of 0.005 ha (min) and 0.56 ha (max), the total damaged area was placed to be between 4.1 ha (0.04%) and 457 ha (4.4%). For instance, in Hungduan, the estimated damage was 0.6 ha. This was derived by multiplying the number of occurrences (Column 2) by 0.005. Thus, for the four heritage sites, the total is 4.1 ha. The same process was followed using Column 5 to get the estimated maximum damage of 457 ha.

The total cost of repairing damaged terraces was estimated using the following assumptions: the cost of terrace repair/restoration is P 700/*maoha* or P 245.61/m<sup>2</sup> (1 *maoha* = 1.5 m x 1.9 m or 2.85 m<sup>2</sup>). Based on these, the low and high estimates of restoration costs for the four heritage municipalities were estimated to be P 5.88 million and P 658.84 million for Mayoyao; P 1.58 million and P 167.80 million for Hungduan; P 1.45 million and P 162.3 million for Batad and Bangaan in Banaue; and P 1.19 million and P 133.42 million for Nagacadan, Kiangnan. The estimated total costs of repair/restoration for all four heritage sites were P 10.021 million (low) and P 1.122 billion (high).

Table 21. Estimated area of rice terraces and damage in the heritage sites

<b>Municipality</b>	<b>Rice terraces (ha)</b>	<b>Abandoned/Damaged (occurrence)</b>	<b>Estimated Abandoned/Damaged RT (ha) (low estimate)</b>	<b>Abandoned/Damaged (%) [low range: 0.005 ha/damage pt]</b>	<b>Estimated Abandoned/Damaged RT (ha) (high estimate)</b>	<b>Abandoned/Damaged (%) [high range: 0.56 ha/ damage pt]</b>	<b>Cost estimate of repair [low, P]</b>	<b>Cost estimate of repair [high, P]</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>
Hungduan	7224.3	122.0	0.6	0.01	68.3	0.9	1,498,245.61	167,803,508.77
Kiangan	241.0	97.0	0.5	0.20	54.3	22.5	1,191,228.07	133,417,543.86
Banaue	1320.0	118.0	0.6	0.04	66.1	5.0	1,449,122.81	162,301,754.39
Mayoyao	1538.3	479.0	2.4	0.16	268.2	17.4	5,882,456.14	658,835,087.72
<b>Total</b>	<b>10323.6</b>	<b>816.0</b>	<b>4.1</b>	<b>0.04</b>	<b>457.0</b>	<b>4.4</b>	<b>10,021,052.63</b>	<b>1,122,357,894.74</b>

Notes:

(1) RT = rice terraces

(2) These were points of occurrence identified by farmers using a map during a workshop, which were then digitized to arrive at area estimates as explained in the 2<sup>nd</sup> paragraph of this section.

### 4.2.3 Potential revenues from tourism

The sample weighted expected gross revenue was also calculated for each respondent who agreed to the bid offered to him/her<sup>6</sup>. This weighted expected gross revenue was then regressed with bid and bid squared as independent variables. The results of these regressions are as follows<sup>7</sup>:

Local Tourist (corrected for certainty and protest votes, CMUI Model):

$$E[\text{expected revenue}] = 0.425 \times \text{bid} - (4 \times 10^{-4}) \times \text{bid}^2$$

Foreign Tourist (corrected for certainty and protest votes, CMUI Model):

$$E[\text{expected revenue}] = 0.273 \times \text{bid} - 0.001 \times \text{bid}^2$$

Local Tourist (corrected for certainty and protest votes, VP Model):

$$E[\text{expected revenue}] = 0.442 \times \text{bid} - (4 \times 10^{-4}) \times \text{bid}^2$$

Foreign Tourist (corrected for certainty and protest votes, VP Model):

$$E[\text{expected revenue}] = 0.267 \times \text{bid} - 0.001 \times \text{bid}^2$$

These regressions imply the following (expected) revenue-maximizing bids or price<sup>8</sup> as shown in Table 22.

Table 22. Expected revenue-maximizing bids/prices by tourist type and model

<b>Tourist Type/Model</b>	<b>Bid/Price That Maximizes Expected Revenue</b>
Local Tourist (corrected for certainty and protest votes CMUI Model)	P 535/person
Foreign Tourist (corrected for certainty and protest votes, CMUI Model)	USD 105/person
Local Tourist (corrected for certainty and protest votes, VP Model)	P 537/person
Foreign Tourist (corrected for certainty and protest votes, VP Model)	USD 112/person

<sup>6</sup> Sample Weighted Expected Gross Revenue = [(Probability of paying)\*(% of Yes Votes/Bid)\*Bid. The probability of payment was generated from the logit regressions discussed in the previous section. To interpret this, for example, about 90% of local tourists said 'yes' to a bid price of P 30. This means that 9 out of 10 local tourists could be expected to pay P 30\*(probability of paying).

<sup>7</sup> All coefficients were significant at the 1% level.

<sup>8</sup> The revenue-maximizing bid was calculated by taking the derivative of the expected revenue equation with respect to the bid and equating it to zero.

