

Format for Proposals of Candidate Systems

for the

Globally Important Agricultural Heritage Systems (GIAHS) Programme

SUMMARY INFORMATION

a.	Country and location : Yuanyang County, Honghe County, Lvchun County and Jinping County in Yunnan Province, P. R. China
b.	Name of the system : Hani Rice Terraces System
c.	Surface Area : 13011.57 ha
d.	Minority Group : Hani and Yi
e.	Proponent/Requesting organization : People's Government of Honghe Prefecture, Yunnan Province, P. R. China
f.	Through NFPI : Center for Natural and Cultural Heritage (CNACH), Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences (CAS)
g.	Governmental counterparts and other partners : <ul style="list-style-type: none">● Ministry of Agriculture, P. R. China;● Agricultural Department of Yunnan Province, P. R. China;● Honghe Hani Terrace Administration, Yunnan Province, P. R. China;● Culture Research Center, Chinese Academy of Social Sciences;● Federation of Social Sciences, Yunnan Province.

h. Summary (max. 200 words):

Hani Rice Terraces are located in the Honghe Hani and Yi Autonomous Prefecture, which is in the southeast part of Yunnan Province. People of various races, with Hani being the main minority group, has built this spectacular agriculture and nature wonders. The magnificent Hani Terrace System is a masterpiece of the brilliant Hani minorities, who has lived in this remarkable landscape for over 1300 years. The terraces are mainly distributed along the south part of the Honghe Ailao Mountain and spread in four counties: Honghe, Yuanyang, Lvchun, and Jinping, covering an area of about 70,000 ha. Hani Rice Terraces are one of best examples to show farmers' wisdom in China. The Hani villages are built on the mountainsides, above the village are the flourishing forests and the terraces are just below the villages. It is amazing that in the Hani Rice Terraces there are no reservoirs but water supply is abundant. The forest, village, terrace and river compose the typical ecological landscape of the Hani Rice Terraces. The Hani People, their indigenous agricultural technologies, their selection of the settlement site and their traditional customs for environment protection and conservation all show a harmonious relationship between human and nature, and their relationship in the human society as well.

DESCRIPTION OF THE SYSTEM

1. Characteristics of the proposed GIAHS

Hani Rice Terraces are located in the Honghe Hani and Yi Autonomous Prefecture, which is in the southeast part of Yunnan Province. People of various races, with Hani being the main minority group, has built this spectacular agriculture and nature wonders.

The magnificent Hani Terrace System is a masterpiece of the brilliant Hani minorities, who has lived in this remarkable landscape for over 1300 years. Since the Tang Dynasty, the Hani people have been recognised for their skills in developing terraces. The terrace was listed as one of the Seven Farming Systems by Xu Guangqi in his book “Nongzheng Quanshu (Complete Treatise on Agriculture)” during the Ming Dynasty. The terraces are mainly distributed along the south part of the Honghe Ailao Mountain and spread in four counties: Honghe, Yuanyang, Lvchun, and Jinping, covering an area of about 70,000 ha.

Hani Rice Terraces are one of best examples to show farmers’ wisdom in China. The Hani villages are built on the mountainsides, above the villages are the flourishing forests and the terraces are just below the village. The water from the forests runs through an irrigation network to the villages and then to the terraces, and then goes into the river valley. The water in the terrace and valley could evaporate and form into clouds at the hilltops because of the monsoon and the topographic condition. The forests at the hilltops can facilitate the rising vapour to form dews and accumulate water, and finally forms swags and creeks in the forests. Hani people try their best to direct all the creeks into their irrigation network, and use Muke or Shike (water allocation tools) to distribute water into a network of irrigation channels and ditches.

It is amazing that in Hani Rice Terraces there are no reservoir but water supply is abundant. The forest, village, terrace and river compose the typical ecological landscape of the Hani Rice Terraces. The Hani People, their indigenous agricultural technologies, their selection of settlement sites and their



traditional customs for environment protection and conservation all show a harmonious relationship between human and nature, and their relationship in the human society as well.

The Hani Rice Terraces are rich in agricultural biodiversity and associated biodiversity. Rice planted in Hani terraced fields is extremely diverse. According to the survey, there used to be 195 varieties of local rice, and the existing ones are 48. With high diversity, common varieties of rice mainly consist of Hongjiaogu, Shuihongjiaogu, Dabaigu, Maxiangu, Mazhagu, Pizagu, Changmaogu, Shangu, Xianggu, Shuihuangnuo, Damaonuo, etc. Hani conserve the rice diversity through exchange with surrounding villages.



In addition to diversity of rice in Hani terraced fields, other types of plants and animals are also very rich:

- 1) a large variety of natural aquatic animals like fish, snail, eel, loach, shrimp, river loach, stone mussels, crab and so on, as well as duckweed, lotus and other aquatic plants;
- 2) the natural & wild herbs like water celery, plantain, Houttuynia are growing in the ridge of the terraced fields;
- 3) Hani raise ducks and culture a variety of fishes including carp, silver carp, crucian carp, etc in terraced fields and also plant soybeans in the ridges between fields.

Well preserved headwater forests, divine mountain stronghold forests and firewood are situated at the top of the terrace. The forests belong to the middle mountain moist evergreen broad-leaved forest with high biological diversity,



including:

1) A variety of wild woody plants: Handonggua, Xishu, Nansuanzao, Baicangshu, Hongmuhe, Maocihuajiao, Xiangyeshu, Rangjiaomu, Lingmu, Xinmujiangzi, Danbingcha, Wafan, Shancha, Duancikao, Shaluoshu, Keleimu, Duomaidongqing, Bayberry, Golden bamboo, Cherry, Huahuimu, Mutong, Mao chestnut, etc.;

2) A variety of wild herbs, Yunnan baizhu, Maojuecai, Chaotianjue, Zijingzelan, Youcifengweijue, Wanjue, Xiangqing, Jincao, Riceball, Biandaxiuqiu, Baimiu, Tuerlan,



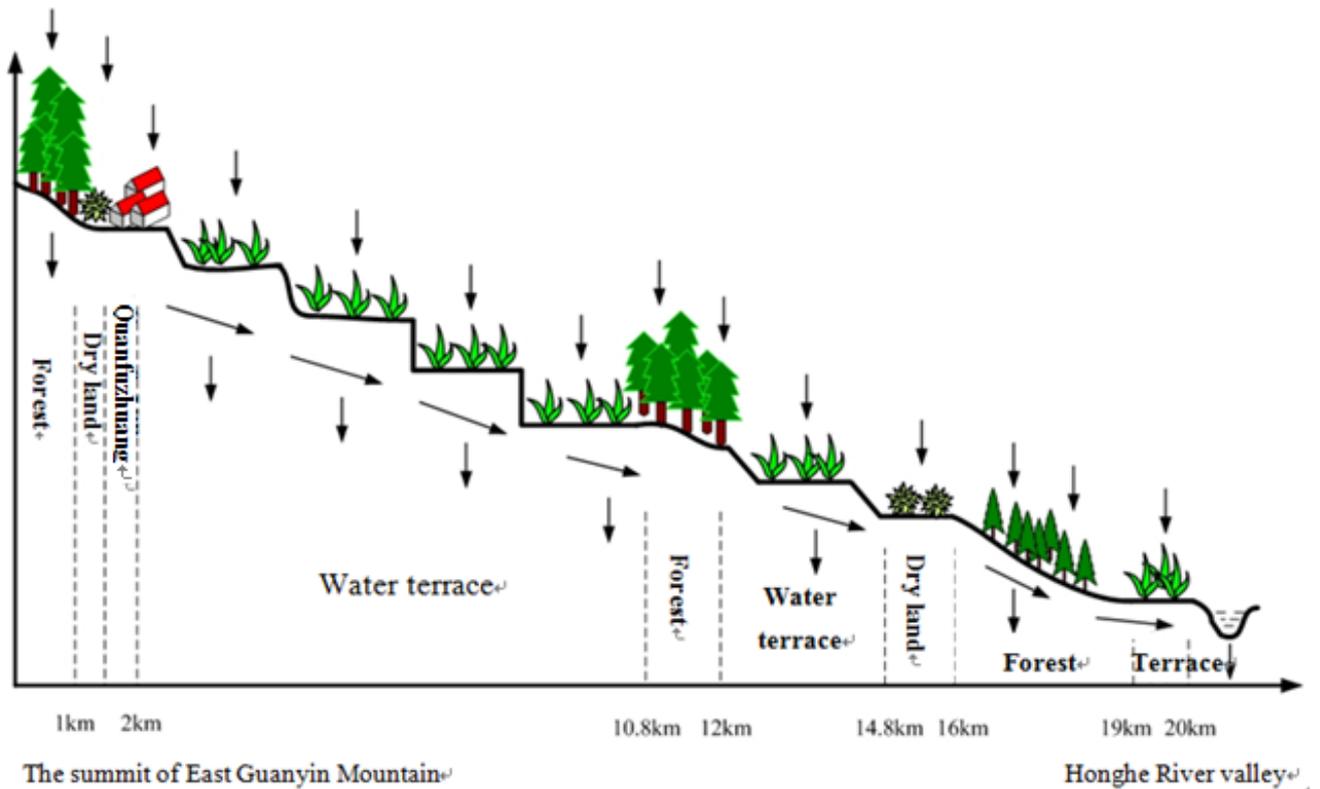
Xiatianju, Hanqin, Shuiqin, Yuxingcao, Yemoyu, Huanghuacai, Tumoyu, etc.;

3) A variety of wild fungi and insects: Mushroom, White fungus, Black fungus, White ginseng, green headed fungus, Ganbajun, ect.

