



COMITE INTERNATIONAL DE COORDINATION POUR LA SAUVEGARDE ET LE DEVELOPPEMENT DU SITE HISTORIQUE D'ANGKOR  
INTERNATIONAL COORDINATING COMMITTEE FOR THE SAFEGUARDING AND DEVELOPMENT OF THE HISTORIC SITE OF ANGKOR

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**TECHNICAL COMMITTEE**

# Twenty sixth Technical Committee

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Co-operation Attachée

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**Siem Reap – June 22-23, 2016 – APSARA National Authority**

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**NOTICE:** The languages used during the sessions of the ICC are English, French and Khmer. In the English language record of the discussions, all material spoken originally in French or Khmer is therefore a translation. Presentations and comments made originally in English are indicated by <sup>[OrigE]</sup> at the beginning of the contribution. The insertion <sup>[OrigK]</sup> shows that the original statement was in Khmer.

# RECORD OF THE DISCUSSIONS

## I - OPENING SESSION

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### **I.1 Statement by the Japanese co-chairman, Mr. Takahisa Tsugawa, Minister/Deputy chief of mission, Embassy of Japan in Cambodia**

[*OrigE*] “Your Excellency Deputy Prime Minister Sok An,  
Ministers,  
Ladies and Gentlemen,

It is a great honour for me to be given the opportunity to speak, on behalf of the Co-chairmanship, at the opening session of this 26<sup>th</sup> Technical Session of the ICC-Angkor. I have the pleasure to introduce Ms. Pascale Turquet, the new Co-chairperson from the French Republic, who replaces Mr. Romain Louvet for this technical session and will take the floor later on.

Excellencies, Ladies and Gentlemen,

Since we met here at the last session in December of last year, we have observed several events with regard to the safeguarding of cultural heritage. Let me start by quoting some of these.

A 10<sup>th</sup> century sandstone sculpture of Rama's torso, originating from the temple of Koh Ker, was returned by the Denver Art Museum. The handover ceremony took place in Phnom Penh on March 28<sup>th</sup>. Only two days after, another handover ceremony was held at the National Museum of Cambodia, celebrating the return of a Brahma head, originally placed at the Koh Ker archaeological site, looted in 1970's and found in Paris. Through these events, I re-appreciate the importance of the originality and the property of cultural heritage. We have treated this question of illegally exported cultural objects at the ICC for a long time. I am delighted that such efforts have born fruit in Cambodia. We shall continue these efforts.

At this 26<sup>th</sup> technical session of the ICC-Angkor, we will have a general debate on training and human resources development. Training activities have always been a priority of the ICC-Angkor, as stipulated in Article 9 of the Tokyo Declaration of 1993. I hope that discussions at this session will further lead to concrete actions.

Thank you to all participants who will contribute during this 26<sup>th</sup> technical session of ICC-Angkor by way of your presentations. I personally look forward to listening to discussions of each agenda's items with full attention. I declare this session open.

Thank you very much for your attention.”

Comment from the Co-chairman for Japan: [*OrigE*] “Now let me invite the representative of the Royal Government of Cambodia, His Excellency the Deputy Prime Minister and Chairman of the APSARA National Authority to deliver his speech.”

**I.2 Statement by the representative of the Royal Government of Cambodia His Excellency Dr. Sok An, Deputy Prime Minister, Chairman of the APSARA National Authority**

“Co-chairs,  
Excellencies,  
Ladies and Gentlemen head of delegations or teams in Angkor,  
*Ad hoc* experts,  
Ladies and Gentlemen,

Welcome to all of you who have actively contributed in keeping up the prestige of the ICC-Angkor from one session to another. You are proof that the ICC has deserved its now universal reputation.

Whilst we are on this topic, let me tell you that we have been greatly satisfied with the declaration just made by the French President, Francois Hollande. He cited Angkor and the huge endeavour that has taken place here and invited the international community to replicate the model of this jewel of the World Heritage in Cambodia to see to the safeguarding of the famous site of Palmyra in Syria.

This is a motif for satisfaction, as this speech was pronounced at Ise-Shima in Japan, in the presence of His Excellency the Prime Minister of Japan, Mr. Shinjo Abe, during exceptional circumstances, as it was the G7 summit meeting. The solemnity bestowed on this declaration by the Head of State of France makes it a milestone in the memory of this ICC.

Other recent events deserve to be highlighted and considered landmarks for Angkor and Cambodia. This morning a delegation of the European Council will bestow to *Samdech Techo* Hun Sen, our Prime Minister, a high academic distinction: honorary member of the Academy of the European Council for World Tourism. The fact is that Cambodia has been listed as a must- see tourism destination and Angkor is its jewel.

The achievements of our ICC have turned Angkor into a model for the safeguarding and development of heritage activities. As proven by the recent meeting in Berlin under the aegis of UNESCO of an expert committee for Palmyra in Syria, which referred to the work started in 1993 in Angkor, the year of the establishment of the ICC, and suggested replicating it.

Moreover, for a long time, Afghanistan has tried to follow the example of the ICC-Angkor and has recently reiterated its interest. As a result, under the aegis of Italy, an international meeting was held recently in Rome. Once again, the achievements of the ICC-Angkor have been considered as exemplary and it has been planned that talks may be conducive to the premise of a fruitful cooperation between Afghanistan and Cambodia.

This may well trigger Angkor replicas throughout the world and the open policy of Cambodia will be even more demonstrated.

Co-chairs, Ladies and Gentlemen,

Our ICC moves on solidly and in harmony with a legitimate feeling of pride. This technical session is the 26<sup>th</sup> held in a space of 23 years. It highlights the fact that the ICC-Angkor has a history and is unique.

Glory to all of those who have taken part in this wonderful success.

Excellencies, Ladies and Gentlemen,



Also joining us in this 26<sup>th</sup> session is the new Co-chair for France, Ms. Pascale Turquet. We wish you a warm welcome and I would like to express my unanimously shared wishes for a successful accomplishment of her task and an enjoyable stay in Siem Reap/Angkor. I take this opportunity to vividly express my gratitude to her predecessor, Mr. Romain Louvet, and wish him all the best in his new posting in Brazil.

Her colleague, the Minister from the Japanese Embassy, Mr. Takahisa Tsugawa, will support her based on his experience and good knowledge of the technical dossiers and operations of the ICC in the footsteps of the recent reform agreed to by all. Our session, under the joint guidance of Ms. Turquet and Mr. Tsugawa, will undoubtedly proceed smoothly in a conducive environment.

Excellencies, Ladies and Gentlemen,

On today's agenda, Angkor Wat takes the lion's share. One would think it is normalcy, as this temple is at the top of the World Heritage for Humanity and its silhouette graces the national flag of Cambodia.

We need to pay special care to this prestigious temple which requires adequate restoration. The house is certainly not on fire but we must be vigilant and watchful. The fact is that the west entrance of the historical causeway dike is a sensitive issue. I have been told that the *ad hoc* experts, to whom I would like to convey my highest appreciations, have requested a comprehensive review of the technical dossier of the causeway before starting the restoration work. They recall the unreserved safeguarding of the authenticity of the monument. This concept of authenticity has been at the core of the Venice Charter and other charters such as the Naga Declaration for more than 50 years. It is one of the prerequisite conditions for the continuous inscription on the World Heritage List of any heritage property wherever they are located.

While speaking about Angkor Wat, I would also like to pay tribute to all the teams that for the past two decades have taken part in the restoration effort: Germany, Australia, China, USA, France, India, Italy and Japan. I foster them to continue their precious endeavour that has enriched information on the history of the monument for its conservation and sustainable development.

I turn my pressing recommendations to the APSARA National Authority. We invite His Excellency, Director General Sum Map, and his collaborators of the relevant departments to prioritize Angkor Wat and to bolster the activities and implement the Risk Map approach. Some towers are causes for concern, as are some walls that are threatening to collapse; damage mainly due to water infiltration and lack of maintenance. As for the Central Gallery, the one thousand plus balusters are not the only monuments in bad condition.

There is also a serious need to comprehensively monitor the condition of the vegetation inside the temple and surrounding areas before implementing any pruning, tree care or planting.

I would also like to recall my clear and firm instructions with regard to Angkor Wat and the *Parvis* [visitor intake area] project. It is primarily an area for visitors to enter and access the monument with tourism facilities for visitors and community activities. With a small footprint, its volume must be surrounded by greenery and vegetation.

To this end, let me recall the previously taken and recorded decisions complying with the standards of the Convention on the protection of the World Heritage and applying the *ad hoc* experts' recommendations of our ICC. The decisions were the following:

- The constructed area's maximum height is 8 metres;
- The maximum covered area of the parvis is 5,000 m<sup>2</sup>;

- Selling terms for the stalls: local and national handicraft products are to be prioritized in an area for local sellers, including a food and beverage space.
- Smooth flow of traffic inside and outside the parvis reserved area.

Excellencies, Ladies and Gentlemen,

I move on to a topic that is at the heart of our work: Training. Firstly, let me congratulate the teams that have within the framework of the Angkor site delivered practical training to young professionals of the APSARA National Authority. I also congratulate the *ad hoc* experts as they are now associated with the training and have established a dialogue with the APSARA National Authority's departments. This is why I would like to warmly thank Professors Giorgio Croci, Kenichiro Hidaka, Pierre-André Lablaude and Shinji Tsukawaki. I am sure that their colleagues, Professors Mounir Bouchenaki and Jean-Marie Furt will shortly follow their examples.

As for Professor Sachchidanand Sahai, he is a permanent advisor to the APSARA National Authority and often stays in the head office. I would like the Director General of the APSARA National Authority to review with him the modalities with regard to the organisation of consulting and training sessions to the benefit of young professionals. As we mentioned at the last session, we prioritise training for the improved readiness of human resources. Here, all the necessary facilities are available: a classroom, a canteen and a guesthouse for visiting professors. The trainees can use the full board guesthouse and the library can further their knowledge. I believe that the physical and material conditions have been met to successfully achieve our training activities.

We thank our friends, the experts, who have stepped up their contribution to training of human resources. There will be more co-operation and input from senior experts to share their experience and knowledge and contribute to training our young executives.

Finally, I would advise that the training taught within the framework of the Angkor Training Centre should also benefit the Preah Vihear National Authority's professionals. The young Preah Vihear National Authority professionals aspire to benefit from the training courses that are set up at the APSARA National Authority Training centre. It should also be to the benefit of final year students of the archaeology and architecture faculties of the Royal University of Fine Arts and other universities (for example the Royal University of Law and Economic Sciences or the Royal University of Agriculture) and other Institutes (the Institute of Technology of Cambodia, for example). This training is also planned to benefit Angkor tourism guides. We have recently sent to Macao a substantial group of guides to train abroad. This activity should continue to improve the training of Angkor guides.

Co-chairs, Excellencies, Ladies and Gentlemen,

To conclude, I would like to reiterate my wishes for the smooth and successful proceedings for this 26<sup>th</sup> session of the ICC and to thank you for your attention."

*Comment from the Co-chairman for Japan:* "Thank you, Excellency Dr Sok An. We will begin with the first part of the session on the 'Follow-up of the implementation of recommendations for restoration and conservation'. Mr. Azedine Beschouch can take the floor."

## II.A- FOLLOW-UP ON IMPLEMENTATION OF THE RECOMMENDATIONS: RESTORATION AND CONSERVATION

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### II.A.1 Follow-up on implementation of the recommendations adopted at the 25<sup>th</sup> technical session and 22<sup>nd</sup> plenary session in December 2015, introduction by the Scientific Secretary, Professor Azedine Beschouch

“Co-chairs,  
Your Excellency Deputy Prime Minister,  
Your Excellency Director General of the APSARA National Authority,  
Excellencies,  
Colleagues,  
Ladies and Gentlemen,

After twenty years of ICC work, we have evolved and agreed on a reform. After one year of enforcement, this reform has already brought benefits. All of those working within the framework of the Secretariat have been delighted to closely monitor this evolution. With regard to conservation and restoration work, I recall that you prioritised the implementation of the recommendations and the Secretariat followed up on them. Today, there will be reports on this follow-up exercise. Each international team or individual in charge at the APSARA National Authority will report.

The first part of the agenda includes the recommendations of the 25<sup>th</sup> technical session, hence the abbreviation ‘25ST1’. This basically means the 25<sup>th</sup> technical session and ‘1’ is for the first recommendation. Also, I recall that all today’s reports truly meet all your expectations that have been addressed through the reform undertaken this year.

I thank you for your attention.”

*Comment from the Co-chairman for Japan:* “Thank you very much. The next agenda item is the Follow-up on recommendation 25ST.1, by Mr. Tann Sophal. The floor is yours.”

### II.A.2 Bakong: Follow-up on recommendation 25ST.1 by Mr. Tann Sophal, Deputy Director of the Department of Conservation of Angkor monuments and Archaeology, APSARA National Authority

[*OrigE*] “Excellencies,  
Ladies and Gentlemen,

[*slide*] Good morning. I would like to present the Bakong restoration project. [*slide*] The Bakong conservation project is located in the first enclosure of the temple. In this picture, you can see tower 8 and the lintel structures (pilasters, columns) that completely collapsed in 2010. This is a cross-section drawing showing you a view from east to west.

The conservation project has been divided into several steps. Step 1 regards the consolidation of the basement and the stone structure of the façade. In step 2, we will complete the restoration of pilasters and columns and door beams. The third step of intervention plans to place back the repaired lintel and the fourth step to reset stones in the right position on top of the lintel.

[*slide*] This is, in detail, the first intervention. You can see the displacement of the basements with the stone steps broken and displaced from their original position and many bricks are also broken. These are the stone steps that we removed from their original set-

ting and the technique we follow to resolve this problem. <sup>[slide]</sup> We need to remove the unstable step stones and repair the stones. We plan to consolidate the stair base and the stone steps should be replaced in their original position.

<sup>[slide]</sup> In blue are the stone steps below and we will use new stones. We are using a new consolidation technique using an interlocking system. If we revert to the original setting of construction of the brick shrine, as originally built here in Cambodia, they did not connect the bricks together, so they got damaged faster. We now provide a technique with an interlocking system. We have done partial consolidation of the brick basement and this is the new condition of the staircase and we are on the 28<sup>th</sup> course. In these pictures the condition before and after intervention.

<sup>[slide]</sup> In step 2, we focused on the columns and pilasters: Consolidation of the remained brick pilaster south of the eastern door and reconstruction of both sides of the pilasters and columns using fibreglass dowels.

<sup>[slide]</sup> For the third intervention, according to our research at Bakong and Lolei, we have found two buttresses that support the lintel. At Lolei, they are actually three that support the lintel but at Bakong we lost one piece of wood and our intervention plans to replace the supporting wooden structure and put the repaired lintel back to its original position and complete the superstructure.

<sup>[slide]</sup> The techniques on how to insert the lintel: We plan to use a metal structure to support the heavy lintel from inside. This stainless steel structure will be inserted inside the wall at 50 cm depth.

<sup>[slide]</sup> Our fourth step is to place back the top stone on the lintel and to set bricks on top of the lintel structure from the back and to complete both pilasters on top to stabilize the lintel structure. This is the safety procedure to remove the lintel from the Museum. This lintel has been repaired at the Museum and it will be moved back to the site. The lintel will be kept in a wooden box, and then on site, we will erect scaffolding and place back the lintel to its original position with great care.

I thank you for your attention.”

*Comment from the Co-chairman for Japan:* “Thank you very much Mr. Deputy Director General. The next point is the Lotus of the North Porch of the Elephant Terrace: Follow-up on recommendation 25ST.2. This is actually a written report if I understood correctly and it has been already submitted and will be duly shared.

Subsequently, the next item is the Western Mebon: Follow-up on recommendation 25ST.3 by Dr. Hang Peou, Deputy Director-General, APSARA National Authority and Ms. Marie-Catherine Beaufeist, APSARA-EFEO.”

### **II.A.3 Western Mebon: Follow-up on recommendation 25ST.3 by Dr. Hang Peou, Deputy Director-General, APSARA National Authority and Ms. Marie-Catherine Beaufeist, APSARA-EFEO**

**Dr. Hang Peou:**

“Your Excellency Deputy Prime Minister,  
Co-chairs,

Allow me to introduce the progress of the works and before we delve into the tech-

nical part of the presentation that my colleague will give, I will briefly inform you with some facts. It has been an exceptionally dry year here in Cambodia, but also in the whole region, in Vietnam, Laos and Thailand. This general drought has necessitated more water.

Usually at this time of the year, the Tonle Sap Lake can supply the southern part of the West Baray with water, through dike 78, but this year the water level is 4.5 metres lower than average, which means shortages of irrigation for people living around the lake.

At the Mebon, we have flooded with water the upstream area of more than 3,000 hectares, to reach a total irrigation area of 4,500 hectares which actually helped speed up the worksite. Let me inform you that after the 2013 floods we undertook the necessary work so that the spillway and sluice gates of the West Baray can be better controlled and adapt to any situation, either flooding or drought.

Let me now hand over the floor to my colleague who will take stock of the work progress at the site.”

**Ms. Marie-Catherine Beaufeist:**

“Excellencies,  
Honourable Co-chairs,  
Colleagues,

[slide] The Mebon restoration programme started in April 2012 within the framework of the priority solidarity funds on Angkorian and non-Angkorian Heritage, Development and Capacity Training. The French Ministries of Foreign Affairs, of Culture and Communication and of Higher Education and Research, the École française d’Extrême Orient, the APSARA National Authority and as private sponsor the Total Foundation support this programme.

Let me start this presentation with the follow-up of the *ad hoc* experts’ recommendations from the last ICC.

[slide] The first recommendation dealt with the stone inventory, specifically stones located at the enclosure’s corner walls. Their morphology is still not exactly known and there is not a great deal of evidence to give us clues.

[slide] After reviewing archived documentation, we found out that the 1920s clearance work report mentioned corner patterns. Maurice Glaize in the December 1936 report wrote that ‘the complex, in very bad condition, includes on each side three entrance pavilions (of which only two of the eastern side are still partly standing) and four carved patterns at the corners.’

Sadly there are no pictures or sketches that could shed light on the form of this area of the monument.