These results, along with the WTP estimates, showed that the revenue-maximizing bid was higher than what individuals were willing to pay for the IRT. Furthermore, on average, local tourists' WTP was closer to the revenue-maximizing bid than that of foreign tourists. Using the conservative estimates (i.e. the CMUI model) for the revenue-maximizing bid/price and with say, a maximum of 43,526<sup>9</sup> local tourists and 26,585 foreign tourists a year, the local government can expect at most around P 5 million and P 17 million<sup>10</sup> every year from local and foreign tourists, respectively.

Using the simulated regression results further, we came up with the following bid-revenue schedule for both local and foreign tourists (Table 23). The bid-revenue schedule shows the maximum total revenues the local government can get for a given bid or entry fee. From these tables, the status quo of charging P 10 per person (USD 0.23 per person) for both local and foreign tourists (i.e. uniform pricing) results in revenue losses simply because foreign tourists are willing to pay more on average than Filipinos. To have an idea of the magnitude of the loss, note that the most conservative discriminatory pricing (P 10 per person for local tourists; USD 10 per person for foreign tourists) would yield an annual revenue of around P 4.2 million, while a uniform pricing policy (P 10 per person) would only yield P 0.2 million (or P 200,000). Thus, the revenue losses amount to around P 4 million. Therefore, a discriminatory pricing policy could be justified on grounds of efficiency.

Table 23. Bid-revenue schedules for local and foreign tourists

Local Tourists		Foreign Tourists	
Bid/ Entry Fee (P/person)	Total Expected Gross Revenues (million P)	Bid/ Entry Fee (USD/person)	Total Expected Gross Revenues (million USD)
10	0.18	0.23	0.07
30	0.54	10	3.04
50	0.88	20	5.77
100	1.68	50	12.14
200	3.01	100	16.67
500	4.93	200	2.90
1000	1.19		

Collecting a P 50-fee per person from local tourists and USD 20 per person from foreign tourists can generate annual revenues of P 0.88 million and P 5.77 million, respectively, or a total of P 6.65 million per year. The low cost estimate of restoring the terraces is P 10.021 million, while the high cost estimate is P 1.122 billion. Annualizing these amounts over a ten-year period (corresponding to a ten-year implementation of a master plan) at an interest rate of 10% will result in annual costs of about P 1.600 million to P 184.243 million a year. Thus, revenues from tourists have the potential to significantly finance the restoration of the terraces.

<sup>9</sup> Based on 2004 tourist arrivals in Banaue.

<sup>10</sup> Assuming USD 1= P 44

#### **4.2.4 Municipalities' efforts to finance conservation**

The original intention of this study was to institutionalize the conservation financing mechanism at the provincial level, but this changed after our meeting with Governor Baguilat. This led the team to go back to each of the heritage municipalities for consultation-workshops. When the project began, it was reported that only the municipality of Hungduan was collecting environmental fees from visitors. The municipality of Banaue passed an ordinance for the collection of a fee from visitors in January 2008. During the workshop in Kiangan, we learned that it also had a similar ordinance, although it appeared that it was not well-circulated because some local government officials were not aware of the ordinance.

The results of the consultation-workshops confirmed the wisdom of the governor's suggestion. We found that each of the heritage municipalities had its own peculiarities, and proposing generic recommendations for all of them would not address their specific needs. In this section, we describe the significant findings and issues discussed during the consultation workshops for each municipality.

##### ***(a) Hungduan***

The Sangguniang Bayan (SB) of Hungduan approved the passage of Municipal Ordinance No. 2, Series of 2004, on February 10, 2004. Otherwise known as the Hungduan Tourism Code, it is "an ordinance formulating and establishing the Hungduan Tourism Code which provides the rules and regulations governing the tourism industry in the municipality of Hungduan, its promotion, development and administration, and prescribing penalties for violations thereof".

The ordinance invokes the Republic Act 7160, also known as the Local Government Code of 1991, which provides, among other things, that the municipal government shall administer all tourism concerns and tourist attractions, regulate and supervise tourism-related business, and be responsible for tourism development.

The ordinance also created the Municipal Tourism Council of Hungduan, which is independent from the municipal government in its management, but is supervised and subsidized by the municipal government in its funding and technical requirements. The Council is composed of 24 members representing the government sector (Principal of Hungduan National High School, District Supervisor, Municipal Engineer, Municipal Health Officer, Municipal Planning and Development Coordinator, Philippine National Police Chief, SB Member—Tourism Committee Chairman, Sangguniang Kabataan Federation Chairman, Association of Barangay Captains President, and Tourism Operations Officer), youth sector, women's sector, farmers' sector, businessmen/entrepreneurs, tour guides, tour operators and drivers' associations, senior citizens, the religious sector, and elders or *mumbaki*. The Code enables the Council to engage in fund-raising or income-generating activities.

Article VI of the Code provides for the collection of an environmental fee in the amount of P10 per tourist, which will be used to restore and maintain tourist spots, and a picture or video recording fee of P 100 per tourist. According to the local government officials, an environmental fee of P 50 per tourist was first proposed, but the SB was afraid that such a fee, which it perceived to be high, would drive tourists away. At that time, only a few tourists visited Hungduan. The SB did not undertake a tourist survey to determine how much the environmental fee should be.