The vertical distribution of the Forest-Village-Terrace-River ecological landscape features has been formed in the Hani terraced landscape, and so have a unique system of energy and material flows. Natural rainfall falls on the ground to form the surface runoff and percolate into the underground water system; surface runoff and springs flow through the forests, villages and terraces along the slope. The flowing water carries nutrients from the forest litters, the village sewage and waste, and sediments into numerous layers of horizontal terraced fields. These nutrients as well as sediments are trapped and filtered in the fields. On the one hand, the filtering



process can improve the soil fertility in the fields. On the other hand, only the excess sediment and less polluted water are flown into rivers in the valley. The spatial structure of the Hani terrace performs various ecological functions, including soil and water conservation, control of soil erosion, protection of the village safety, maintenance of system stability, the self-purification capacity and others.



The vertical distribution of the Forest-Village-Terrace-River ecological landscape

The Hani utilize and manage the local water resources in a unique, simple, economical and efficient manner and the water management has provided a guarantee for the sustainable operation of the Hani terraced rice farming system. As the water crisis intensifies and water quality continuously deteriorates, water shortage has evolved into one of the well-focused global environmental resource problems. In this backdrop, water resource management has an important role in addressing these issues. Therefore, it is of great importance to protect and learn from the Hani's water resources utilization and management methods.

Hani take the geographical advantages that their villages are above terraced fields and have invented the traditional method of "Fertilization of rice fields with hydropower". The method is divided into two kinds. With the first type of fertilization, each village dig a communal manure pond, in which oxen and horses livestock manures are accumulated. When it is time for spring

ploughing, water will be released from the large pond and various manures will be washed into terraced fields. Meanwhile, along the ditch and canals someone is taking care of the diversion of enriched water. After the Household Contract Responsibility System was implemented in 1980', each household has his own little manure pond. Nutrients will be ploughed into the substrate to become that long-lasting basic fertility. With the second type, of fertilization, the rain in June or July will wash dung and humus on the mountain into the ditch and diverted then into terraced fields of rice by Hani to provide fertilizers for the flowering rice. The traditional method of soil fertilization not only saves energy and power in the fertilization process but also makes full use of the "garbage" in the village and the nutrients brought by natural soil erosion. It has to some extent played an energy-saving & emission-reduction role and can provide an important reference for slowing global warming and protecting the water environment.



Hani take use the favourable conditions that canals flow through their village and make full use of water resources. The hydropower is utilized to save labour through building facilities like water grind, water miller and water pestle, etc. The rice husk is removed by water grind and made into flour by water mill and then mashed by water pestle and finally processed into a variety of delicious food. The utilization of water grind, water miller and water pestle is not only accumulation of Hani's wisdom, but also an important manifestation of the rational use of natural resources.

Management of the ditches plays a very important role in terraced field irrigation. The water coming down from the hills has to go through the ditch to reach the whole terrace. The purpose of digging the ditches is to catch flows from mountain forests and spring water seeping from mountains to irrigate terraces. In addition, the ditches also can deposit sediments before entering the terrace to avoid continuously elevating the terrace surface due to sediment deposition and declining water-retention capacity.



To enable every household reasonable access to the water, Hani invented a unique water allocation method with “Water dividing wood”, “Water dividing stone” and “watershed distribution”. The specific method is as follows: a wood or stone bar is placed at the junction of water diversion to lower ditches. The

wood or stone is carved with different sizes of water outlets to divide and allocate certain volume of water flow to lower ditches. The size of water outlet for each lower ditch is decided according to the irrigation area of the ditch, the water flow in the upper ditch, and the historical order of irrigation priority. This water distribution method not only enables modest terraced water conservation, but also ensures irrigation of lower hill paddy, and has set the precedent example for irrigation of mountainous regions.

The operator of water allocation is the ditch leader, whose first job is to dredge ditches and then allocate water and solve dispute over the water use. Since the ditch leader has contributed his labour to the water management, the household whose terraced fields are irrigated by the ditches must pay "ditch rice". In general, to use certain water in a ditch for irrigation of 2 to 3 mu of terraced fields, a household must pay a bucket for the ditch rice (2.8 ~ 3.0 kg) to the ditch leader. The collected ditch rice will be distributed to the ditch leaders as annual labour allowance. The above is the Hani water resources management system – ditch leadership system.

Forests are "natural reservoir" for the terraced fields, and also an important guarantee for the Ailao Mountain terraced area and the stable high yield for surrounding agriculture, thus playing a crucial role in the stability and sustainability for the area's ecosystem.

The Hani worship of nature ultimately embodies in the worship of the tree. Hani respect trees as gods safeguarding and blessing them. Cutting down trees will bring about retributions. The results of the worship are to make the tree represent the nature and hold a series of religious activities worshipping the tree deity, such as "Village Deity's Day". Hani people worship trees and nature annually, with a solemn religious ceremony to express their reverence to trees and the nature.

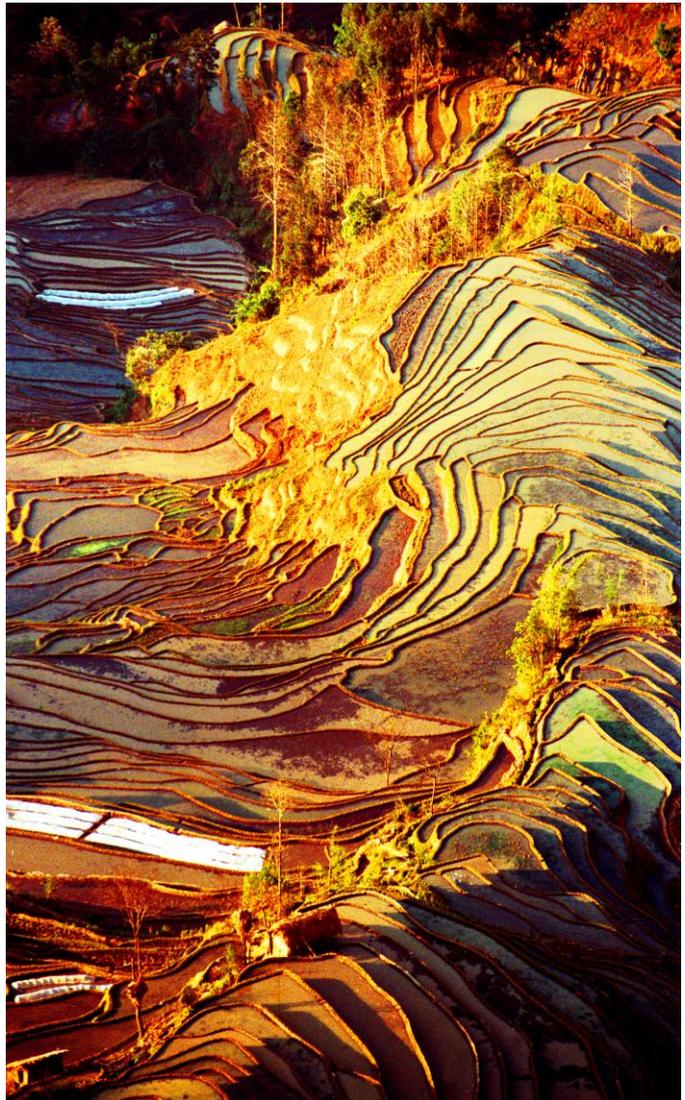
2. Goods and Services Provided by the System

The Hani Rice Terrace Landscape provides multiple goods and services for local livelihoods as well as society, including:

1) livelihood services

- Food security: rice, beans and vegetables, including wild vegetables from paddy fields and upland fields; fish and ducks raised or harvested from paddy fields, streams and ponds; livestock feeding on grasslands as well as agricultural residuals.
- Housing, fuel / energy health and related needs: timber and firewood from mixed forests; roof thatch from grasslands; herb medicines from forests as well as other habitats in the Hani Rice Terrace landscapes.

- Social and cultural services: As a representative of the mountainous rice culture of Asian ethnic groups, the heritage well demonstrates the historical development, the ethnic cultural tradition and the management techniques on the cultivation of terraced field of the Hani ethnic group living along the south bank of Honghe River. The ethnic cultural system which comprises tangible cultural heritages including the villages, dwellings and buildings for production, the sacred woods of the villages, irrigation works and road sign steles, etc. and intangible cultural heritages such as the traditional production and life styles, traditional custom and festivals activities, and knowledge systems passed down orally (for instance: the Song of Four Seasons), etc.



2) Environmental services

- **Biodiversity and ecosystem services:** The Hani Rice Terrace landscape is home to rich flora and fauna, adapting to and living on various habitats, including woodlands, grasslands, wetlands, streams as well as farmlands. The deciduous trees are widely found in woodlands. The forests are also home to insects and birds that pollinate plants and suppress pests as well as of cultural values. The common reeds are common in the grasslands. Birds and fish are found in the wetlands and ponds. Various crops, including rice, buckwheat, millets, beans, vegetables are cultivated in farmlands. Soil and water conservation and restoration: Mixed forests on steep lands control soil erosion and reduce risks of landslides and floods. The paddy fields including rice terrace on the slope serve as artificial wetlands to store excessive water and reduce risk of floods.
- **Climate regulation and greenhouse gases sequestration:** The biodiversity powered by solar energy through photosynthesis in the Hani Rice Terrace landscape converts carbon dioxide into bio resources to meet local subsistence needs for energy (firewood), fertilizers (forest litters), food (crops) and fodders (grasslands), providing a subsistence model with little dependence on fossil energy. The application of organic fertilizer would help increase carbon sequestration in soils. As the one of traditional management practices, the continuous flooding of rice fields in the Hani rice terraces contributes to emission of methane into the



atmosphere.