[slide] The construction of the reinforced earth blankets on the northeast corner last February led us to substantially enlarge the opening of the fills. We repositioned some of the corner members and designed a potential reassembly scheme.

[slide] Despite the Mebon’s unique form, we are working on establishing comparison with other Angkorian monuments. This will lead to establish comparisons with other corners assembly scheme.

[slide] The recommendation at the time mentioned the conservation and restoration of carved decors. The fact that the masonry was left in a ruined state over a long period weakened many decors, including some bas-reliefs. They have been submerged or buried and their clearance at the onset of the work site may have accelerated their decay process.

As our teams are not used to this type of detailed restoration work, we plan to collaborate with a specialised team and to train some workers. These restorations will be carried out during the soon to be started reassembly of the elevations.

[slide] The last recommendation referred with the storage area located west of the monument before dismantlement work planned for the next dry season. The latter is ongoing and the soil backfill is gradually being brought to the work site. The APSARA National Authority has helped us for the organisation of this work and also lent us a small excavator that has undoubtedly sped up the pace of the works. We would like here to underscore our great collaboration and thank the APSARA National Authority for its generosity.

[slide] Let me now take stock of the restoration work progress. [slide] Thirty workers reinforced the team at the start of the year to total 127 staff. Simon Leuckx, an architect, and Marc Grillo, our new site manager, take care of the staff and work site.

As of today, about 95 per cent of the reassembly of the eastern facade is completed. The reinforced earth blankets located at the rear of the highest courses are wedged on the outside by a filler of laterite stones to allow for the pyramidal shape of the massif. [slide] The members of the tiers are more systematically mended in the higher courses due to less water immersion time once the basin has been re-flooded.

[slide] The reassembly also started in January 2016 for the north and south sides whilst reassembling the east side. Trenches are dug for the fills, so that the stratigraphy can be recorded on the intermediary berms. This informs on the temple's original construction method.

[slide] The tiers are entirely dismantled. Only the lowest course is maintained on site with its deformations in order to preserve a benchmark level for the reassembly work. Weathered horizontal and vertical deformations are then softened during reassembly of the upper courses.

[slide] Once again this year, we have discovered earthenware pavers right by the tiers on the north façade, although the south facade did not show any. This discovery props the assumption that an earlier architectural structure, dating before the construction of the Mebon, was modified.

[slide] Along with these works, we also completely restructured and rationalised stockyard and work site areas. The early onset of the dry season enabled supplying all materials required for the Baray high-water season.

The disassembly work is completed and the reassembly work has started on the northern and southern facades to ensure sufficient height of the restoration levels once the Baray water will rise. Presently, three quarters of the temple complex is being worked on.

Let me move on to the next six months' works.

[slide] In the latter part of 2016, work will focus on reassembly of the eastern elevations and of the north and south tiers. In the next dry season, we will begin dismantling the western façade.

A pre-casted concrete slab that is being developed will support the reassembly of the east façade. The composition of the concrete and the fact that it must not be reinforced is subject to special attention and a dedicated team will be trained.

[slide] The slabs where the bases of the walls will be reassembled include 2 x 0.5 metres components assembled side by side and sealed by a slightly runny mortar to achieve a perfectly flat surface. This will give sufficient flexibility to the structure in case of differential settlement that may occur once the monument is re-flooded.

[slide] As for the much heavier bases of the towers, they will be reassembled on a thicker slab and cast directly on site. The concrete and the sandstone will be sealed.

[slide] Our teams are currently researching the central sanctuary with a view to drawing up the restoration project of this part of the monument. A review of the archives to analyse previous works undertaken is ongoing.

[slide] Scaffolding will soon be put up and disassembly work, archaeological studies and restoration will respectively proceed in the next dry season.

[slide] I thank you for your attention."

#### **II.A.4 Risk map: *Prasat Ta Kav* and Angkor Thom Gate of the Dead: Follow-up on recommendation 25ST.4, introduction by Mr. Philippe Delanghe, Culture Programme Specialist, UNESCO and its implementation by Dr. Hang Peou, Deputy Director-General, APSARA National Authority**

**Mr. Philippe Delanghe:**

"Excellency, Deputy Prime Minister,  
Excellency, Minister of the Environment,  
Excellency, Director General of the APSARA National Authority,  
Excellencies,  
Ladies and Gentlemen,

[slide] It is a great honour and pleasure for me to be here today, and give you a general overview with my dear colleague and friend, Dr. Hang Peou, on the activities related to the Risk Map for the World Heritage Site of Angkor, carried out in very close co-operation between the APSARA National Authority and the Culture Unit of the UNESCO Phnom Penh Office over the last few years.

As you all very well know, the activities on the Monumental Risk Map for Angkor started in the early 2000's with the then Department of Archaeology and Monuments I, in an effort to gather and grasp the imminent and less imminent issues, problems, dangers at the monuments of the Angkor Site. This was done, by systematic mapping of monuments with pathologies, structural issues and others which could endanger the site, but also the visitors and researchers visiting and working on site.

[slide] Ever since, the situation on site has drastically changed. Not only have the visitor numbers tremendously increased, other issues affecting the World Heritage Site have also multiplied. To give but a few examples: (1) the forest and its aging trees led to an intense debate when ASI launched its initiative to start restoration and conservation activities at Ta Prohm, back in 2003-2004; (2) climate change, heavy storms and flooding started causing serious danger to the monuments and brought serious inundation problems for the city of Siem Reap in 2008 and 2009, (3); the air pollution has increased and, (4) the population on site has kept on growing.

As a reaction to these developments, and as you also very well know, the Australian Government, in partnership with the Royal Government of Cambodia and UNESCO, developed the Heritage Management Framework for Angkor (HMF for Angkor), which was implemented between 2009 and 2014, with the development of a Risk Map as one of its major components. This time however, the different partners of the project were not only looking at a monumental risk map, but at an integrated risk map which could cover subjects as the ones mentioned above, in other words, a risk map that could cover

monumental, environmental, hydrological, population and visitation issues, a much larger and far wider stretching undertaking. The recovered data would then be transferred to a GIS system, which could provide us with an automatic and immediate overview of the situation on site under every circumstance. I will not go into practical details, as I believe my colleague Dr. Hang Peou will do so after me, but I would like to stress that we have come a long way and have a path in front of us.

So, what has been achieved so far under the HMF for Angkor, and what still lies ahead of us? The slides I will be showing now, will demonstrate the basic GIS system created under the HMF for Angkor project, which forms the baseline for a more complete system we are working towards now.

[slide] First of all, there are the risk factors taken into account here on the left: flooding, groundwater, population, visitation, forests, monuments, safety and rituals. Second, is the Shared Data Set, here on the bottom, which then results in the third and final component, the Total Risk Map superimposing all shared data, to the right of the slide. A Risk Map team was put in place under the responsibility of my colleague Dr. Hang Peou and implementation took effect as of 2012-2013.

With the data collected, we have a GIS system, which shows us some, but no complete results, which nevertheless already indicate strong and weak points on site we should look at in more detail in the future. The following slides may illustrate this. [slide] Colours varying from yellow to orange and to red indicate the status of the particular area. Here, the flooding risk: Red is high risk and yellow is lesser risk. You can see many areas around and near Angkor. This is a ground water risk factor. Once again these data are not completed yet, but it is a start.

Again, the three colours going from high to medium and low. [slide] The population risk factor was also taken into account, and a red dot is in Siem Reap of course and one near the West Baray. [slide] This is the visitation and travel risk factor, something familiar to all. Here we can see a high risk at the corner at Angkor Wat and medium risk on the all circuit from Angkor Wat to Angkor Thom and along the site. [slide] This is the last one I will show you, as I think that Dr. Hang Peou will go in the details of the monument Risk Map. This is the forest situation, once again from high to low risks.

At this stage, information needs to be collected on site and the status of a particular spot needs to be changed manually in the system. The idea is that in the near future, the system will automatically indicate the status of a particular spot by configuring the colours automatically upon the information received and will even tell us in advance where a colour will be changing, so actions can be taken on site accordingly.

Detailed information on the monuments and hydrological aspects of the site have been collected and partially transferred to the system, the other issues still need much of our attention. This was mainly due to the project constraints and structural organizational issues. The project had but a confined space in time, for both the setting up of the system and necessary training, and the APSARA National Authority needed to look for a structure adapted to this new instrument.

Therefore, we would like to congratulate His Excellency the Deputy Prime Minister in his capacity as Chairman of the APSARA National Authority, on his recent decision and instruction to establish a Risk Map Group, under the authority of His Excellency Mr. Sum Map, Director General of the APSARA National Authority.

This group will be constituted of representatives of each department concerned, and will have the special task to collect the necessary data for the GIS based system, and transfer them into the system. Needless to say, it is very important this group will at all times work together and exchange information.



The system, however, will first have to be updated by GIS experts, who will modify it towards all data to be collected, resulting in an automatic information system that will update, inform and alert the risk map group by the system of colours I showed you earlier. These GIS experts will then have to train the Risk Map Group on the proper use of the updated system.

[slide] Several meetings were held recently with His Excellency Mr. Sum Map, Director General of the APSARA National Authority, and several directors of departments concerned with the participation of your Permanent Scientific Secretary to the ICC-Angkor, Professor Azedine Beschouch, establishing a road map for the months to come. A next meeting will involve all departments concerned, including representatives for the risk map group.

It is our intention to make a presentation on the results achieved with the Risk Map Group at the next technical session.

Thank you very much."

### **Dr. Hang Peou:**

[OrigE] "As Philippe has explained the concept and all the data needed to set up the Risks Map, there should be a kind of automatic system for the decision maker on the activity in the field and on the technical aspect.

[slide] I would like to focus on how we can link with the recommendations of the last ICC and on two points that concern Angkor Thom. If you look at that Risks Map of the whole area of the surrounding wall of Angkor Thom, which is 12 km long, you can see different points with different colours that relate to the diagnosis established at the time. I will focus on two points on the East and West Gates.

[slide] For Ta Kav, as per recommendations which mentioned that the tower is very damaged and we could not begin to set up the full restoration, we had to carry out emergency intervention. To this end we know that part of the problem comes from vehicles driving through this area, so we tried to control traffic, with only tuk tuks and motorbikes allowed to drive through. Cars and buses can no longer drive through this gate, until the complete restoration is done.

[slide] As for the East Gate, I would like to show you some examples to demonstrate how the team works, but I am not going to go into technical details as this was already explained last year. You can see the issues that the team has already diagnosed and, for example, the wall of the gate, which could collapse anytime. One of the quick solutions has been to support the structure so that the load will be better distributed vertically. [slide] As for the tower, you can see on this drawing that it is in danger, with the top opening up. The team to carry out fast intervention has belted the tower on three levels, so that there will be no more stone collapsing.

[slide] To the south and north of the gate [slide] you can see structural issues, notably for the elephant heads. One of the first interventions of the team was to use a reversible system by putting material that will support, whilst not touching directly, the stones. It did not look very good, what was done in 2013 and 2014, as this picture shows you. We looked for a more aesthetically pleasing repair that is less visible. After the recommendations of the *ad hoc* experts last year, we removed quickly some parts of the concrete but be reassured that it is pre-casted concrete — we do not make it on site but bring it. We had to make sure the bricks would stick to the original stone. We made sure that all this could be removed without damaging the stone. [slide] This picture shows you where the concrete is, and when it will be removed nothing will damage the original stones.

The problem when you want to use wood is that it does not last very long and we

have a lot of temples in this area and climate change has some impact, with a lot of wind and temperature change. There is also a human factor to take into account. We try to use material that can last a long time but does not damage the stone.

[slide] To finish, I would like to talk about what comes after the Risks Map, which is the Map of Priorities, a concept proposed by Professor Croci: It is an advanced stage of the Risk Maps. From the latter, we know that the red points are the most endangered locations and those in yellow can turn to orange or red depending on the evolution on the ground. The Map of Priorities would help the decision maker to decide, depending on the budget.

For example, if you have only US \$1000, what can you do in this area here in red? Only this small part can be repaired. But if we could use these dollars on the yellow areas so that they do not turn red or orange, then the decision maker can decide that it would be better to allocate a sum to a larger area and thereby set the priorities. I believe that during the discussion Professor Croci will go more into detail of this notion and how the Risks Map can be linked and moved forward to a Map of Priorities.

Thank you.”

**II.A.5 Bantey Srey: Follow-up on recommendation 25ST.5 by Her Excellency Ms. Chau Sun Kérya, project leader, advisor and spokesperson, Dr. Hang Peou, Deputy Director-General, in charge of the Water Management Department, Dr. Ly Vanna, Director of the Department of Conservation of Monuments and Rescue Archaeology, Mr. Heng Kim Leng, Director of the Department of Technical Support and Intersectoral Projects, APSARA National Authority**

**Ms. Chau Sun Kérya:**

“Your Excellency Deputy Prime Minister,  
Co-chairs,  
Excellencies,  
Ladies and Gentlemen,

[slide] I am sorry not to read out a written speech, but I did not have the time to prepare one and I am well versed in this topic. I will present on the implementation of the recommendations for Banteay Srei. I am the project manager and the project gathers the Department of Monuments and Rescue Archaeology of Mr. Ros Borath, the Department of Water of Mr. Hang Peou, the Department of Intersectoral Projects and Technical Support of Mr. Heng Kim Leng and the Department of Culture and Heritage Norms.

[slide] For Banteay Srei, four recommendations were made and I am not going to read them again as they are written here on the slides. The first dealt with the central causeway drain, the second the pavers; the third was on the protection of the inscriptions of the main causeway. [slide] The fourth regarded the collapsed surrounding walls, where the management of the APSARA National Authority and the experts advised to appoint national technicians of the APSARA National Authority in the restoration of this wall by setting up small work sites.

Local technicians will spearhead these small projects, guided by the experts, and this will enable them to take command and ownership of their heritage. The fifth recommendation dealt with the level of water in the surrounding moats of the temple. Finally, the last recommendation was the construction of a lapidarium as advised by the experts in order to shelter all the stones that were not sent to museums or storage and that suffer from weathering. This will also help in the flow management of visitors as they will be able to wait while admiring the stones in the case that too many people want to enter the temple at the same time.

[slide] The first recommendation concerned water pooling on the east entrance causeway of the monument. You all know that Cambodian temples face east. The Department of Water Management, in collaboration with the Department of Conservation of Monuments and Preventive Archaeology, implemented the works. The latter department carried out archaeological digs in order to unearth the temple's original drainage system. Based on the outcomes of these excavations, the Department of Water management suggested installing a drainage system with pipes and manholes. I believe that work is almost completed. [slide] These are some pictures. [slide] In blue is the general plan where is located the drainage system to prevent water stagnation.

[slide] The second recommendation was on upgrading the entrance paving to the main sanctuary. The Department of Monuments is in charge of the work. They have undertaken several tests to find the right mix to be used to fill shallow areas and the deepest areas will be repaved using new laterite slabs. Once again, tests are ongoing to respect the experts' recommendation.

[slide] The third recommendation that is presented on this plan deals with the first gopura, which features stunning inscriptions. Unfortunately, they are located in a narrow passageway and people rub against them with their clothes when traversing although they have been asked to leave their backpacks in locker rooms to prevent them rubbing against the inscriptions. In the long term, this will lead to the deletion of these inscriptions: This is the reason that, as a preventive measure, it was suggested to use the other entrance by consolidating the north side door to stabilise it and guarantee the safety of visitors. A study was carried out and the consolidation plan designed and soon the consolidation works of this entrance will start. It means that in the future people will enter from both lateral sides.

[slide] The fourth recommendation is on reinforcement of the surrounding wall. National work sites will be established, led by young technicians under the guidance of the experts. An inventory of the scattered stones all around the enclosure has commenced and a file was put together and approved by the experts and the work sites are being prepared. In the future, the surrounding wall gaps will be restored and the tourists will not be able to climb on the walls and the temple will be better protected.

[slide] The fifth recommendation is the work of the Water Management Department in collaboration with the Department of Monuments. They have studied potential upgrading of the drainage system of the temple. They have identified two locations where the Department of Conservation will carry out archaeological excavations. You can see them in red on the plan on screen.

[slide] The Department of Intersectoral and Technical Support carries out the last recommendation and established the plan here on the screen. This is yet to be submitted to the experts, as it is not sufficiently exhaustive. I have explained to the Department the expectations of the experts, and ours. They have started by carrying out a topographic survey of the temple that will be followed by a plan and then the Department of Museums will study organising the lapidarium. There are some valuable stones that cannot be left in the open and other stones that can stay outside. The lapidarium will be indoor and outdoor.

[slide] I thank you for your attention and to conclude please enjoy this aerial picture of Banteay Srei taken by Yann Arthus-Bertrand."

## **II.A.6 Preah Pithu Monument: Follow-up on recommendation 25ST.6, Introduction by His Excellency Mr. Ros Borath, Deputy Director General, APSARA National Authority and by Mr. Jeon Bumhwan, team leader, Korea Cultural Heritage Foundation**

**Mr. Ros Borath:**

“Co-chairs,  
Excellencies,  
Ladies and Gentlemen,

[slide] The Korean Republic is the 17<sup>th</sup> country joining our effort to continue the conservation of Angkor. Together, we selected the Preah Pithu complex and its different monuments, categorised by the letters T, U, V, Y. It is a Hindu temple built in the 12<sup>th</sup> or 13<sup>th</sup> century, apart from Buddhist monument X dating from the 14<sup>th</sup> century. The Royal Square that is mentioned in the 12<sup>th</sup> century by Zhou Daguan is now entirely surrounded by French, Japanese, Indonesian and now Korean team activities.

[slide] Preah Pithu boasts a unique natural landscape in the Angkor site which has protected it. It is the ideal place for taking a break and meeting people, where locals could re-appropriate their Buddhist terraces. The first drafted projects heeded all the components of the site. This last project will restore its value to the Royal Square and reinvent the relationship with its surrounding monuments.

I thank you for your attention and hand over the floor to Mr. Jeon, who will present the project.”