### ***Collection and administration of the environmental fee***

Tourists are given official receipts upon payment of the environmental fee. The local officials revealed that the cost of collecting the fee exceeded the revenues generated. The Code does not mention where the fees collected will go, and the specific activities that they will support. At present, the fees go to Hungduan's General Fund. The amount collected is deemed too little and certainly not enough to maintain tourist spots. As such, the local government provides additional support for this purpose from the 20% of the Internal Revenue Allocation (IRA) that goes to the economic sector. The share of the tourism sector is about P 300,000, which is used mostly for Hungduan's festivals.

### ***Steps Forward***

A workshop participant proposed for the LGU to pilot-test the collection of higher fees in Hungduan, using the results of the team's tourist survey. The LGU representatives committed to review the Hungduan Tourism Code, especially the provisions on the amount of fee to be collected, and the collection of different fees for local and foreign tourists. For our part, we would give the LGU heritage municipalities a copy of the results of the tourist survey and a summary of the matters discussed during the workshop.

The local government also expressed its need for assistance, particularly in pilot-testing the new rates, and in promoting Hungduan's tourist attractions (i.e. through the development of their website as well as information, education and communication (IEC) materials).

### ***(b) Kiangán***

The Sangguniang Bayan of Kiangán passed Municipal Ordinance No. 01, Series of 2006, which is otherwise known as the "Beauty Tourist Spots Ordinance of Kiangán, Ifugao." Section VI of the Ordinance prescribes the fees and charges to be collected from local and foreign tourists by the barangay treasurer. These include:

- An entrance fee of P 20/head, which will go to the barangay where the tourist spot is located.
- An environmental fee of P 10/head, which will go to the municipal government.
- A camping fee of P 10/head, which will go to the municipal government.
- A cave exploration fee of P 100/head, to be shared 50-50 between the tourist guide and the municipal government.

The ordinance does not mention how the fees collected will be used. At present, the fees go to the General Fund for the LGU's use. It was noted that the funds raised were not substantial, and the LGU had to subsidize the cost of tourist-related activities.

Kiangán also houses the Philippine War Memorial Shrine<sup>11</sup>, which is being managed by the Philippine Veterans Affairs Office (PVAO). An entrance fee of P 20

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<sup>11</sup> The shrine was built to commemorate the end of World War II (UNESCO 2008).



per visitor is collected at the shrine. The local government plans to request the PVAO to transfer jurisdiction over the shrine to the LGU.

### ***Steps Forward***

The local government officials who attended the workshop agreed to revise the fees they were charging tourists as well as the use of the funds. Vice-Mayor, Lito Dulinayan, who also headed the legislative branch of the LGU, said that the research team “lit up a sleeping issue”, and that the municipal government would schedule consultations with the stakeholders to have a Municipal Tourism Council that would be devoid of politics. He also expressed the need for the development and adoption of a Comprehensive Tourism Plan for Kiangan.

### ***(c) Banaue***

The Mayor of Banaue issued Executive Order No. 17 S-2008 to implement the Tourism Ordinance of Banaue. Among other provisions, the ordinance requires all local and foreign tourists entering the municipality of Banaue to register at the Tourist Information Center or through accredited hotels, inns, and lodging houses. As an added provision, jeepney and tricycle drivers are required to instruct their tourist-passengers to register. A registration and environmental fee of P 20 is to be collected per local or foreign tourist. The fees collected are to go to the municipal government, which is to use them for ecotourism-related projects, particularly the preservation of the rice terraces.

The collection of the environmental fee is being handled by the Banaue Tourism Council (BTC). However, there is no report about the collections as the ordinance was implemented only in January 2008. The BTC decided to collect the fees through the hotels and lodging houses. However, some establishments did not cooperate, saying that the collection of the fees was an additional task for them. The BTC also shared that some tourists were not willing to pay the fee.

The ordinance provides that the fees collected will be shared by the LGU (40%), BTC (40%), and Philippine National Police (PNP, 20%), and will be used for tourism-related purposes. The specific activities that will be supported by the fund have not yet been identified. At present, the LGU’s share goes to the General Fund. On the other hand, the BTC has to submit a proposal to the LGU for its approval before it can use its share. The PNP has a share because it assists local and foreign tourists. During a workshop, the Municipal Agriculturist pointed out that the present sharing scheme did not include the farmers (Jimmy Cabigat, personal communication, August 21, 2008).

Of the two heritage barangays in the province, only Batad is collecting donations, while Bangaan does not collect anything from tourists. One peculiarity of Banaue is that the barangays that are most accessible to tourists, namely Viewpoint and Bocos, are not heritage barangays. The terraces in these barangays are easily visible from the national highway for all to see. Their non-inclusion in the heritage list has resulted in the further deterioration of many terraces in these barangays due to lack of financial support. It cannot be denied, however, that tourists derive significant aesthetic benefits from the terraces of these barangays.

