



TA DZONG PRESENTATION
(THE TOWER OF TRONGSA)

N Bhutan



CHINA

BHUTAN

Thimphu

INDIA

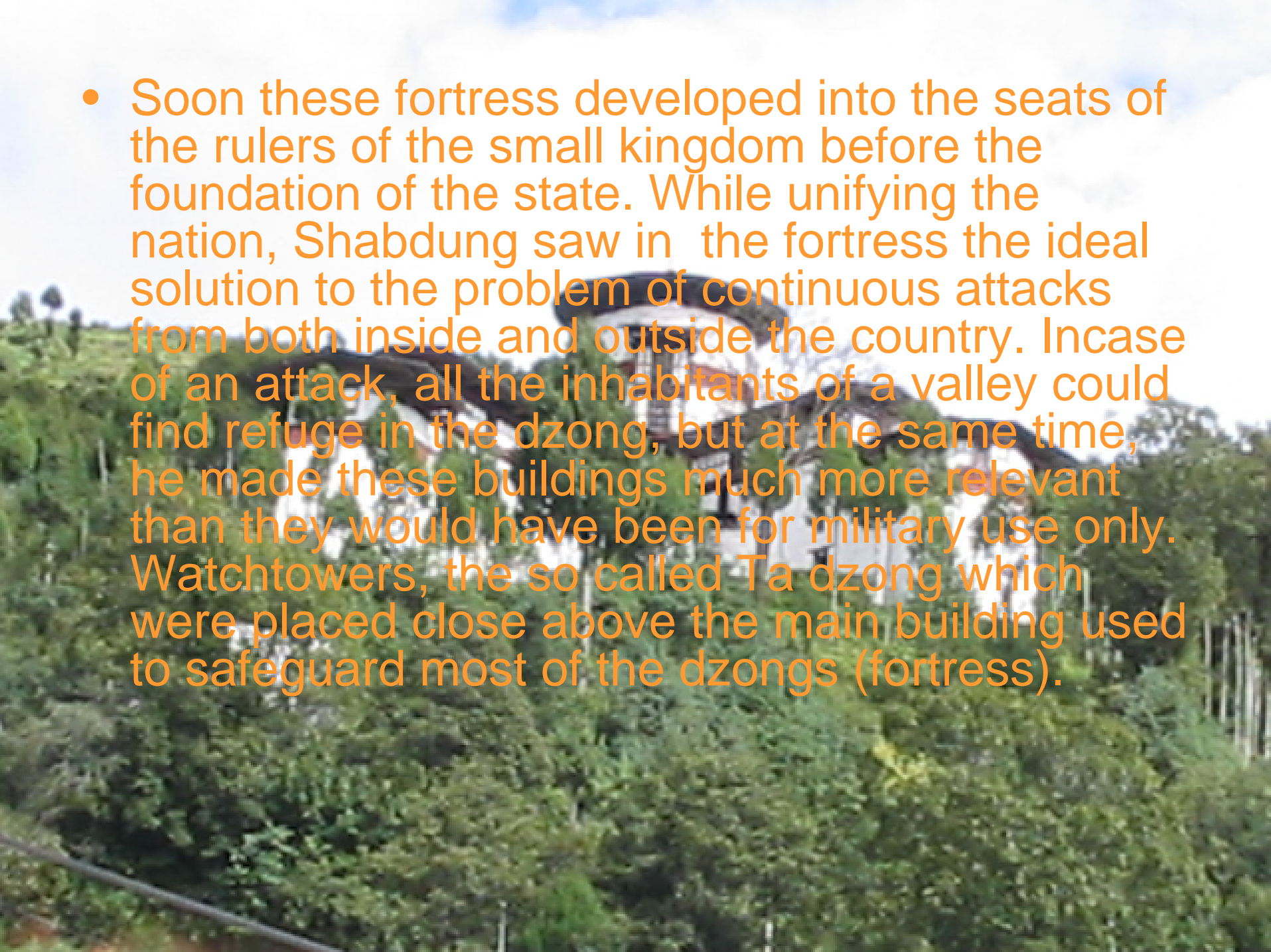
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INTRODUCTION.

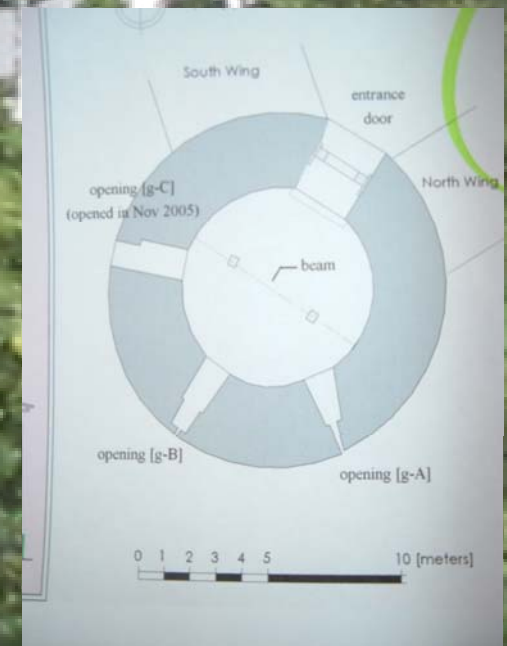
- Stone monuments dominate the landscape in Bhutan. A monastery fortress, a dzong marks every valley. These dzongs can be compared with the European fortress- castles of the middle ages which were strongholds of both political and religious power. This great architecture, however still forms a living part of Bhutan's culture. Besides being carriers of Bhutanese identity, they also represents the cohesion of religious and secular power.
- The origin of the concept of using a dzong (fortress) as a military stronghold predates the period of Shabdung Nawang Namgay(1594-1651), Spiritual leader. The centuries before him, the powerful Lhapa school had already built various such buildings, following Tibetan models, in Western Bhutan.

- Soon these fortress developed into the seats of the rulers of the small kingdom before the foundation of the state. While unifying the nation, Shabdung saw in the fortress the ideal solution to the problem of continuous attacks from both inside and outside the country. In case of an attack, all the inhabitants of a valley could find refuge in the dzong, but at the same time, he made these buildings much more relevant than they would have been for military use only. Watchtowers, the so called Ta dzong which were placed close above the main building used to safeguard most of the dzongs (fortress).



- In view of the many aspects of the building's future use, it is suggested to name and market the renovated and converted Ta dzong under a category less specific than just a MUSEUM and called it more suggestively, THE TOWER OF TRONGSA. This designation would reflect the proposed multiple use of Ta dzong, since neither the term "museum" nor the term "temple" would cover the intended function of the building alone. It should be placed of worship used by Bhutanese Buddhists and at the same time a museum presenting the rich historic and religious heritage of the Trongsa dzong. Thus an exhibition object would serve as a source of information for a foreign visitor, at the same time be an object of worship for a Bhutanese pilgrim.

- Besides the museum- type use of Ta dzong, the religious importance it serves today should be maintained and integrated into the future overall functions. The southern wings shall be converted into a residential quarters for the monks, whereas the main tower and northern wing will be used for the museum. The lhakhang (temple) of the legendary hero Gesar of Ling as well as the lhakhang of the Bodhisattva manjushri (jampelyang) will become integrated parts of the museum as well.



Preservation and promotion of Historical and cultural heritage.