**Mr. Jeon Bumhwan:**

[OrigE] “Your Excellency Deputy Prime Minister Sok An,  
Your Excellency Director General Mr. Sum Map,  
Excellencies,  
Ladies and Gentlemen,

[slide] I am very glad to be here and I thank you for giving us the opportunity to present our project. My name is Mr. Jeon from the Korea Cultural Heritage Foundation and our project is conducted under the auspices of KOICA.

[slide] Today, I would like to discuss four main topics on Preah Pithu: General information, the follow-up of the 25<sup>th</sup> ICC recommendation, work in progress and preparation and lastly co-operation.

[slide] General information: Preah Pithu is located within the boundaries of Angkor Thom, to the northeast of the Elephant Terrace. [slide] This is the top view, using the LiDAR. There are five main temples and terraces in the site. [slide] We have just finished the topography of the site and there are many trees and moats around the five temples. The monuments are in harmony with surrounding nature.

[slide] These are a few pictures of the temples: Here are temples T, U and X and the terrace in front of temple X. [slide] These are temples V, and Y. The characteristics of the temples are that the vegetation has also been taken into account. We can see many trees in the area.

[slide] These are a few pictures from the past to establish comparisons. They were taken by the EFEO during the early 1900s. This is temple Y, [slide] temple U and [slide] X and V. [slide] The temples in Preah Pithu are located in harmony with the environment but some temples are in critical condition. In particular, temple Y has structural problems. The wall members have been displaced due to various factors such as ground subsidence.

[slide] Preah Pithu is a cultural heritage as both monument and landscape. The project master plan should be executed in consideration of preserving the natural environment. This was the first part of the presentation; let’s move to the next part.

[slide] The project has progressed following the recommendations and advice given by the ICC and I would like to follow up with the recommendations: First, the principle of minimum intervention.

[slide] Our team will be following the principles of minimum intervention. Documentation, analysis and non-destructive tests using the GPR methodology will be initiated firstly. The restoration plan will maximize the use of the original material and be consolidated. The restoration work of the terrace of temple T will start in 2017.

[slide] The second recommendation is about the exhibition hall and storage. [slide] The APSARA Authority has approved the location of the exhibition hall. The location is taking into account three factors: Protecting the landscape of the monuments, accessibility for tourists and socialisation with the surrounding stalls.

[slide] The location was negotiated with the DCMA and Tourism departments on the south west part of Preah Pithu. [slide] This will be the location of the exhibition hall. We will be relocating some current stores. The left part of the line is where it will be constructed.

[slide] Work in Progress and Preparation: For the past 6 months, we have been focusing on preliminary research such as actual surveys, architectural research and ground surface surveys. For the coming six months, research for stone conservation, groundwater surveys and structural stability will be initiated.

[slide] Among actual surveys, the finalization of the 3D scanning process is being done and this is an example of terrace T. [slide] The drawing will be finalized adapting aerial photography and it will be used for structural analysis. [slide] Architectural research is one of the main themes for understanding the establishment and construction methodology of the monuments.

[slide] The ground surface survey was initiated in a wide range of the area and a vast amount of relics were found (pottery, ceramics, etc.). These investigations will be adapted to the principles of archaeological research.

[slide] Lastly I would like to talk about our co-operation: Our team is continuously in close co-operation with departments of the APSARA authority. [slide] We are consistently investigating the vegetation of trees around the Preah Pithu area with the Forestry Department. We have confirmed around 360 trees and 46 tree types in the area.

[slide] One project is capacity development. It is classified into on-site training and invitational training.

[slide] There was an on-site training during the first week of June for actual survey. Ten participants took part in the training of the terrace of temple X using various surveying equipment. We will continue our on-site training for subjects like stone conservation, ground analysis and structural monitoring and analysis.

[slide] Invitational training will take place in Korea during August and September. Ten participants from five different departments of the APSARA Authority will have a chance to visit our country. It will be for two weeks.

[slide] This is all for our presentation for the progress of the project. It was a short presentation to talk about all of the subjects, but we will be in close co-operation with the APSARA Authority and will try to make a successful project.

Thank you for your attention."

## II.A.7 Prasat Top West: Follow-up on recommendations 25ST.7, by Dr. Susumu Morimoto NARA Institute,

[OrigE] “Excellencies,  
Ladies and Gentlemen,

[slide] Today, I would like to present our report on research and restoration work at Western Prasat Top in Angkor Thom.

[slide] During the dismantlement of the south sanctuary, we found many damaged stones and many re-useable stones. Needless to say, we used original stone for the reconstruction of the south sanctuary. However, when it was difficult to use original stones because they were too damaged, we had to repair them or carved copies with new stones. This is a picture of the restoration work before and after at the southern sanctuary.

[slide] The recommendation was: The team is encouraged to do further architectural study on the monument to better identify the different phases of construction. For the second chapter, with regard to new stone, special attention should be given to the details of stonecutting, decorative moulding and carving on new stones. For the other parts of the temple to be restored, the expert group confirms its wish to have geotextiles used for the inner fill and to avoid the use of other materials such as clay or lime when applying sand fill.

[slide] With regard to the Architectural study: Following the recommendation, we conducted architectural surveys, such as 3D measurement and measurement survey for the scattered stone. Here is the drawing of the north sanctuary viewed from east. You can see that the building frame is severely collapsed, especially the north part which is quite damaged. Based on the architectural survey, we know that many sandstones are missing, including the door frame. [slide] We made plans for all these scattered stone.

[slide] Reconstruction of false door frames of the northern sanctuary: This work is still ongoing, however, our Khmer colleague found a part of a door frame, and we can reconstruct it partially. As you can see, Buddha images were carved on each door frame. This finding is very important for the reconstruction of the door frame, but at the same time, it is quite important to understand the art and history at the end of the Angkor period. [slide] We conducted partial retouching at this northeast corner of the middle platform of the central sanctuary.

[slide] The northern staircase of the central sanctuary: Henri Marchal or Madeleine Giteau discovered former laterite structures in previous studies. They mentioned that there was a former laterite structure inside the central sanctuary. During our retouching work, we could distinguish the laterite structure clearly, as shown on this photo.

[slide] The stages of construction were the following: the 1<sup>st</sup> phase was the laterite platform work, the next phase they built the central sanctuary by using sandstone, next, they constructed the southern sanctuary, and finally the northern sanctuary.

[slide] We presently conduct excavation of the lower platform of the north sanctuary. From this trench we found an aligned brick structure. We need to conduct further surveys in the next six months.

[slide] The second point of the recommendation regarded technical problems of the new stones. We conducted partial retouching of the carving and stone cutting of the south sanctuary stones. [slide] Further study of stone cutting or carving was carried out by rubbing on the original sandstone. This study understands the ancient stone carving technique and tools. We believe that understanding the ancient technique can help today’s stone works.

[slide] The third point of recommendation is about sand fill and geo textile. Geotechnical specialists tested the soil several times and we know that the deformation of the south sanctuary is mainly due to the sand being washed away by gully erosion of the foundation material. However, the erosion and the loss of sand occurred due to the material being loose, coarse sand. Thus, consolidation of the foundation material plays an important role in the restoration of the South sanctuary.

[slide] In 2014, we received a recommendation from the *ad hoc* experts to install aramid fibre net or similar nets. After conducting the geotechnical survey, we decided to install geotextiles. We laid one meter-wide geotextile on the platforms of the southern sanctuary. After that, we compacted the foundation soil. However, for the next reconstruction work of the north sanctuary, we will need to conduct additional geotechnical surveys and analyse the fill again. This is a part of our next work plan.

[slide] Finally, our work plan for the next six months is as follows: To continue our research and restoration work on the north sanctuary; continue to conduct the further architectural studies at the north sanctuary to understand the stages of construction of monuments of the Western Prasat Top; to invite specialists on stone work to study raising the level of stone works; conduct a geotechnical survey and establish a comparative study for brick structures.

This marks the end of my presentation, thank you for your attention.”

## **II.A.8 Phnom Bakheng: Follow-up on recommendations 25ST.8, by Dr. Ginevra Boatto, World Monuments Fund**

[OrigE] “Excellencies,  
Ladies and Gentlemen,

[slide] At the last ICC-Angkor site visit to the Conservation Project in December 2015, the experts approved our suggested approach for stabilization of the monument terraces and encouraged us to continue using it, keeping in mind the principle to ‘make limited use of dismantling’. For this session, we do not have recommendations to follow-up with. Allow me now to give you an update of the work World Monuments Fund has completed over the last six months at Phnom Bakheng.

[slide] As you know, we committed to the conservation of this temple in 2008, when a long-term project focused on the eastern part of the temple started thanks to the generous contribution of the United States Embassy in Phnom Penh and other donors from the United States. At present, WMF employs about 100 people on site, from craftsmen and site workers to those responsible for the coordination and the management of the activities taking place at the site. To maximize the conservation efforts, the workforce is distributed into three areas of intervention, at the north, east, and south sides of the central pyramid.

[slide] Let me start with the north side. [slide] In August 2015, WMF moved the crane to the north side to allow work to continue in this location. After completing a detailed documentation of the conditions of the walls here, [slide] work began in January 2016, with the dismantling of stone shrines F10 and E10.

[slide] We then continued with the partial dismantling of a section of the terrace wall at levels F and E. As always during the process of disassembling, all stone blocks were numbered and are now stored on site. The condition of the underlying bedrock foundation was documented after the removal of decayed matter. A few stone blocks that were scattered on the terraces were also removed and inventoried.

[slide] The process of foundation repair began in April 2016 with the insertion of stainless steel anchor pins in the bedrock and the injection of a structural adhesive. [slide] We then started reassembling the wall. At both levels, large sections of the terrace wall are missing, and they will be ultimately reconstructed using scattered stone blocks. [slide] Here is a very recent general view of this area.

[slide] On the east side, work has progressed on both sides of the eastern staircase, which is shown by the arrow on the image. [slide] On the southern side of the staircase, work has advanced at a steady pace thanks to scaffolding that was erected in July 2015. The new structure facilitated the dismantling of stone shrine F1 and the repair of level F, here shown by the arrow.

[slide] In the fall of 2015 WMF completed the repair of the terrace foundation through pinning and the addition of laterite blocks. Sandstone blocks were used underneath the shrine for added durability. The surface was adjusted to give the correct pitch before the installation of a waterproofing membrane and a layer of lead.

[slide] In January 2016, work advanced to level E, with an auto level survey and the removal of decayed bedrock, [slide] followed by wall reassembly throughout the spring months.

[slide] Dismantling of stone shrine E1 began in April and has now been completed. [slide] On the northern side of the staircase, we have worked on the repair of short lengths of the terraces that connect to the restored portion of the temple at the northeast corner. Work took place at levels E, D, and C. The bedrock at level C, shown in this picture on the right hand side, was highly fragmented: it was adjusted and reinforced with the addition of new laterite blocks. This allowed the reassembly of the terrace walls at that location with the addition of new sandstone blocks where necessary.

[slide] Let us now move to the south side of the pyramid and the southeast corner. [slide] Here, at the beginning of 2016, work has concentrated on levels E and D immediately adjacent to the south staircase. At this location, where the terraces join the stairs, the WMF team has repaired the terrace foundations through the insertion of new laterite blocks, followed by wall reassembly.

[slide] The rebuilding of the terrace wall at level E, the second from the bottom, was completed in February. At level D, restoration of the terrace continued through April, including in the framed area the adjustment of the surface and waterproofing at the location where stone shrine D3 is now being reassembled.

[slide] At the same level, near the southeast corner, compacted but highly friable soil was revealed after disassembly of unstable wall sections. We decided this could not be conserved and stabilized in place, thus it was removed. [slide] Stainless steel pins were inserted into the surviving bedrock, [slide] while new stone blocks were inserted into gaps in the foundation, in some cases secured using stainless steel clips. This reinforcement is required, as this location will support the weight of stone shrine D2 after reassembly. [slide] Reassembly of the terrace wall at this location has already taken place and will now continue until the wall is completed, in the next three months, according to our schedule.

[slide] WMF continues to extend its care to the entire site, including structures beyond the area of intervention established in 2008. Here is the result of the preliminary survey of the condition of the surviving brick shrines that surround the central pyramid. Shoring plans for the five shrines that most urgently require it, in green, were designed by the WMF team.



[slide] For this reason, in April, new wooden shoring was installed at brick shrine G30 and in June at G16, as a way to begin addressing *ad hoc* experts' recommendation to conserve the different peripheral brick towers.

[slide] A systematic inventory of all stones scattered around the platform of Phnom Bakheng and on top of each terrace of the central pyramid was brought to completion in May. It includes the western part of the monument. The inventory of the stones scattered on the hill slope instead will continue to be conducted by a dedicated team at the north side, starting in the next months. Following the former recommendation from ICC-Angkor in 2011, this will allow WMF to retrieve anonymous stones to be reused for the reassembly of wall sections where the original blocks are missing.

[slide] Finally, in the process of retrieval of scattered stones, a stone linga was discovered on the hillside, the fifth such discovery since the beginning of the project. The object presents similar proportions to three of the others previously found at the site. The correspondence between its diameter and the diameter of existing pedestals at the site seems to suggest it was originally located inside a brick shrine.

[slide] Thank you very much for your attention."

Comment from the co-chairman for Japan: [OrigE] "Thank you very much for your presentation. According to the agenda we should take a coffee break now. It is 10:20 am and we are slightly late. I would then suggest we just take a ten minute break and be back at 10:30 a.m."

Comment from the Co-chair for France: "Ladies and Gentlemen, thank you for taking your seats and let us resume this session with the following item: Angkor Wat: Wooden Ceiling Project for the Churning Gallery: Follow-up on recommendation 25ST.9, by Dr. LY Vanna, Director of Department of Conservation of Angkor Monuments and Archaeology and by Dr. Ginevra Boatto, World Monuments Fund."

## **II.A.9 Angkor Wat: Wooden Ceiling Project for the Churning of the Sea of Milk Gallery: Follow-up on recommendation 25ST.9, by Dr. Ly Vanna, Director of the Department of Conservation of Angkor monuments and Rescue Archaeology and Dr. Ginevra Boatto, World Monuments Fund**

**Dr Ly Vanna:**

[OrigE] "Excellencies,  
Ladies and Gentlemen,

[slide] It is a great honour for me to introduce this long-term project on which we have been working in collaboration with the World Monuments Fund and Professor Lablaude on the reproduction of the ceiling of the Gallery of the Churning of the Sea of Milk at Angkor Wat.

[slide] I would like to introduce the three main points that we have achieved for our research and investigation. The first point is that we have already determined the kind of material to be used for the reproduction of the ceiling and we came up with a conventional agreement regarding the technique of installation of the wooden structure to the cornices of the gallery and also the process on how to reproduce the new carvings by partially imitating the majority of the old carvings.

I would now like to invite Dr. Boatto for her detailed presentation, which will be followed by Professor Lablaude's research on the existing piece preserved at the Guimet Museum."

**Dr. Ginevra Boatto:**

[OrigE] "Excellencies,  
Ladies and Gentlemen,  
Colleagues,

[slide] Thank you for this opportunity to report on the progress of WMF and APSARA's project for the creation of a wooden ceiling for the Churning of the Sea of Milk Gallery at Angkor Wat. At the last Technical Session of ICC, the *ad hoc* group of experts provided us with a set of recommendations which addressed both the decoration and the installation of the wooden ceiling.

[slide] As discussed at that time, further study of the original sample housed in the Musée Guimet was recommended. Allow me to briefly remind you that this fragment is the only one which was recovered in the third gallery of Angkor Wat, and thus it has been recommended as a reference throughout this project. Professor Lablaude very kindly offered to help our project by personally visiting the museum to study the fragment. A very important outcome of Professor Lablaude's visit has to do with the execution of the decorative details of the ceiling. By looking at the fragment very closely, he was able to ascertain that the original ceiling was not carved very finely. This observation was made possible by the fact that a considerable portion of the fragment is still very well preserved. This allowed us to ascertain the original quality of execution, which was rough, uneven, and unfinished. I believe Professor Lablaude will provide a more exhaustive description of his observations at Musée Guimet, but still, allow me to show you a few detailed images.

[slide] This for instance shows the frame detail and the uneven geometric motifs which were carved on the borders separating the panels. [slide] And here is another place where the floral motif was left unfinished. [slide] This general method of execution is also confirmed by other wooden fragments housed in the same collection at the Musée Guimet, which were also discovered at Angkor Wat, in locations other than the third gallery. The execution gives the appearance of a more artisanal and less mechanical work.

I just would like to briefly mention that there are several explanations for why the ceilings appear not to have been carved as finely as the stone carvings. This could have to do with the fact that the wooden beams would only be seen at a relatively large distance from the floor of the gallery, or with the fact that wood carvers had less refined skills than stone carvers. There could be other possible explanations and I am sure that Professor Lablaude will discuss them in much greater detail in his presentation following my presentation.

[slide] Following Professor Lablaude's visit, a new decorative sample was carved following the recommendations that he generously provided. The carved sample shown here, although unfinished, has been reviewed by the *ad hoc* group of experts in this 26<sup>th</sup> Technical Session of ICC. One of the challenges associated with the implementation of such 'rough execution' is that it requires a crude and quick approach from the carver. This completely contrasts with the one generally adopted by local carvers, who instead are extremely accurate and detailed. To warrant this spontaneous execution, the work was conducted exclusively by hand, using only traditional tools such as metal chisels. The experts assessed this carving test positively and encouraged us to continue towards the preparation of a mock-up to be installed in the gallery. WMF and APSARA will then be able to work for the implementation of the other official recommendations provided.

[slide] As suggested in June 2015, WMF has started collaborating with a wood conservation specialist, in an attempt to explore and identify ways to increase the durability of the wooden ceiling. This includes the study of appropriate treatment options and assembly modes, and also the best installation method to guarantee protection from bat infestation as well as adequate ventilation.

[slide] Thank you for your attention."

Comment from the Co-chair for France: "Thank you Madam Boatto. The floor is now to Professor Lablaude on the same topic."

### **Professor Pierre-André Lablaude:**

"The Permanent Secretary of the ICC asked me to briefly expound on the research undertaken at the Guimet Museum to better understand the composition of the ceiling. The original idea put forth by the APSARA National Authority and WMF considered restoring the ceiling of the Churning of the Sea of Milk Gallery, an appealing prospect.