### ***Conflict in Batad***

It was discovered during the workshop, that the Batad Environmental Tour Guides Association (BETGA) and a farmers' group were in conflict over the collection of donations from tourist-related activities despite the fact that neither of them had a legal mandate (i.e. through an ordinance) to make such collections.

For several years now, BETGA has been soliciting donations from tourists based on a permit given by a barangay official. However, there are allegations that the amounts spent for projects are less than the total amount collected, and that there is a lack of transparency and accountability. The validity of BETGA itself is being questioned because apparently it is not a legal entity.

The farmers of Batad complain that they do not get any support out of the funds generated from donations, even though they are the ones who maintain the terraces. As a result, they have formed a group called the Batad Farmers Organization, and have requested the barangay to recognize them and permit them to take charge of collecting donations. To date, they have not obtained the support of barangay officials.

The farmers' organization suggested in the workshop that the tourists should be the ones to choose whom they would like to give donations to. However, this suggestion was not well received as it made it appear that the two organizations were quarreling over money. It also implied the lack of a systematic collection system which may deter tourists from paying the proposed environmental fee for the terraces.

Hence, the research team suggested that a municipal ordinance be drafted by the Banaue Tourism Council which will then authorize an organization to collect the donations. This will form the basis for the LGUs in Batad and Bangaan to formulate their own barangay ordinances. This recommendation was based on the provision of Section 32 of the Local Government Code, which provides that the municipality, through the municipal mayor concerned, shall exercise general supervision over component barangays to ensure that said barangays act within the scope of their prescribed powers and functions. The municipal LGU therefore has the power to act over the issues raised in Batad.

### ***Steps Forward***

The LGU officials who attended the workshop were receptive to the possibility of reviewing the environmental fees collected from tourists and the heightened involvement of farmer representatives in the BTC. As an initial step, the SB's tourism committee will meet the BTC to review and possibly amend the ordinance. Mr. Ferdie Daguio, personal secretary to the Mayor, lauded the research team for conducting a study that they needed. He admitted that while they had recognized the need to give incentives to farmers, they had not been sure how to do it.

### ***(d) Mayoyao***

The municipality of Mayoyao is the most inaccessible among the four heritage sites, being 48 km from Banaue and requiring 2.5–4 hours of travel on narrow roads. The terraces in Mayoyao are considered to be the most extensive, and the residents take pride in their reputation of being the best "stonewallers" in Ifugao.

Mayoyao has not yet passed an ordinance to regulate tourism in the area, but it already has a draft ordinance for this purpose, which is expected to be passed this year. The SB members who attended the workshop, particularly the Chair and Members of the Tourism Committee, said that the workshop could not have come at a better time. They said that they would consider the research team's presentation in revising their draft ordinance, particularly the rates to be collected and how the funds would be used.

As per the draft, the ordinance will be known as the Tourism Ordinance of the Municipality of Mayoyao. Among other things, it will create the Municipal Tourism Board consisting of representatives from different sectors and provide for tourism registration, charges and fees. The proposed tourist registration fee, to be called an environmental registration fee, will be P 25 per tourist regardless of whether local or foreign. This will go to a trust fund of the municipal government and be used for tourism-related projects, especially for the preservation of the rice terraces and scenic spots.

The participants noted that Mayoyao was usually not a priority destination of tourists because of its location. It was also common for tour guides from Banaue to also act as tour guides in Mayoyao when they brought tourists to the area. To address these problems, the Tourism Officer had linked up with the tour guides association in Banaue to also promote Mayoyao among tourists. Our experience in conducting the tourist survey was that many tourists found the picture of Mayoyao beautiful, but said that they were not aware of the place.

The workshop participants saw the need to promote Mayoyao more aggressively and also to improve tourist facilities, particularly lodging facilities. They also planned to nominate other barangays to be included in the heritage list.

### ***Steps Forward***

The SB committed to further review the proposed ordinance, specifically the rates for local and foreign tourists, how fees will be collected, and the activities to be supported.

#### **4.2.5 Building on the conservation financing mechanism cornerstone**

The concern over the maintenance of the Ifugao Rice Terraces is explicitly covered in Section 16 of the Local Government Code of 1991, which reads: "...Within their respective territorial jurisdictions, local government units shall ensure and support, among other things, the preservation and enrichment of culture..."

Since the IRT embody the Ifugao culture, the provincial, municipal, and barangay LGUs are bound to support initiatives to develop a sustainable financing mechanism for the conservation of the rice terraces.

During the workshop with major stakeholders from the four heritage municipalities on March 14, 2008, the values of the rice terraces, their beneficiaries, and the possibility of collecting fees by the latter were identified. These are given in Table 24.