However, it has yet to be studied how the traditional culture of the fish and ducks in the rice fields could contribute to reduction of the emission compared to the mono-culture of rice.

3. Threats and Challenges

1) Threats from Nature:

The core region of the Hani rice terrace landscape is located at the southern part of the Ailao Mountain. It is a deeply-cut mountainous region characterized by high mountains and deep valleys. This region is very susceptible to soil and water loss, landslide and terrace collapse, etc due to the high mountains with steep slopes as well as abundant rainfall. This leads to direct threats to the terrace landscape.

Taking the small watersheds in Quanfuzhuang Village of Yuanyang County for example, nine landslides are found in the region. All are small scale landslides, with the maximum width of 50 meters, the length of 20 meters, and the depth from 3 meters to 5 meters. These landslides took place mainly in the soil layers, and few occurred in the weathered rock. The stability of these landslides is bad because most of landslides, except three ancient ones, are formed in modern times. The reason of landslide formation is mainly due to the steep slope where the steep rock/soil-faces could easily develop by dig or gully erosion, and water seeping into the rock/soil lowers the slip resistance of these rocks.

Secondly, the terrace is susceptible to drought and water shortage in drought years because of the lack of the reservoirs in the upper regions of the terrace to adapt. For example, Yuanyang County suffered from a one-hundred-year drought in March to May of 2005. About 1200 hectares of terrace suffered from drought. The global climate change is possibly leading to more extreme weather threats to the ability of prevention of terrace floods, landslides, and droughts.



2) Social Threats

The traditional ecological knowledge and its maintenance systems are under the threats of other culture shocks.

The senior people with traditional knowledge pass away continuously. As a result of market motivation and urbanization, more and younger generations are gradually giving up the traditional culture such as customs, religions and etiquettes. They are moving to cities for better jobs and better salary. There is not enough education of traditional knowledge in school. Most of modern young people cannot bear the hardships of farming and its corresponding complex management. The management system of the Hani rice terrace conservation is not well established. The values of food



security, ecological functions and environmental protection are substantially undervalued. The modern agriculture is taking the place of traditional organic one, leading to the replacement of organic fertilizer with chemical ones.

4. Policy and Development Relevance

Facing the increasing anthropogenic threats to the Hani rice terraces region, it is necessary to unify both the domestic and international efforts to adopt long-term and short-term measures simultaneously to restore and protect this region. Thus we suggest the following:

1) By taking advantage of the brandings of terrace ecological agriculture and the world cultural heritage, a series of ecological products can be developed and certified in order to increase the income of local residents and promote the conservation of the rice terrace landscape. The concrete measures are as follows:

- Develop and investigate the rice varieties, increase the production and quality of rice in order to assure food security.
- With the diversity of rice variety, rice blast can be controlled through mixture inter-planting. The measure will not only increase the rice production but also conserve the diversity of local rice variety.
- Promote the marketing of native agricultural products including rice, fish, duck, tea, banana, apple pine, orange and other vegetables (use a dictionary to translate these vegetable names please), prevent the farmers from changing the rice terrace to other agricultural uses to the maximal extent. The local economic development can be pushed forward through the certification of ecological/green products such as ecological rice, ecological vegetable, ecological fish and bacteria, etc, in order to keep the stability and sustainability of the traditional cultural system of the rice terrace agriculture.

2) Focusing on the terrace landscape ecotourism can be developed with the unique natural landscape and cultural resources, in order to promote the local economic development.

- Based on the comprehensive assessment of the scenic zone, the ornamental and economic value can be increased in order to fully expose or demonstrate the values of the historical, cultural and natural resources of the Hani terrace.
- Focusing on the Yuanyang terrace wetland, the three agriculture tourist routes can be developed, including the route from Yuanyang to the Red River; the route from Yuanyang to Lvchun, and the route from Yuanyang to Jinping.
- According to the distribution of scenic spots and the demands of conservation and development, the Hani terrace scenic zone is divided into three functional areas : the core

terrace tourism area (the typical terrace regions in Yuanyang county, such as the Quanfuzhuang village and Tada terrace region, Laohuzui terrace region, Duoyishu terrace region); the buffer tourism area (including other terrace regions in Yuan Yang county and the terrace regions in Honghe county, Lvchun county and Jinping county), and the experimental area (the other regions in the four counties).

- Coordinate distribution of benefits from the Hani rice terraces in order for the farmers to share the benefits from the protection and development of terrace landscape.

3) Set up the conservation plan based on the local traditional management philosophy and the management approaches with customary rules such as utilization and management of water resources and forest, in order to protect the biodiversity and cultural diversity in the ethnic minority area.

4) Request for inclusion of the Hani rice terraces in the pilot programme of the Globally Important Agricultural Heritage System (GIAHS), and push forward the application for inclusion of it in the world heritage list. The holistic, localized, dynamic conservation actions will ensure the local food security and alleviate the poverty in the ethnic minority area, and promote the international exchange and dialogue of cultural diversity.

5. Global Importance

1) The Hani rice terrace landscape as a whole has multi-values in the fields of production, ecology, society, culture, etc. The diversity and maintenance mechanism of rice and other natural species have important demonstrating significance for the global on-farm conservation of biodiversity.

2) The wetland landscape of terraced farming is characterized by its perennial water holding and moisture holding. Its



unique utilization and management system of water resources provide the world with important enlightenment in the protection and utilization of water resources.

3) The Hani landscape of terraced rice farming is the vivid example of sustainable land utilization. It is the typical representation of ecological agriculture, circulating agriculture and low-carbon agriculture. It has important significance for the sustainable development of agriculture in the similar regions.

6. Outline of activities

1) The efforts of government departments

- In 2000, the CPC Committee of the Honghe Prefecture, the Prefecture Government embarked on the work for inclusion of Hani terraced fields in the World Heritage List. The provincial government organized many study visits to the south part of Honghe with a high degree of attention and concern on the Hani terraced fields and gave strong support of policy and funds.
- In Oct., 2001, in order to regulate the protection and management of the Hani terraced fields, the prefecture government formulated the "Interim Measures on Management of Honghe Hani Terrace". In early 2002, a "master plan to protect the Honghe Hani terraced fields", was developed to provide the policy basis for the management of Hani terraced fields.
- In 2005, the Honghe Prefecture Government actively identified the non-material cultural heritage representing the Hani terrace ethnic spirits and traditions of the cultural context in Hani terrace protected areas such as "Four Seasons' Production Notes of Hani ", "Hani Polyphonic Folk Songs," "Music for Dance", "Hanihaba". These four properties are included in the state-level intangible cultural heritage list. Six properties, like "terraced farming rituals and customs", "Long Street Banquet" are included in the provincial-level intangible cultural heritage protection list. 79 properties are included in the prefecture-level intangible cultural heritage protection list. In addition, 100 volumes of Hani oral intangible cultural heritage related publications have been collected and compiled.
- In Nov., 2007, through a lot of reporting work of the Hong He Prefecture Government and relevant departments, Hani terrace was approved as a national wetland park by the State Forestry.
- In order to strengthen village culture and team-building, ethnic holiday celebrations such as

"Terrace Culture and Tourism Festival", "Long Street Banquet" have been organized.

- In Aug., 2007, the prefecture government set up the Hani Terrace Authority with eight staff and increased special funding. In 2008, a full-time regulatory agency in each county was set up in the Hani terrace protected areas, including Yuanyang County, Honghe County, Lvchun County, and Jinping County.
- In 2008, application was made for registration of "Hani Terrace", "Honghe Hani Terrace" and protected areas, their important place names, names of festivals and other iconic trademark (total of 44 kinds, 87 items) to strengthen the brand image and brand value of maintenance for Hani terrace.
- In March, 2009, many experts were invited to participate in “Multi-disciplinary Expert thematic Research for Hani Terrace Application for Intangible Heritage”.
- In Dec., 2009, the prefecture government and Institute of Geographical Sciences and Natural Resources under Chinese Academy of Sciences co-sponsored the “Cultural Heritage and Dynamic Protection Forum of Hani Terraced Agriculture”.
- Terraced cultural website has been built up: Hani terraced Network (<http://www.hhtt.cn>);



2) Construction of multi-participatory mechanisms

In March, 2009, the Yunnan Provincial Federation of Social Sciences, under the support of Honghe Prefecture government and Yuanyang County invited experts from Chinese Academy of Sciences, Chinese Academy of Social Sciences, Yunnan Academy of Social Sciences, Yunnan Office of History literatures, Yunnan Agricultural University, Southwest Forestry University, Kunming University of Technology, Yunnan University, Kunming Institute and other units to the core area of

Honghe Hani terraced fields in Yuanyang County to participate in application for intangible heritage and a multidisciplinary thematic research activities.

In Dec., 2009, the Honghe Prefecture Government, Geographical Resources Institute under Chinese Academy of Sciences, Culture Research Centre under Chinese Academy of Social Sciences and Yunnan Social & Scientific Federation jointly held the signing ceremony of "Joint Research Base of Hani Terrace Cultural Heritage ". The establishment of the base marked that more and more social & natural scientists will make it as a platform to focus on the protection and development of Hani terraced fields and study Hani terraced fields as a systematic management method through a joint application for the subject and mutual cooperation Hani terrace fields so as to actively promote their cultural heritage protection and development.