Yet, as is the case for these types of work that include the reinstatement of something that has disappeared it can be risky and be a hit or a miss. The APSARA National Authority and WMF approach started by asking Mr. Olivier Cunin to document the historical background of the ancient ceilings of Angkor Wat. His remarkable study collated all the constitutive elements of the Angkor Wat ceiling.

[slide] This shows an 1873 drawing from Francis Garnier presenting the ceiling in the Angkor Wat galleries resting on the cornices. As early as in the late 19<sup>th</sup> century, academics like Louis Delaporte suggested restoring these ceilings, as is the case here with a drawing of the corner pavilion of the Bayon.

[slide] Rare are monuments in Cambodia where this type of ceiling can be seen. This is a picture of Banteay Torp, a temple located a few kilometres before Banteay Chhmar. The ceiling is still visible on site although the patterns are more basic but the architectural composition which was common can be seen. Some members of the ceiling from Angkor Wat have been preserved, such as these in pictures from the EFEO picture library. Some of these members are still preserved either on site or in several museums, as is the case for that from the Guimet Museum presented earlier.

Noticeable is the composition of the ceilings not in masonry and filled in frames but rather planks of wood laid side-by-side onto which are later carved the patterns. The latter represent lotus flower motifs alternating large and smaller flowers in a grid where the layout grid can be replicated in some areas. This is a drawing by Delaporte taken for the Indochinese Museum of the Trocadéro in Paris. This wooden decor covered the wooden ceilings and the under-faces of the lintels, for example here in Angkor Wat, where traces of polychromy and lacquer are found.

The fact that Angkor Wat had ceilings led Henri Marchal after the war to restore one in the Heaven and Hell Gallery between 1948 and 1950 with a ceiling made of moulded cement with special joists and panels inserted in this layout grid. Why were they made in cement? It may have given in to a sort of modernity at the time or maybe wood was costly. You all know this old project which was criticised knowing that there was an additional project to install binding beams above the ceilings to guarantee the stability of this Gallery which in the past had completely collapsed. [slide] Here are the moulded cement tiles laid at the time.

Initially when the APSARA National Authority and WMF presented the project to restore the ceiling they were replicating in wood the ceiling project from Marchal restored in

cement. [slide] This sample was presented on site and we understood how it connects with the cornices. Why did we do this? Firstly, in order to restore the consistency of the volume and of the décor of the Churning of the Sea of Milk Gallery and concretely to hide the lead sheets that were used on the roof during WMF's work to make watertight the gallery and preserve the bas-reliefs.

This is the reason the *ad hoc* group of experts recommended to search for an ancient model rather than replicating the cement ceiling and to try to restore the authentic ceiling preserved at the Guimet Museum. [slide] The first sample was made of wood and that second, which has been selected, is inventoried under number 23153 at the Guimet Museum and a first drawing was done to allow for the production of a second sample panel.

[slide] This is a comparison of both sample panels with the drawings they are based on. Looking at the details, we realised that the carving was too detailed and sophisticated and did not match the original ceiling. This is the reason we agreed that I would visit the Guimet Museum to analyse the samples. I must here thank Mrs. Sophi Macquariou the president of the museum and Mr. Pierre Baptiste who gave some of their time to let me analyse the fragments.

And this was a good idea, as the analyses of the samples have given us additional information. As said and as was confirmed by the other elements of the ceiling preserved in Paris and Phnom Penh, the installation of the ceiling was made using carpentry and not masonry. The constitutive wooden members are not jointed but are conversely thick wooden planks reaching from one cornice to the other and simply laid next to one another without any joints. The fragment from Guimet is 32.5 cm long for a thickness of 8.3 to 9 cm (thick pieces of wood) and at the back is a large rebate meaning that there was an overlap between two planks of wood side-by-side to better fit the decor.

As is the case with the other stored or documented elements, fragment 23153 does not show any need for concordance between the width of the thick plank (32.5 cm in that case) and the width of the layout grid of the decor pattern used in that case (of 55 cm). This means that the decor is randomly applied on these planks of wood. Similarly, other stored or previously documented examples displayed an execution of uneven width thick planks, although the difference in the width is not massive, but rather depended on the variation of the diameters of the wooden trunks they were cut from.

*A priori*, there is no concordance between the layout grid of the different widths of the wooden planks and that of the carved decor applied due to the wooden pieces they have been carved in.

This could lead us to rather carve the décor on site once the thick wooden planks have been laid, an approach which respects the Khmer traditional architectural style, as is done with stone; the use of two types of specialists — those that build the structure and later those that specialize in moulded and carved decors.

This original approach to carve a decor on an already built ceiling (and not before the ceiling is laid) has pros, as the wooden carver can better adapt the patterns to any original deformations of the stone structure where the ceiling is laid on, on plan and on level knowing that such deformations were often seen in Khmer monuments.

In addition, the pictures of the ceiling fragment number 23153 may show a very deteriorated and eroded member, but after close inspection this first impression can be questioned.

[slide] Actually, as this picture shows, the ends of the wooden member and some of the central floral patterns of the decor do testify that some wood-eating insects were active in the past, but the other areas of the patterns can be seen in their original condition, not degraded and in their rough aspect that is not the consequence of weathering, but of the

original rather rough work that seemed to have been undertaken using a metal chisel. This tool seems to have mostly hit the wooden surface perpendicularly (it can be seen clearly here with the chisel hits that carved this pattern) without any prepared designs, but also more subtly straighter to the surface on the eight 'petals' of the large floral patterns where the traces of the tools are here clearly visible. The chisel was used sideways and the hits can be seen, there was no subsequent sanding.

Other ceiling fragments preserved at the Guimet Museum show this to different degrees of hits. If you look at the measured drawings I took on site, the chisel hits can be seen with the main motifs in silhouette on the lower part and the framing frieze where square, cubic and diamond-shaped elements can be seen and which have been chiselled very simply. Other measured drawings of the ceiling which present a more or less similar workmanship, skilful but still hasty and rough, of this type of decor. It looks quite out of place when put in perspective with the fine and virtuosic carved decor of the stone that characterizes Angkor Wat temple and more specifically the Gallery of the Churning of the Sea of Milk. The other element of the ceiling preserved at Guimet that we mentioned presented the same particularities and characteristics.

How can this discrepancy be explained? Why is there a contrast between the extraordinary quality of the stone carving and that lesser of the wood carving?

There are many possible answers. The decor is high up, far from the eye, backlit and did not grant a carving as thorough as that on vertical surfaces, the latter being directly exposed to sunlight; it could also be a potential difference of craftsmanship skills of a wooden carver and a stone carver; finally it could have been that this wooden carving was covered with stucco, that was subsequently reworked in relief before a coat of decorative painting was applied.

A final assumption, already mentioned by Olivier Cunin and which Pierre Baptiste did not exclude, is that the ceilings were carved not in the 12<sup>th</sup> century during the initial construction of the temple but rather during later refurbishment in the 16<sup>th</sup> century during maintenance and upgrading work that were undertaken during the reign of King Ang Chan I (1516-1566) the period that let Theravada Buddhism conquer the entire temple.

Thank you."

*Comment from the Co-chair for France:* "Thank you professor. Mr. Ros Borath and Mr. Miwa from the University of Sophia sent us a written report with regard to the Western causeway dike. I now invite His Excellency Sok Sangvar to present the results of his studies on the project of a temporary bridge."

#### **II.A.10 Result from studies on the temporary bridge, by His Excellency Mr. Sok Sangvar, head of the Tourism Management Plan Unit, Deputy Director General, APSARA National Authority**

[*OrigE*] "Excellency Deputy Prime Minister,  
Co-chairs,  
Ladies and Gentlemen,

It is a great pleasure today to present our progress report on the temporary bridge that is planned for Angkor Wat during the restoration of the western causeway dike.

[*slide*] First, I would like to recall that the decision is based on last December's ICC, which stipulated having a temporary bridge during the works and that it should be located

at the Elephant Gate on the south side of the causeway. Based on this decision, the APSARA National Authority has established a working group and from there, the group has defined conditions.

[slide] The bridge should be 200 x 9 metres width, it must be temporary, although at the same time persistent and robust, as it has to last for five years minimum [slide] and it must be aesthetic and discreet and respect the underwater and underground heritage. As the amount of visitors is on the rise we need to have a bridge that is stable and safe for visitors and that can accommodate 15,000 visitors per day. Of course, it has to be easy to maintain.

[slide] We have held close discussion with our colleagues from the Sophia University side and we have received a few options and we have established a table of options and ideas on how we should build this bridge. What I will do now is review each option and highlight the positive and negative aspect of it.

[slide] We have the option of a metallic or wooden bridge or to build a dam or a floating bridge with a concrete base and a suspended bridge. [slide] Based on our discussions we realised that the metallic bridge is fixed on metallic pillars and has a platform in concrete. It can damage the archaeological soil and underwater heritage, when constructing the bridge and removing it. It causes inconvenience to the site and water quality. It is expensive and time-consuming to build. It requires starting the excavations before proceeding with the construction of the bridge. It is a heavy construction and will have a strong visual impact.

[slide] The second option is the wooden bridge: We used the same system except that it is fixed on wooden pillars and platforms in concrete. It can also damage the archaeological soil and underwater heritage, when constructing the bridge and removing it. It has also the same level of costs and visual impact as the metallic bridge.

[slide] The third one is what we call a dam bridge, where soil is held by concrete pillars on both side of the moat. It can damage the archaeological soil and underwater heritage, when constructing the bridge and removing it. It causes inconvenience to the site and water quality, it also requires starting the excavations before proceeding with the construction of the bridge.

[slide] The fourth option is the floating bridge, a system where a floating dock is attached to a concrete anchor in the water. It can damage the archaeological soil and underwater heritage, when constructing the bridge and removing it. It also requires starting the excavations before proceeding with the construction of the bridge.

[slide] The last option that we discussed with the Japanese team is the suspended bridge with the suspension to hold existing structure. It would have a negative impact on the historic causeway because it is a metallic structure that is directly suspended to the historic causeway and would impact the bridge and cannot be built at the Elephant Gate where we would like the bridge to be located.

[slide] In conclusion, all the bridges presented are fixed on pillars, anchored to a base or the historic causeway. They need a concrete platform system and they can damage the archaeological background, the underwater heritage and water quality and they are time consuming (construction and excavation).

[slide] Based on this, the team came with this idea of a floating bridge that only use floaters and no underground platform. This will allow protection and no impact of the archaeological background and underwater heritage. The bridge would be a light structure with minimum impact on the environment and it has to be resistant and stable as well as [slide] cost effective and extremely durable, easy to build and to remove.

[slide] Once we reflected on the floating bridges we realized that they have been in

use in the past, even during the era of the Khmer Empire. We can see two carving scenes of soldiers crossing two rivers on floating bridges. These floating bridges were made in bamboo and allowed the passage of two elephants and approximately 30 soldiers, simultaneously; another reason why we were happy to pursue this option.

[slide] We went further and looked into different types of floating bridge: [slide] there are wooden floating bridges, some in aluminium, the same as the system used for a floating wooden bridge just covered in aluminium. Then we looked at military grade bridges used by the military. The last option is the floating modular bridge, which is made of modular cubes that you can put together and you form a bridge.

[slide] We came up with a table to compare all these floating bridge options. We looked at the technique used. For a wooden bridge it is made of wooden deck on polyethylene floats, the same for the aluminium bridge. For the military it is heavier and needs supporting boats. For the modular you just need to assemble polyethylene cubes like for Lego or a puzzle.

Now, the landscape and how it would fit in. The wooden bridge is ok; the steel and military are not and the modular is quite discreet. As for assembly and disassembly wood and steel are easy, the military is difficult and the modular is very easy, re-usable. As for the delivery time, as we need to know when we can have the bridge in place. The steel is the longest with six months, then the wooden four months and the others take two months. The ecological aspect was also looked into and only the military bridge is not ecological. As for maintenance which is also important: The wood and steel bridges require maintenance, the army bridge requires the presence of soldiers whereas the modular requires zero maintenance. As for the price: The steel or wood bridges are expensive, the military is very expensive and the modular is affordable.

[slide] After having taken into account all these considerations we found that the best option is the modular bridge. [slide] Here are some examples of bridges and how they have been put together. This is in France, where you have a very simple bridge with low traffic and no guardrail. Then you have another example here with a crowded place frequented by students and where guardrails have been put up for protection. [slide] This picture shows you how stable the bridges are, as a helicopter can even land on them.

[slide] We came up with a drawing to show you how this could look. This is a bridge where only the central part is on water, so we would need a wooden platform to access it and go over the structure of the temple. The length is 200 metres and the width is 9 metres. On the side, halfway, we have thought of putting a small area, as it would enable a couple of guards to stand on each side and monitor the flow in case of traffic jams.

[slide] This is a prospective view on how it would look when you arrive at Angkor Wat. First, there would be a wooden platform and then you cross and this is how the modular system would look. Before concluding I would like to show you a video on how this system works [A video is played]. That showed you the system and this concludes my presentation on the temporary bridge. Thank you very much."

## **General Discussion**

*Comment from the Co-chair for France:* "Thank you Excellency. I would suggest that without delay we start the general discussion session. Ladies and Gentlemen, you have certainly noticed that we are slightly behind schedule, therefore the time dedicated to this discussion will be shortened to 15 minutes. The floor is yours and actually to Professor Giorgio Croci."

*Observation from Mr. Giorgio Croci:* [OrigE] "I really appreciated the presentation on the Risk

Map and I would like to add a consideration. Usually when we analyse and study monuments we see where the problems are and then we develop and decide on an intervention. I believe that is not correct, because there are in Angkor several kinds of monuments that are of specific typology.

For example, let's take a tower. There are hundreds of towers in Angkor, but they are all made the same way: horizontal joints, heavy blocks to prevent any sliding and in some cases towers are fitted with huge heads. It is a very simple behaviour which is often altered by outward movement of the façade, blocks falling that were broken by the force or water infiltration. If we look at it globally, there are very often similar results of decay. In my opinion, it is indispensable to face the problem globally for all the monuments and in some cases we can look at some results and works already done and copy them. When a project is prepared, we need to look at what has been done in the past to decide how you can connect with it. I should stop here but what I would like to say is to draw your attention to the fact that something should be done to make better use of all possibilities."

Comment from the Co-chair for France: "Thank you Professor. Any other comment from the floor? Mr. Beschouch, please take the floor."

Remark from Mr. Azedine Beschouch: "Thank you. I will start by congratulating Professor Lablaude for his excellent presentation. This is a great example on how archives from the EFEO and the storage of the Guimet Museum have helped achieved this study. This will not be a simple replication of the ceiling, but rather even through its methodology, an increased heritage prestige for the temple.

On this matter, I would like to ask a question before we listen to our friend Excellency Sok Sangvar's presentation. The replica that will be made is executed by the APSARA National Authority on the basis of what has been proposed by Professor Lablaude. Is that correct? Who could answer my question? Dr. Ly Vanna?"

Answer from Mr. Ly Vanna: "With regard to Mr. Beschouch's question, I would like to give a very brief answer. Technically, we have been working with WMF and Professor Lablaude to find a conventional accepted philosophy and principle on how to produce the statue. We have asked for the assistance of a workshop in Siem Reap with the technical assistance of the people specialising in plastic arts from the Department of Conservation of Monuments from the APSARA National Authority. The work has been executed by a local workshop and we provide the technical expertise with Professor Lablaude and WMF."

Comment from Mr. Azedine Beschouch: "Thank you. I would like to add something if I may. I would like to tell His Excellency Sok Sangvar that we are delighted to see that a solution has been put forth based on detailed analysis of the dossier. It was sent to each expert and presented. We are satisfied to understand that the solution is to not consider such or such options but rather to study all the solutions. Once again, this is an exemplary methodology of work.

I have a dual question. I have not understood why the military bridge does not respect nature: I know that we are all antimilitarist but that is not enough. The other point is the future. The solution that you advocated is based on your analysis and the floating bridge that you have shown is stable. I would like to know whether the maintenance can be guaranteed. What I mean by that is that there will be thousands of people crossing that floating bridge, so how is this going to be maintained? Thank you."

Comment from the Co-chair for France: "Excellency Sok Sangvar, would you like to answer? A microphone will be available in a second."

Answer from Mr. Sok Sangvar: "Thank you Professor Beschouch for these very important questions. With regard to the first question on the non-eco friendliness of the military bridge, it is mainly based on the material used, which includes iron, heavy materials that



could impact negatively on the water and also rust in longer term and the fact that to install this bridge there will be a lot of motorboats used which we do not deem as very ecological for the moat. As for the maintenance of the modular bridge this is exactly where it got many brownie points, as it is made of plastic and it does not oxidise and no rust or algae can grow on it. Over a long period, that is five years for this project, and more as they showed in the video, up to 15 years with no maintenance. I hope that my answer was clear."

Comment from the Co-chair for France: "Thank you Excellency for this detailed answer. I can see that someone else is requesting the floor."

Question from Mr. Takeshi Nakagawa: <sup>[OrigE]</sup> "I was very interested by the presentation on the wooden ceiling project and I think it is necessary to find the original carving tools and to study how these tools were used. Did you already study this? The wooden carving project is very interesting. We have done a survey about all the tools of the carpenters in the province of Kampong Cham and whether it is difficult to find them. I would like to ask the question."

Comment from the Co-chair for France: "Thank you very much. Would Dr. Ly Vanna like to answer? I cannot see him."

Observation from Mr. Takeshi Nakagawa: <sup>[OrigE]</sup> "If you want, we have all the carpenters' tools in a Museum in Kobe and our experts sometimes visit Cambodia to survey, so we can collaborate as it is very interesting."

Answer from Mr. Ly Vanna: <sup>[OrigE]</sup> "Thank you for your question Mr. Nakagawa. I would like to answer that if you looked at and followed the detailed presentation of Professor Lablaude, we can observe the different cut marks on the surface of the ceiling. Of course if you visit a local workshop in Siem Reap you will see a lot of variety of tools, with different types, shapes, cutting edges and functional aspects, by which I mean the attribute of each tool. The tool of course must meet with the cut marks that remain on the old fragment. I do not know how to name the tools that you find at the workshop, and I am sure that there are large varieties. If Professor Nakagawa can provide us with additional information on how to use the tools it would be great and we would welcome it. Thank you."