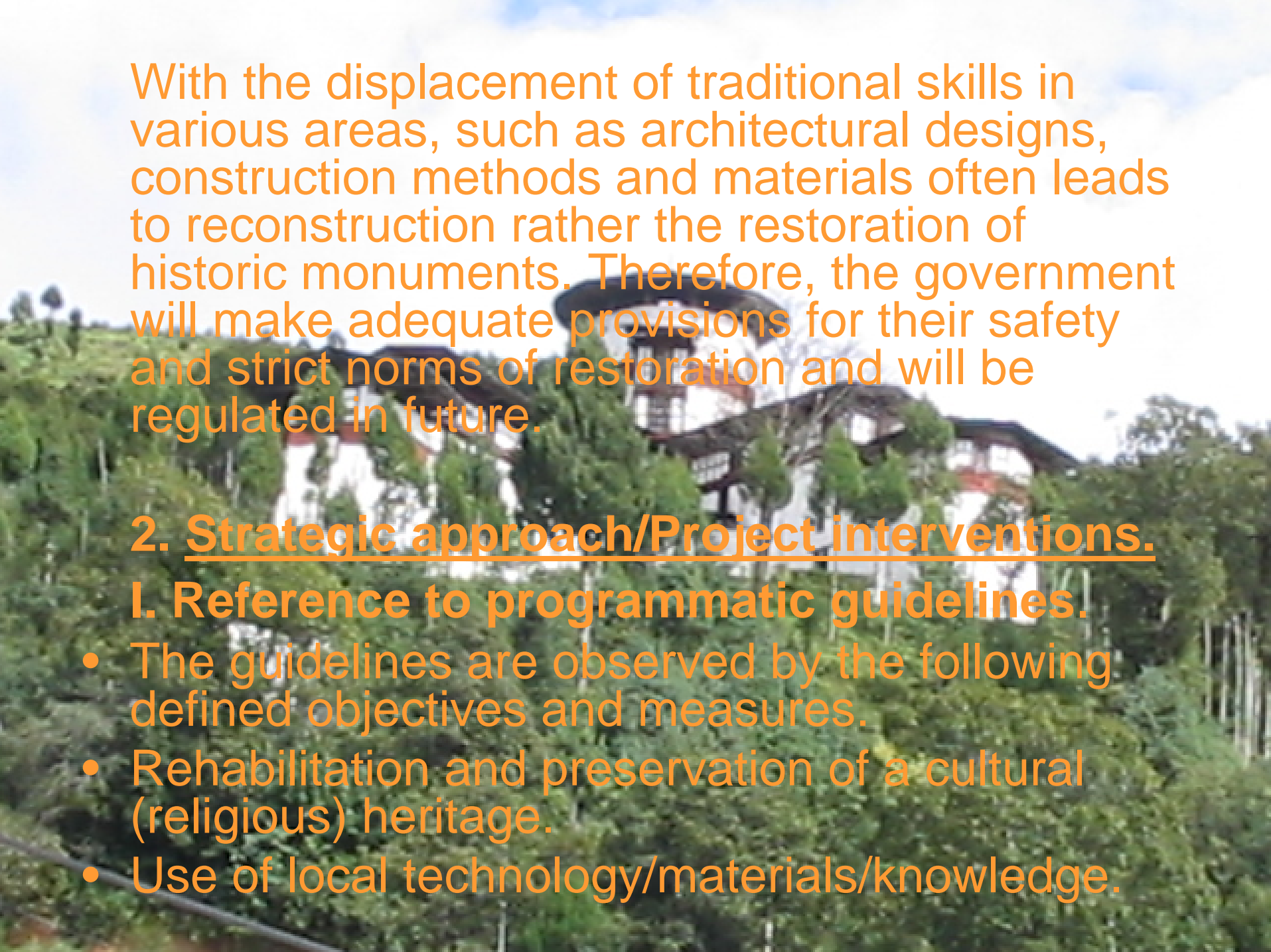
Unlike many countries, traditional arts, age old ceremonies, festivals ,social conduct and structures not remains of a bygone age. Traditional arts and crafts are still practiced as they were done hundreds of years ago, vibrant festivals are still celebrated and social principles like Driglam Namzha are still evident because they continue to have a special significance in the daily lived of the people.



While development is being ushered in by far the most ambitious national goal is that of cultural preservation, assimilating changes without losing the country's unique culture and identity is one of the main challenges facing the country today. Physical heritage traditions like architectural designs that are unique, environmentally friendly, and built from the local materials by the local craftsmen and villagers are being replaced by concrete structures. Beautiful houses and whole villages with traditional structures are slowly disappearing with the introduction of new materials and construction methods. Concerted efforts have been made by the government to identify, declare and maintain sites in their original state, a legislation to prevent encroachment to these cultural and historical sites will be brought out.

The country has over 2000 ancient Buddhist temples and monasteries and over 10,000 chortens (Buddhist stupas). Many of these structures date back to medieval ages and house rare objects, ancient paintings, sculptures and unique manuscripts. These architectural treasure houses are largely located in remote and some in almost inaccessible places, causing many constraints in maintenance, safety and restoration.






With the displacement of traditional skills in various areas, such as architectural designs, construction methods and materials often leads to reconstruction rather than the restoration of historic monuments. Therefore, the government will make adequate provisions for their safety and strict norms of restoration and will be regulated in future.

2. Strategic approach/Project interventions.

I. Reference to programmatic guidelines.

- The guidelines are observed by the following defined objectives and measures.
- Rehabilitation and preservation of a cultural (religious) heritage.
- Use of local technology/materials/knowledge.

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- Improvement of professional skills of local experts and craftsmen in the field of renovation and restoration and upgrading of the artisans' skills.
 - Creation of employment opportunities in the region.
 - Improvement of living conditions within Ta dzong for hermits and caretakers.
 - The focal groups are the monks living in Ta dzong, People/Villages in and around Trongsa and local experts, technicians and skilled labours of the country.

II. Overall project objectives.

- The rehabilitations and preservation of Ta dzong in Trongsa as a significant cultural and historical heritage site in the country.
- The establishment of a state of the art museum showcasing the best of Bhutan's valuable art and rich history

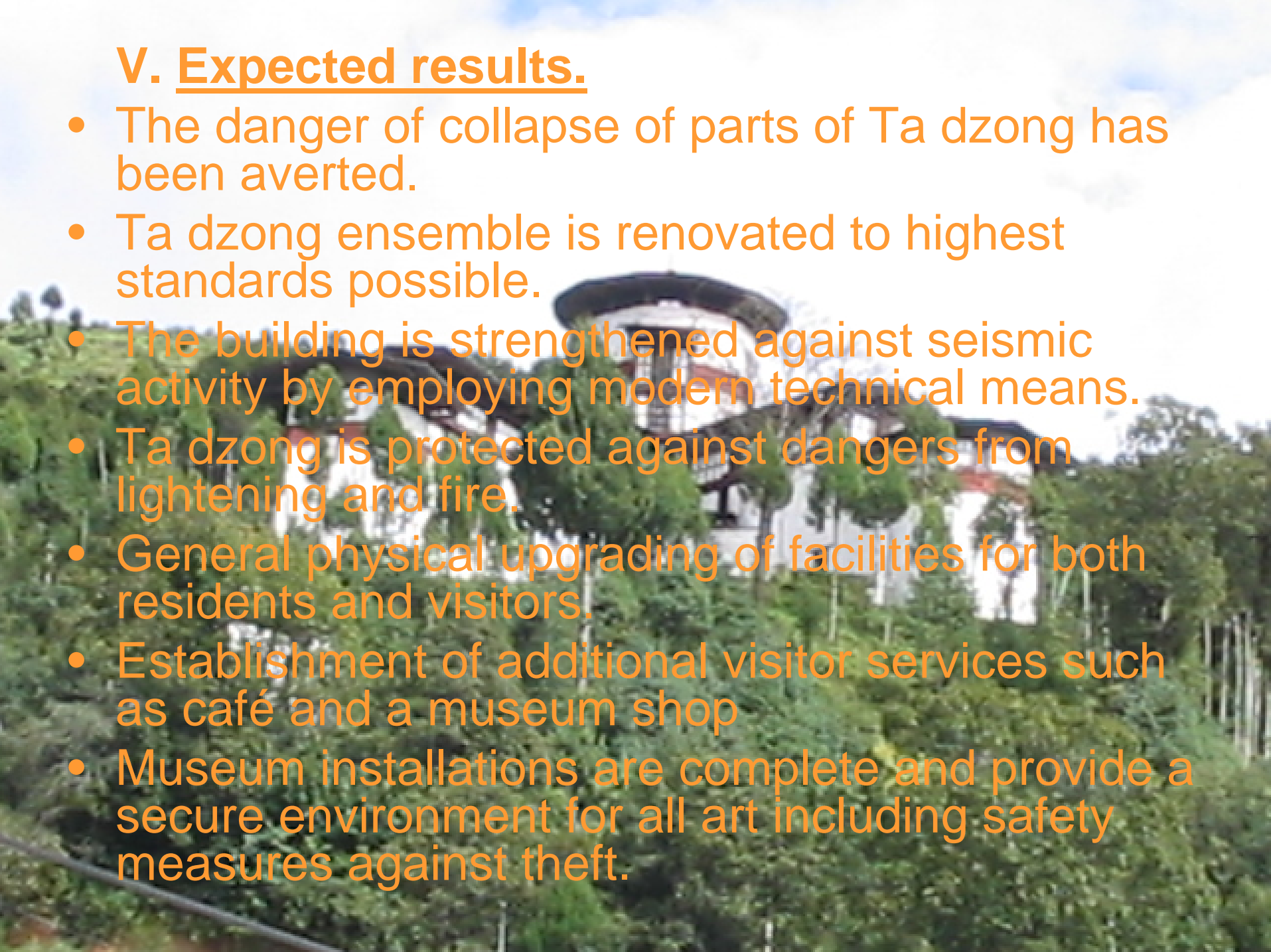
III. Strategic approach.

