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Xe Bang Fai Cave Tourism Development Workshop Report

Prepared for the project: Integrated Nature Conservation and Sustainable Resources Management in the Hin Nam No Region

By Terry Bolger

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"Integrated Nature Conservation & Sustainable Resource Management in the Hin Nam No Region (HNN)"

"P.O. Box 9233, Vientiane, Lao PDR"
T +856-20-59973025
F +856-21-243083

E mirjam.dekoning@giz.de
I www.giz.de

Responsible: Dr. Mirjam de Koning

Author(s): Terry Bolger

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1. Introduction

A workshop was held on 30 October 2013 to discuss infrastructure needs for sustainable tourism development of the Xe Bang Fai Cave. The objective of the workshop was to develop a shared understanding and vision among stakeholders for the tourism development of the cave. Participants included personnel from the Hin Nam No project, provincial and district officials from the Natural Resource and Environment Office and the Information Culture and Tourism Office of Khammouane Province. The workshop was facilitated by a consultant cave expert. The agenda for the workshop is presented in Annex 1 and a list of workshop participants is presented in Annex 2.

Dr Mirjam from GIZ and the Hin Nam No project opened the meeting. She noted the high tourism potential of the Xe Bang Fai Cave, but also pointed out that Hin Nam No may be listed as a Natural World Heritage site. Thus tourism development and infrastructure in the cave should be carefully assessed, planned and implemented. She also noted that tourism development is important for the sustainable financing of Hin Nam No NPA. She expressed her hope that the meeting would facilitate the stakeholders to work together for developing an ecotourism development plan for the cave.

2. Xe Bang Fai Cave Development Strategy (2012-2020)

Mr Phanya from the Khammouane Provincial Tourism Department gave a presentation on the strategy and plans for the development of infrastructure to facilitate tourism from Boualapha town up to the entrance of the cave. This plan was developed by the national and provincial tourism departments and was completed in 2012. The plan includes road improvement, parking and toilet facilities, booths for handicraft and ticket sales, an entry gate and walkway to the cave entrance, with benches for resting and viewing platforms for overlooking the lake outside the cave. Mr Phanya requested support for their plan from the Hin Nam No project. Among several additional ideas, he suggested development of the ‘bat cave’, with fixed lighting, for tourism.

The presentation was well-received by the group, especially the idea for a stone walkway to the cave entrance. The consultant noted the need to take account of seasonal fluctuations in the river water level in planning infrastructure close to the water, such as the viewing platforms. Also, no cost estimates have been made yet for the proposed infrastructure developments, which are needed to attract donor interest and funding. The development of the ‘bat cave’ for tourism is not recommended by the consultant or by a cave biology specialist, due to the fauna and biodiversity in this dry, upper section of the cave.

3. Significance and Ecotourism Potential of the Xe Bang Fai Cave

The consultant introduced his presentation with an overview of the significance and ecotourism potential of the Xe Bang Fai Cave, illustrated with photographs. The Xe Bang Fai river has cut a 7 kilometer underground course through the limestone mountain, creating one of the largest active river cave passages in the world. The active river passage averages 76 meters (m) in width and 53 m in height, with a maximum width of 200 m and a maximum height of 120 m. In addition to the size of the cave passages, the cave is superbly decorated with speleothems, including many large and beautiful stalagmites, gour pools, cave pearls and flowstone draperies. High quality photographs of the cave published on the National Geographic website in 2008 have contributed substantially to raising awareness of the significance of Xe Bang Fai Cave, and to increasing interest in ecotourism visitation to the cave.

Sections 3 through 6 of this report summarize material presented by the consultant as introductory concepts. Discussion of options for infrastructure development and tours in the cave begin with section 7 of this report.

4. Possible World Heritage and Ecotourism Development of the Xe Bang Fai Cave

The Lao government has stated its intention to submit a nomination for Hin Namno NPA as a Natural World Heritage Site to UNESCO sometime in 201_? Listing a property as a Natural World Heritage Site requires that it be deemed of outstanding universal value, and meet strict conditions of integrity, which is defined as a measure of the wholeness and intactness of the natural heritage and its attributes.