Comment from the Co-chair for France: "Thank you very much. Are there any more comments? There is one minute left for another comment or we will end the discussion. I suggest that we move on to the follow-up of recommendations, but this time in terms of sustainable development. The floor is to Professor Beschouch."

## **II.B- SUSTAINABLE DEVELOPMENT: FOLLOW-UP ON IMPLEMENTATION LAST RECOMMENDATIONS ADOPTED AT THE 25<sup>TH</sup> TECHNICAL SESSION AND AT THE 22<sup>ND</sup> PLENARY SESSION IN DECEMBER 2015**

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Introduction by the Scientific Secretariat, Professor Azedine Beschouch: "I will be brief and just recall what I said earlier. The sustainable development recommendations date from the 25<sup>th</sup> Technical Session as '25st'. There are two written reports on the Run Ta EK ecovillage and Flight of the Gibbons. Among us is the Minister of the Environment in person, His Excellency Say Sam Al, and we will also have as speaker Mr. Sok Sangvar. Two presentations and the same methodology is applied. Thank you."

Comment from the Co-chair for France: "Thank you. The floor is to His Excellency the Minister."

## **II.B.1 Phnom Kulen: Follow-up on recommendations 25ST.12 by His Excellency Dr. Say Sam AI, Minister of the Environment of the Royal Government of Cambodia**

[OrigE] “Your Excellency Deputy Prime Minister Mr. Sok An,  
Excellencies Co-chairs,

I would like to take this opportunity to brief you on the latest developments at Kulen National Park. As you are aware, we have asked the government to help us terminate the contract with the company that held the concession at the Kulen. This contract has been terminated but we have some technical issues at the moment, as we need to compensate the company. We have ended their terms earlier, so we need to find the right compensation. I hope that this will be done quickly. Yesterday, I was at the Ministry of Finance and we discussed how we can compensate the company the quickest and easiest way, so that the company can pull out of the mountain. This is one of the obstacles that have delayed our schedule, but I hope very much that this will be done in the near future, hopefully in the next couple of months.

Today, I would like to ask the ICC to help us. We at the Ministry of the Environment do not have enough technical expertise (archaeologists, environmentalists, tourism experts). We want to develop a proper master plan for Mount Kulen. It is not just a National Park but a very significant one, as it boasts culture, biodiversity, water resources and is a tourism destination. At the last meeting we agreed to set up a plan, but I think we really need to make up a working group to formally come up with a master plan for Kulen before development happens and it would be too late to preserve Kulen.

This is an urgent matter and we need both technical expertise and financial assistance to develop this master plan.

Another point that I would like to report is that I have instructed the governor of the Siem Reap province to redeploy the military forces that are stationed on the mountain, including their families. They will be relocated, as will be the people that grabbed land illegally in Kulen. I will be working very closely with the governor, because not only do we want to relocate them but also we want to make sure that their livelihoods are sustained in the new places they will be relocated to.

One more thing; we have spent a lot of time organizing public fora or meeting the communities to stop the locals from encroaching on land and to explain to them to stop burning the forest and then grabbing it to grow plantations. We have been doing that and have been very soft with the people so far. Now, we have decided to crack down on a number of well-known perpetrators that repeatedly encroach on Kulen Mountain, as the way they do it is very damaging: They burn the forest and then use the land to build new houses or plant fruit trees or farm. We decided to proceed with legal procedures on these cases.

I also asked the Siem Reap governor to look into people that are selling goods and food on the mountain. We need to be quick with their relocation and to settle them in a place where we prevent them from polluting the water source and dispersing their waste everywhere. This is another focus of our activity.

Once again, these are short-term measures and we need a master plan for the Mount. We need to sustain the livelihoods of the people and we need a road map regarding tourism development and also need to be clear on how to preserve our mountain; for that we need a comprehensive master plan. Once again I ask you for your help, as we do not have any experience or the finances to carry out such a master plan.

Thank you very much for your attention.”

*Comment from the Co-chair for France:* “Thank you, Excellency Minister. Let us move on to the next item on the follow-up of recommendations with the Tourism Management Plan, presented by His Excellency Mr. Sok Sangvar.”

## **II.B.2 Tourism Management Plan (TMP): Follow-up on recommendation 25ST.14, by His Excellency Mr. Sok Sangvar, head of TMP Unit, Deputy Director General, APSARA National Authority**

[OrigE] “Excellencies,

Once again good morning and I would like to update you on the follow-up of the recommendations that were given to the department. [slide] The first one, as you might see on screen, is a general recommendation and was a concern about the proliferation of advertising signs on the World Heritage site. We followed up this request by taking quick, strict action: APSARA has sent a letter to beer and drink companies explaining the need to remove their advertising signs. The companies understood the request and accepted to remove their signs. They have been very cooperative. About 452 signs have been removed until today. [slide] This is a map that we have drawn up to show you, here in blue, where the companies came and removed their own signs.

[slide] The second recommendation was about the Ta Kav Gate, as mentioned earlier by Hang Peou. After discussion with the Tourism Department, the Risk Map Team has removed the wooden platform under the gate. The Risk Map Team, in consultation with the Tourism Department, has installed a wooden barrier to block access to all four-wheeled vehicles.

[slide] The third recommendation was about Run Ta Ek. Of course, as mentioned by Professor Beschouch, a written report has been submitted, but I will still give you a quick update on how we dealt with this recommendation in terms of having leisure activities in the village. APSARA agrees and is thankful to Professor Sahai for his idea of developing a Museum in the eco-village. The name of the Museum will be the Mahasenapati Sangrama Ethnographic Museum. Professor Sahai has contacted the Ministry of External Affairs to obtain an initial grant of US \$50,000 for the project. [slide] This is a picture of the house that we agreed to turn into a Museum in Run Ta Ek.

[slide] The fourth recommendation is about the Tourism Management Plan and to develop as far as we can a system that will collect data on visitors. These data will provide better understanding of not only the nature of visitors, but also their flows and their behaviour while in the Park. We are still defining the system guidelines to get better understanding and to monitor the flow of visitors in the Park. At the same time, we have strengthened our partnership with Angkor Enterprise, which is a new body set up by the government to officially sell tickets to Angkor. We have received more data with regards to the numbers of visitors and to which temples they go and also the timing of the visits.

[slide] At the same time, we have also placed a new feedback box at the airport so that visitors can tell us what they liked or disliked during their stay. When you leave Siem Reap you will notice a small table with the forms, so please feel free to write down your comments on your experience here.

[slide] Another recommendation asked the TMP to take actions that would actually change the image of the site, such as flow management, bicycle paths or site managers. Based on this we have made some improvements that you can see if you travel from Ang-

kor Wat to the Bayon. The road used to be dusty and muddy and now we have inaugurated this road, in April. Not only the road has been upgraded, but there are also bicycle lanes. This action has received a lot of support from the locals living in the park, so we will continue this work and respect the condition of the heritage Park and create bicycle lanes throughout the Park.

[slide] The second action was on flow management, and as you may see at the South Gate of Angkor Thom, there was heavy traffic congestion in the mornings. After having studied and surveyed the area and the timing of the vehicles getting in or out of the gate, we decided to implement the one-way circulation (from 7.30 a.m. to 11.30 a.m.) in the morning. Sometimes you can just have one vehicle that would block the entirety of traffic. We decided on 7.30 a.m. because we know that the locals leave earlier to go to work, so that time should not have too much impact on those who work in the city.

[slide] The third action is again on flow management, but this time in front of Angkor Wat. A few months ago the cars could go and drop their guests right at the stairs of the causeway dike of Angkor Wat. Tuk tuks and cars waited there and created a mess in front of the temple. After consultations with all stakeholders (police, guides, sellers, travel agents) we all came up with the idea to stop traffic in front of the temple. This has been put in place for about a month and it has been much welcomed.

[slide] The next point concerns site managers. We do realise that having site managers is very important and that we will try to establish one manager per temple. We have started by strengthening the management of the guards at the temple. We have recruited over 100 new guards that will be stationed at the temples. We have trained them on general knowledge, tourism and heritage management and also first aid. In fact, we will hold our first new first aid class on the 27<sup>th</sup> of June. Once again, thanks to Professor Sahai who had a good contact in the USA with a person who specialises in first aid training and that will come and train us next week. I am also delighted to inform you that not only the APSARA guards will join but also the different police forces (tourism, heritage) will also take part in this training.

[slide] As for tourism improvement, we actually take care and give importance to the landscape. More grass has been planted opposite Angkor Wat and also at the Elephant Terrace. This picture was taken a few weeks ago during the Royal Ploughing ceremony. One of the plans is to plant some grass in Angkor Wat. Of course, we noticed that in the dry season the grass does not hold, so we have studied how to circumvent this and this is a map where the grass will be planted in the temple and also throughout the Park. We are of course thinking about a sprinkler system which is found everywhere nowadays, so that the grass can be regularly and automatically watered.

These were the recommendations that we received last December and their follow-up. Thank you very much for your attention."

## General Discussion

Comment from the Co-chair for France: "Thank you Excellency. Run Ta Ek ecovillage and Flight of the Gibbons are written reports so we can move on to the general discussion knowing that we are slightly ahead of schedule. You have the floor and please introduce yourself so that we can identify you in the written minutes of this session."

Comment from Mr. Chhean Ratha: <sup>[OrigE]</sup> "My name is Chhean Ratha. I work for the APSARA National Authority, in charge of the Department of Conservation of Monuments Outside of the Angkor Park. I would like to quickly report on the recommendations of the 25<sup>th</sup> technical session.

What the APSARA National Authority has done at Phnom Kulen relates to human resources. The department has permanently stationed three archaeologists at the site. We have increased the amount of temple guards from 18 to 48 people. We have built one guardhouse at the one thousand linga site, so that the guards and technical staff can stay there. We have built a public toilet and emergency shoring work has been carried out in five temples. We have completed the first step of the conservation at O'Ang temple. We have plant 5000 trees at Neak Ta protected zone. We have brought 450 steel scaffoldings for conservation purposes.

With regard to international cooperation: We have worked together on measured drawings, archaeological research and excavations. The outcomes include setting up of five protected zones of ancient remains. There are 426 ancient remains located at Phnom Kulen that are confirmed and listed temporarily. The total amount will be increased thanks to the new LiDAR data. We have repaired Tnoul dike and His Excellency Dr. Hang Peou will present it in the next session. Thank you very much."

*Comment from the Co-chair for France:* "Thank you very much for this additional information that partly answered some of the questions raised by the Minister of the Environment. The floor is now to Professor Beschaouch."

*Comment from Mr. Azedine Beschaouch:* "Thank you. I would like to turn to His Excellency the Minister of the Environment, as we are privileged to count Mr. Say Sam Al among us. His presentation gave us some guarantees. We are extremely delighted to see that the general policy of the Ministry and subsequently of the Royal Government is going in the right direction, which is the establishment of a Master Plan. The latter will facilitate the implementation of the policy that you aspire for, which is that of the Royal Government.

It is obvious that the history of Kulen Mountain is closely related to the history of Angkor; this has been documented by the EFEO, by the more recent research of our colleague Mr. Chevance and by the APSARA National Authority's research on water and the monuments. This means that the future of Angkor is also closely related to that of Mount Kulen. The future of Angkor has to include Kulen. In the past, water and stones both came from Kulen. Excellency, you have honoured the ICC with your presence several times; this committee and its community of academics are available for your convenience. You have clearly stipulated shortcomings in skilled human resources and we are at your disposal to help you design the best Master Plan.

The international community is closely watching. There have been recent articles in the French and English language media. Everyone is now taking an interest in Mount Kulen. Some facts have been exaggerated but we deem this interest to be positive. This will facilitate the establishment of co-operative action. I am sure that your appeal will be heeded by all the colleagues in this room and that we stand at the ready so that the implementation can be as smooth as possible."

*Comment from the Co-chair for France:* "Thank you Professor. Professor Lablaude would like to take the floor."

*Comment from Mr. Pierre-André Lablaude:* "I think that we should congratulate the departments of the APSARA National Authority on the work done with regard to advertising signs. Last year our visit was disturbed, notably at Srah Srang, where there is the view of the pond and of the nearby village. This view was tagged by red and white signs of an American drink which name contains three Cs and one L, and we noticed this year great improvement.

I wanted to ask a question on another disturbing landmark in the Angkor landscape and especially the fact that this is the first view for tourists when they arrive at Angkor Wat coming from Siem Reap. I am talking about this huge information billboard located to the

left when driving onto the road along the moat. This huge billboard informs on official or sporting events and stays empty when there are none; it kind of disfigures the view when arriving to the moat. I wanted to know whether this billboard was also included in the on-going action eradicating advertising on the Angkor site.

Comment from the Co-chair for France: "This is a question for His Excellency Sok Sangvar."

Answer from Mr. Sok Sangvar: "Thank you very much Professor Lablaude for raising this important issue. This was actually discussed during our visit with the *ad hoc* experts in sustainable development and conservation. We all agree that when there are no events this billboard stands there like a rundown decor and impacts on the view on arriving to Angkor Wat. We are looking into mitigating this impact whilst keeping an information space to herald events. We must then think out the way to proceed and probably relocate it. The team will work on this matter. Thank you."

Comment from the Co-chair for France: "Thank you very much. Mr Bouchenaki asked for the floor."

Comment from Mr. Mounir Bouchenaki: "Thank you Co-chair. I would like to take the opportunity of the attendance of His Excellency the Minister of the Environment to tell him that among the UNESCO advisory bodies there is a major NGO, the International Union for Conservation of Nature (IUCN), and I believe that with a project including development issues in a key area such as Kulen they could help.

[*OrigE*] I think it would be useful to request the experience of the Committee and their experts. We are going to see them in a few weeks' time for the World Heritage Committee meeting in Istanbul and I will be delighted to introduce them to the Cambodian delegations so that you can create a link with the ministry and by then, as I said, benefit from their experience. Thank you."

Comment from Mr. Say Sam Aj: [*OrigE*] "Thank you very much."

Comment from the Co-chair for France: "Excellency, would you like to comment? That is not the case. Would anyone like to take the floor? Madame Anne Lemaistre."

Comment from Ms. Anne Lemaistre: [*OrigE*] "Thank you very much. I will speak in English just to facilitate communication with the Minister. UNESCO wishes to support and congratulate the work you have been done on Kulen in rather difficult circumstances and we know all the obstacles you had to face and overcome. In addition to what Professor Bouchenaki just said, we have a close co-operation with the UNESCO office in Jakarta which is the regional science office for UNESCO. This relationship comes from the Biosphere Reserve and they have many science experts that carry developed master plans for the Biosphere Reserve and maybe we could take the opportunity when they are coming for the next meeting on the Biosphere Reserve to ask for their expertise to assist you in your master plan development. Thank you very much and once again congratulations."

Comment from the Co-chair for France: "Thank you to the representative of UNESCO. Ms. d'Orgeval would like the floor."

Comment from Ms. Francine D'Orgeval: "I congratulate the APSARA National Authority for the work carried out to harmonise the approach areas of the Angkor site. One thing I am very keen on is the improvement of all site approach areas. You might think that it is not something important but when a tourist arrives it could be nice to harmonise the colours of the parasols and of the stalls, as there is no harmony. The outdoor furniture should be harmonised. I believe that if there was a better presentation of the colours of the furniture and of the parasols it would add value to the site. This is a site which requires a lot of attention and I think that we could look into this. Thank you."

Comment from the Co-chair for France: "Thank you. His Excellency the Deputy Prime Minister would like to take the floor."

Comment from Mr. Sok An: "Thank you Co-chair for giving me the floor. When looking at the situation of Kulen, if we establish a comparison with the situation one or two years ago, already great progress has been made."

[OrigE] It is true that we have yet to achieve the goals set. Two years ago when we spoke about Kulen it was causing us big headaches. You remember the presentation with the tree being cut and the pictures taken from helicopter with a lot of violation of the law regarding the forest. Now, we have overcome the big problems and are turning to the re-settlement of the military installations on the mountain. We have already got approval from the Prime Minister that the soldiers should leave Kulen. We have to work on forestry preservation and now the discovery of the site of the old city on Kulen.

After having listened to the presentation of His Excellency the Minister, Mr. Say Sam Al, I think it is a good idea that we work on the master plan. I will give instructions to Dr. Sum Map to work together with the Ministry of the Environment on how to co-operate and set up a working group. That latter will be tasked with studying and elaborating, step by step, a master plan. We have different targets such as protecting the forest, organising sustainable development of the area and preserving and developing the archaeological site. After the discovery of the ancient city in Phnom Kulen the site has become even more attractive for the public at large. It will be a good site for tourism in addition to the sites we already have.

We need to have in place a universally recognised preservation and development plan. I think we will have a co-operation between the APSARA National Authority and the Ministry of the Environment to set up a working group and we have to request the ICC to support that working group. We have experience with what we did at Preah Vihear from 2007-2008. We established, as fast as possible, the management plan of the sacred site of Preah Vihear. I think we should base ourselves on that experience and with the ministry of the Environment, the working group should be set up very soon and will be successful if we can get the precious support of the ICC. The targets are: Preservation of the forest, sustainable development of the site and in particular management, preservation and development of the archaeological site of Kulen.

I think we have thousands of steps to climb to reach our goal, but we should start by climbing the first, the second steps and so on to be successful. This is all I have to say. Thank you very much for your attention."

Comment from the Co-chair for France: "Thank you Excellency. I see many avenues that can lead to co-operation based on acquired experiences. Thank you to the academics and experts that took the floor this morning."

Please stay in the room as we are moving to the signing ceremony between the APSARA National Authority and INTACH, which will take fifteen minutes."

### **II.B.3 Signing ceremony between the APSARA National Authority and INTACH (Indian National Trust for Art and Culture Heritage)**

Comment from the Moderator: [OrigE] "Excellencies, Ladies and Gentlemen, I have been informed that Dr. Gupta, who I hope is in the room, would like to make a short presentation before we set up the stage for the ceremony. Major General Mr. Gupta would like to show a very short movie before we break for lunch, as we are all very hungry. That is before we proceed to the ceremony. Actually, we are sorry, we have a technical hitch so we will set up the stage now and the movie will be shown after."