- The Bhutanese point of view that Ta dzong is a living structure which is not necessarily compatible with strict international conservation rules. A renovation and structural rehabilitation concept should be agreed upon which will serve the wishes to protect and conserve an important historic building as well as to allow contemporary use as a monk's residence and as a museum.

IV. Project justification.

- As an important site of national heritage, the renovation of Ta dzong should preserve the traditional and unique character of its architecture for generations to come.
- During the implementation period the project will provide employment opportunities for the local community and for skilled craftsmen from all over the country.
- The project will offer training for apprentices of traditional architecture such as Lapons (Supervisors), Zows (carpenters) and dozops (masons). Craftsmen will gain additional experience in both traditional and modern work skills which will prove invaluable for future historic preservation endeavors in the country.

V. Expected results.

- The danger of collapse of parts of Ta dzong has been averted.
 - Ta dzong ensemble is renovated to highest standards possible.
 - The building is strengthened against seismic activity by employing modern technical means.
 - Ta dzong is protected against dangers from lightning and fire.
 - General physical upgrading of facilities for both residents and visitors.
 - Establishment of additional visitor services such as café and a museum shop
 - Museum installations are complete and provide a secure environment for all art including safety measures against theft.
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- The wall paintings (cloth) frescos and painted wooden surfaces are restored.
 - A complete project documentation is made available to the Government.
 - Sustainable management of Ta dzong.
 - Improvement of local management capacities with regard to site and museum.
 - Increased awareness and management capacities in the fields of renovation and restoration, fire protection, art conservation, water and sanitation.
 - Upgrading of artisans' skills.
 - Craftsmen taking a lead role in conservation.
 - Increased employment opportunities.


- Increased income for the town of Trongsa from the tourist trade by becoming a major tourist destination in the country.
- The project sets an example for the future renovation works of major historic buildings in the country.
- A major contribution to the Government's commitment to the preservation of tradition and culture.



VI. Beneficiaries, participants and partners.

Direct beneficiaries/target groups/stakeholders of the project intervention.

- Monk body (representing 2 monks and 2 caretakers living in the dzong) through preservation of their living and working environment and improvement of their living standards.
- Bhutanese people in general: Preservation of their national cultural heritage
- Trongsa municipality: employment opportunities during project implementation.

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- Trongsa town: increase of income from tourism.
 - Visitors to Bhutan, international community: model preservation of an outstanding cultural heritage site of international importance.
 - Bhutanese scholars of architecture and culture: model renovation, applied science of fresco restoration, preservation of old paintings and textiles, traditional building techniques and interfaces to international standards of historic conservation and structural rehabilitation.
 - Ministry of Home and Cultural Affairs, Department of Culture and Dzongkhag Administration: general capacity building and gaining of experiences in project implementation and execution procedures.

3. Project Implementation and Duration.

- The implementing agency will be Trongsa Dzongkhag (District Administration) and the district administrator (Governor) will be directly responsible to Ministry of Home and Cultural Affairs in all the matters relating to the field implementation of the project.
- An annual work plan will be prepared by the project management unit and submitted to the project steering committee for approval. The annual work plan will cover all components of project activities. On the basis of the approved work plan, fund will be released by Ministry of Finance directly to Trongsa Dzongkhag administration.

Project management unit (PMU).

- The PMU is a project implementation office headed by a Project Director (District administrator). The project manager (PM) will be directly responsible to the project director in all matters relating to the field implementation of the project. The Project Manager will be supported by the Project Management team (PMT) consisting of Project Director, Project Engineer, Finance and Administration officers, Architects of Department of culture and Local advisors.
- The following procedures will be executed:
- -The annual work plan will be prepared by PMU and submitted to the annual project meeting of the project steering committee for approval. The annual work plan will cover separately all the components of project activities.

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- The background of the slide features a photograph of a traditional building with a prominent, curved, dark-colored roof. The building is partially obscured by lush green foliage in the foreground, which appears to be a garden or a field of crops. The sky is bright and slightly overcast. The text is overlaid on this image in a bold, orange font.
- On the basis of the approved annual workplan, funds will be released by Ministry of Finance to Trongsa Dzongkhag Administration.
 - The PMU will prepare quarterly accounts and progress reports for the activities and submitted to Ministry of Finance.
 - The Project Director will be the drawing and disbursing officer for the project. He may however delegate financial powers to the project manager.

Project management Unit (PMU) Meetings.

- This body represents the managerial link between the management unit responsible in the project. Meetings of the PMU shall take place at least once every month and more often if needed on call of the Project Director. The decision in the PMU meeting should be unanimous. If no consent is achieved, the matter shall be brought forwarded for decision to higher authority in Ministry of Home and Cultural Affairs. Detailed minutes of the meetings of the PMU shall be kept for project management documentation.
- PMU shall be responsible for:
- -Controlling of budgets

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- Controlling the timetables and milestones given in the annual working plan.
 - Recruitment of local experts and employees.
 - Controlling of budget.

4. Budget.

- The Austrian Coordination Office has proposed to continue with 20 : 80 (Bhutan- Austria) funding ratio for total implementation costs (Euro 1,679,067).

Audit.

- The project accounts will be audited annually based on Royal Government of Bhutan's Audit Authority's norms.

5. Budget Overview.

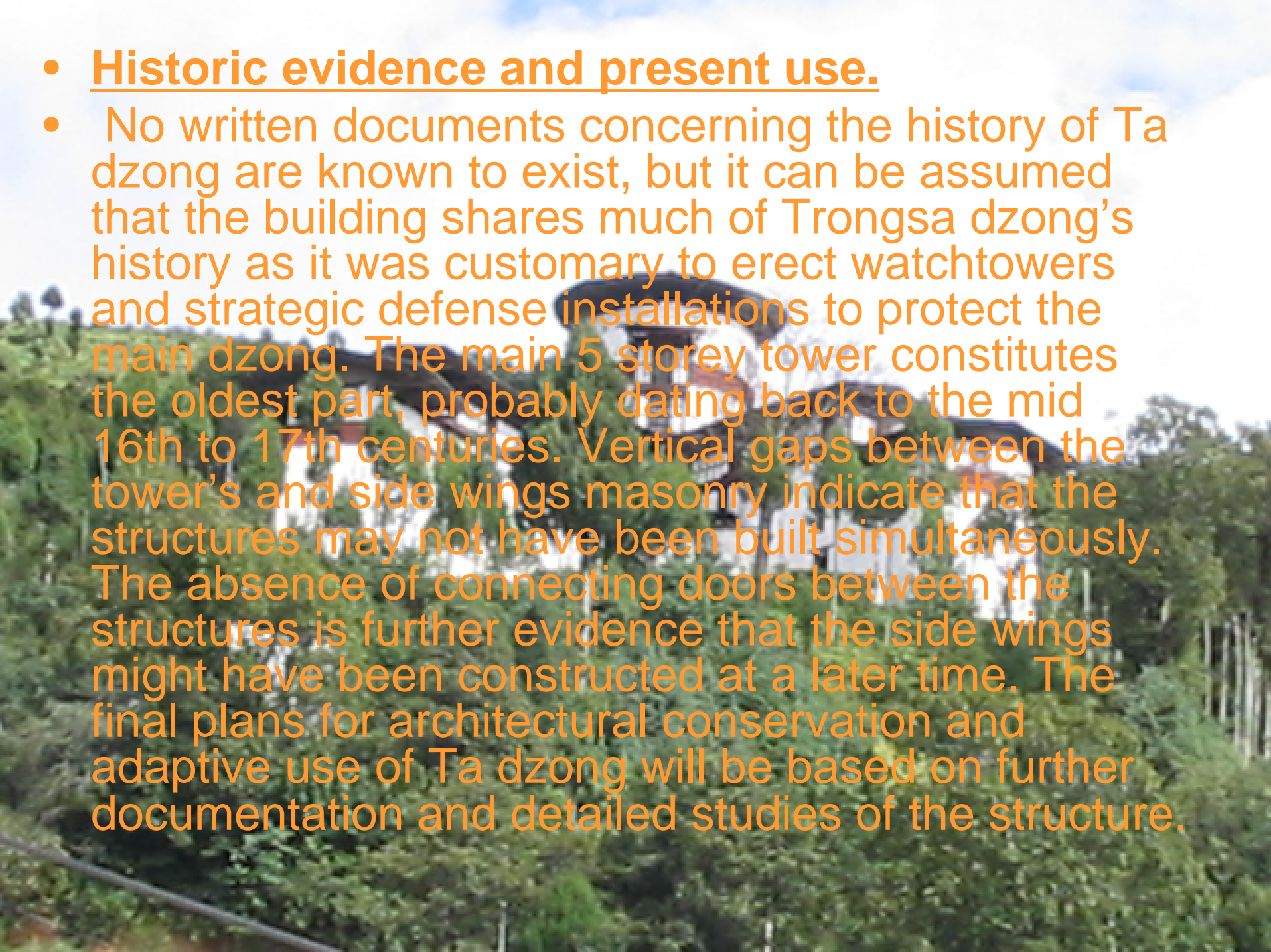
- Establishing an estimate of how much of the original substance of the dzong can be conserved and how much of it will need to be rebuilt or replaced poses clearly the most difficult challenge. No previous analysis of restoration needs or detailed investigation of the buildings foundations and stone structure has been undertaken.