Table 24. Beneficiaries of the different values of the IRT and the possibility of collecting fees for them

<b>Value</b>	<b>Beneficiaries</b>	<b>Possibility of Collecting Fees</b>
Aesthetic value (tourism)	*Tourists	Yes
Environmental value (watershed protection, water supply)	*Local people	Yes
	*Resource users	Yes
	*Farmers	No
	*Tourists	Yes
Technical value (engineering methods, agricultural designs, indigenous knowledge)	*Student visitors	Yes
	*Researchers	Yes
	*Local people	No
	*Tourists	Yes
Cultural/anthropological value (rituals and ceremonies)	*Tourists	Yes
	*Local students	No
	*Student visitors	Yes
	*Researchers	Yes
	*Local people	No
Scientific value (ethno-botanical value or the value of the relationship between people and plants)	*Students	Yes
	*Researchers	Yes
Economic value (livelihood, food, other products)	*Business sector	Yes
	*Tourists	Yes
	*Local people	No
	*Consumers of products	Yes

The representative of the Save the Ifugao Terraces Movement (SITMO) pointed out that the local people should not be deprived of the opportunity to give their share, no matter how little, to help conserve the terraces. Contributions to the fund can either be systematic (e.g. fees and charges or taxes) or voluntary (donations). The participants recognized that it would be easy to collect fees from tourists in sites with one or two entry points, such as Kiangan, Mayoyao, Hungduan and even Batad. However, Banaue could be a challenge because the terraces could be viewed from the highway.

For the business sector and researchers, it is possible for the payments to be incorporated in the computation of fees for business or research permits, and local taxes. A percentage of the business firm's income could also be collected and added to the funds for IRT conservation. For tourists, student visitors, and walk-in guests, the collection of an environmental/consumer fee may be exacted by the tourism office through a deputized staff from the municipal Treasurer's office.

Funds may also be raised through donations. For example, private companies and individuals may be encouraged to adopt the rice terraces, the size of which will depend on the amount of donation and the required cost of support. This scheme is being done with considerable success in the La Mesa Watershed in Metro Manila, where donors can help finance reforestation by giving amounts good for several trees or

hectares of land. The business sector's corporate social responsibility (CSR) may be tapped for this.

Admittedly, the project was overtaken by events in three municipalities, in that they issued ordinances on the collection of fees from tourists during the project implementation period. However, we do not consider these developments to be setbacks. On the contrary, they represent the removal of one major challenge in that we no longer had to convince the policy-makers and local executives to institutionalize a conservation financing mechanism. What we would instead do would be to help improve the current/draft ordinances and facilitate their implementation. The LGUs and tourism councils themselves recognized the need to strengthen the financing mechanisms that they had put in place to conserve the rice terraces. It is in this context that the following recommendations were developed:

*(a) At the Ifugao provincial level*

The heritage municipalities should develop their comprehensive tourism plans, with guidance and assistance from the province's Ifugao Cultural Heritage Office (ICHO), the Department of Tourism, and other organizations that could help improve the capacity of the municipalities. It will be an advantage if the initiative to develop the respective plans emanates from the level of the heritage municipality or even barangay to ensure that the unique characteristics of each site, whether with respect to the terraces, tourist attractions, or culture of the people, are considered. On several occasions, workshop participants lamented that the Master Plan for the Ifugao Rice Terraces was developed using a top-down approach instead of a bottom-up approach. As a result, generic recommendations which failed to consider the peculiarities of each municipality, were given for all heritage municipalities. Furthermore, no one knows the heritage sites better than the people who come from and live in them.

In developing each municipality's tourism plan, the following aspects should be considered:

1. **ICHO should spearhead the harmonization of the tourism plans of the heritage municipalities with one another**, whether these already exist or are about to be formulated, as well as the ordinances issued to effect the implementation of the plans. The municipalities' plans should also be consistent with the tourism plan of the province.
2. **Ecotourism in the heritage municipalities should be marketed as a package of different cultural and environmental experiences.** Some tourists perceive that the only thing to do in Ifugao is to view the terraces. Sagada, in Mountain Province, for instance, offers cave exploration (spelunking), "hanging coffins", and burial caves. The research team noted that even in Banaue, Sagada is being promoted, as evidenced by tour guides shouting "Sagada! Sagada!" to newly-arrived tourists at bus terminals. If these tour guides are from Banaue themselves, it is unfortunate that they find it more lucrative to promote the tourist spots in Sagada than those in Ifugao. The ordinances issued by the municipalities have already identified numerous tourist spots, such as mountains, waterfalls, natural pools, hot springs, historical landmarks, and caves, in addition to the rice terraces. These should be developed as ecotourism sites with interesting activities for tourists.

