Restoring Heritage
Developing Disaster Risk Management Plan to Conserve the Outstanding Universal Value of the Historic City of Ayutthaya, Thailand

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Outline

I. Historic City of Ayutthaya and the 2011 flood

II. Developing disaster risk management for cultural heritage

III. Engaging partners, stakeholders and local communities through capacity building activities in order to advance the understanding in disaster risk management for cultural heritage.

VI. Lesson learnt
I. Introduction
Historic City of Ayutthaya, Thailand

Southeast Asia

Thailand
II. Disaster Risk Management Plan
Overview of Developing DRM Plan

2011 Flood

Damage Assessment by International Experts and professional associations

Damage Assessment by FAD and Volunteers

Various international assistance on restoration projects

FAD+UNESCO to study flood risk assessment

Community-based Risk Assessment Engaging local communities into the planning process

Short-term measure Salvages, Cleaning, Stabilisation

Capacity building workshop for FAD Staff
Sharing knowledge on WH conservation principle and Disaster risk management for cultural heritage

Long term measure DRM Plan for Ayutthaya Island

FAD to develop Disaster Risk Management Plan for the Historic City of Ayutthaya

Mitigation measures included into Master Plan to be approved by the Cabinet and implemented
Active Faults

Tropical spiral storm

Seismic hazard

Summer storm

Flood risk map

Hazard Maps
Well-known from contemporary sources and maps, Ayutthaya was laid out according to a systematic and rigid city planning grid, consisting of roads, canals, and moats around all the principal structures. The scheme took maximum advantage of the city’s position in the midst of three rivers and had a hydraulic system for water management which was technologically extremely advanced and unique in the world.

Statement of Outstanding Universal Value
<table>
<thead>
<tr>
<th>Significance</th>
<th>Attributes</th>
<th>Contribution of Attribute to Significance of Property</th>
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</thead>
</table>
| The world’s largest and most cosmopolitan urban areas and a center of global diplomacy and commerce | 1. Location—an island surrounded by 3 rivers connecting the city to the sea  
2. Extensive archaeological site the remains of tall prang and Buddhist monasteries | 1. Very high (Urban Heritage)  
2. Very high (Archaeology Heritage) |
| Water management which was technologically extremely advanced and unique in the world. | 1. Systematic and rigid city planning grid, consisting of roads, canals, and moats around all the principal structures | 1. Very high (Urban Heritage) |
| Ingenuity and the creativity of the Ayutthaya civilization as well as its ability to assimilate a multitude of foreign influences | 1. The surviving art in the architectural ruins.  
2. The large palaces and the Buddhist monasteries | 1. Very high (Architecture/Intangible Heritage)  
2. Very high (Architecture/Intangible Heritage) |
| Emulation the perfection of the mythical city of Ayodhaya | 1. Pattern of urban replication is in keeping with the urban planning concept (Bangkok) | 1. Very high (Urban Heritage) |
Risk analysis

Vulnerabilities

- Monsoon
- Depression
- Climate change
- Location

Urbanisation
- Construction
- Water management
- Past Intervention
- Unprepared management
- Lack of corporation
- Change of architecture and building technique

Hazard: Flood

- Landslide/erosion
- Land sunken
- Electricity leakage
- Theft

Primary Impacts

- Remains, water system
- Museum Antiques objects
- Historic building Urban structure deteriorated, failed

Secondary Impacts

- Cultural assets/economic damages
- Loss of traditional knowledge
- Loss of lives/safety of staff, visitors