- The preliminary cost estimate prepared by Bhutanese experts assumed a complete reconstruction from ground level. To be prepared for unexpected or hidden damages, a contingency allowance of 15% of restoration costs appears justified.

6. Architectural concept for the adaptive use.

Adaptive Re-use.

- It was agreed that the central tower and the North wing would house the proposed museum and its exhibits, while both hermits and caretakers should occupy the other wing, secluded from the public space of the museum.

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- **Historic evidence and present use.**
 - No written documents concerning the history of Ta dzong are known to exist, but it can be assumed that the building shares much of Trongsa dzong's history as it was customary to erect watchtowers and strategic defense installations to protect the main dzong. The main 5 storey tower constitutes the oldest part, probably dating back to the mid 16th to 17th centuries. Vertical gaps between the tower's and side wings masonry indicate that the structures may not have been built simultaneously. The absence of connecting doors between the structures is further evidence that the side wings might have been constructed at a later time. The final plans for architectural conservation and adaptive use of Ta dzong will be based on further documentation and detailed studies of the structure.

Summary of Ta dzong's multiple purpose potential.

- Preservation of the spiritual aspects of the building that houses two hermits and their caretakers in one of the wings.
- Creation of a state of the art museum as a place of education about the country's religious culture.
- Creation of a new tourist destination with a unique viewing terrace and other facilities such a café and a museum/ craft shop which will attract visitors.
- A rotating exhibition concept which will allow display of objects that are usually under key and lock in the dzong. This will give Bhutanese visitors a sense of ownership of these national treasures.

General design aspects.

- The general character and appearance of the side wings should be maintained as they are, their structural parts repaired or renovated wherever necessary and the fine wall paintings and other decoration within both lhakhangs professionally restored. All roofs of both side wings shall be covered with traditional shingles on top of CGI sheets. Although many old and new buildings in Bhutan are adorned with new decorative carving and painting, this trend is not compatible with the still prevailing and basically unadorned defense character of the Dzong. In addition, the colorful beauty of most exhibits should stand out on its own and attention should not be diverted by unrelated contemporary adornment.

7. Conservation, renovation and other works.

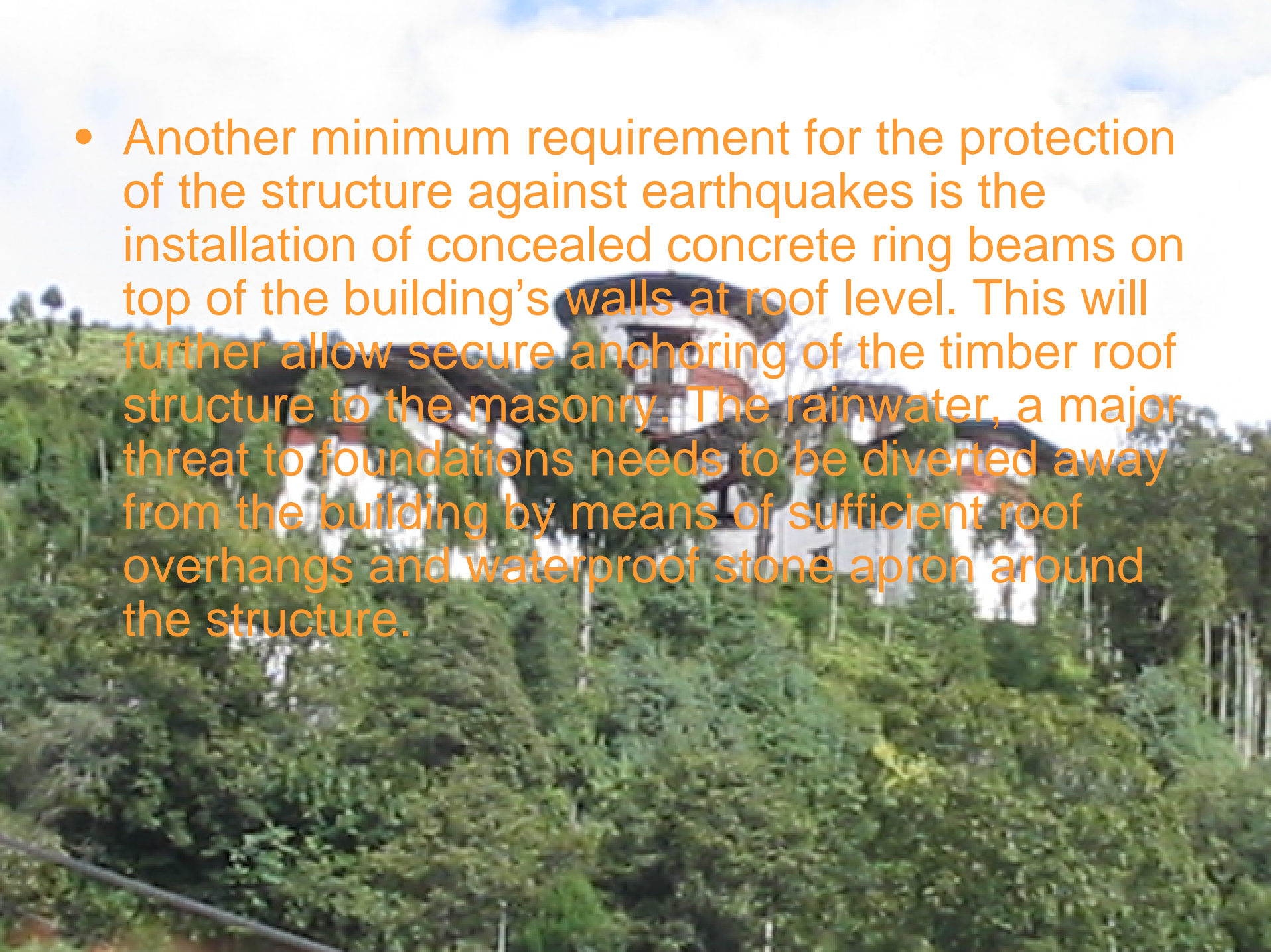
In discussion, two main concerns kept reoccurring.

- 1. For consolidating the building's structural strength. (It should last for another 1000years).
- 2. For protecting it against fire hazards (fire and lightning protection).
- 3. Aiming to preserve as much of the historic structure as possible and thus saving one of the most important buildings in Trongsa. In repairs preference should be given rather than complete dismantling and rebuilding.

Foundations, Stone walls.

- The building's massive external walls (two to three meters thick and up to 15 meters high) are constructed of poorly fitted stone rubble masonry laid in mud mortars. The archaic buildings technique indicates that not much attention was paid to erect a refined building but rather a massive structure for defense purpose only. It was observed that the foundations are traditionally shallow if at all existent. Numerous vertical cracks can be observed on all outside walls and slight settling of foundations near the rounded off ends of the side wings.

- Another minimum requirement for the protection of the structure against earthquakes is the installation of concealed concrete ring beams on top of the building's walls at roof level. This will further allow secure anchoring of the timber roof structure to the masonry. The rainwater, a major threat to foundations needs to be diverted away from the building by means of sufficient roof overhangs and waterproof stone apron around the structure.