3) Prospects for future work

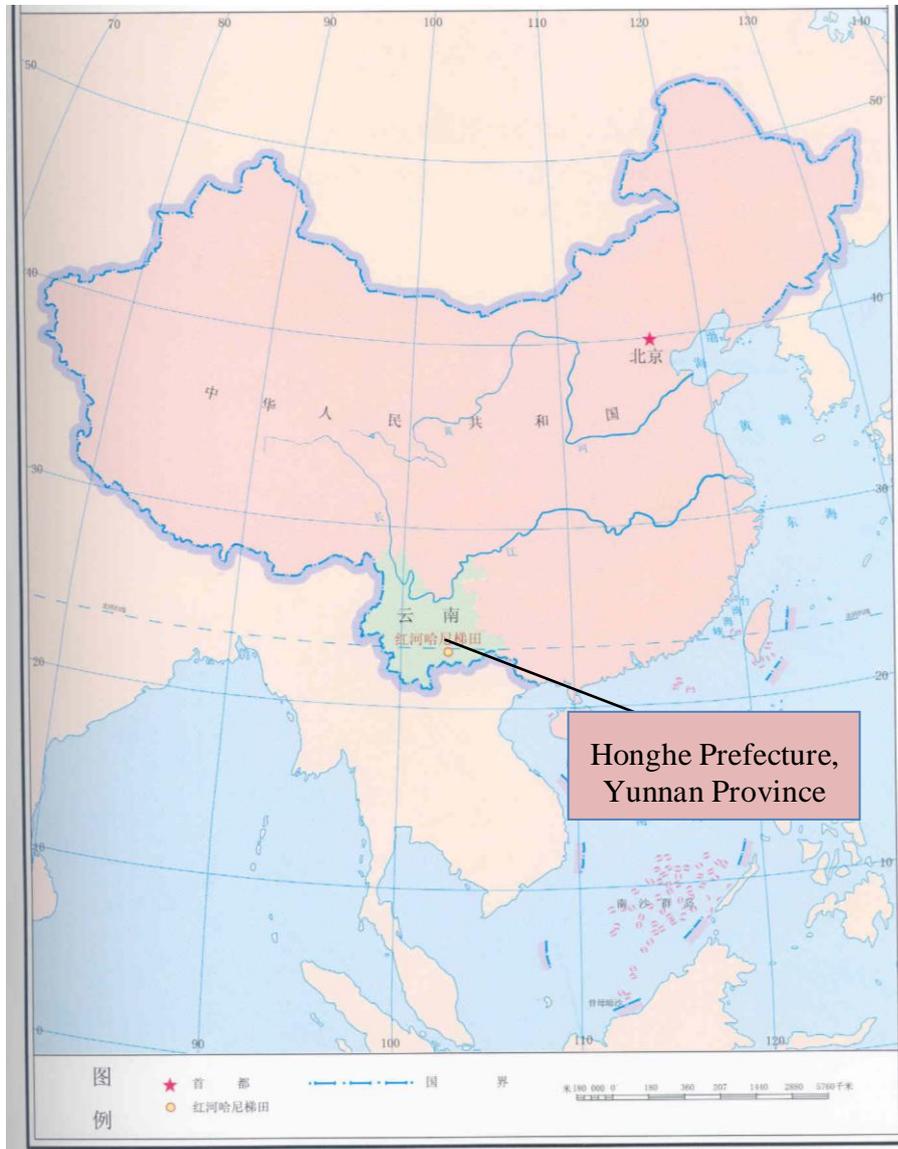
Government departments will further improve the overall protection and sustainable use planning, step up publicity and attract more investments, develop eco-tourism, prevent the blind, monotonous, over-exploitation; will pay great attention on protection of local traditional agricultural knowledge and local agricultural species, and benefit farmers through the certification of agricultural products to improve the value of agricultural products.

In addition, the government will adjust the structure of protected areas to form the core zone, buffer zone, radiation zone which are called "3 protection systems". The core area will be greatly protected while buffer zones will be appropriately developed and key development areas of radiation will be mainly exploited. A detailed plan of ecological agriculture will be worked out to mainly protect and develop organic agriculture, establish ecological agriculture demonstration base, and gradually spread to all the Hani terraced areas.

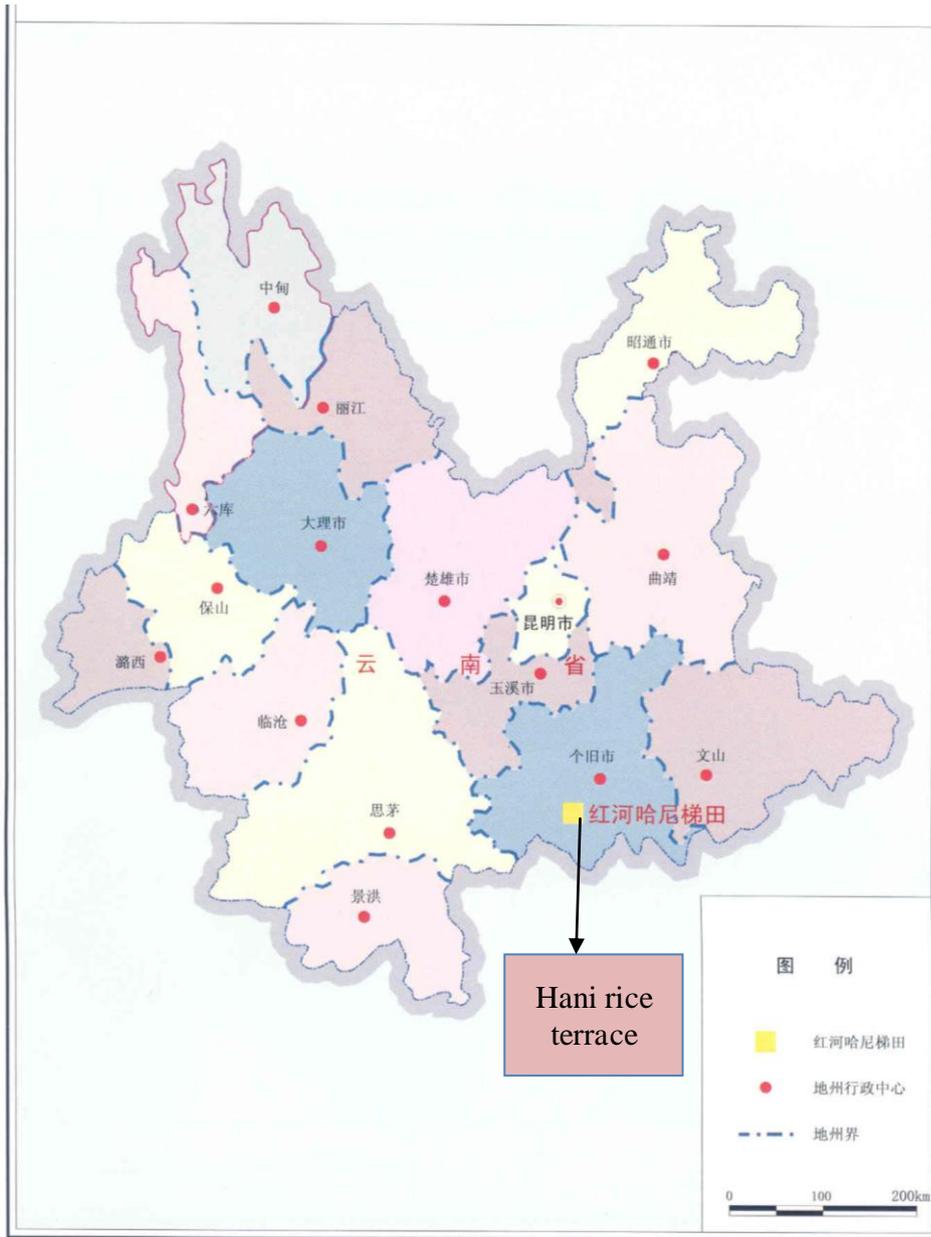
The multi-stakeholders participatory systems, involving the "international organizations - Government - Company - Technology - Community" will be further perfected in Hani Terrace protection and development system. Under the guidance of international organizations, government departments, government and scientific research units, enterprises actively cooperate in the Hani terrace dynamic conservation and sustainable development model. And at the same time, public officials & community-based public education, training and guidance will be strengthened to raise public conservation awareness upon rice terrace system value and attract local residents to participate in the development and construction of Hani terraced fields.

SUGGESTED ANNEXES:

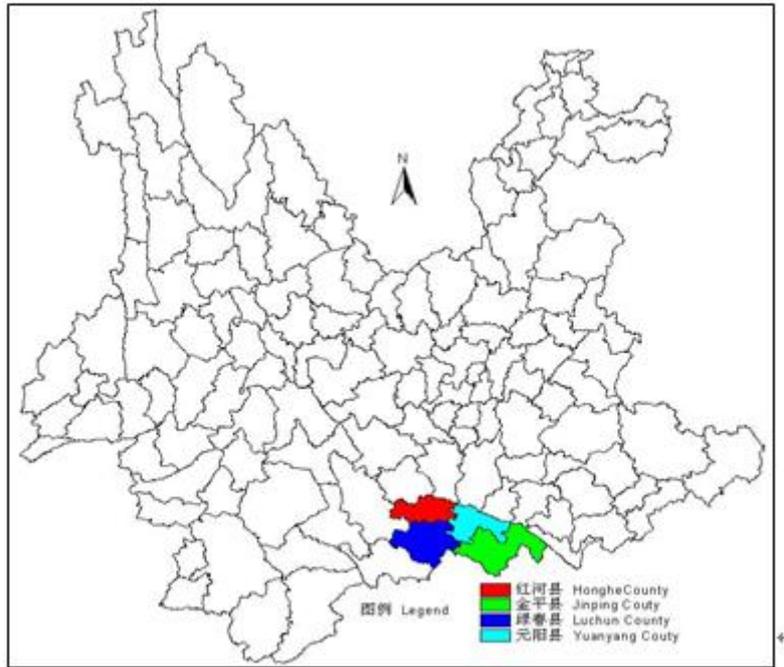
- location map of the system/site



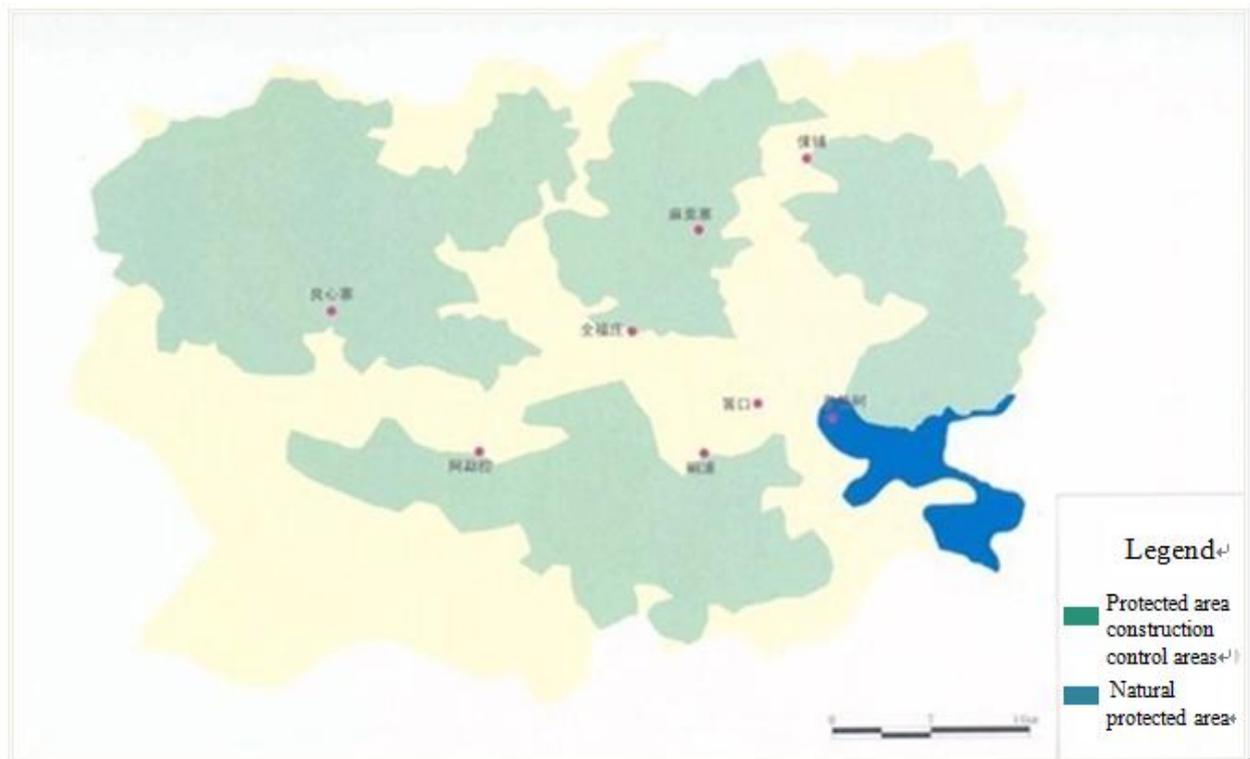
Location in P. R. China



Location in Honghe Hani and Yi Minority Prefecture, Yunnan Province



Geographical distribution map of the terrace system



Protected areas and controlling construction areas of Honghe rice terrace



Satellite image map of the terrace system

- lists of agricultural biodiversity

1) Rice variety:

No.	Name	No.	Name	No.	Name
1	Red husked rice	20	Dige	39	Fine Round-grained nonglutinous rice
2	Rosette rice	21	Three-white-seed rice	40	Red round-grained nonglutinous rice
3	Hongpi rice	22	Salad rice	41	Moon rice
4	Fragrant glutinous rice	23	Purple glutinous rice	42	Upland rice
5	Cold rice	24	White glutinous rice	43	Paozhu rice
6	Hairy rice	25	End-butt rice	44	Hen rice
7	Little glutinous rice	26	Flat rice	45	Teqing
8	Violet glutinous rice	27	Loose-husked rice	46	Baotai white rice
9	Big red glutinous rice	28	Round-grained nonglutinous rice	47	Red-footed rice
10	Big white glutinous rice	29	Jianshui red rice	48	Gaoshanzao rice
11	Yellow husked glutinous rice	30	Jianshui white rice	49	Cheni

12	Flat rice	31	Laoshao rice	50	Soft rice
13	Big old japonica	32	Laopi rice	51	Yao rice
14	Little old japonica	33	Dalixiang rice	52	Xiaolixiang rice
15	Dove rice	34	Big white rice	53	Tuanke rice
16	Shao rice	35	Zaohong rice	54	Maxian rice
17	Sickle rice	36	Grasshopper rice	55	Bozhu rice
18	Yaduo rice	37	Flocked rice	56	Coldwater rice
19	Shaomao rice	38	Small white rice		

2) Other agricultural species:

Order name	Family name	Species name
<i>Caryophyllaceae</i>	<i>Malachium Fries</i>	<i>M.aqtiaticum Fries</i>
Cardamine L.	Capsella Cardamine L.	C.bursa-pastoris
		C.flexuosa With.
		<i>C.reniformis Hayata</i>
		<i>C.yunnanensis Franch.</i>
		<i>C.hirsuta L.</i>
		Nasturtium R.Br
Violaceae	Viola L.	<i>V.verecunda A. Gray</i>
		<i>Hemiphragma heterophyllum</i>
Lythraceae	Ammania (Houst)L.	<i>A.auriculata Willd.</i>
		<i>A.baccifera L.</i>
	Rotala L.	<i>R.indica (willd.) Koehne</i>
		<i>R.rotundifolia(Buch-Ham)Koehne</i>
Umbelliferae	Oenanthe L.	<i>O.benghalensis Benth et Hook fGen.</i>

		<i>O.didlsii de Boiss</i>
		<i>O.javanica (BI)DC</i>
		<i>O.rivulariaDunn</i>
		<i>O.thomsonii C.B.Clarke</i>
Primulaceae	Lysimachia L.	<i>L.cancida L.</i>
		<i>L.stenosepala Hamsl</i>
		<i>L.parvifolia Franch</i>
Gentianaceae	Swertia	<i>S.macrosperma C.B.Clarke</i>
Scrophulariaceae	Lindernia Baill.	<i>L.procumbens (Krock.)Phlcox.</i>
	Veronica L.	<i>V.anagallis-aquatica L.</i>
		<i>V.undalata Wall</i>
Rubiaceae	Galium L.	<i>G.verum L.</i>
Gramineae	Poa L.	<i>P.annua L.</i>
		<i>P.khasiana Stapf</i>
		<i>P.nipponica Koidz</i>
Cyperaceae	Eleocharis R.Br	<i>E.pellucida Paresl</i>
		<i>E.valleculosa Ohwi f.setosa(ohwi) Kitag</i>
		<i>E.yokoscensis (Fr.et Sav.)Tang et Wang</i>
	Scripus	<i>S.tabernaemontani Gmel</i>
		<i>S.validus var.laeviglumis Tang et Wang</i>
Araceae	Calla L.	<i>C.palustris L.</i>
	Colocasia Schott	<i>C.fallax Schott</i>
		<i>C.antiqueorum Schott</i>
Liliaceae	Hemerocallis L.	<i>H.milor Mill</i>

3) list of other resource endowments and goods and services provided by the system

Tree species		
<i>Alnus nepalensis</i>	<i>Neolitsea aurata</i>	<i>Camellia assamica</i>
<i>Camptotheca acuminata</i>	<i>Stuartia pteroputiolata</i>	<i>Castanopsis echidnocarpa</i>
<i>Choerospondias axillaries</i>	<i>Haltia sinensis</i>	<i>Reevesia pubescens</i>
<i>Clerodendron mandarinorum</i>	<i>Vaccinium brachybotrys</i>	<i>Myrica rubra</i>
<i>Schima wallichii</i>	<i>Neolitsea aurata</i>	<i>Phyllostachys nigra var. hennas</i>
<i>Zanthoxylum acanthopodium</i>	<i>Castanea seguinii Dode</i>	<i>Prunus pseudocerasus</i>
<i>Lindera communis</i>	<i>Toona sinensis</i> (A.Juss) .Roem.	<i>Symplocos chinensis</i>
<i>Xaphniphyllum macropodium</i>	<i>Canarium album (Lour.)</i> <i>Rauesch</i>	<i>Llex polyneura</i>
<i>Eurya aurea</i>	<i>Lyeopodium japonica</i>	<i>Akebia quinata (Houttuyn) Decaisne</i>
Eumyceta		
Family Name (Latin)	Genus Name (Latin)	Species (Latin)
<i>Omphalotaceae</i>	<i>Lentinus</i>	<i>Lentinula edodes</i>
<i>Tremellaceae</i>	<i>Tremella</i>	<i>Tremella fuciformis</i>
<i>Russula lepida Fr.</i>	<i>Russula Pers.</i>	<i>Rus-sulavirescens</i>
<i>Boletaceae</i>	<i>Boletus</i>	<i>Boletus aereus</i>
<i>Amanitaceae</i>	<i>Sinotermitomyces</i>	<i>Termitomyces</i>
Bryophyta		
Family Name (Latin)	Genus Name (Latin)	Species (Latin)
<i>Marchanteaceae</i>	<i>Marchantia L.</i>	M.plymorpha L.
<i>Diranaceae</i>	<i>Dicranum Hedw.</i>	<i>D.muehlenbeckii B.S.G</i>
		<i>D.scoparium Hedw</i>
<i>Funariaceae</i>	<i>Funaria Hedw</i>	<i>F.hygrometrica Hedw</i>