3. **The fees that should be collected from tourists should be the same across heritage municipalities.** It is recommended that the amount of the fees should be revised to better capture the tourists' WTP, as revealed by the results of this study. Furthermore, different rates should be charged for local and foreign tourists. The results of this study show that local and foreign tourists have different average WTPs, i.e. P 440 per person and USD 71 per person for local and foreign tourists, respectively. We are not recommending a drastic increase in the rates, for example from P10 to P 440 or USD 71 per person. However, the present rates, ranging from P 10–30 per person, are way too low, missing a great opportunity to capture a higher proportion of the tourists' WTP.
4. **Revenues generated from cultural and environmental fees should be retained where the fees are collected (i.e. barangay or municipality) and placed in a trust fund.** The Local Government Code (LGC) provides under Section 18 that the LGUs “shall have the power and authority to create their own sources of revenue and to levy taxes, fees, and charges which shall accrue exclusively for their use and disposition and which shall be retained by them” (*underscoring added by authors*). With regard to the current practice of the LGUs to collect environmental fees and include it in the General Fund, the research team believes that it would be advisable to create a trust fund in the local treasury to ensure that the fees are used for the restoration of the terraces. According to the LGC, “Trust funds in the local treasury shall not be paid out except in fulfilment of the purpose for which the trust was created or the funds received”.
5. **The municipal tourism council should be strengthened, especially in terms of the participation of the various stakeholders and autonomy.** The collection of the fees in Hungduan, Kiangan and Banaue is being undertaken either by the LGU or the tourism council of each municipality. Our results show that many tourists do not favour the collection and utilization of fees being managed by an office attached to the government and under the influence of politicians. While different stakeholders are represented in the municipal tourism councils, these bodies have been created by the LGU. While we are not recommending that new bodies be created, it would be good if the existing tourism councils could become independent of LGU officials in their functions (e.g. policy-making, and collecting and utilizing funds).
6. **An information, education and communication (IEC) program should be developed both at the provincial and municipal levels.** This is important in informing all stakeholders about their roles in implementing a comprehensive tourism development plan. For example, it will be difficult for the LGU or local tourism council to collect fees from tourists unless operators of lodging houses and hotels, tour guides, and the business sector help in ensuring that all tourists are registered. It is also important to promote the heritage municipalities equally. At present, the most well-known of the heritage municipalities is Banaue. During our interviews, some tourists said they did not know about the other heritage municipalities, such as Mayoyao, and were pleasantly surprised to learn that equally beautiful terraces could be found in other areas. Also, there is a need to improve the information materials and explanations by the tourist guides regarding the tourist sites. Some foreign tourists said that the history and details of the places they visited were not fully explained to them.

7. **Homestay programs should be developed/enhanced, not only to provide lodging facilities to tourists but also to allow them to better appreciate the culture of the Ifugaos.** Homestay programs are already available in some municipalities. However, there is a need to develop standards as to the rates that should be charged, the amenities that should be offered, and other services offered. It would also be good to accredit families offering homestay services to ensure the security of tourists and the services offered.
8. **The possibility of collecting the cultural and environmental fee only once for access to all the rice terraces in the heritage municipalities and, eventually the whole province of Ifugao, should be studied.** This may promote visits to non-heritage areas and enable the communities in such municipalities to benefit from tourism as well. This will also be easier to administer, monitor and control; as well as lower transaction costs and reduce the inconvenience to tourists of having to pay each time they go to a site. However, adopting this recommendation will require issues of revenue-sharing and prioritization of conservation and development activities to be carefully studied.

*(b) At the heritage municipality level*

It is indeed a positive development that the heritage municipalities have already issued ordinances to regulate the tourism industry in their areas and undertake activities to conserve the Ifugao culture, including the rice terraces. Should the municipalities of Kiangnan, Banaue and Hungduan consider amending their ordinances, and that of Mayoyao considers revising its draft ordinance, it is recommended that they take the following factors into account, based on the findings and results of this study.

1. **Revise the fees charged for local and foreign tourists.** While the LGUs' fear that charging higher fees may drive tourists away is understandable, it should be pointed out that such a fee will only be a small amount compared to the total travel costs tourists incur to reach Ifugao. Our results show that for as long as tourists are informed about the condition and problems of the rice terraces, most of them are willing to support their conservation.
2. **Use the funds to support farmers, particularly to maintain the terrace walls and repair the irrigation system.** The ordinances are not clear as to how the fees collected from tourists will be used, only that they will be used for tourism-related activities. Initially, the fees collected may not raise substantial funds to support the farmers' activities, and they will still require subsidies as well as financial and technical assistance from the LGUs, national government especially the Department of Agriculture, National Irrigation Administration and the Department of Tourism, the academe, and other cause-oriented groups. Funding for activities like infrastructure development (e.g. improvement of pathways for tourists, putting up of signage, improving roads, etc.), maintaining peace and order and other activities supportive of the tourism industry but which do not directly benefit farmers should come from the budget of the LGU or even the national government. Under Section 17 of the LGC (Basic Services and Facilities), the municipal LGU is mandated to provide basic services and facilities, which include among others, the following:

- Extension and on-site research services and facilities related to agriculture and fishery activities which include .... inter-barangay irrigation systems, water and soil resource utilization and conservation projects.
- Tourism facilities and other tourist attractions, including the acquisition of equipment, regulation and supervision of business concessions, and security services for such facilities.

Furthermore, the provincial LGU is also mandated to undertake tourism development and promotion programs.

3. **Proper Memorandums of Agreement should be signed with recognized and functioning farmers' organizations.** Dealing with farmers' organizations instead of individual farmers will not only facilitate the distribution of funds, but also ensure proper fund utilization. This may require a Memorandum of Agreement (MOA) to be signed between the fund manager (the independent multi-sectoral council that will manage the funds) and the farmers' organization. It should be clear to the farmer-beneficiaries that the service that they are expected to deliver in return for payments is the conservation of the rice terraces. This will require close monitoring to ensure that the beneficiaries keep their end of the payment scheme.