Timber Structure.

- The building's structural timbers are affected by worm infestation, dry and wet rot, and poor makeshift repairs carried out as emergency measures. A detailed assessment will only be possible after careful removal of individual components but it can be assured that very little of the bearing wooden structure can be reused. Metal sheeting of the roofs is acceptable as it provides the best protection against rains but should be covered with traditional wooden shingles in order to regain the typical and original appearance of Bhutanese roofs which are so rapidly and regrettably disappearing.

The Two free standing Towers.

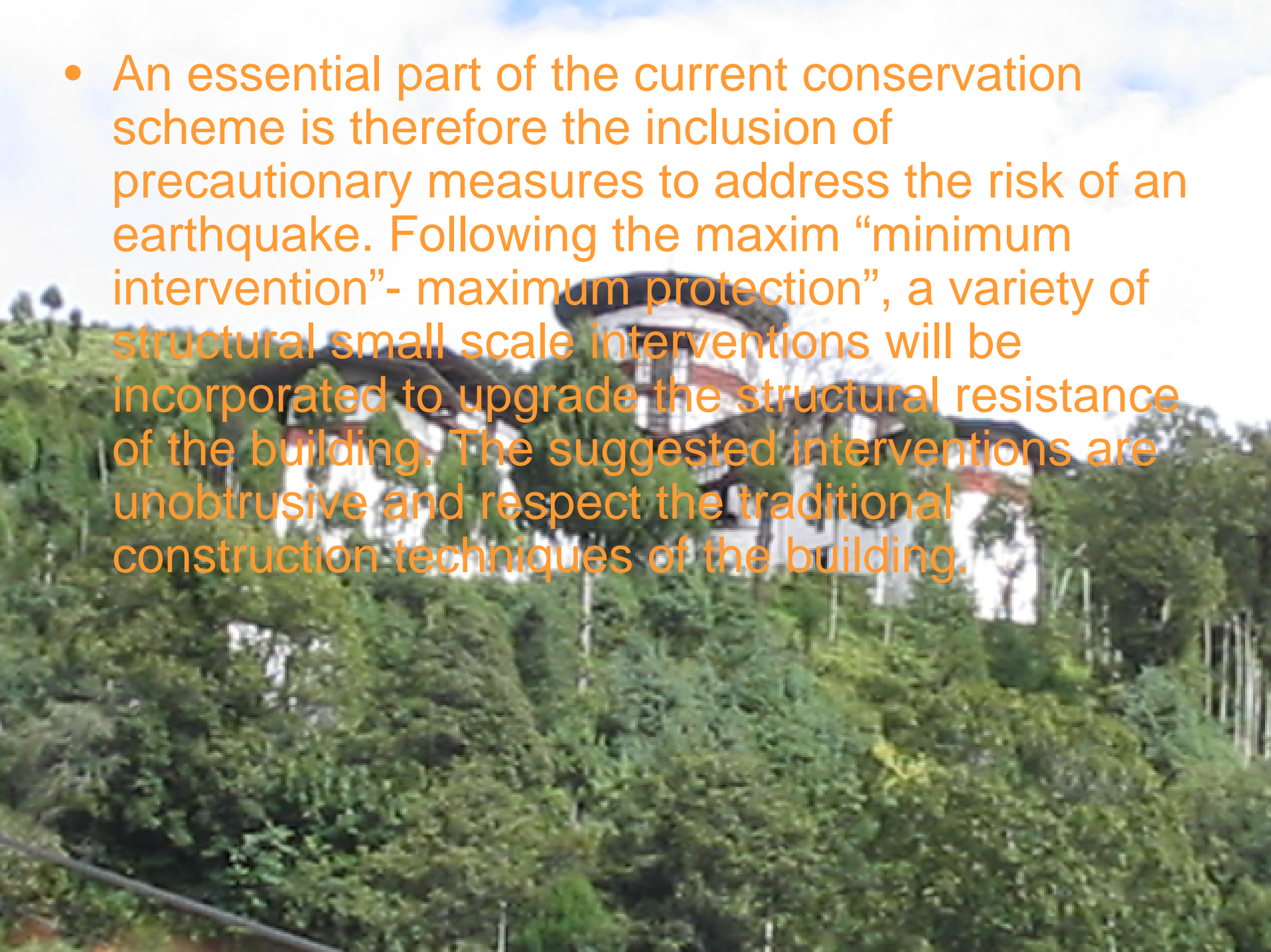
- The two free standing towers to the south and North of the main building form an integral part of Ta dzong ensemble. Most certainly, they were originally built for defense purpose.

8. Structural investigation and suggested interventions.

- Rehabilitation strategy.

As it is located along the Himalayan fault line, Bhutan is exposed to strong seismic activity, although the country has not suffered a major earthquake in recent years, smaller tremors are experienced every year.

- An essential part of the current conservation scheme is therefore the inclusion of precautionary measures to address the risk of an earthquake. Following the maxim “minimum intervention”- maximum protection”, a variety of structural small scale interventions will be incorporated to upgrade the structural resistance of the building. The suggested interventions are unobtrusive and respect the traditional construction techniques of the building.



Foundations- proposed interventions.

Test pits should be dug at several locations. The foundations should be strengthened with reinforced concrete ring beam on the inner and outer side of the walls. Ring beams at the foundation level can be an efficient tool to increase the bear shear capacity of existing foundations. A drainage system should be installed around the entire building to decrease water pressure on foundation walls and lessen the impact of rising water in the walls.

Walls-Existing condition.

The primary load bearing walls are made of rubble stone masonry set in mud mortar. The stones are partly dressed with a roundish surface and partly hammer dressed. The size of the stones ranges from 12cm to 50cm approximately. The wooden lintels at the loopholes are typically made of square, 12cm wide pine members. Throughout the building, the lintels are heavily decayed and appear to be undersized.

Walls- proposed interventions.

Missing stones have to be replaced. Cracks and decayed mortar joints have to be repointed with the traditional mud mortar. The majority of the wooden lintels needs to be replaced. The thickness of the mud mortar joints in the reconstructed areas should be kept thin so that settlements within the newly reconstructed walls will be minimal.

Floors- existing condition.

The floors consist of multi layered timber slabs, which in general are in poor condition.



The timber floor structure showing the multi-layered timber slabs and supporting timber beams.

Floors- Proposed interventions.

Most of the decayed and rotten wooden members will need to be replaced. For the new floors slabs, it is intended to mount two layers of traditional planks on top of cross beams with a layer of pressure treated plywood panels in between. The planks will maintain the traditional appearance of floor and ceiling while the plywood panels create a stiff diaphragm. This diaphragm will brace and stabilize adjoining walls and help to transfer lateral forces into the closest shear wall in the event of an earthquake. The panels should be at least $\frac{3}{4}$ inches thick. Panels should be staggered in plan so that they are interlock with each other.

Roofs- existing conditions.

All roofs were built in recent years in a simplified way and covered with painted CGI sheets instead of the traditional wooden shingles.

Roofs- Proposed interventions.

All the existing roofs will be replaced with traditional roofs with wooden shingles.

Museum design and exhibition technology.

Long term preservation and sensitive exhibits under adverse environmental conditions, appropriate illumination, and security provision against theft or burglary.

- The humid climate of Trongsa and the stark difference in daily and annually temperature levels are fundamental problems for a museum, particularly in a historical building that doesn't allow the introduction of an air conditioning system. The necessary protection of exhibits thus will be relegated almost completely to the showcases- apart from number of large, freestanding objects. The showcases will be made of steel sections, welded and screwed together and with glazing and sealing made as airtight as possible. All object labels and gallery texts (in Dzongkha and English) will be made for easy reading and comprehension.