<i>Bryaceae</i>	<i>Mnium Hedw</i>	<i>M.maximovicaii Lindb.</i>
<i>Amblystegiaceae</i>	<i>Campyllum (Sull.) Mitt.</i>	<i>C. chrysophyllum (Bird.) J. Lang</i>
	<i>Cratoneuron (Sull.) Spruc.</i>	<i>C. commutatum (Hedw.)Roth</i>
		<i>C.filicinum (Hedw) Spruc.</i>
	<i>Drepanocladus (C. Muell.) Roth.</i>	<i>D.lycopodioides (Bird.)W arnst.</i>
<i>Brachytheciaceae</i>	<i>Brachythecium B.S.G</i>	<i>B. rivulare B.S.G</i>
	<i>Cirriphyllum</i>	<i>C.Piliferum (Hedw.)Grout.</i>
<i>Hypnaceae</i>	<i>Ptilium (Sull.) De Not</i>	<i>P.crista-castrensis (Hedw.)De Not.</i>
<i>Rhytidiaceae</i>	<i>Rhytidium (Swll) Kindb.</i>	<i>R.rugosum (Hedw) Kindb.</i>
Pteridophyte		
<i>Equisetaceae</i>	<i>Equisetum</i>	<i>E. diffuseum</i>
		<i>E.ramosessimum</i>
<i>Marsilea L.</i>	<i>Marsilea L.</i>	<i>M.natans(L.)All</i>
<i>Azollaceae</i>	<i>Azolla Lam.</i>	<i>A.imbricata (Roxb.) Nak.</i>
<i>Pteridaceae</i>	Pteris multifida Poir	<i>Pteris se tulosa-costulata</i>
<i>Dennstaedtiaceae</i>	<i>Dennstaedtia</i>	<i>Dennstaedtia scabra</i>
Angiosperm		
<i>Saururaceae</i>	<i>Saururus Linn</i>	<i>S.chinensis (Lour.) Baill.</i>
	<i>Houttuynia Thunb</i>	<i>H.cordata Thunb</i>
<i>Podostemonaceae</i>	<i>Hydrobryum Endl.</i>	<i>H.griffithii Tulasne</i>
<i>Geraniaceae</i>	<i>Geranium</i>	<i>G.neaplense</i>
<i>SALICACEAE</i>	<i>Salix L.</i>	<i>S.tetrasperma Roxb.</i>
<i>Cavyophyllaceae</i>	<i>Cubalus L.</i>	<i>C.baccifer L.</i>
	<i>Malachium</i>	<i>M.aqtiaticum Fries</i>

	<i>Fries</i>	
	<i>Sagina L.</i>	<i>S.japonica Chwi</i>
	<i>Stellaria L.</i>	<i>S.media(Linn) Cyrillus</i>
		<i>S.westita Kurz</i>
		<i>S.yunnanensis Franch</i>
		<i>S. uliginosa Murr.</i>
<i>Ceratophyllaceae</i>	<i>Ceratophyllum L.</i>	<i>C.demersum.L.</i>
		<i>C.submersum L.</i>
<i>Ranunculaceae</i>	<i>Anemone L.</i>	<i>A. dichotoma L.</i>
		<i>A. ovalifolia Bruhl</i>
	<i>Caltah L.</i>	<i>C. palustris Linn.var. umbasa Diels</i>
	<i>Ranunculun L.</i>	<i>R. chinensis Bunge</i>
		<i>R. japonicas Thunb</i>
		<i>R. sceleratus L.</i>
<i>Rosaceae</i>	<i>Agrimonia</i>	<i>A. pilosa Ledeb.</i>
	<i>Rubus L.</i>	<i>R.leucanthus Hance</i>
<i>Callitrichaceae</i>	<i>Callitriche</i>	<i>C. stagnalis Scop</i>
<i>Leguminosae</i>	<i>Aeschynomene L.</i>	<i>A.indica L.</i>
	<i>Derris Lour</i>	<i>D.trifoliata Lour.</i>
<i>Eupobiaceae</i>	<i>Glochidion J.R.ee.G</i>	<i>G.dasyphyllum K.koch</i>
	<i>Sapium P.Br.</i>	<i>S.discolor (Champ.)Muell-Arg</i>
<i>Balsaminaceae</i>	<i>Impatiens L.</i>	<i>Lnoli-tangere L.</i>
<i>Oenotheraceae</i>	<i>Epilobium L</i>	<i>E.hirsutum Linn.</i>
	<i>Jussisea L.</i>	<i>J.repens Linn.</i>
<i>Myrtaceae</i>	<i>Rhodomyrtus Reichb.</i>	<i>R.tomentosa (Ait.) Hassk.</i>

<i>Melastomataceae</i>	<i>Melastoma L.</i>	<i>M.candidum G.Don</i>
<i>Haloragaceae</i>	<i>Myriophyllum Linn</i>	<i>M.spicatum Linn</i>
	<i>Haloragis T.R.et.G</i>	<i>H.chinensis(Lour)Merr.</i>
		<i>H.micrantha Thunb R.Br.ex S.et z.</i>
<i>Umbelliferae</i>	<i>Centella L.</i>	<i>C.asiatica (L.)Vrb.</i>
<i>Adclepiadaceae</i>	<i>Hoya R.Br</i>	<i>H.carnosa (L.f.)R.Br</i>
<i>Labiatae</i>	<i>Mentha L.</i>	<i>M.arvensis kudo</i>
		<i>M.haplocalyx Brin.</i>
	<i>Salvia L.</i>	<i>S.plebeia R.Don</i>
	<i>Lycopus L.</i>	<i>L.lucidus Turcz.exbenth.</i>
<i>Scrophulariaceae</i>	<i>Centranthera R.Br</i>	<i>C.cochinchinensis (Lour)Merr.</i>
	<i>Limnophila R.Br.</i>	<i>L.sessiliflora Baill.</i>
	<i>Mazus Lour.</i>	<i>M.stachydidfolium Maxim</i>
	<i>Mimulus L.</i>	<i>M.tenellus Bunge</i>
<i>Lentidbulariaceae</i>	<i>Utrichlaria L.</i>	<i>U.aurea Lour</i>
		<i>U.australis R.Br</i>
		<i>U.bitida L.</i>
		<i>U.striatula J. Smith</i>
		<i>U.uliginosa Vahl</i>
<i>Plantaginaceae</i>	<i>Plantago L.</i>	<i>P.asiatica L.</i>
<i>Caprifoliaceae</i>	<i>Lonicera L.</i>	<i>L.maackii Maxim</i>
<i>Compositae</i>	<i>Bidens L.</i>	<i>B.tripartita L.</i>
	<i>Inula L.</i>	<i>Ihelianthus-aquatilis</i>
	<i>Ixeris Cass</i>	<i>Lgracilis (DC)Stebbins.</i>
	<i>Erigeron</i>	<i>E.breviscapus</i>

	<i>Inula</i>	<i>Lhelianthus-aquatica C.Y,Wu ex Ling.</i>
<i>Typhaceae</i>	<i>Typha L.</i>	<i>T.ovientalis Presl</i>
<i>Pandanaceae</i>	<i>Pandanus Linn.f.</i>	<i>P.furcatus Roxb.</i>
		<i>P.tectorius var.sinensis Warb.</i>
<i>Potamogetonaceae</i>	<i>Potamogeton Link</i>	<i>P.distinctus A.Benn</i>
		<i>P.lucens L.</i>
		<i>P.malainus.Miq.</i>
		<i>P.malainus Miq.</i>
	<i>Zannichellia Linn</i>	<i>Z.palustris Linn</i>
<i>Najadaceae</i>	<i>Najas L.</i>	<i>N.gracillima(A.Br)Magnus</i>
		<i>N.graminea Del.</i>
		<i>N.marina Linn</i>
		<i>N.minor Allioni</i>
		<i>N.orientalis Triest et Uoüila</i>
<i>Alismataceae</i>	<i>Alisma Linn</i>	<i>A.plantaga-aquatica Linn</i>
	<i>Sagittaria Linn</i>	<i>S. trifolia var.trifolia f.longiloba(Turcz)Makino</i>
<i>Hydrocharitaceae</i>	<i>Blyxa Thou et Rich</i>	<i>B.echinosperma (Charke)Hook.f.</i>
		<i>B.octandra(Roab)Planch.ex Thw</i>
	<i>Hydrilla L.C.Richard</i>	<i>H.verticillata(L.f)Royle</i>
	<i>Ottelia</i>	<i>O.acuminata(Gagnep.)Dandy</i>
<i>Gramineae</i>	<i>Agrostis</i>	<i>A.micrantha Steud</i>
	<i>Alloteropsis C.Presl</i>	<i>A.semialata(R.Br)Hitchc.</i>
	<i>Arthraxon Beauv</i>	<i>Arthraxon hispidus</i>
	<i>Calamagrostis</i>	<i>C.epigejos (L.) Roth.</i>