I would now like to invite His Excellency Dr. Sum Map and all the members of the Cambodian delegation to move to the stage and also Mr. Gupta and the Indian delegation, our co-chairs and the *ad hoc* group of experts. Please, proceed to the stage for the ceremony. Excellency Deputy Prime Minister and all Cambodian members of the delegation please proceed to the table.

This is the Memorandum of Understanding signing ceremony between the APSARA National Authority and the Indian National Trust for Art and Culture Heritage, or INTACH, on different co-operation activities on archaeology conservation and knowledge development fields. I would like to invite their Excellencies Dr. Sum Map and Major General Mr. Gupta to proceed to the chairs for the signature.

Excellency Major General Mr. Gupta, I understand that you would like to say a few words for this ceremony. Please, do so and His Excellency Sum Map will stand by you.”

### **Major General Gupta:**

[OrigE] “Your Excellency Mr. Sok An Deputy Prime Minister of Cambodia  
Excellency Sun Map Director General of the APSARA,  
Excellencies,  
Experts,  
Ladies & Gentlemen and friends,

[slide] It gives me immense pleasure to address this August gathering. It is a matter of honour for me to be invited by the APSARA for the ICC-Angkor. Today, I represent an experiment in India which started in 1984, called INTACH, meaning the Indian National Trust for Art and Cultural Heritage. The idea to establish INTACH was born out of the realisation that governments alone cannot protect heritage and that people’s involvement is essential. Under the Indian Constitution, it is also the duty of the people of India to protect their heritage, and INTACH became that instrument to involve the people, i.e. make first people aware of their heritage and then make them aware of the tools and techniques to save and conserve their heritage themselves.

[slide] INTACH is an army of volunteers supported by teams of conservation professionals in various fields such as architecture, for example conservation skills in all typologies of architecture: Ancient, Indo-Islamic, Indo-European and temples, mosques, churches and so on; natural (especially the conservation of water); material heritage (all types, metal, paper, public manuscripts and for that we have established conservation laboratories in the country); heritage education (we concentrate on training the trainers so that children are told about heritage and what they could do); intangible heritage; heritage tourism and a legal cell to guide us on what we can do about heritage in the legal framework.

We have established a heritage academy to consolidate the knowledge acquired and passed on that knowledge to the people on the ground who work on heritage. We have a Library and Documentation Centre; we publish books on heritage, guides on heritage tourism and publications and craft regeneration in the country.

[slide] Our volunteers are grouped in chapters. Each chapter is composed of at least 25 volunteers and some chapters have as many as 400-800 volunteers. We have chapters in every state in a country of subcontinental size and the aim is to have one chapter in every district of India. Presently we have 187 chapters spread across the country.

[slide] With these arrangements, we involve the local communities and their skills for conserving heritage. India, as you know, being the size of a continent, is endowed with diverse climatic conditions, differing and varying landforms and vegetations, such that we



have very high mountains, deserts, coasts, rivers, plains, and six seasons, from very cold to very hot.

Further, Indian civilization has been adept in absorbing any outside influence and adapting and modifying it. Therefore, as I said earlier, the challenge of heritage in India needs local solutions and there is no one centralized solution, as for example the quality of lime changes from state to state and within the state the quality of lime will vary, so a different method is needed to handle it depending on the site.

[slide] We have also evolved our own Charter of Conservation as distinct from the Western Philosophy of conservation. It is based on our Life Cycle Theory of Reincarnation rather than the Theory of Redemption that is prevalent in the Western world.

[slide] I am therefore proud to say that, today, not only is most of our conservation expertise indigenous, but some of these experts have also become international experts in their own right. We are now enlarging our capabilities by research and studies, establishing training facilities in conservation and management within India and sharing whatever we have with those with whom we have a common, shared heritage.

I am indeed glad that this initiative started in Cambodia with whom our ties and history of friendship date back to centuries ago and will further share our knowledge between the two countries and we will protect together our heritage. In both of our countries, the cultural heritage is alive and vibrant, sharing so much in common in terms of arts, architecture, crafts, traditions and customs. There is so much to share and celebrate together and be proud of collaborative partnership. I therefore thank the management of the APSARA – the national agency of Cambodia with the responsibility to not only to protect and conserve the site of Angkor, the World heritage site, but also as I understand, with the prime duty to put the management and the conservation of this heritage into Khmer hands – for example the same hands and minds which created it centuries ago and then protected it for so many centuries.

With my experience in India, where there is now regeneration of interest in heritage after our independence from colonial rule, I am sure that a similar spirit prevails in Cambodia, to not only love and respect their heritage and also a keenness to acquire the skills and expertise to take care of it. I offer INTACH facilities in India to share with you whatever knowledge we have acquired over the past 32 years to fulfil what His Majesty the King once said 'Khmers who are capable of standing in the present with an arm around the past and eyes on the future.'

Thank you very much, wishing you all the best." [A video is being played]

Comment from the Co-chair for France: "These pictures are closing this morning's proceedings. Enjoy the lunch and reconvene at 2 p.m. sharp. Thank you."

Comment from the Co-chairman for Japan: "We reconvene and start with the Follow-up of General Recommendations of the 22<sup>nd</sup> Plenary Session and the floor is to Professor Beschaouch."

**II.C- GENERAL RECOMMENDATIONS: FOLLOW-UP ON IMPLEMENTATION OF THE  
LAST RECOMMENDATIONS ADOPTED AT THE 25<sup>TH</sup> TECHNICAL SESSION AND AT  
THE 22<sup>ND</sup> PLENARY SESSION IN DECEMBER 2015**

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**II.C.1 Introduction by the Scientific Secretary, Professor Azedine Beschaouch**

***a. General recommendation 25ST.a***

"Thank you, Co-chair. We move on to the recommendations taken at the 25<sup>th</sup> Technical Session, or in short 'ST', and this from the 22<sup>nd</sup> Plenary Session or '22SP'. These recommendations include important matters. Let me initially make some observations. For the newcomers I recall that the general recommendations remain valid for several years. They are not repeated but applied one hundred per cent and remain in force. We have never heard anyone say that this or that recommendation should be cancelled.

Let me begin with that first on conservation and development issues that asked for the respect of the Angkor Charter that we can be proud of. According to the latter specifications, project documentation must be made available prior to the *ad hoc* experts' advice. We recall this point and it is being implemented. To be frank, it is not that people do not want to impart the information it is just that people have been used to past practices. The Secretariat will pursue this work matter. I would like to add that His Excellency the Director General attending today has repeated this recommendation in several meetings he invited me to attend where he recalled that this was a duty. The Secretariat will closely monitor this matter. This general recommendations remain in force and we hope that it will not be respected to only 25 per cent as is the case now but we hope at a minimum of 50 per cent.

***b. General recommendation 25ST.c***

Before I start with this recommendation, let me mention that we did not table the 25ST.b as this recommendation is being dealt with in the framework of the TMP and that we heard the report from His Excellency Sok Sangvar so we did not add it. It dealt with the advertising signs in Srah Srang for beer, alcohol and other beverage brands.

The 25ST.c is a technical recommendation. In some monuments the stone can be re-used and is found in or around the monument and in other monuments new stone must be inserted. To prevent any discrepancy between the old and the new stones, the *ad hoc* experts recommend using as many old stones as possible and to minimise the use of new stones. It is true quarries of sandstone found at Kulen produce new stones that can be harmonised with the old stones. It is an issue of look, aesthetic and colour. This recommendation was recalled to all as sometimes the treatment of the new stone is not easy, especially the patina. We would like this recommendation to be applied and ask the teams to enforce it, keeping in mind the issues at stake. Let us not be too stringent as this is not a simple matter but something complicated.

***c. Cultural property management on the Angkor site 22SP.1***

The next item is from the plenary session, the last two pages for those who have the handout, and talks about cultural property management. This is a key recommendation. We heard a presentation on the inventory of properties and the UNESCO recommendation taken on inventories in museums and in particular for cultural properties. What was demonstrated is that with a properly managed inventory it is easier to fight against illicit trafficking of properties. Interpol, the international agency against international trafficking and theft, relies heavily on inventories when assisting States asking for the return of their properties and also to prevent trafficking.

We heeded all these points and even heard the presentation from someone in charge during the last technical session. Let me add that, after a request from His Excellency the Director General, I personally attended meetings on the inventory with CIRDA, the International Research and Documentation Centre and the Department of Conservation of Monuments and Rescue Archaeology of His Excellency Ros Borath and Dr. Ly Vanna. A first draft of a report has been completed.

In order for an inventory to be operational it needs to meet two conditions here in Angkor. First, to adopt the same codes of codification and the same numbers and references; this is for the normative procedure. To this end, there need it to be common practise among the teams and we are waiting for the endorsement of the Researchers' Code of Conduct as it will facilitate this. Secondly, in order for this inventory to be national there is a need for co-operation between the APSARA National Authority and the Preah Vihear National Authority, which should be easy, and with the Ministry of Culture and Fine Arts and all the Kingdom's Museums, as they are the conservators of most of the items that need to be inventoried. Initial steps will be undertaken, and we will report on them.

I was tasked with the Secretariat to take part in this endeavour and I will do it representing the ICC. Moreover, I am an archaeologist and I believe in the power of the inventory and I will do this with pleasure and conviction.

#### ***d. Heritage and population 22SP.2***

The next item concerns Heritage and Population under number 22SP.2 and set as a principle: maximum association between the people and the benefits of development. The experts recalled this, but it is also the backbone of the World Heritage Convention. The Convention and its guidelines, some of you are familiar with this verbatim, insists a great deal on associating people with development in a tourism site or an archaeological-turned-tourism site. Obviously you are all aware of this key matter.

His Excellency Sok Sangvar is very active in this field with his department respecting the instructions of His Excellency the Deputy Prime Minister. He has always repeated that the Royal Government advocates harmony between people and heritage to avoid a fracture. This is something that is obvious but very often overlooked. When you drive around the Angkor site there are many stalls selling souvenirs, food and beverages and without tourism these people would be living below the poverty line. This must not be shunned and must be said. I think that it is not sufficiently mentioned.

The APSARA National Authority also employs more than 2,000 people that in turn see to their families' welfare. I am not here to paint a rosy picture, but to insist on the effort undertaken and the reality. When we do a stocktaking exercise on the situation of the site, we will realise that families and people now live differently than before. Thereby, it is important to keep up the effort and not to stop halfway and look at it globally.

#### ***e. Complete version of the presentations (during the technical session) 22SP.3***

The last item mentioned the final version of the presentations. This was discussed several times and it is stipulated in the internal rules, so it is not something invented by the Secretariat or the co-chairmanship. I would like to repeat what was said during the quadripartite, in small committee: The difficulty of implementing this recommendation. We noticed this session that we have been sent a lot of texts, yet it is not satisfying. We need to think this out and, if you allow us, the Secretariat will report on the feedback received. Many people told us that they could not give complete texts but just an abstract.

I would like to share with you my experience as an archaeologist and my 50 years of attending congresses and colloquia. If someone has in a few pages summarised the substance of its presentation it is sufficient. Of course, it would be better to receive the whole paper but a summary enables us to know whether the content is legitimate or not. We will talk with the co-chairs and the APSARA National Authority which is also struggling in getting its own texts on schedule. We will think about it and suggest and will talk about it at the next technical meeting.

These were, co-chairs, the salient points of these recommendations, but let me add that the follow-up of recommendations is a wonderful tool. It is a time when we realise the seriousness of the works implemented and how everyone respects the recommendations. When establishing a comparison with the past I must admit that we note formidable progress. Of course, there are hurdles, but they must not stop us and we should pursue our activities. Our recommendations mean that in the field the Angkor Charter is being applied in good conditions.

Thank you.”

Comment from the Co-chair for Japan: <sup>[OrigE]</sup> “Thank you very much. We now move on to the second part of our session, which is the Activity Report and we begin with Mr Mr. Sebastian Kerridge and Mr. Suy Bonthorn, GIZ/APSARA Stone Conservation Unit.”

### **III.A- TECHNICAL TEAMS ACTIVITY REPORTS: CONSERVATION, RESEARCH AND ARCHAEOLOGY**

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#### **III.A.1 Short notion of SCU’s lab facilities and activity report June 2015-June 2016, by Mr. Sebastian Kerridge and Mr. Suy Bonthorn, GIZ/APSARA Stone Conservation Unit**

**Mr. Sebastian Kerridge:**

<sup>[OrigE]</sup> “Excellencies,  
Distinguished Guests,  
Fellow Professionals and Colleagues,  
Ladies and Gentlemen.

<sup>[slide]</sup> I am grateful for the opportunity to present the latest developments from the APSARA Stone Conservation Unit, which also gives me the chance to introduce myself very briefly. <sup>[slide]</sup> This presentation is a joint effort and I shall only take about three minutes of your time before handing over to my colleague Suy Bonthorn from the Stone Conservation Unit to present to you the latest project activities of our team. My part of this presentation will comprise of a brief introduction (as already mentioned) and a notion of the new Lab Facilities here at the SCU building.

<sup>[slide]</sup> My name is Sebastian Kerridge and I am the new GIZ advisor for the APSARA Stone Conservation Unit, eventually replacing my predecessor, Mr. Bernecker, who, unfortunately, is not able to attend today. Professionally, I have worked in the field of stone conservation and stone carving for more than ten years now and I have worked on heritage sites across Germany, Italy, Australia and most notably the United Kingdom. I am exceptionally grateful to now have the opportunity to contribute, no matter how little, to the preservation of the magnificent temples of Angkor.

[slide] That leads me to the next point, the subject of the extension of our capabilities. The SCU recently acquired laboratory equipment for basic scientific research into the properties of natural stone and replacement mortars, as specialised training efforts for some of the young stone conservators of our team into this field are underway. The Lab facilities are equipped for basic type testing to establish properties of natural stone samples as well as conducting tests into different repair mortar systems.

The following images are intended to illustrate our capabilities a little. [slide] Here you can see a sequence of photographs showing initial stone classification with the help of a microscope and further tests which have been carried out to establish the properties of capillary action at atmospheric pressure for these natural stone samples.

[slide] And lastly, what you can see here, equipment to produce sample pieces from mortar. Currently, my predecessor Mr. Bernecker has conducted preliminary tests into lime mortar mixes using locally produced lime putty made from shells with the addition of brick dust to add hydraulic properties. The laboratory will be used on an ongoing basis to support the effectiveness of our interventions and will hopefully produce many valuable research results which will be shared here in the future.

[slide] This is the point where I would like to hand over this presentation to Suy Bunthorn who will inform you about SCU's latest project activities. Thank you very much for your attention."

**Mr. Suy Bunthorn:**

[OrigE] "Your Excellency Deputy Prime Minister,  
Excellency Co-chair,  
Ladies and Gentlemen

[slide] It is my pleasure to present the activities of the APSARA Stone Conservation Unit from January until June 2016. This is the first time I have given a presentation, so I am sorry in case of accidental slips.

[slide] I would briefly like to introduce the projects currently carried out by the SCU. There are: Banteay Samre Temple (Naga balustrade and door frame at the east side Gopura 1), Preah Norodom Sihanouk-Angkor Museum, Pre Rup Temple and Kravan Temple.

[slide] One of the sites we worked on in the last six months was Banteay Samre Temple: At the northern elevation of the West side of the inner enclosure gallery the Naga balustrade is being conserved by SCU. This project started in February 2016. The Naga balustrade is not stable anymore and is heavily damaged. After mapping the Naga balustrade we dismantled it on site. Previous interventions were removed.

[slide] The pieces of the Naga head and body were reattached with fibreglass dowels and glue. Cracks and gaps were filled with Ethyl Silicate pointing mortar. The surface that was flaking and sanding was consolidated with Ethyl Silicate 300 ES. This project is a work in progress.

[slide] Now, we come to the second project at Banteay Samre Temple. On the outer east side of Gopura 1 the door frame on the left side and the corner of the central entrance porch was damaged due to weathering and structural strains. Some details of the carving threaten to fall off in the near future, so the SCU has conducted emergency treatment.

[slide] Let's move to Preah Norodom Sihanouk-Angkor Museum. In the storage of Preah Norodom Sihanouk-Angkor Museum were a lintel and two columns from Bakong Temple. The lintel and columns were broken into some bigger parts and many small fragments, some of which are lost.

[slide] The lintel alone broke into at least 192 known fragments, and up to now work on the lintel is nearly completed. In the same way the decoration of the two columns shattered into 65 pieces, with some lost; it was decided to reassemble the columns. First, the big pieces were pieced together before attaching the small fragments. Some missing parts have been replaced with new carved sandstone to re-stabilize the objects.

[slide] One more project was the conservation of three lions at the south side of the first level central tower at Pre Rup Temple, which was completed in March 2016. Many original pieces were found at another place inside the temple.

[slide] After that, we pieced together the original pieces and some missing parts have been replaced with new carved sandstone to complete and stabilise the sculptures. Again, you can see another example of re-attaching an original fragment.

[slide] Let's go on to another project at Pre Rup Temple. Two lintels at Pre Rup temple, the first at the northeast tower (east side) and the second at the northwest tower (north side) of the central platform were damaged due to weathering. Fifty per cent of the carved decorations of the lintels were lost and the remaining parts could fall off. After mapping, the lintels were prepared for conservation *in situ*. This project has just commenced.

[slide] The last project of our current activities concerns the five lions at the east side of Kravan Temple which were heavily damaged due to weathering. The statues were not stable because the base, body and legs were broken, with missing parts. During the last intervention, cement replacements and wooden and iron dowels to stabilize them were fitted to support them. After damage assessment we started work on site. Cement replacements and iron dowels have been removed.