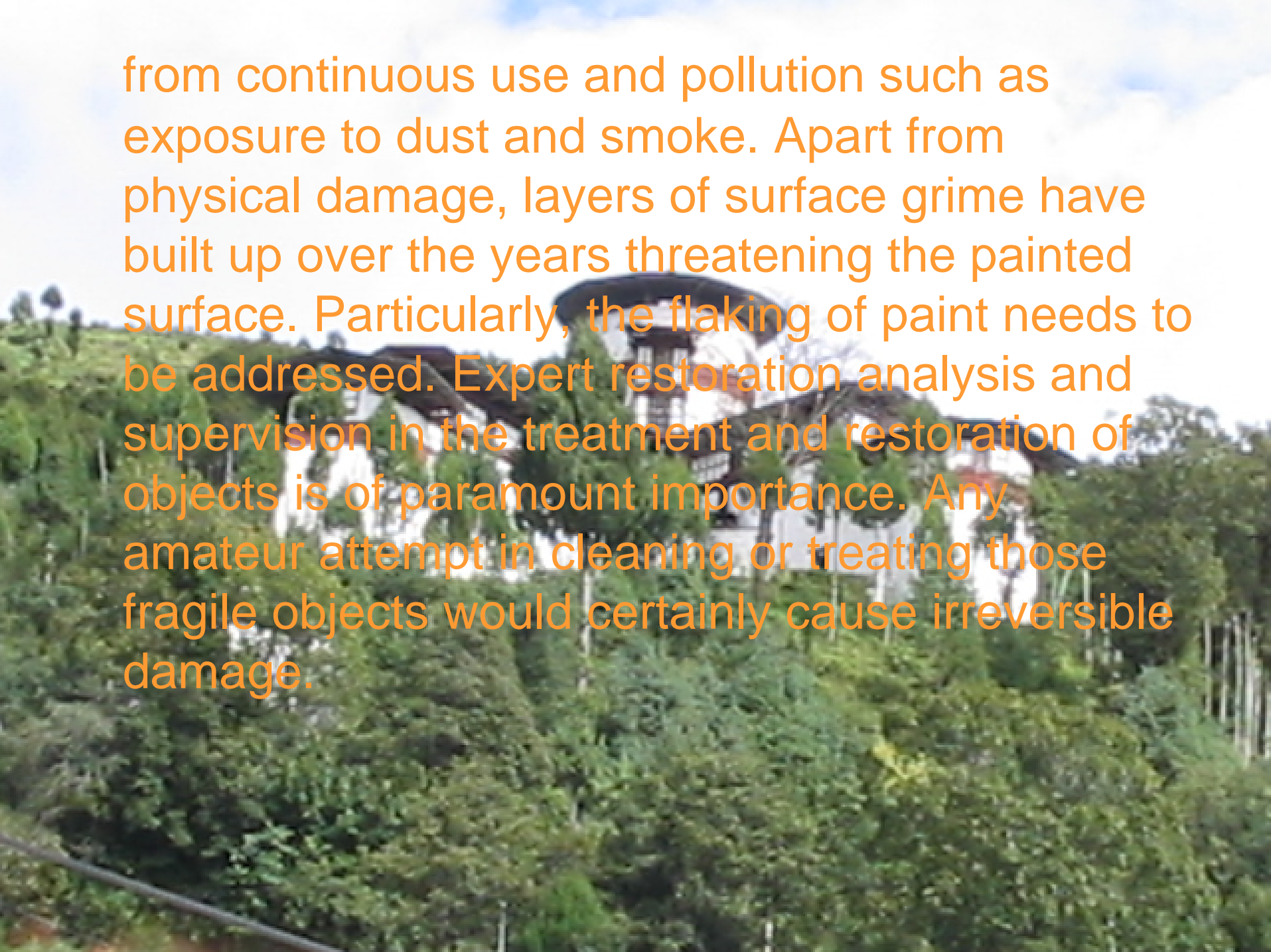
9. THE EXHIBITION.

Exhibition Concept.

The exhibition will reflect the historic and religious significance which emphasizes the history of the monarchy reign. Historical developments from the foundation of the first temple on this location till the present day's monarchy will be presented.

CONSERVATION AND RESTORATION OF OBJECTS.

Due to their function in religious ceremonies and daily worship, statues have severely suffered



from continuous use and pollution such as exposure to dust and smoke. Apart from physical damage, layers of surface grime have built up over the years threatening the painted surface. Particularly, the flaking of paint needs to be addressed. Expert restoration analysis and supervision in the treatment and restoration of objects is of paramount importance. Any amateur attempt in cleaning or treating those fragile objects would certainly cause irreversible damage.

The museum is divided into 14 galleries. They are as follows.

Gallery1. Guardians of four directions (East, West, North and South).

Gallery2. Media room.

Gallery3. The Raven Crown.

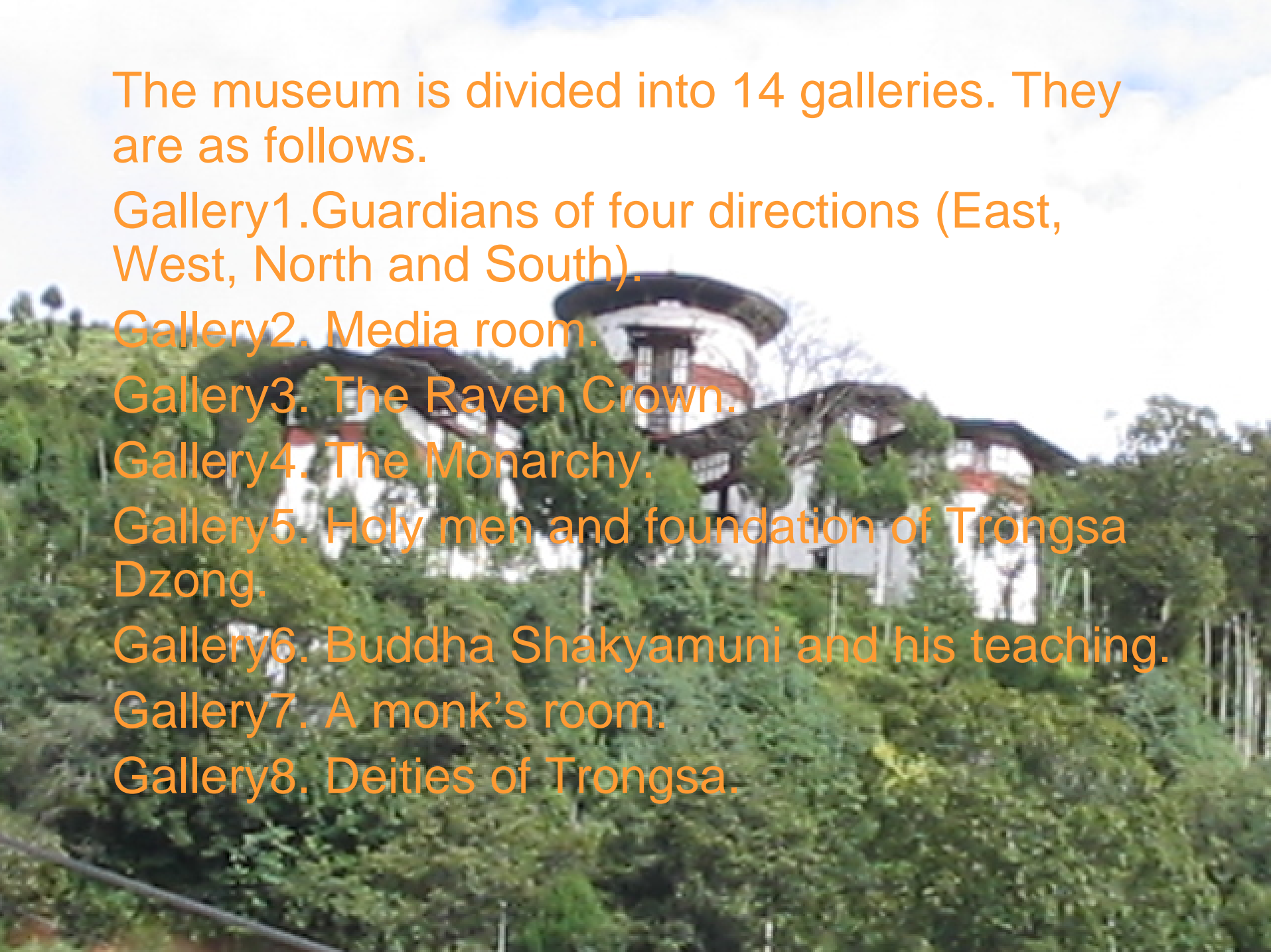
Gallery4. The Monarchy.

Gallery5. Holy men and foundation of Trongsa Dzong.

Gallery6. Buddha Shakyamuni and his teaching.

Gallery7. A monk's room.

Gallery8. Deities of Trongsa.



Gallery9. Guru Rinpoche.