Special skill is required to develop a cave for tourism to the standards required for a World Heritage Site. A careful balance is required between the infrastructure required to facilitate access to the cave and the need to minimize alteration or disturbance to the natural environment in and around the cave. In a World Heritage Site, this balance should err on the side of precaution and conservation.

5. Limitations of Access to the Area

Road access to the area near the Xe Bang Fai Cave is currently one of the key factors that limits the number of visitors. The greatest impact on visitor numbers may come from upgrading the road from Boualapha to Ban Nongping. For example, before the road up the Hinboun Valley from Highway 8 was upgraded, Konglor Cave received only about 300 visitors per year. Following the road upgrade, in 2008 there were 4,700 visitors, and in 2011 there were 14,000 visitors to Konglor Cave.

6. Protection of the Cave Resources

The main threat to the cave from ecotourism is damage to the speleothem formations, particularly to formations on the cave floor such as the rims of gour pools and cave pearls, which people could walk on and damage, or disfigure by tracking cave sediments onto them. Most of these formations occur on terraces alongside and above the active river passage, and in several side passages such as the balcony passage. The best way to protect these speleothem formations is to confine the tour routes in the cave to the active river passage, where high-energy annual flooding means that the impact of visitors on this passage would be minimal. If riverside terraces or side passages with speleothems are to be included on tour routes, then elevated walkways should be constructed to protect these areas only after careful assessment and planning to preserve the intactness and integrity of the cave with regard to World Heritage guidelines.

Protection of the cave ecosystem and resources can be aided by:

- Baseline assessment and on-going monitoring of the biology, geology and hydrology of the cave.
- Careful assessment and development of any infrastructure in the cave.
- Training of cave guides, awareness raising of villagers, and good interpretation materials or presentations for visitors, to develop awareness of cave resources and values and their need for protection.

7. Walkway to the Cave Entrance

Infrastructure Options	Impact	Cost
1. No walkway	High	None
2. Walkway on and through rocks	Moderate	Moderate
3. Walkway made of bamboo or wood	Low	Moderate
4. Walkway made of metal	Low	High

A key infrastructure need is a walkway over the rugged and slippery rockfall pile near the downstream entrance to the cave. This would make the cave safely accessible to a wider range of tourists, while also protecting the natural resources and ecosystem near the cave entrance. The walkway should follow an alignment along the higher sections of the rockfall near the cliff line to the south (right) on the approach to the cave entrance. This alignment will help to protect the walkway from the damaging impacts of floodwaters during the wet season.

The group agreed that Option 2, a walkway made of stone or cut into the rock (similar to the design shown in Mr Panya's presentation), would be the preferred option in the medium term. While this option should be costed now, it was felt that building this would have to wait until tourism numbers increased and more funding was available. In the near term, it was agreed that the existing bamboo walkway (Option 3) should be repaired in time for the coming tourist season. The existing walkway (55 m long) cost 20 million kip to build in 2012.

8. Boat Landing at the Cave Entrance

Infrastructure Options	Impact	Cost
1. No boat landing	High	None
2. Boat landing made of bamboo or wood	Low	Moderate
3. Boat landing made of metal	Low	High

There should be a defined landing dock for the boats in the cave entrance area. The boat landing design needs to allow for changes in water level during the tourism season (December – April). As fluctuations in water level are not known with any certainty, it would be desirable to make baseline measurements of water level from November through May, near the cave entrance. This can be done by villagers, with project guidance and monitoring.

The group agreed that a floating boat landing (Option 2) made of bamboo and local materials would be the best option. Mr Panya reported that a boat landing of this type is in use at Tham Ting in Luang Prabang Province, and this could be used as an example for design and costing. The boat landing would need to be removed from the cave before the wet season, and re-installed at the beginning of each dry season.