[slide] Finally, before finishing my presentation I would like to show you a group picture of our team during our excursion to monitor many temples on Kulen Mountain before Khmer New Year. Thank you for your attention"

### **III.A.2 Overview of restoration work from June 2015 until June 2016, by Dr. Takeshi Nakagawa, Dr. Kou Vet and Mr. Cheam Pross, JASA**

#### **Dr. Takeshi Nakagawa:**

[OrigE] "Your Excellency Deputy Prime Minister,  
Excellencies Co-chair,  
Ladies and Gentlemen

My name is Takeshi Nakagawa from JASA. One of JASA's consistent activities is the fourth phase landscape activity at the east side of the Bayon with restoration using partial dismantling and partial excavation. These two years we have undertaken excavation surveys around tower 55 and part of the front causeway terrace of the Bayon. We studied Jacques Dumarçay (1973) and Olivier Cunin (2003) and found very interesting features through our excavation surveys and we would like to present a provisional report. Dr. Kou Vet will do so."

#### **Dr Kou Vet:**

[OrigE] "Excellency,  
Colleagues,  
Ladies and Gentlemen,

[slide] Good afternoon. My name is Kou Vet from the Japan-APSARA Safeguarding Angkor Team. My presentation is the Report of New Findings through the Archaeological Survey around Tower 55 of Bayon Complex in 2015 and 2016.

[slide] First let me show you the Location of the archaeological excavation survey. On the top left is the Bayon plan; this light grey circle is Tower 55. The survey areas are shown as missions BYJA19 to 21 (in 2015) and BYJA22 (in 2016).

[slide] Let me show you the detected features in each survey location. They had been coloured in grey for easy identification.

[slide] This is a view of sandstone features identified in BYJA19. The grey coloured blocks represent the unfinished staircase and plinth of the platform, feature 19SC024. They were identified in the south and in front of the chamber of Tower 55. The staircase is the top picture to the right side and the plinth is the lower one.

[slide] This is a view of another sandstone feature identified in BYJA19. Grey colored blocks represent the plinth of the platform, and it is a partial view of feature 19SC024.

[slide] This is a view of a sandstone and laterite feature also identified in BYJA19. The upper 3 tiers are sandstone and the bottom 2 tiers are laterite. Grey coloured sandstone blocks represent the overlapping staircase and partial basement, feature 19SC023; it overlapped feature 19SC024.

[slide] This sandstone and laterite feature was also identified in BYJA19. The Grey coloured blocks represent the lower pavement connecting to the plinth, and it is a partial view of feature 19SC023. [slide] This is a partial view of posthole features identified in BYJA19. It indicates the overlapping circular posthole traces of a succession of wooden structures in front of Tower 55.

[slide] This is a view of sandstone feature 20SC025 identified in BYJA20 at the southern and northern corners of Tower 55. Grey coloured sandstone blocks represent the unfinished plinth that predates the plinth identified in BYJA19, features 19SC024 and 23.

[slide] This is a view of a sandstone feature 21SC025 identified in BYJA21. It is a partial view of feature 20SC025 as I mentioned above. It is an unfinished staircase identified directly east of the porch of Tower 55 and most likely predating Tower 55 and the outer gallery wall.

[slide] This is a view of a sandstone feature identified in BYJA22 (2016). It is a partial view of feature 20-21SC025. It is an unfinished staircase directly north of the side chamber of Tower 55 and most likely predating Tower 55 and the outer gallery wall.

[slide] This is a view of a laterite feature 22SX003 identified in BYJA22. The grey colored blocks represent an additional laterite realignment of an older outer gallery.

[slide] Conclusion and future study: [slide] The platform identified in BYJA20 and 22 is believed to predate Tower 55 and the outer gallery wall. Two sandstone staircases of this platform were identified as unfinished.

[slide] When a design change occurred with the addition of Tower 55 and the outer gallery wall, the initial plinth and the staircase of the platform identified in BYJA21 and 22 were buried and a laterite realignment with seven tiers, confirmed at the northern part of Tower 55, was constructed connecting the plinth to this platform.

[slide] The platform identified in BYJA19 (feature 19SC024) was constructed subsequently to feature 21SC025. [slide] Overlapped staircase with three sandstone steps was

constructed over existing staircase. [slide] The vestiges of overlapping circular posthole features identified in front of the chamber of Tower 55 suggest that there was a sequence of wooden structures. [slide] In order to further clarify the process and sequence of the construction of the east main causeway additional archaeological investigation is required.

[slide] Thank you for your kind attention.”

Comment from the Co-chair for Japan: [OrigE] “Thank you very much. For the next item we have received a written report from Dr. Alison Carter concerning excavations of the mound inside Angkor Wat’s enclosure and for the following item concerning the preliminary results of the Yaçodharâçrama programme, the presentation is expected at the next plenary session. We now invite Ms. Yuan Mengxi on the conservation work at Takeo temple.”

### **III.A.3 Conservation work at Takeo Temple, Ms. Yuan Mengxi Representative of CACH (Chinese Government Team for Safeguarding Angkor)**

[OrigE] “Your Excellency Deputy Prime Minister,  
Excellencies Co-chairs,  
Ladies and Gentlemen,

[slide] It is an honour to present the report on The Conservation and Restoration of Ta Keo Temple. The report starts with the conservation and restoration of the monuments and then I will talk about the conservation project of sandstone carvings on Ta Keo Temple Pyramid

[slide] The conservation and restoration project of Ta Keo temple started in 2008 and is in its third phase now, with the focus on the north stairway and the west stairway of the pyramid.

[slide] As we can see in this picture, the blue part is after restoration and the red is still under restoration. Here is the location of the north stairway and the west stairway. [slide] This is the contrast before and after restoration for both the north stairway and the west stairway of the pyramid.

[slide] Both sides of the north stairway of the pyramid suffered different scale of deformation and transposition. Parts of the stone components collapsed and fell down. Many corners were damaged. CSA have found the collapsed stone components and returned them to their original positions.

[slide] Compared with other stairways on Ta Keo Temple, the west stairway is cliffier so the damage and collapse were more severe. This also caused the collapsed stone to break into small pieces which has increased the difficulty of the restoration works.

[slide] Since the space between the west stairway and the west inner gopura is very small, which limited the scaffold, the restoration work on this side was more difficult. During restoration, we replaced missing stones using chained blocks which are more flexible and cause less risk to the architecture.

[slide] During the implementation of the conservation and restoration project at Ta Keo Temple, CSA also focused on research, archaeological study and also architectural composition studies and published several academic works.

[slide] The publications include: Architectural Research on Ta Keo Temple-Mountain at the Angkor Site, the Architectural Research on Ta Keo Temple-Mountain at the Angkor Site



and the Report on Archaeological Investigation and Excavation at the Ta Keo Temple-Mountain Site of the Angkor Monuments in Cambodia

[slide] For visitors to get a better understanding of the site and its history, we will build an Exhibition Centre. The Management and Exhibition Centre of Ta Keo Temple will give us a clear introduction on the conservation and restoration work, the temple's history, the results of archaeological research and the conservation of stone carving. The location and the scheme of the Management and Exhibition Centre of Ta Keo Temple have already been approved by the APSARA National Authority and the construction will start in July and be completed in 2016.

[slide] Now, a brief introduction to the Conservation Project of Sandstone Carvings on Ta Keo Temple Pyramid. [slide] The conservation project started in October 26<sup>th</sup>, 2015 to October 1<sup>st</sup>, 2016. As we know Ta Keo was never finished. We chose seven areas as conservation points; their location can be found in this picture, mainly on the eastern side of the south façade.

[slide] Due to the local climate, the stone surface suffered diverse types of damage of the stone carving, including: Delamination, hair cracking, powdering, flaking detachment and hollowing.

[slide] Depending on the type of degradation, we have chosen different conservation techniques and materials. [slide] For point bonding we use ethyl silicate and red sand rock powder. The construction process is as shown. This is the effect after the completion of bonding

[slide] Permeating reinforcement is used for the weathering surface of the carved stone. We used the dripping technique in this reinforcement construction. These pictures are reinforced construction process photos.

[slide] After the completion of the reinforcement, we evaluate its effect by microscopic 3D photos and colour detection. The photos showed that the surface of the sandstone was compacted and the pores were filled. We also analysed the colour impact before and after reinforcement. There is a slight colour difference. You cannot notice it with naked eyes.

[slide] *In situ* bonding is used for the fallen stones and loose stones, those threatening to fall. The materials are the same as for point bonding: ethyl silicate and sandstone powder. [slide] First, we took photos to make sure that the components will be set back in their original place.

[slide] Permeating technique is used for small cracks; this is the process. [slide] Grouting bonding process is mainly used for hollowing. We prepare the sealing and bonding materials and internal grouting materials by adjusting the proportion of liquid materials and solid materials. The grouting process included cleaning, caulking, grouting and quality testing.

[slide] After, we used infrared thermal imaging instruments to detect the effect of grouting. Through the infrared thermal images, we can clearly see, before grouting, the high temperature of the yellow area hollowing region. After grouting, the colour of the photo showed uniform temperature. This shows that the original hollow area has been filled with adhesive.

[slide] This is the construction process of another typical hollow grouting adhesive. [slide] These are the photos of infrared thermal imaging before and after grouting; the grouting effect is good, the original hollow area has been filled with adhesive.

[slide] Up to now, we have completed the following works: Permeating reinforcement construction on an area of 152.2m<sup>2</sup>, 447 points of spot bonding, 393 points of *in-situ* bond-

ing, 117 points of grouting and 69 points of filling have been completed. Statistic tables of engineering work volume completed in all construction areas are shown in the table.

[slide] Along with the conservation work we also carry out monitoring research on the pyramid of Ta Keo temple, including manual monitoring and instrument monitoring. Monitoring contents included the atmospheric environment, rock surface temperature and moisture, air temperature and humidity around the rock surface, and weathering status. The monitoring started in September 2015 and will be completed in the same month in 2016.

This chart shows the meteorological monitoring results of the past four months; the monthly average temperature every month in Ta Keo temple was about 28 degrees Celsius. The monthly highest and average temperature had no significant difference. [slide] But the monthly atmospheric humidity showed a big difference — the atmospheric humidity was circa 78 per cent in December and January, but 60 per cent in February and March.

[slide] Coinciding with the change of atmospheric temperature, the monthly average temperature of the rock surface in the Pyramid were the same; there was no obvious difference. But the difference of surface temperature in different façade was obvious; the monthly maximum, average and minimum temperatures of rock surfaces in the west façade were higher than the other three façades, while the north façade was the lowest. During the four months from December 2015 to March 2016, the highest temperature of the rock surface on the east façade, south façade and north façade all occurred in March 2016. The highest temperature of the rock surface on the east façade was 49.34 degrees Celsius, the highest temperature of the rock surface on the south façade was 37.92 degrees Celsius, and the highest temperature of the rock surface on the north façade was 37.73 degrees Celsius. The north wall west face recorded the highest temperature of the rock surface with 43.19 degrees Celsius in December 2015.

[slide] Until now, the project team has calculated moisture content by weighing the rock mass selected near the weathering monitoring points, and found that the moisture content in September 2015 was the highest; the lowest was in April 2016.

[slide] There are varying degrees of weathering diseases appearing in the 14 monitoring points: Monitoring points No.1, 2 and 4 partially fell off, and the No. 8 and 13 peeled off in a large extent, and a few cracks have become slightly bigger. Most of the degradation appeared in the west façade which is hotter, which means the stone carvings in the west façade weathered most seriously.

The next step including our monitoring work remains to be improved in the first and second levels of the pyramid and we will continue reinforcement of the cracks of the carving on the first and second levels of the pyramid. We will carry on monitoring the construction using scientific instruments in order to evaluate the conservation impact. We will keep on our monitoring work to understand the relationship between the environment and the diseases affecting the temple.

This is all the work we have done in 2006. Thank you very much for your attention.”

#### **III.A.4 Activity report of the Angkor Ceramic Unit 2015-2016, by Dr. EA Darith, Deputy Director of the Angkor International Center for Research and Documentation, APSARA National Authority**

[OrigE] “Excellency Deputy Prime Minister,  
Excellencies Co-chair,

[slide] I would like to present the activity report of the Angkor Ceramic Unit (ACU). [slide] The ACU was established during the 24<sup>th</sup> technical session of the ICC-Angkor, 4-5 June 2015. On 15<sup>th</sup> of June 2015: a *Prakas* from the Prime Ministerial cabinet ordered to transfer and nominate myself, Ea Darith, and Chhay Rachna to work for the ACU. In October 2015: The Director General led a meeting to address the tasks of the ACU within APSARA and decided to purchase supplies for operations. In November 2015: Five technical staff members were appointed to work at the ACU.

[slide] The ACU stores 97,952 fragments and 3000.6 kilograms of ceramics and other artefacts. Those artefacts come mostly from sites like the kilns at Topr Chey, Khnar Po, Bangkong and Chong Samrong and also from other sites like Koh Ker.

[slide] The ACU was placed under responsibility of the Angkor International Centre for Research and Documentation. The ACU is divided into five units: the Inventory and Storage Unit; Research Unit; Restoration and conservation Unit; Exhibition Unit and Training Unit.

[slide] We have a detailed inventory of the artefacts including: Numbering of each fragment, photographing, describing, weighting, and drawing of significant items. We tested systematic work on Topr Chey fragments. It took almost four months to complete the systematic documentation and inventory of 4,292 pieces and 721 kilograms. Detailed sort and basic analysis of Koh Ker assemblage (22,604 fragments; 178.9 kilograms) was made and it took about two weeks.

[slide] This is the activity of our inventory and storage unit. Once the artefacts are brought from the excavations, we sort them out and decide what significant items are worth drawing, which is also done on computer. [slide] We also have a numbering system and describe all the artefacts and take pictures of all the fragments with hard and soft copy made. You can see the picture here. [slide] This is the detailed sort and basic analysis of Koh Ker sherds. It took two weeks to complete with sorting out 24,291 fragments including earthenware, diagnostic earthenware, brown glazed, exotic glazed (mostly Chinese) and other significant artefacts.

[slide] For the restoration and conservation project, it includes: Recovering the assemblage sherds; soaking sherds in pure water to desalinate the soluble salt from pots; joining; adding plaster as needed; painting; creating a softcopy database and reporting before, during and after restoration. So far, we have restored almost ten complete jars and four roof-tiles and uncompleted shapes from 1,100 pieces.

[slide] This is the restoration and conservation unit where our staff has tried to restore artefacts; here you can see plaster. There is a machine to purify water and this is the salt test after we put the ceramics in water and we remove the salt. [slide] These are the restored artefacts that we have completed so far.

[slide] The Research Unit collaborates with the University of Hawaii (USA), Santa Clara University (USA), New England University (Australia) and other institutions supplying samples from various projects. The purpose Khmer Production and Exchange Project (KPX) is a scientific research to understand the dates, kiln origins, source material, composition and technology of Khmer ceramics, as well as distribution networks (supply/value chain). The total of 2,514 Khmer samples from 182 sites were prepared and sent to Australia for analysis.

[slide] This is the sample preparation for KPX project. This is the ceramic that we sort out and we cut a small piece to be used as a sample; the large pieces remain in Cambodia. [slide] This is a sample that we have already prepared for sanding.

[slide] As for the Training Unit: In 2013 and 2014, we collaborated with the Smithsonian Institute and trained Southeast Asian researchers on how to excavate kilns and manage

ceramics after excavation. In late 2016, we will continue to collaborate with the Smithsonian to train in petrographic analysis of stone and ceramic material. We will possibly create a petrography lab at the APSARA following the workshop, depending on the Smithsonian funding (all lab materials to be kept at the APSARA).

[slide] In the upper picture you can see the trainees from the Smithsonian and Europe. This is the training activity and the reports from the sites of Torp Chey and Chong Samrong. [slide] This is a picture of the petrography that we discussed in Shanghai during a workshop. We also designed it.

[slide] The Exhibition Unit has no activity yet as there is currently an insufficient amount of artefacts. These are the members of the ACU. [slide] Below are the cabinet and shelves donated by Friends of Khmer Culture. I would like to thank them for supporting all the equipment at the ACU.

Thank you very much for your attention.”

### **III.A.5 Conservation and Archaeological Research of *Prasat* Kok Chak by Mr. Srun Tech and Mrs. Net Simon, Department of Conservation of Angkor monuments and Rescue Archaeology, APSARA National Authority**

**Mr. Srun Tech:**

[OrigE] “Co-chairs,  
Ladies and Gentlemen,

[slide] Today, I would like to present the conservation of Kok Chak. The Department of Conservation of Monuments and Rescue Archaeology has implemented the project. Kok Chak is located about 3.5 km from Angkor Wat inside the urban perimeter which is now sprawling and Kok Chak is suffering from this pressure.

[slide] There is an inscription which mentions the King who visited the place where Jayavarman VII gave land and contracted the construction of a place for his people. In addition, this inscription also mentions that Jayavarman VII was a great hunter of elephants. Thanks to the studies of Maurice Glaize and Dumarçay, we know that the two towers were probably constructed in this period. The translation of the inscription notes that it was in the 11<sup>th</sup> century. This means that the inscription was probably written later than the construction itself.

[slide] Maurice Glaize described a decorated lintel. The structures appeared in the 9<sup>th</sup> or 10<sup>th</sup> century. The lintel of the north *Prasat* is dated from the 9-10<sup>th</sup> century. As for the lintel of the southern *Prasat* it was probably carved in the early 10<sup>th</sup> which is confirmed by Dumarçay, although he claimed that the large temple complex construction took years to complete and often underwent modifications.

[slide] In order to verify previous studies, archaeological excavations were carried out to study the history of the structure and understand their construction. [slide] This map shows the temple component in layout. Kok Chak consists of two temples: the south temple is considered the main tower which is not opposite the causeway where the main temple is. I found the stratigraphy in this picture showing the foundations which are important features to analyze this building. This is the foundation block and this is the stratigraphy of the temple terrace. I could not find the stratigraphy in this area. [slide] When comparing both foundations, we noticed that the foundations are of same size with a bigger building. I thought that the limit of the foundations could be here and that they planned on building another temple, otherwise why did they build a foundation and construct only one

temple? The small temple is in the middle of the foundation opposite the causeway. [slide]  
This is the foundation.