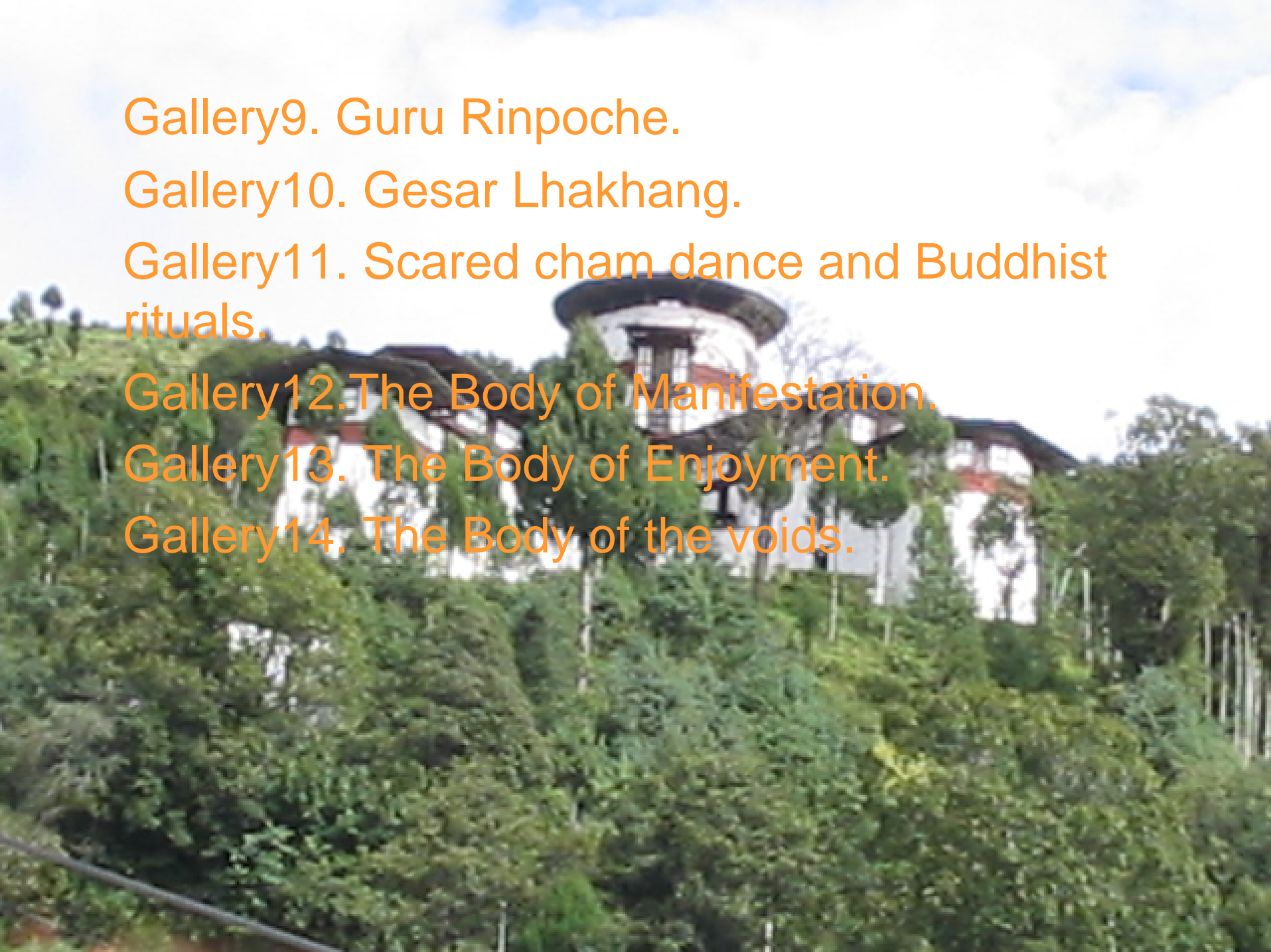
Gallery10. Gesar Lhakhang.

Gallery11. Scared cham dance and Buddhist rituals.

Gallery12. The Body of Manifestation.

Gallery13. The Body of Enjoyment.

Gallery14. The Body of the voids.



The conservator's responsibilities in this project.

- Design of a comprehensive on the job training program that includes Bhutanese specialists at all times.
- Selection of objects for treatment according to their urgency for conservation.
- Definition of conservation techniques for cleaning, consolidation of paint layer and reconstruction of broken or missing parts according to international standards.
- Instruction of craftsmen and artists in the proper handling of conservation and restoration work.

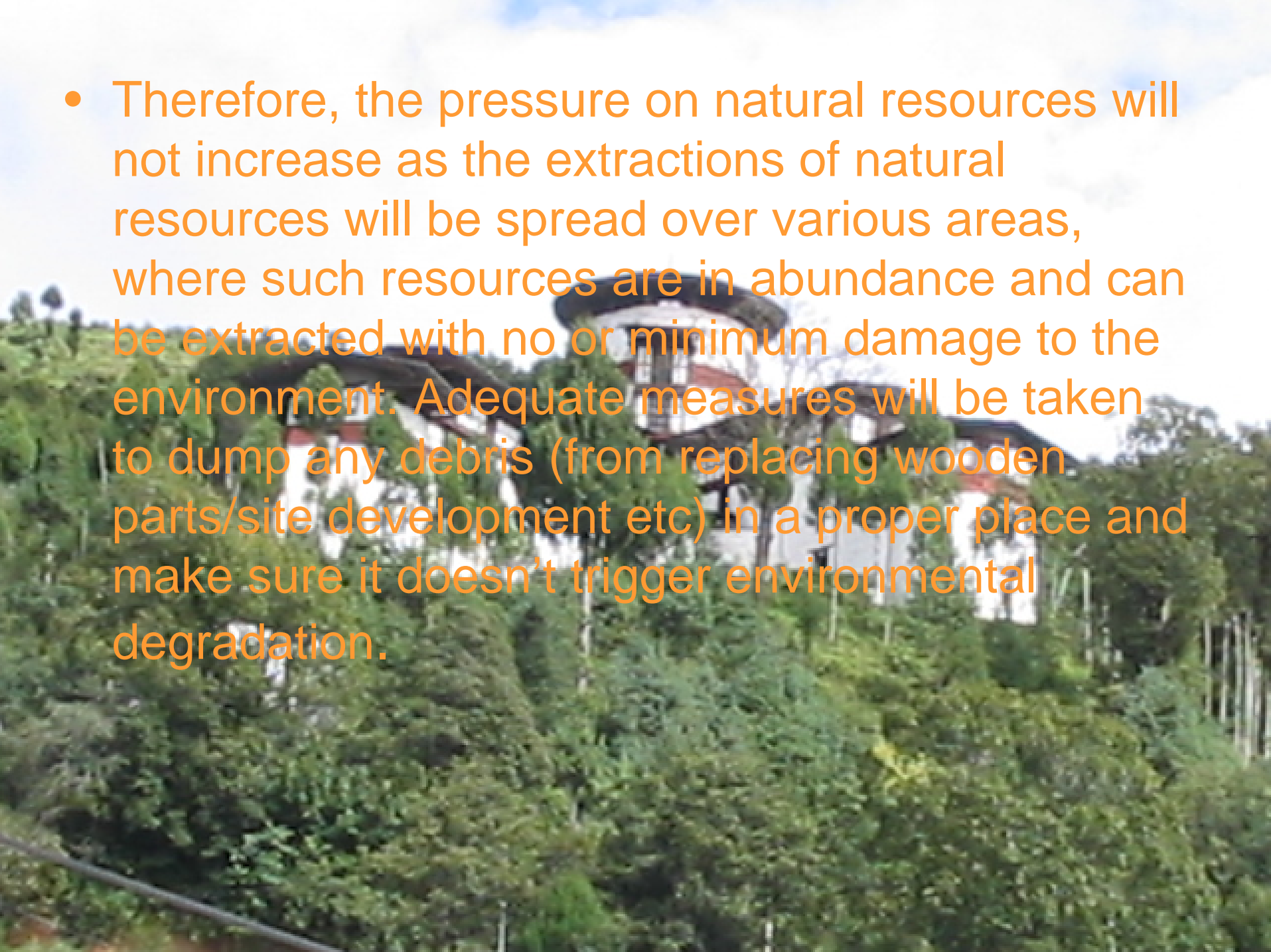
- **Gender Criteria.**

- While preparing the documentation and project, there have not been any gender sensitive consultations as the main objective of the project is to renovate an ancient monument and convert it to a Museum. Nevertheless, the project will create employment opportunities during the implementation stage and equal opportunity will be available for men as well as women. Further the project also will provide on the job training in the conservation techniques and architecture.