9. Boats for the Cave Tour

Infrastructure Options	Impact	Cost
1. Typical Lao river boat, no motor	Moderate	Low
2. Typical Lao river boat, gas motor	High	Moderate
3. Wider stable boat, no motor	Low	Moderate
4. Wider stable boat, electric motor	Low	High

Boats of good quality and wider (more stable) than the typical Lao river boat could be bought or made by the local villagers. These boats would be used for tours up the main river

passage to the major rockfall located 1.75 km into the cave. The villagers could act as boatmen or perhaps even as guides, and paddle the boats along the river passage. Boats could be carried into the cave entrance in the dry season, and removed at the beginning of the wet season each year. It is recommended that motorized boats not be used inside the cave. If it is deemed necessary to use motorized boats, then electric motors run on battery power should be used. The noise from gas motors may disturb the bats and swiftlets roosting near the cave entrance, which may provide a sensitive indicator of ecotourism impacts on the cave fauna.

The group agreed that plastic boats, similar to the ones owned by the Hin Nam No project but larger, and without motors (Option 3) would be the best option. It was suggested that the tourists could help to paddle the boat if they desired, to make it a more active experience.

10. Lighting for the Cave Tour

Infrastructure Options	Impact	Cost
1. Typical spotlight for guide	Moderate	Low
2. High output spotlight for guide	Low	Moderate
3. Fixed lighting system in cave	Moderate/High	High

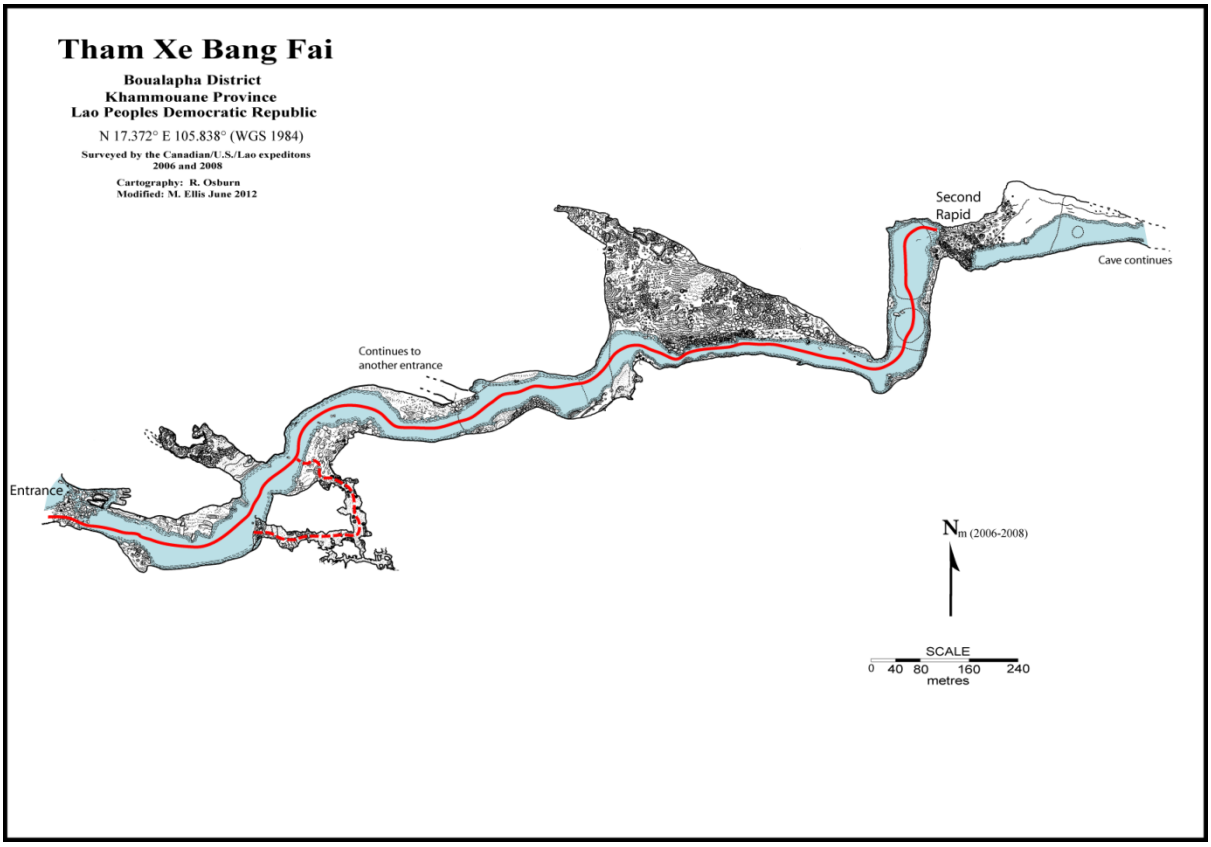
Portable, battery powered lighting is recommended, and probably the only feasible option, for lighting the cave. Powerful, modern LED lights will be required for tourists to be able to see and appreciate the large passages and beautiful speleothem formations in the cave. Powerful LED spotlights that are powered by 12 volt batteries are available for about $400. Batteries can be recharged using grid or solar panels. A guide in each boat should have a powerful LED spotlight to illuminate the large cave passages. In addition, regular headlamps or handheld flashlights should be provided to guides and tourists for safety purposes.