Impacts

- Loss of original bricks, lime mortar of the ancient ruins, the river/canal bank can collapse
- Antiques and artefacts kept in the museums can be stolen or broken during the emergency time
- Moist and rising damp can make the earlier deteriorated to the ruins, old temples and museum objects.
- Cultural buildings and tourism asset coming from the heritage attributes can be affected
- Old local artisans carrying the knowledge of living with water and handicraft can not transmit their knowledge
- Staff of heritage sites and visitors are insecure during the time
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<th>Mitigation measures</th>
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<td><strong>Mitigation measures</strong></td>
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<td>Urbanisation in the historic city and Industrialisation around less flood plains and water flow channel</td>
<td>1. Review Land use</td>
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<td>Construction of higher embankment and retaining wall along the river/ increase water amount to lower area</td>
<td>2. Transportation improvement</td>
</tr>
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<td>Water management of the dams relating the area</td>
<td>3. Infrastructure and services improvement i.e. sewage, drainage</td>
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<td>Unprepared management for disasters</td>
<td></td>
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<tr>
<td>Lack of integrated corporation when disaster happened</td>
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<td>Past intervention/ conservation treatment</td>
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<td>Change of architectural style and building technique</td>
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### Vulnerabilities

- Monsoon Depression
- Climate change
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- Past intervention/conservation treatment
- Change of architectural style and building technique

- Urbanisation in the historic city and industrialisation around/less flood plains and water flow channel

- Construction of higher embankment and retaining wall along the river/increase water amount to lower area

- Water management of the dams relating the area

- Unprepared management for disasters

- Lack of integrated corporation when disaster happened

### Technical Measures within Site (at area or attribute level)

1. Scientific research/compilation/evaluation on appropriate techniques i.e., Intensive archaeological survey and scientific study for the ancient canal system
2. Conduct water system restoration and retention areas within the Island
3. Put in place temporary water barrier around the island
4. Enhance landscape for flood protection
5. Improve river embankment
6. Consolidation of ancient monuments
7. Ayutthaya city wall restoration to be part of water barrier
8. Adapt temple wall to protect local flood
9. Regular capacity building for staff

### Mitigation measures

- Maintenance and Monitoring Procedures at Sites, Area and Attribute levels

1. Always cleaning the drainage system
2. Flushing the canal system
3. Depending on condition-3m
4. Monitoring and checking monuments
5. Maintenance flood protection system/temporary flood barriers/equipment/pumping machines (กรมศิลปากร)+station (เทศบาล)
III. Capacity-building activities
Background

Long term measure to protect this WH property
Conservation model for other heritage sites
5-day workshop at Ayutthaya World Heritage property

Target

Bangkok office - Conservation architects/engineers
  - inventory’s staff
World Heritage Sites (4 historical parks and Ban Chiang National Museum) - managers
  - Archaeologists
  - Technicians

Expected Outcome

DRM to be implemented at other heritage sites
Community-based risk assessment

Participatory Flood Risk Assessment: activities

1. Meetings with partners:
   - UNESCO
   - Fine Arts Department
   - Department of Public Works and Town and Country Planning
   - Ayutthaya municipality (Social Welfare Division)

2. Two workshops with 5-7 representatives from 30 of 33 communities/ Group mapping and group interviews with communities’ representatives

3. Individual questionnaires

Stakeholders identification

Vulnerability: social dimension

Property insurance

- Yes, do have insurance: 93%
- No insurance: 7%

Support from authorities

- Yes, sufficient: 42%
- Yes, but not sufficient: 55%
- No: 3%

Flood awareness

- High level: 33%
- Medium level: 40%
- Low level: 27%

Loss of income sources

- Minority of the community: 7%
- About half: 19%
- Majority of the community: 74%

Risk perception

Level of perceived risk
- high
- medium
- low

IV. Lessons learnt
Culture – Disaster Management: Human lives come first
Heritage to be protected while it can also help i.e. shelters, knowledge
Local communities play a major role when dealing with their areas.
Making heritage cities sustainable and resilient is a new dimension for conservation to respond to Global agenda.
Capacity building/learning activities are strongly needed.

SEAMEO-SPAFA Consultative Meeting on Developing Capacity-Building Disaster Risk Management for Southeast Asian Cultural Heritage
Thank you for your attention

KHOB KHUN KHA