- Equal opportunities will be available to both male and female participants. Both men and women will have equal access to employment opportunities during implementation. Most of the manual workers are recruited from the local area itself and both men and women will be given equal opportunity. So far no obstacles or barriers could be identified. No measures have been taken as men and women have equal rights and also in general there are no restrictions for neither for men nor women to visit/work in a monastery/Museum.

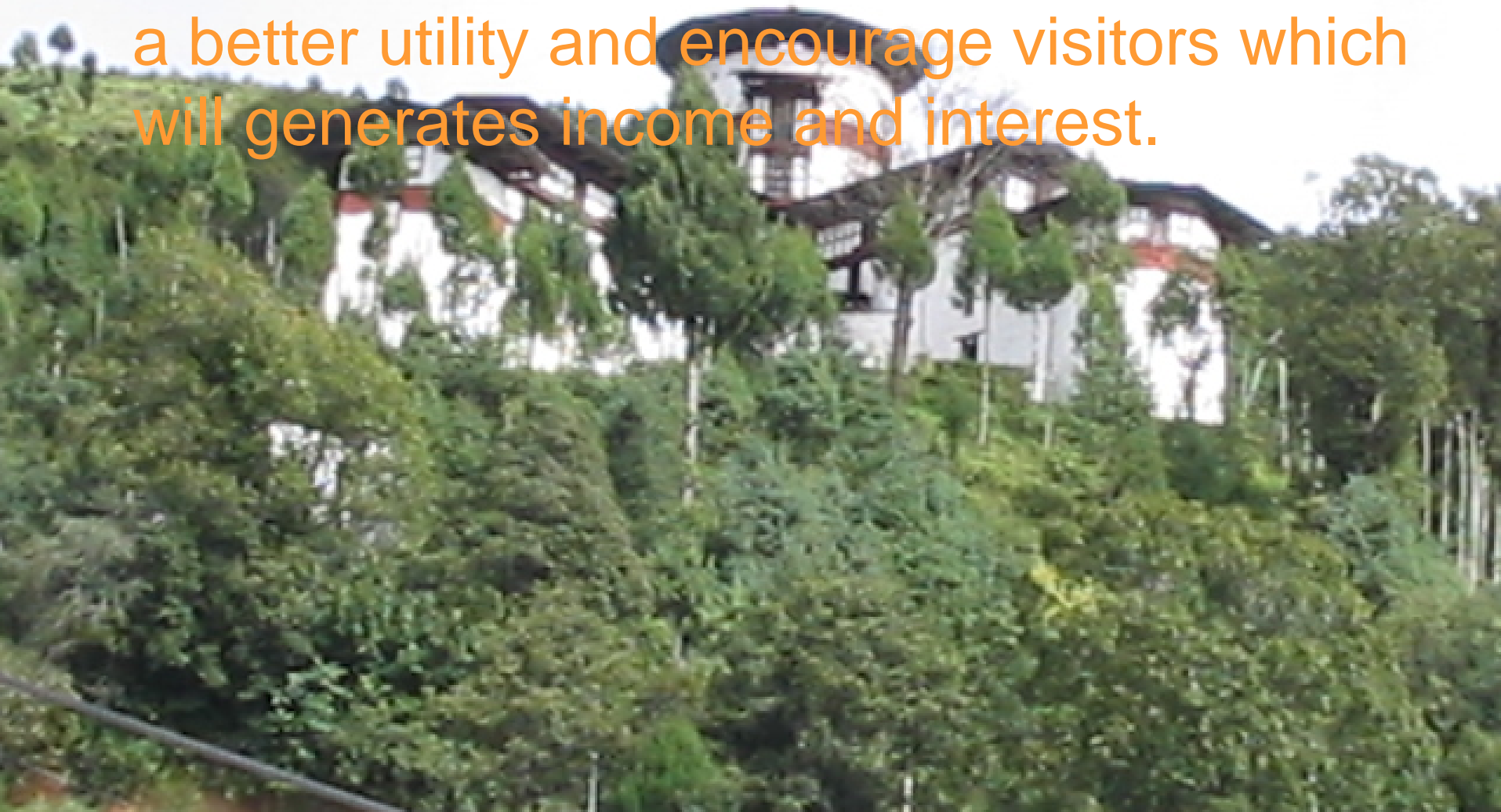
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- **Environmental impact of the project.**
 - The project is in line with the sustainable development and environmental strategies. Environmental aspects have a high priority in Bhutan, which follow the concept of increasing Gross National Happiness, instead of increasing the Gross National Product. The project should take into account the necessary environmentally relevant national laws. For extraction of natural resources like stones, timber etc for construction purposes, the project management will have to strictly follow the Royal Government of Bhutan's rules, which means that the Government will only allow specifically, project oriented planned and sustainable extraction of natural resources.

- Therefore, the pressure on natural resources will not increase as the extractions of natural resources will be spread over various areas, where such resources are in abundance and can be extracted with no or minimum damage to the environment. Adequate measures will be taken to dump any debris (from replacing wooden parts/site development etc) in a proper place and make sure it doesn't trigger environmental degradation.



- Conclusion.

Only four people were using this big building. Adaptive use as a museum will be a better utility and encourage visitors which will generate income and interest.





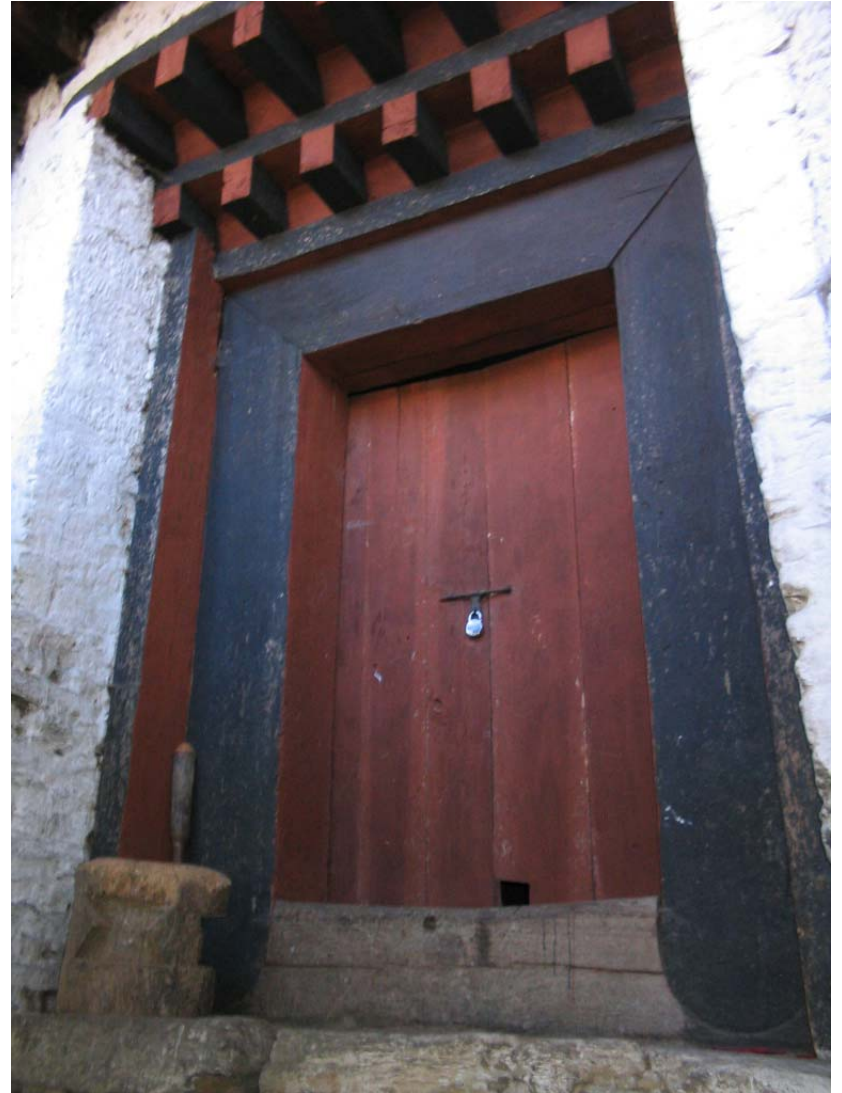
















THANK YOU

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