	<i>Adans.</i>	
	<i>Cynodon</i>	<i>C.dactylon(L.)Rers.</i>
	<i>Chrysopogon Trin</i>	<i>C.aciculatus Trin</i>
	<i>Coix L.</i>	<i>C.lacryma-jobi L.</i>
	<i>Digitaria Scop</i>	<i>D.sanguinalis(L.)Scop</i>
		<i>D.violascens Link.</i>
	<i>Echinochloa Beauv</i>	<i>E.colonum(L.)Link</i>
		<i>E.crusgalli(L)Beauv.</i>
		<i>E.crusgalli var.mitis(Pursh)Peterm</i>
		<i>E.oryxoides(Ard)Fritsch.</i>
	<i>Isachne R.Br</i>	<i>I.globosa(Thunb)Kuntze</i>
	<i>Ischaemun L</i>	<i>I.vugosum var.segetum(Trin.)Hack</i>
	<i>Leersia Sw</i>	<i>L.hexandrs var.japonica(Makino)Keng.</i>
	<i>Leptochloa Beauv</i>	<i>L.chinensis L.Ness</i>
		<i>Miscanthus Anderss</i>
		<i>M.floridulus(Labill)Warb.</i>
	<i>Oplismens Beauv</i>	<i>O.undulatifolius(Ard.)Roem.et Schult</i>
	<i>Paspalum L.</i>	<i>P.distichum L.</i>
		<i>P.orbiculare G.Fost.</i>
		<i>P.thunbergii Kunth</i>
	<i>Phragmites Trin.</i>	<i>P.australis Trin.</i>
	<i>Polypogon Desf.</i>	<i>P.fugax Ness et Steudo</i>
	<i>Roegneria C.Koch</i>	<i>R.komaji Ohw.</i>
	<i>Sacciolepis</i>	<i>S.indica(L.)Chase</i>

	<i>Nash</i>	
	<i>Eulalia Kunth</i>	<i>Eulalia quadrinervis</i>
<i>Cyperaceae</i>	<i>Hemarthria</i>	<i>H.compressa (Linn.f.)R.Br</i>
	<i>Carex L.</i>	<i>C.enervis C.A.M</i>
	<i>Cyperus L.</i>	<i>C.iriay L.</i>
	<i>Festuca L.</i>	<i>F.leptopogon Stapf</i>
		<i>F.vierhapperi Hand.-Mazz.</i>
	<i>Fimbristylis Vahl</i>	<i>F.aestivalis(Retz.)Vahl</i>
		<i>F.miliacea(L.)Vabl.</i>
	<i>Pycneus Beauv</i>	<i>P.globosus(All)Reichb.</i>
		<i>P.globosus var.strictus C.B.Clarke</i>
		<i>P.sanguinolentus(Vahl)Nees</i>
<i>P.uniolooides Urb.</i>		
<i>Araceae</i>	<i>Acorus L.</i>	<i>A.calamus L</i>
		<i>A.gramineus Soland</i>
		<i>A.tatarino wil Schott</i>
	<i>Calla L.</i>	<i>C.palustris L.</i>
	<i>Colocasia Schott</i>	<i>C.fallax Schott</i>
		<i>C.antiqueorum Schott</i>
	<i>Pistia L.</i>	<i>P.stratiotes L.</i>
	<i>Houttuyn</i>	<i>Houttuynia cordata Thunb</i>
	<i>Typhonium</i>	<i>T.flagellaforme(Lodd.)Blume</i>
		<i>T.jinpingense Z.L.Wang</i>
<i>Lemnaceae</i>	<i>Wolffia Horkel ex Scbleid</i>	<i>W.arrhiza(L.)Wimm.</i>
	<i>Lemna Linn.</i>	<i>L.minor.L.</i>
		<i>L.perpusilla Torr</i>

	<i>Spirodela</i> <i>Schleid</i>	<i>S.polyrrhiza</i> Schleid
	<i>Polygonum</i>	<i>Fragaria nalgerrensis</i>
<i>Xyridaceae</i>	<i>Xyris</i> L.	<i>X.pauciflora</i> Willd
<i>Ericaulaceae</i>	<i>Eriocaulon</i> <i>Rich</i>	<i>E.buergerianum</i> Koern
		<i>E.henryanum</i> Ruhl
<i>Commelinaceae</i>	<i>Commelina</i> L.	<i>C.communis</i> L.
<i>Ponteriaceae</i>	<i>Monochoria</i> <i>Presl</i>	<i>M.hastata</i> (Lim)Solms
		<i>M.vaginalis</i> (Burm.f.)Pres les Kunth.
	<i>Eichhornia</i> <i>Kunth</i>	<i>E.crassipes</i> (Mart.)Solms Laub.
<i>Juncaceae</i>	<i>Juncus</i> L.	<i>J.bufonius</i> L.
		<i>J.effusus</i> L.
		<i>J.lampocarpus</i> Ehrh
		<i>J.prismatocarpus</i> R.Br
		<i>J.setchuensis</i> Buchen
<i>Liliaceae</i>	<i>Ophiopogon</i> <i>Ker-Gaull</i>	<i>O.japonicam</i> Ket. Gaull.
	<i>Smilax</i>	<i>Smilax glabra</i> Roxb
<i>Burmanniaceae</i>	<i>Burmannia</i> L.	<i>B.disticha</i> L.
<i>Iridaceae</i>	<i>Iris</i> L.	<i>I.milesii</i> Foster
		<i>I.subdichotoma</i> Y.T.Zhao
		<i>I.wattii</i> Baker
<i>Orchidoceae</i>	<i>Bletilla</i> Rchb.f	<i>B.striata</i> (Thunb.)Rchb.f.
	<i>Sprianthes</i> <i>L.C.Rich</i>	<i>S.amoena</i> Sprengel
	<i>Cymbidium</i>	<i>Cymbidium lancifolium</i>

fishes			
Order name	Family name	Subfamily name	Species
CYPRINIFORMES	Cyprinidae	Danioninae	<i>Barilius pulchellus</i>
			<i>Parazacco spilurus</i>
			<i>Opsariichthys bidens</i>
		Leuciscinae	<i>Mylopharyngodon ptceus</i>
			<i>Ctenopharyngodon idellus</i>
			<i>Squaliobarbus curriculus</i>
		Cultrinae	<i>Pseudolaubuca sinensis</i>
			<i>Sinibrama melrosei</i>
			<i>Anabarilius transmontana</i>
			<i>Anabarilius macrolepis</i>
			<i>Pseudohemiculter dispar</i>
			<i>Hemiculter leucisculus</i>
			<i>Toxabramis houdemeri</i>
			<i>Megalobrama amblycephala</i>
			<i>Erythroculter hypselonotus</i>
			<i>Erythroculter ilishaeformis</i>
		Xenocyprininae	<i>Xenocypris argentea</i>
		Hypophthalmichthyinae	<i>Aristichthys nobilis</i>
			<i>Hypophthalmichthys molitrix</i>
		Gobioninae	<i>Hemibarbus maculatus</i>
			<i>Pseudorasbora parva</i>
<i>Squalidus argentatus</i>			
<i>Abbottina rivularis</i>			
<i>Abbottina yunnanensis</i>			
<i>Saurogobio immaculatus</i>			

		Gobiobotinae	<i>Gobiobotia longibarba</i> <i> yuanjiangensis</i>
		Acheilognathinae	<i>Rhodeus sinensis</i>
			<i>Rhodeus ocellaius</i>
			<i>Rhodeus spinalis</i>
			<i>Acheilognathus tonkinensis</i>
		Barbinae	<i>Tor(Folifer) brevifilis</i>
			<i>Balantiocheilus hekouensis</i>
			<i>Spinibarbus hollandi</i>
			<i>Spinibarbus denticulatus</i> <i> denticulatus</i>
			<i>Spinibarbus denticulatus</i> <i> polylepis</i>
			<i>Luciocyprinus langsoni</i>
			<i>Capoeta semifasciolata</i>
			<i>Sinocyclocheilus angustiporus</i>
			<i>Barbodes benasi</i>
			<i>Barbodes rhomboides</i>
			<i>Barbodes huangchuchieni</i>
			<i>Acrossocheilus elongates</i>
			<i>Acrossocheilus iridescens</i> <i> yuanjianensis</i>
			<i>Acrossocheilus yunnanensis</i>
			<i>Acrossocheilus krempfi</i>
			<i>Varicorhinus simus</i>
		<i>Varicorhinus gerachi</i>	
		<i>Varicorhinus ovalis ovalis</i>	
		<i>Varicorhinus macracanthus</i>	

			<i>Varicorhinus acanthopterus</i>
			<i>Typhlobarbus nudiventris</i>
			<i>Systemus orphoides</i>
		Labeoninae	<i>Semilabeo notabilis</i>
			<i>Semilabeo obscureus</i>
			<i>Sinilabeo rendahli lemassoni</i>
			<i>Sinilabeo decorus xanthogenys</i>
			<i>Sinilabeo tonkinensis</i>
			<i>Cirrhinus molitorella</i>
			<i>Garra alticorpara</i>
			<i>Garra orientalis</i>
			<i>Osteochilus salsburyi</i>
			<i>Placocheilus caudofasciatus</i>
			<i>Discogobio yunnanensis</i>
			Schizothoracinae
		Cyprininae	<i>Cyprinus yilongensis</i>
			<i>Cyprinus carpio rubrofuscus</i>
			<i>Cyprinus carpio chilia</i>
			<i>Carassius auratus</i>
			<i>Carassius auratus</i>
	Cobitidae	Nemacheilinae	<i>Nemacheilus laterivittatus</i>
			<i>Nemacheilus fasciolatus</i>
			<i>Nemacheilus gejiuensis</i>
			<i>Nemacheilus macrotaenia</i>
			<i>Nemacheilus callichromus</i>
		Cobitinae	<i>Misgurnus anguillicaudatus</i>
	Homalopteridae	Gastromyzoninae	<i>Vanmanenia tetraloba</i>