The group agreed that a high output spotlight carried by the guide on each tour (Option 2) is the best option at present and for the medium term. In the future, if tourist numbers (and revenue) increase substantially, then a feasibility study and costing for a fixed lighting system in the cave (Option 3) may be warranted.

11. Boat Tour from the Cave Entrance to the Rockfall

This tour is recommended as the most suitable for the majority of tourists who will come to visit the cave. From the downstream entrance to the cave, tourists will be taken along the active river passage by boat, to a point about 1.75 km into the cave where a major rockfall and rapids obstructs further navigation by boat (see Map 1). The boat tour will then return back down the active river passage to the entrance. It is estimated that this tour would take 2-3 hours. This trip would allow tourists to see many of the outstanding features of the cave, such as the large river passage, large and beautiful stalagmites and flowstone draperies, bats and swiftlets roosting in the ceiling near the cave entrance, and the spectacular view out the entrance from inside the cave. This trip would also minimize tourist and infrastructure development impacts on the cave. This trip would be suitable for tourists with limited to moderate levels of physical fitness and agility.

The group agreed that this would be the most popular (and profitable) tour of the cave.



Map 1. Map showing the downstream section of Xe Bang Fai Cave with the recommended boat route indicated by the solid red line along the river (in blue). The walking route in the Balcony passage is indicated by the dashed red line.

12. Boat Tour to the Rockfall and Walking Up to the Balcony

Infrastructure Options	Impact	Cost
1. No tourism, no walkway	Low	None
2. Tourism, no walkway	High	Low
3. Tourism, bamboo or wood walkway	High	Moderate
4. Tourism, metal walkway	Low/Moderate	High

This trip is similar to the boat trip to the rockfall, but on the way back downstream the boats would stop on the left bank of the river passage and the tourists would be guided on a walk up the balcony passage to a balcony overlooking the active river passage near the downstream cave entrance (see Map 1). The balcony passage is about 18 m above the dry season river level, and is nicely decorated with a variety of speleothem formations (such as stalagmites, stalactites, columns, flowstone, gours and cave pearls) on the walls, ceiling and floor. Due to the extensive speleothem formations, particularly on the floor of this passage, an elevated walkway would need to be constructed to protect this passage from being heavily impacted by tourist visitation. In addition, a ladder or stairway would need to be constructed to assist tourists in getting up to the balcony passage. Careful assessment, planning and monitoring will be required of any walkway development and tourism in this passage. It is estimated that this tour would take 3-4 hours. This trip would be suitable for tourists with moderate levels of physical fitness and agility.

After a fair bit of discussion of the four options in the table above, the majority of the participants felt that no walkway was needed for tourism to this area (Option 2). They thought that delineating a path with a string (or reflective surveyors flagging tape) and 'being careful' would be enough to protect this cave passage from tourism impacts. However, the consultant strongly disagrees with this opinion, and recommends that a metal grating walkway (with a non-slip surface) be constructed (Option 4) before tourism is permitted in this passage. There are many examples from around the world of the impacts that tourism can have on the cave formations when there is not a defined walkway. A number of caves in Vang Vieng without walkways provide local examples of the damage that can occur from uncontrolled tourism in dry, decorated passages. A walkway made of bamboo or wood (Option 3) is not recommended inside the cave due to the rapid decomposition of natural materials in the cave environment. Guidelines for cave walkways are presented in Annex 3.