The appropriate arrangements between the respective fund managers and the farmers' organizations should consider, among other things, the amount of payment, duration of the agreement, land use practices that will enhance the conservation of the terraces, enforcement, sanctions for non-compliance, and recognition for good performance. The criteria to consider in determining the degree of support to be given to farmers include the extent of damage and whether the farmers perform cultural practices.

There is also a need to develop work and cost standards. The indigenous way of measuring the rice terraces, which is known as the *maoha*, depends on the height and arm length of the person taking the measurements and is area-based. The terraces, however, should be measured in terms of volume (length, breadth and height) of the terraces. This can be a source of conflict because two farmers may be given the same amount of support based on the *maoha*, even if one farmer did more work because his volume of damaged terraces was bigger.

During the March 14, 2008-workshop, the stakeholders identified some of the responsibilities of farmers and cluster organizations that should be specified in the MOA, such as:

*Responsibilities of farmers*

- Terraces should not be abandoned.
- Minimize the building of houses within the terraces; if houses are built, they should have native design or complement the landscape.
- Plant only rice in the terraces during the rice cycle; vegetables can be planted during the fallow period.
- Abandoned terraces should be restored.
- Fruit trees should be planted in woodlots and watershed areas.



- Beneficiaries should provide their share of the labor required to maintain the terraces.
- Individual owners of the terrace should till their own lots.

Responsibilities of farmers' organizations or clusters

- Ensure continuous farming of the terraces.
- Allow abandoned terraces to be tilled by others under a sharing agreement, which is locally known as *liyak*.

The possible sanctions for non-compliance were also identified during the March 2008 workshop. There are already existing penalties for late sowing of seeds, e.g. if the *Tomonah* (the agricultural leader) has started to plant and other farmers do not follow. The penalty can be in cash depending on the agreed amount or by bundles of rice. It was suggested that the MOA should stipulate that a sanctioned member should comply with cluster planting requirements before he can be in good standing again, and should not be able to avail of the project benefits (e.g. labor support, and fertilizers) until such time.

The group pointed out that the MOA should also have a provision to recognize good performance. Incentives for good performance may include cash and/or materials (e.g. sacks of rice), and labor support for top performers. These can result in the better participation of family members in their desire to perform well and can even rekindle their interest in farming.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

The following conclusions have been drawn from the results of this study:

1. The Ifugaos' water supply problems would be reduced considerably if the irrigation system and damaged terrace walls were to be repaired.
2. Improving the irrigation system will enhance water availability during the summer months. Traditionally, the Ifugaos have been planting *tinawon* (a traditional rice variety) once a year, mainly because it takes at least six months before it can be harvested. However, it has been shown that rice farming in the terraces is in many cases no longer profitable and cannot even provide the rice needs of the farmers and their families. Making water available during the fallow period (which coincides with the dry season) can allow the Ifugaos to plant other crops to augment their income from rice farming.
3. Most of the respondents do not plan to abandon rice terrace farming, mainly because they consider the terraces to be their heritage and the embodiment of their culture. They maintain that it should only be the Ifugaos who are involved in rice terrace farming, and that labor supply is not a problem. However, the majority indicated a need for a labor subsidy for terrace repair and maintenance because this was the costliest among the different terrace farming activities.
4. The significant factors affecting the farmers' decision to abandon terrace farming in the future are poor irrigation facilities and farm size. This implies that an

investment in the repair/restoration of the irrigation system can greatly reduce the possibility of more farmers abandoning the terraces.

5. The survey of high school students from the four study municipalities revealed that only about one-fourth of them were likely to be involved in agriculture in the future, and the majority would engage in non-agriculture occupations. Three categorical variables which were significantly associated with choice of future occupation were sex, ethnic group, and school. Income and academic standing had a negative correlation which means that students from high income families and the relatively brighter ones will not choose agriculture as a future occupation. Age was directly correlated with desired occupation in the future; the relatively older students, probably from low income families, were also most likely to be the ones to engage in agriculture. On average, the students had a favorable perception of and attitude towards the rice terraces.
6. Aside from environmental fees from tourists, the other possible sources of funds to finance the conservation of the terraces include taxes and business permits for the business sector, permit fees for students and researchers and donations from private corporations and individuals.
7. The average WTP for local and foreign tourists are P 440 per person and USD 71 per person, respectively. For local tourists, the significant factors affecting WTP are gender (male; positive), knowledge about the present condition of the terraces (negative), and bid amount (negative). For foreign tourists, the significant factors affecting WTP are age, knowledge as UNESCO World Heritage Site, and bid amount.
8. The total area of the rice terraces in the heritage sites is estimated to be 10,324 while the estimated area of damaged terraces is 4.1 ha (low estimate) to 457 ha (high estimate), or 0.04% to 4.4% of the total area. These translate to total repair/restoration costs of P 10.021 million to P1.122 billion, respectively.
9. Collecting P 50 per local tourist and USD 20 per foreign tourist has the potential of generating as much as P 6.65 million per year. These fees are significantly higher than the fees that are currently being collected, which range from P10 to P30 per visitor.
10. Three of the heritage municipalities already have ordinances allowing the collection of fees from tourists, while one has a draft ordinance. The LGUs of Hungduan, Banaue and Kiangan are willing to amend their ordinances and the LGU of Mayoyao is open to revising its draft ordinance to take into consideration the findings of this study. Specifically, these are in the aspects of the amounts of the fees, setting different fees for local and foreign tourists, and the utilization of funds.