			<i>Beaufortia leveretti</i>
		<i>Homalopterinae</i>	<i>Balitora kwangsiensis</i>
			<i>Sinogastromyzon tonkinensis</i>
<i>SILURIFORMES</i>	<i>Siluridae</i>	<i>Silurus asotus</i>	
		<i>Clariidae</i>	
		<i>Clarias fuscus</i>	
		<i>Clarias lazera</i>	
		<i>Cranoglanidae</i>	
		<i>Cranoglanis boudierius</i>	
	<i>Bagridae</i>	<i>Pelteobagrus vachelli</i>	
		<i>Mystus guttatus</i>	
		<i>Mystus pluriradiatus</i>	
	<i>Sisoridae</i>	<i>Glyptothorax fukiensis fukiensis</i>	
		<i>Glyptothorax fukiensis honghensis</i>	
		<i>Glyptothorax quadriocellatus</i>	
		<i>Glyptothorax merus</i>	
		<i>Glyptothorax interspinalum</i>	
		<i>Bagarius yarrelli</i>	
		<i>Pareuchiloglanis macrotrema</i>	
		<i>Paeudecheneis intermedius</i>	
	<i>CYPERNODONTIFORMES</i>	<i>Oryziatidae</i>	<i>Oryzias latipes sinensis</i>
<i>Poeciliidae</i>		<i>Gambusia affinis</i>	
<i>BELONIFORMES</i>	<i>Belonidae</i>	<i>Tylosurus strongylurus</i>	
<i>SYNBRANCHIFORMES</i>	<i>Synbranchidae</i>	<i>Monopterus albus</i>	
<i>PERCIFORMES</i>	<i>Cichlidae</i>	<i>Tilapia mossambica</i>	
	<i>Eleotridae</i>	<i>Hypseleotris swinhonis</i>	

	<i>Gobiidae</i>	<i>Ctenogobius brunneus</i>	
	<i>Belontiidae</i>	<i>Macropodus opercularis</i>	
	<i>Channidae</i>	<i>Channa argus</i>	
		<i>Channa asiatica</i>	
	<i>Mastacembelidae</i>	<i>Mastacembelus armatus</i>	
Amphibians			
GYMNOPHIONA	ICHTHYOPHIDAE	<i>Ichthyophis bannanicus</i>	
CAUDATA	SALAMANDRIDAE	<i>Tylotriton shanjing</i>	
		<i>Cynops cyanurus yunnanensis</i>	
ANURA	DISCOGLOSSIDAE	<i>Bombina microdeladigitora</i>	
	PELOBATIDAE	Megophryinae	<i>Brachytarsophrys carinensis</i>
			<i>Brachytarsophrys feae</i>
			<i>Megophrys daweiensis</i>
			<i>Megophrys giganticus</i>
			<i>Megophrys jindongensis</i>
			<i>Megophrys omeimontis</i>
			<i>Megophrys lateralis</i>
			<i>Megophrys minor</i>
			<i>Megophrys palpebralespinosa</i>
			<i>Ophryophryne microstoma</i>
	Oreolalaxinae	<i>Leptobrachium hapaensis</i>	
		<i>Leptolalax alpines</i>	
		<i>Leptolalax Pelodytoides</i>	
		<i>Leptolalax ventripunctatus</i>	
		<i>Vibrissaphora ailaonica</i>	
	BUFONIDAE	<i>Bufo andrewsi</i>	
		<i>Bufo cryptotympanicus</i>	

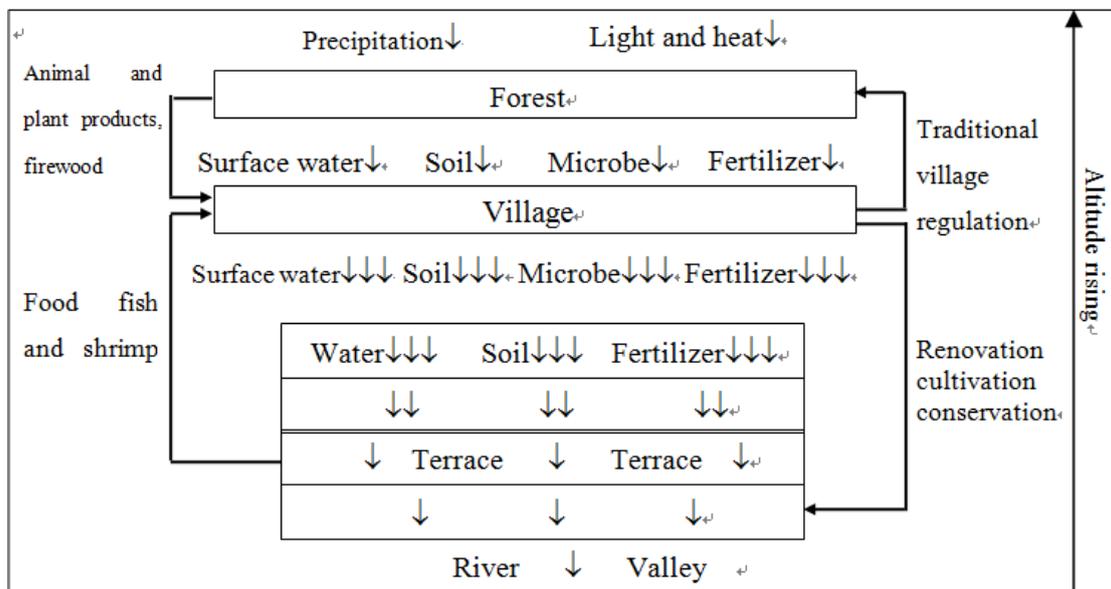
		<i>Bufo melanostictus</i>
	HYLIDAE	<i>Hyla annenctans</i>
	RANIDAE	<i>Occidozyga</i>
		<i>Occidozyga lima</i>
		<i>Rana adenopleura</i>
		<i>Pana andersonii</i>
		<i>Pana boulengeri</i>
		<i>Pana chaochiaoensis</i>
		<i>Pana graham</i>
		<i>Rana guentheri</i>
		<i>Rana kuhlii</i>
		<i>Rana limnocharis</i>
		<i>Rana lini</i>
		<i>Rana livida</i>
		<i>Rana macrodactyla</i>
		<i>Rana microlineata</i>
		<i>Rana nigrolineata</i>
		<i>Rana nigrotympanica</i>
		<i>Rana nigrovittata</i>
		<i>Rana pleuraden</i>
		<i>Rana rugulosa</i>
		<i>Rana spinosa</i>
		<i>Rana taipehensis</i>
	<i>Rana tiannanensis</i>	
	<i>Rana unculuanus</i>	
	<i>Rana yunnanensis</i>	
	Amolopsinae	<i>Amolops jingdongensis</i>

			<i>Amolops macrorhynchus</i>	
			<i>Amolops ricketti</i>	
			<i>Amolops viridimaculatus</i>	
			<i>Amolops chapaensis</i>	
	RHACOPHORIDAE	Philautinae		<i>Philautus gracilipes</i>
				<i>Philautus albopunctatus</i>
				<i>Philautus cavirostris</i>
				<i>Philautus jinxiuensis</i>
				<i>Philautus longchuanensis</i>
				<i>Philautus palpebralis</i>
				<i>Philautus rhododiscus</i>
		Phacophorinae		<i>Chirixalus doriae</i>
				<i>Chirixalus vittatus</i>
				<i>Polypedates dugritei</i>
				<i>Polypedates feae</i>
				<i>Polypedates leucomystax</i>
				<i>Polypedates mutus</i>
				<i>Polypedates pingbianensis</i>
				<i>Rhacophorus feae</i>
				<i>Rhacophorus rhodopus</i>
	<i>Rhacophorus reinwardtii</i>			
	<i>Rhacophorus omeimontis</i>			
	<i>Rhacophorus nigropunctatus</i>			
MICROHYLIDAE		<i>Calluella yunnanensis</i>		
		<i>Kaloula p.pulchra</i>		
		<i>Kaloula verrucosa</i>		
		<i>Microhyla butleri</i>		

		<i>Microhyla heymonsi</i>
		<i>Microhyla ornata</i>
		<i>Microhyla pulchra</i>

- description of ecosystem interactions (human and bio-physical)

The natural condition combining terrain, stereoscopic climate and vegetation play a fundamental role by acting as the ecological carrier of Hani terrace. Water vapour evaporated from a great number of river valleys shape into sea of clouds when encountering the cold air current around the mountainside, and then the clouds condense into rainfall and dews, pouring down the forest area. The dense forests and the mountain valleys store the precipitation in forms of rivers and lakes and so on, and constitute a vast headwater reservoir system. The ravine stream bypasses the village, irrigates and fertilizes the rice terraces, and flows into the river valleys at the foot of hills again. By the river water evaporating into the mountainside, this ecological system operates as a virtuous cycle.



Substance and energy flow and cycle of terrace system

- Heritage site is an integrated domicile in which all the constitutive factors are terrace-oriented. Local people, especially the minority nationalities master a set of systemic nature-related traditional knowledge which has historically been dynamic, responding and adapting to changing environment. They have created an ingenious system which closely integrates forest, village, terrace and river, and has successfully balance the relationship between human and natural environment as well as the local ecological system for centuries. Most of the traditional knowledge is often tightly interwoven with traditional religious beliefs, customs, folklore, land-use practices and community-level decision-making processes, and used in agriculture management, farming techniques, environment conservation, terrace landscape, ethnical culture preservation.
- historical and archaeological description of the system or site

The archaeological material “Water dividing stone” has existed for about 1000 years in Quanfuzhuang Village. Based on historic material, Hani’s folklore and genealogy, it is estimated that terrace can traced back to Tang Dynasty when Hani ancestors settled down in the Ailao Mountain which provided a sanctuary from war outside. Explicit description about terrace in southwest frontier of ancient China was recorded in Chinese agricultural classic “Nong zhen quan shu” of the Ming Dynasty. The much earlier record can be found in the Book on Southern Ethnic Groups (Manshu) written by Fan Chao of the Tang Dynasty.