13. Walkway in the Stalagmite Area

Infrastructure Options	Impact	Cost
1. Tourism from boat, no walkway	Low	None
2. Walking tourism, no walkway	High	Low
3. Tourism, bamboo or wood walkway	High	Moderate
4. Tourism, metal walkway	Low/Moderate	High

The large stalagmites in this area (about 400 m before the second rapid on Map 1) can be seen from the boat, and it is recommended that tourists not get out of the boat to see this area. There are many delicate features on the floor in this area which could be heavily impacted by walking tourism. If there is going to be walking tourism in this area then a walkway will need to be built. Also, a staircase or ladder will be required to get up to this area from the river level. Careful assessment, planning and monitoring will be required of any walkway development and tourism in this area.

The majority of the group did not seem strongly committed to walking tourism up to this area, so viewing the stalagmite area from the boat (Option 1) is recommended by the consultant. If it is decided to have walking tourism to this area, then the consultant strongly recommends that a metal grating walkway (Option 4) be planned and constructed. The discussion of this was essentially the same as the discussion of a walkway in the balcony passage.

14. Adventure Kayaking Trip through the Cave and Back

Infrastructure Options	Impact	Cost
1. No tourism, no development	Low	None
2. Tourism, no development or guide	Moderate/High	Low
3. Tourism, with guide	Low/Moderate	Low
4. Tourism, with development and guide	Moderate/High	High

This trip is suitable only for adventure-seeking tourists with a good level of physical fitness and agility. The trip through the active river passage is done using inflatable or hard shell kayaks. The kayaks must be portaged around three major rockfall / rapids in the downstream section of the cave, and a further five rapids in the upper section of the cave must be portaged going in the upstream direction, but can be 'run' when kayaking downstream. The kayak trip through the cave takes 3-4 hours or more in each direction, depending on the strength, skill and experience of the kayakers, and the strength of the river current. This trip requires no infrastructure development in or near the cave. As long as the kayakers stay on the river or close to the riverbank and near the water level they would have minimal impact

on the cave passage or speleothem formations. This trip is already offered on a commercial basis by several ecotourism operators. Development in this upper area of the cave would be very difficult and expensive.

The group agreed that tourism to the upper part of the cave (upstream of the second rapid on Map 1) should remain as an adventure tour, and that infrastructure development in this section of the cave is not feasible. Adventure tourism with an experienced guide (Option 3) is recommended for safety reasons, and the group felt that this tour should continue to be provided by private sector tour operators.

15. Potential Financial Benefits and Benefit Sharing

The Hin Namno NPA Co-Management Plan identifies revenues from ecotourism as one of the sustainable financing mechanisms for the conservation and management of Hin Namno NPA, including benefit sharing with local communities. Indicative entrance fees for the cave tours are provided by considering entrance fees to other comparable tourist caves in the area:

- Konglor Cave: 40,000 kip/person ($5.00)
- Phong Nha Cave: 38,000 kip/person ($4.75)
- Thien Duong Cave: 58,000 kip/person ($7.25)
- Xe Bang Fai Cave: 40,000 kip/person ($5.00)

For tours into the Xe Bang Fai Cave, a Hin Nam No NPA entrance fee and a boat fee have previously been negotiated between the tourism department and the villagers. Combined, these fees are about 40,000 kip per person, which is in alignment with other comparable caves in the region.

A realistic annual revenue income of about 360 million kip ($45,000) from tours into the Xe Bang Fai Cave is possible, based on 60 tourists per day over a 5 month period (December-April) for tours into the cave. A potential maximum annual revenue income from cave tours is estimated to be 1,080 million kip ($135,000), based on 180 tourists per day over 5 months. This compares with an estimated 560 million kip ($70,000) from tours into the Konglor Cave in 2011. A benefit sharing arrangement has previously been negotiated between the villagers, the tourism department and the Hin Nam No NPA. This was presented by Miss Vanhxay to the workshop group.