## **5.2 Recommendations**

In addition to the specific recommendations in Section 4.2.5 for the development of a sustainable financing mechanism for the heritage sites, we also recommend the following:

1. The irrigation systems in the Ifugao Rice Terraces should be repaired and maintained to reduce the possibility of farmers abandoning their terraces. Furthermore, the agglomeration of rice terraces owned by individuals and clans should be pursued. The results of the farmer survey show that poor irrigation facilities and small farm size are significant factors that can increase the chances of abandonment. Repairing the irrigation systems is very costly and will require funding support not only from the local and national governments, but also other sources as well.
2. Farmers should be given support for the repair and maintenance of terrace walls, which is the most expensive and difficult of all terrace farming activities. Furthermore, the farmers will benefit if they will have other livelihood activities to supplement their incomes from farming.
3. The LGUs should endeavour to develop tree plantations for the wood carving industry. This will ease the pressure on the woodlots supporting the watersheds of Ifugao, and ensure sustainable wood sources for wood carvers.
4. The value and importance of the terraces should be integrated into the elementary and high school curricula in Ifugao. Aside from discussing the importance of the terraces in class, the students may appreciate the terraces and terrace farming more if they were involved in various terrace farming activities (planting, harvesting, and stone walling) as part of their practical arts or agriculture subjects. Furthermore, providing students with incentives such as scholarships and jobs may rekindle their interest in agriculture and forestry-related courses.
5. The LGUs should review the fees they are collecting from tourists, and consider the possibility of increasing these and collecting different fees from local and foreign tourists. The revenues generated from tourists should be placed in a trust fund to be managed by a council that is not controlled by the government/politicians to ensure continuity. At present, the LGUs undertake the collection of fees because the collection mechanism is still in its infancy stage. Through time, however, the tourism councils (or other multi-sectoral councils) should be strengthened, become independent of the LGUs, and enabled to take charge not only of collecting fees but also of prioritizing activities that will be supported by the trust fund.
6. Support to farmers should be formalized through a Memorandum of Agreement (MOA) between an organized and functional farmers' organization and the multi-sectoral council in the respective municipalities. The MOA should clearly specify the farmers' benefits, responsibilities of parties concerned, sanctions for non-compliance, and incentives for good performance. It should also consider the culture and practices of the Ifugaos in farming the terraces (system, payment schemes, labor equity, etc.).

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Appendix 1. The Ifugao Rice Terraces ten-year master plan investment program (in million pesos)

<b>Component/Program</b>	<b>Yr. 1</b>	<b>Yr. 2</b>	<b>Yr. 3</b>	<b>Yr. 4</b>	<b>Yr. 5</b>	<b>Yrs. 6-10</b>	<b>TOTAL</b>
<b>I. Bio-physical component</b>							
A. Community-based land use, physical planning and zoning	0.726	0.726	0.409				1.861
B. Biodiversity restoration and conservation			6.000	6.500	5.500	21.250	39.250
C. Community-based forest management	2.663	3.083	11.012	15.763	15.791	52.690	101.000
D. Hazards management	1.000	7.200	4.200	4.200	4.200	21000	41.800
<b>Subtotal</b>	4.389	11.009	21.621	26.463	25.491	94.940	183.911
<b>II. Socio-cultural component</b>							
A. Indigenous knowledge systems and cultural development	11.716	12.585	10.649	14.445	10.122	62.118	121.635
B. Institutional development	1.570	7.770	6.470	1.720	0.720	3.600	21.850
<b>Subtotal</b>	13.286	20.355	17.119	16.165	10.842	65.718	143.485
<b>III. Support systems component</b>							
A. Community-based agri-industry	5.000	10.000	7.000	7.000	7.000	30.000	66.000
B. Sustainable tourism development	2.675	2.605	3.975	2.305	3.475	10.265	25.300
C. Social services enhancement	2.150	4.2	15.850	13.400	13.250	33.850	78.300
D. Resource mobilization and institutionalization	0.100	.900	2.800	2.860	2.900	4.400	13.960
E. Infrastructure support	20.000	50.500	82.500	87.500	86.500	185.000	512.000
F. Buffer zone development		0.450	2.950	5.250	2.650		11.300
<b>Subtotal</b>	29.925	68.655	115.075	118.315	115.775	259.115	706.860
<b>Grand Total</b>	47.600	100.019	153.812	160.943	152.108	419.773	1,034.256

Source: Ifugao Rice Terraces Master Plan 2002