The group had a vigorous discussion about benefit sharing. From the projected annual revenues it was apparent that the current benefit sharing arrangement (presented by Miss Vanhxay) would only provide a small amount of the money required to finance the conservation and management of Hin Nam No NPA. Mr Sysomphone stated that a minimum of 240 million kip per year is required for the management of Hin Nam No NPA. Thus, the discussion focused on how this amount of revenue could potentially be raised in a reasonable way. To achieve this, it was suggested that there needs to be a NPA entrance fee that goes only to the NPA, with an increased rate for 'foreigners' than what has currently been agreed. To bring the NPA entrance fees in alignment with those for National Parks in Thailand and Vietnam, it was suggested to increase the fee for 'foreigners' to 40,000 kip per person. The term 'foreigner' was not clearly defined in this discussion. The possibility of having three categories: Lao citizens, ASEAN citizens, and other foreigners, should be considered. To maintain the benefit sharing arrangements as already agreed to, it was suggested to change the current NPA entrance fee to a cave entrance fee. Discussion of this issue was not completed due to time running short and Mr Sysomphone needed to go to

another meeting. These issues will need to be discussed in more detail in a proposed meeting in December 2013.

The consultant has constructed a spreadsheet file (Benefit sharing from TXBF Tourism.xlsx) *that represents the benefit sharing arrangements as proposed at the workshop, and which provides projections of tourist numbers and related revenues for the beneficiaries. More work and discussion is needed on revenue raising and benefit sharing arrangements. The spreadsheet provides a useful tool for exploring different options.*

16. Closing Comments

Mr Keng commented that implementation at the local level is difficult, due to the low service quality of the villagers. He further commented that the khumban police had been inadvertently left out of the discussions up until now. He also presented seven proposals to the Hin Nam No project for consideration. These proposals are presented in Annex 4.

Dr Mirjam thanked all the participants for their input to the workshop. She commented that the participants now have a better vision of how to develop the cave for tourism. She noted that the consultant will provide recommendations on next steps in his report on the workshop. The results of the workshop and recommended next steps will be used in planning the next phase of the Hin Nam No project, which will be done in November.

17. Recommended Next Steps

- *Survey and Estimate Costs for Infrastructure:* Estimate the cost to repair the current walkway to the cave entrance. Survey the alignment and measure the distance and width for a stone walkway to the cave entrance, and develop a cost estimate. Get cost estimates for boats for cave tours. Survey the alignment and measure the distance and width for a stairway and walkway in the balcony passage, and develop a cost estimate for a grated metal stairway and walkway.

- *Investigate and Discuss Benefit Sharing Arrangements:* Further work is needed to investigate, discuss and agree on benefit sharing arrangements. Benefit sharing arrangements from other tourism developments in NPAs in Lao PDR and neighboring countries should be investigated and assessed as possible models. A workshop among stakeholders to discuss and agree on benefit sharing arrangements and distribution of responsibilities should be convened.

- *Interpretation and Awareness Raising of Cave Values:* Interpretation materials should be drafted and used for interpretation, training and awareness raising activities. Training and awareness raising should be provided initially to staff from the tourism and awareness raising groups of the Hin Nam No project. The training and awareness raising should be conducted in both a classroom/workshop setting and in the cave.

- *Baseline Assessment of the Cave Environment:* Baseline measurement, survey and documentation of the aesthetic, geological, hydrological and biological resources and attributes of the cave should be initiated with the assistance of appropriate experts. The results of the baseline monitoring should be used to develop recommendations for the development, management and ongoing monitoring of the cave.

- *Cave and Visitor Management Plan:* A management plan should be developed and implemented both to protect the cave resources and provide an enjoyable and educational experience for visitors to the cave.

Annex 1: Agenda for the Workshop Regarding Developments Inside and Outside of the Xe Bang Fai Cave, 30th October, 2013.

Time	Program	Responsible person
08:30	Registration	Miss. Anong
09:00	Presentation: objective and agenda of the meeting	Miss. Vanhxay
09:15	Open the ceremony	Dr. Mirjam deKoning
09:30	Presentation: Xe Bang Fai Cave Development Strategy (2012-2020)	P-ICT
10:00	Coffee break	
10:15	Presentation: Development Options Inside of the Xe Bang Fai Cave.	Dr. Terry Bolger
10:35	Continue presentation and discussion for agreement on each point inside the cave how to develop based on advice of the cave expert (Dr. Terry). <u>Presentation and discussion topic are:</u> 1. Protection of the cave resources	Presentation by Dr. Terry. Discussion by all participants
11:00	2. Walkway to the cave entrance	
11:20	3. Boat landing at the cave entrance.	
11:40	4. Boats for the cave tour.	
12:00	Lunch break	
01:30	5. Lighting for the cave tour	Presentation by Dr. Terry. Discussion by all participants
02:00	6. Walkway in the balcony area	
02:30	7. Walkway in stalagmite area	
03:00	Coffee break	
03:15	8. Cave tours and potential financial benefits	
03:35	Summarize results of the discussion	Miss. Vanhxay
04:00	Closing the ceremony	Dr. Mirjam deKoning

Annex 2: List of Workshop Participants

No.	Name	Title / Organization
1	Dr Mirjam deKoning	Programme Director, GIZ - HNN Project
2	Mr Sinnasone Seangchanhthavong	Deputy Director of Khammouane PONRE
3	Mr Sysomphone Soudthichack	Head of FRM Section, Khammouane PONRE
4	Mr Phanya Chanhthalath	Deputy Director of Khammouane ICT
5	Mr Keng Prakoompon	Head of ICT Office, Boualapha District
6	Mr Khamphao	Technical Officer, FRM Section, PONRE
7	Mr Kenta	Technical Officer, Khammouane ICT
8	Mr Bounlong	Technical Officer, Boualapha ICT
9	Mr Chanhthavysouk	HNN NPA Tourism Unit, Boualapha
10	Miss Vanhxay Keobounphan	Ecotourism Advisor, IP Consult - HNN Project
11	Dr Terry Bolger	Cave and Karst Specialist, Freelance Consultant

Annex 3: Guidelines for Cave Walkways

1. Walkways are an essential first step in reducing the cumulative impacts of large amounts of visitors into a cave and protecting fragile or sensitive cave resources. Walkways should provide a durable and safe walking surface and definite boundaries for visitors to stay within.

2. The most effective walkways are ones that lead the visitor close enough to the major points of interest so they can see and photograph them but not so close that they can touch or disturb them.

3. Walkway layout is best done after becoming very familiar with the cave and its resources and recognizing which areas could be shown and which ones should be avoided. A detailed cave map is a great asset in laying out walkways. If a map is not available an individual familiar with the cave and its resources could provide the needed information.

4. Where feasible, sloping paths are preferable to stairways or steps. On an irregular walkway, handrails are important.

5. Unless the floor is solid rock, paving or other walkway surfaces are important. Wood is not preferred. The ideal material is stainless steel or good quality plastic. If not sure of quality, the material should be tested for acid exudation prior to use. Pre-cast concrete tiles or slabs are the next choice.

6. Any walkways should be set on pre-cast beams so they do not make contact with the natural floor or impede natural water movements.

7. Construction and development can then be planned in detail but there needs to be some flexibility so that there can be adjustment to respond to unforeseen problems or opportunities.

8. Some level of environmental impact assessment should be conducted and an environmental mitigation and management plan (EMMP) should be drawn up before construction work commences.

9. The EMMP should be implemented and monitored to minimize damage to the cave resources in the course of construction.

Annex 4: Additional Proposals from the ICT Office of Boualapha District

1. Repair or improve the walkway to the cave entrance as soon as possible.
2. Improve the road to Xieng Lue waterfall.
3. Build police boxes for the village police near the cave and at the turnoff to Xieng Lue waterfall.
4. Provide electricity for the five Nongping village homestay families.
5. Provide another water well and water tower for Nongping village.
6. Provide equipment for Boualapha Tourism Office: 1 motorbike (to station one staff in Nongping village), 1 computer, 1 camera.
7. Increase in DSA from 30,000 kip/day.