[slide] Let's look at the pathology, taking into account all elements. In general the wall tilts in this direction. This is due to the base of the temple, built in laterite and covered by sandstones. This shows you how the base is made and its deformation. The base is built on the foundation. [slide] The same here. Based on my observations, I noticed that the wall was made of three layers. If there is a depression in the ground or some deformation then the wall would collapse easily. [slide] The same thing here. The northern door is tilted because of the depression inside the temple.

[slide] The department carried out consolidation of the wall. First they propped the door for safety reasons and then they cut tree roots below, removed the accumulated soil and consolidated the base before mending the stones. [slide] Here, a picture of the consolidation work. [slide] This is after consolidation work. In the future my department plans to consolidate this one and to plant trees in front of the temple area and to delimit a protected zone.

Thank you very much for your attention."

### **III.A.6 Restoration and reconstitution of six lions, western cruciform terrace, Angkor Wat, introduction by His Excellency Ros Borath, Deputy Director General, presentation by Mr. Long Nary and Mr. Teuk Touch, Stone Conservation Unit, APSARA National Authority**

**Mr. Ros Borath:**

"Co-chairs,  
Excellencies,  
Ladies and Gentlemen,

The project that we are about to present deals with the six lions that can be found on the western entrance terrace of the main causeway of Angkor Wat; simply put, the main access to the monument. The development of this area is needed, as this will go along the last stages, II and III, of the restoration of this causeway. With all the development projects ongoing the entrance to Angkor Wat must be majestic.

Once all the usual approach documentation, studies, analysis and condition surveys are completed, the team in charge of the implementation of the works is ready. Moreover, the control and analysis of this terrace have brought reassuring results as it does not show any damage nor tilting at the location where the lions will be placed. The soil content was also analysed.

Of course, all six lions are in an advanced state of decay and have undergone numerous restorations. The fact is that only five lions are in sandstone and that sixth is a copy made of sandstone built by the EFEO which is in very bad condition. We suggest replacing it by a sandstone replica with the eventual hope of finding the original statue.

Once the restoration of the north jetty of the causeway has been completed, the two other restored lions should be placed back in their original locations; they have been stored at the Angkor Conservancy since 1997.

I thank you for your attention and would like to hand over the floor to Messrs. Long Nary and Teuk Touch who will present the projects. Thank you."

**Mr. Teuk Touch:**

[OrigE] "Excellencies,  
Ladies and Gentlemen,

[slide] It is my pleasure to present to you our proposal for the conservation and restoration of the six lions at the west entrance of the causeway at Angkor Wat. First of all, I would like to show you the results of our research of previous interventions and then talk about the present condition of the lions.

[slide] This plan shows you the place where the lions are located. [slide] This historic photograph shows us the location before the start of a restoration project in 1922. It gives us a good understanding of the lion's condition at that time.

[slide] This is the risk map which was established with data we generated during our documentation research process. Here, you can see the statues which are most at risk. [slide] The map you can see here shows the planned work area for the conservation and restoration of the Western causeway, phases two and three.

[slide] Let's have a look at historic evidence about these six lions. As you can see in the photograph from 1949 on the right hand side, lion number one did not exist in this location at that time. [slide] In comparison, the condition of lion number two appears to be stable in 1950 from which the photograph of the EFEO archive depicted here is dated. The current condition of this lion seems to not have changed significantly.

[slide] This leads us to lion number three. As you can see in the photograph on the top, before a restoration in 1950, there has merely been the plinth with the feet of the Lion remaining. The photographs underneath show the restored condition after completion of this project.

[slide] Let's conclude the historic condition analysis with lion number four. In 1949 this Lion appears to have been in a solid state. The same is true for today. [slide] This leads us to the condition of the foundation. The area in the red mark is the cruciform of the causeway and as you can see on the graphic below the ground is still stable and therefore, does not need to be re-enforced to bear the load of the Lions.

[slide] In this slide you can see our team researching the current decay. For this, the team carried out documentation, hand mapping, and water absorption and drilling resistance tests to be able to judge the qualities of the stone.

[slide] Let's talk about the current condition of the individual lion statues. This slide is about the first lion which is a replica completely made of concrete. The concrete has started to crack and showed signs of further deterioration and salt built-up.

[slide] Let's move on to lions number two and number three. These statues are in a state of bad deterioration. The rear half of Lion number three is a complete cement concrete replacement. Our team is going to conserve the remaining original stone parts. Cracks and scales will be treated and the salt encrusted area will be removed. [slide] These are sketches of lion number three showing the areas of cement concrete and original stone parts.

[slide] Lastly, let's go to see lion number six. This lion is in good condition, with only some cracks and scales. Furthermore, half of the head is missing. We will replace existing cement concrete with Ethyl Silicate pointing mortar. The same treatment will be applied to lions four and five which are in a similar condition.

[slide] Let's go to this slide on the conclusions for the conservation process and the techniques applied when carrying out the forthcoming interventions. [slide] This is the material list for the conservation and restoration of the six lions at the first causeway of Angkor

Wat Temple. These materials have been previously approved for use in Angkor Wat with GACP.

Thank you for your attention.”

*Comment from the Co-chairman for Japan:* <sup>[OrigE]</sup> “Thank you very much. With regard to the Conservation and Restoration of *Prasat Ta Nei*: Progress and Future Plans by Mr. An Sopheap, a written report was provided. We move on to the next point: Conservation and development of the east causeway of Beng Mealea temple by Dr. Chhean Ratha.”

### **III.A.7 Conservation and development of the east causeway of Beng Mealea temple by Dr. Chhean Ratha, Acting Director of Department of Conservation of Monuments Outside Angkor Park**

<sup>[OrigE]</sup> “Excellency Deputy Prime Minister,  
Co-chairs,  
Friends and colleagues,  
Ladies and Gentlemen,

<sup>[slide]</sup> Beng Mealea, the 12<sup>th</sup> century temple, is located along the ancient road from Siem Reap to the Preah Khan of Kampong Svay (or Bakan in Khmer), <sup>[slide]</sup> about 40 kilometres east of Angkor Wat.

<sup>[slide]</sup> The reason we chose the eastern and northern causeways as priority locations for the conservation and development are the following. The south and west causeways are in better condition compared to the east and the north. Presently, tourists are temporarily allowed to visit the temple entering from the south and to leave the temple from the west and south gates.

<sup>[slide]</sup> Due to the increasing number of tourists the southern car park has very limited space. Moreover, it is close and impacts on the temple as you can see in the picture. <sup>[slide]</sup> Therefore, in the future, the *parvis* should be located to the east. Tourists should visit the temple by starting from the eastern causeway and leave the temple from the western gate. During the work carried out at the east and north causeways, the tourist can still visit the temple normally as is the case presently using the south and west causeways.

<sup>[slide]</sup> This slide shows general views of the east causeway. <sup>[slide]</sup> Actually, it is a new project, the survey started three months ago. Topographical survey, photos record, architectural survey and excavation work will confirm the structure of the causeway

<sup>[slide]</sup> The topographical survey: Thanks to LiDAR data, we got useful information. However, we need more detailed data related to the stone locations, shape of the causeway, the location and amount of impacted trees on the causeway and the location of the drainage system, as well as the run off direction of the raining water etc. That is why we have used a total station machine to survey this data. We finished with the northern causeway with 1250 points (NEZ), now we are working on the eastern causeway. <sup>[slide]</sup> The amount and location of trees have been recorded.

<sup>[slide]</sup> Photo record: We have carried out a photo record for both eastern and northern causeways. For the eastern causeway measuring 836 metres, we have taken 684 photos. <sup>[slide]</sup> For the northern causeway measuring 344 metres, we have taken 252 photos.

<sup>[slide]</sup> As seen in this slide, plans, elevations, sections and detail drawings etc. are in progress. <sup>[slide]</sup> In order to confirm the structure of the causeway, excavations have been

carried out. <sup>[slide]</sup> As you saw in the cross section drawing, the structure of the causeway could be described as follows: Two retaining walls were made from five blocks of sandstone built to support the Naga balustrade and to protect the compacted soil inside the causeway.

<sup>[slide]</sup> The top pavement of the causeway was made of sandstone blocks, its layout look quite similar to the western causeway of Angkor Wat where we have worked with Sophia University. However, most of the sandstone pavements were covered with accumulated soil to a depth from 100 mm to about 500 mm. The compacted soil under the pavement and the foundation will be clarified after dismantling of the sandstone pavement.

<sup>[slide]</sup> Let's look at the compacted layer from top to bottom. <sup>[slide]</sup> Number one to four is compacted clay with chips of laterite. On the right hand side you can see the sandstone chips at the top and two metres from the top is sand. The most important is number 5 — you can see the block of stones used to reinforce the foundation.

<sup>[slide]</sup> In the accumulated layer, we found several fragments of Naga balustrades at risk of decay. <sup>[slide]</sup> There are several kinds of artefacts that have been found. <sup>[slide]</sup> During the investigation we found many risks and undertsood reasons of collapse as follows:

<sup>[slide]</sup> Water issues: There are five drainage structures constructed under the four causeways that have been discovered; all of them were not operational. Therefore, the water could not flow properly through the ancient drainage system. <sup>[slide]</sup> The light blue colour is the direction of run off water flowing toward the causeway structure; due to the non operational drainage, water pools along the causeway for long period of time. As a result, as you can see in these pictures, the sandstone structure subsided from 25 to 35 cm.

<sup>[slide]</sup> Tree problems: Based on the result of the topographical survey, we could record the location, type as well as number of trees which impacted the structure of the causeway. The number of trees has been classified according to their size. The total number of trees impacting the eastern causeway structure is 374 with 138 trees for the northern causeway. The following slides below show several kinds of risks that have to be solved.

<sup>[slide]</sup> The lack of safeguarding and maintenance and roots of trees caused gaps between blocks of sandstone walls and the structure of the Naga balustrade. It is considered one of the reasons of the cracks of the Naga stones. <sup>[slide]</sup> Roots of trees caused the gaps between blocks of sandstone walls, therefore, the compacted backfill soil was washed away, running off with rain water.

<sup>[slide]</sup> Many types of trees grow on the causeway; their roots and gravity impacted the sandstone pavement and push the wall outwards. <sup>[slide]</sup> Many valuable Naga heads and other balustrade structures are in dangerous conditions. Most of them are under the ground in the layer of accumulated soil, which is considered as a high risk of decay condition.

<sup>[slide]</sup> The Sema stones were in risk of decay and the roots of trees destroyed the structure of the drainage. <sup>[slide]</sup> The Naga balustrades are covered by accumulated soil layers that need to be removed to start the restoration work.

<sup>[slide]</sup> Solutions and work plans: To continue the investigation work such as a topographical survey at the east causeway, an architectural survey, excavation works to confirm the structure of the causeway at the Sema area; remove all elements of Naga balustrade and Sema from underground to set a proper environment for mending; inventory of all elements of the causeway structure; remove some trees impacting on the structure; dismantle and restore some part of unstable structure and foundation; install the balustrade elements back to original position.



[slide] Parts of the conservation and development of the southern causeway have been done. Tourists take a lot of interest in this area and always take pictures of it when they visit Bang Mealea.

Thank you for your attention."

## General Discussion

Comment from the Co-chairman for Japan: [OrigE] "Thank you very much. The co-chairmanship proposes that we move directly to the general discussion to keep the momentum of this session before we break shortly. Would anyone like to take the floor? Mr. Bouchenaki, please."

Question from Mr. Mounir Bouchenaki: [OrigE] "Thank you, Co-chairman. These presentations were absolutely remarkable because they have shown the diversity of the interventions, either in the structural architecture field or in the field of conservation of objects and decors.

I would like to ask a question to my colleague and friend Professor Nakagawa with regard to the archaeological research that he is conducting and to ask him whether the results of these very specialised and fine analyses of the layers of the monument are giving us more data on the dating of the monument and on the different stages of intervention on the monument. Thank you."

Comment from the Co-chairman for Japan: [OrigE] "Professor Nakagawa please."

Reply from Mr. Takeshi Nakagawa: [OrigE] "Thank you very much for your question. We have extended the excavation area to the northeast and after we will make a full report, for the moment we only have a provisional report so please wait. Thank you."

Comment from the Co-chairman for Japan: [OrigE] "Thank you very much. Are there any other observations from the floor? Madame, please."

Question from Mrs. Francine d'Orgeval: "I would like to second the congratulations just formulated, as these presentations are of high quality. I would like to ask a question with regard to the Stone Conservation Unit which was mentioned and so were the Angkor ceramic programme and the restoration of the six lions. I would like to focus on the different types of teams which work on these topics. What are their relationships and co-operation? For example, with the workshop for conservation at the Phnom Penh National Museum or with the EFEO that established a ceramic laboratory. This is all in line with the ICC working strategy, maybe it would be the right time to organise a workshop at the end of the year on the restoration and conservation of ceramics and on this momentum that has led to dating and the constitution of stratigraphy. This is the question I wanted to ask."

Comment from the Co-chairman for Japan: "Thank you. Maybe the Ceramic Unit can answer?"

Answer from Mr. Azedine Beschaouch : "Madam, you are spot on. We will try to heed this proposal and as Secretariat will follow up. As I have the floor let me concur with Mr. Mounir Bouchenaki to say that we have noticed that, from one session to the other, the level of young Cambodians steadily improves especially their command of a foreign language and also in the field of conservation. This is something to bear in mind for the future and to give them the means to act for the safeguarding of the Angkorian heritage which is essential for world heritage.

I would like to reiterate that I have been for years very impressed by the work of Dr. Ea Darith. I have studied ceramics a lot throughout my life and I can tell you that I have identified the use of the multidisciplinary approach. I watched him work in his laboratory and he follows the right methodology. He studies history through dating, technology through petrography, the composition of the mix and even in an excavation, he will present tomorrow, he showed me how he can distinguish the Chinese ceramic from that Khmer — not only through the study of the patterns, because even a Boetian like I am could do that — but by studying the form of the ceramic. As he received excellent training in Tokyo and still does by teaching in Singapore, I would invite him to train young Cambodians in this key field for the understanding of Angkorian history. Thank you.”

Comment from the Co-chairman for Japan: “Thank you. Mr. Tan Boun Suy has the floor.”

Question from Mr. Tan Boun Suy: “Co-chair, my name is Tan Boun Suy and I work for the APSARA National Authority. I am very interested in the studies on microclimate and especially those carried out by the Chinese team at Ta Keo. I would like to ask a question on the way the temperature is measured on the stone surface. Thank you.”

Comment from the Co-chairman for Japan: “The representative of the Chinese team could answer your query.”

Reply from Ms. Yuan Mengxi: <sup>[OrigE]</sup> “Is your question about how we measure the stone surface or how to measure the temperature on the surface of the stone? We have equipment which is mastered by my colleague. It is not the temperature that you feel at the surface of the stone. The best way would be to bring you to my project and then you could have a look at the equipment and better understand.”

Reply from Mr. Tan Boun Suy: “Yes Madame.”

Comment from the Co-chairman for Japan: “Are there any more comments, questions? No. Let us take a break before restarting the proceedings. Please, be back in the room at 4 p.m.”

Comment from the Co-chair for France: “After this short break, we reconvene and start with the report of the technical teams in terms of sustainable development and I immediately give the floor to His Excellency Sok Sangvar on the Tourism Management Plan.”

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### III.B - TECHNICAL TEAMS ACTIVITY REPORTS: SUSTAINABLE DEVELOPMENT

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#### **III.B.1 Activity report of the TMP by His Excellency Mr. Sok Sangvar, head of the TMP Unit, Deputy Director General, APSARA National Authority**

**Mr. Sok Sangvar:**

<sup>[OrigE]</sup> “Excellency Deputy Prime Minister,  
Colleagues and Friends,

Today I would like to do things differently because I have been presenting twice already and, as part of the APSARA National Authority’s philosophy and that of my Department, we would like to give opportunity to train our staff. For this presentation, it is Ms. Oum Marady who will present the progress report of the Tourism Management Plan.”

**Ms. Oum Marady:**

[OrigE] "Thank you Excellency for giving me the opportunity to present the progress report of the TMP. I would like to start by saying that in order to implement the six policies stated in the TMP (visitors' positive experience, reduced site impacts, partnership with industry, benefits for local people, good governance and stakeholder engagement) 17 priority actions have been proposed.

[slide] Among those we discussed together are the priorities of the priority actions we need to focus on. We found six priorities, which are: Industry consultative group, update the APSARA website, visitor services plan, develop codes of conduct, re-train tourist guides, implement integrated temple management and appointment of responsible officers.

[slide] Since the establishment of the Consultative Group we organized meetings with members of the private sectors and concerned authorities. We shared information about the sustainable development project in Angkor and we found solutions together.

[slide] With regard to the Code of Conduct, we launched it on 4<sup>th</sup> of December, 2015 and since then leaflets, stands and DVDs have been distributed in planes, buses, hotels and travel agencies. [slide] You can also find them in the rooms of hotels in Siem Reap and Phnom Penh, so that visitors are informed before visiting the site. [slide] We also put the Code of Conduct on signs and information boards at Ta Prohm and Angkor Wat temples. You can also see it at the ticketing booth. When visitors buy a ticket they are informed. Guards at temples can also show visitors what we call flashcards, so that if they cannot speak the language they use them to inform and educate the visitors in case of inappropriate behaviours. [slide] We communicated the Code through different media, Internet, Facebook, local radio and newspaper. This was strongly supported by local stakeholders, including tour guides and visitors.

[slide] The next action is the visitor service plan: We have improved the telephone network coverage. The APSARA National Authority signed a contract with a company which provides a mono-pole tree network. We hope this will be all done by September this year.

[slide] We also take care of our visitors. Recently, with the hot weather the APSARA National Authority communicated an official hot weather warning and we made announcements at the ticket booth so that visitors are prepared for the hot weather. We also provide free water during big events such as the Khmer New Year, the Royal Ploughing Ceremony and International Yoga Day.

[slide] We have also put feedback boxes at the departure hall of Siem Reap airport since mid-May 2016 and we have already received about 300 filled in forms. Visitors can tell us what they enjoyed or did not in the Park and the types of facilities they would like. This is to improve our facilities.

[slide] In the same time, we have worked closely with the concerns department to upgrade roads and create new parking facilities. This one is opposite Angkor Wat temple. We will also work with the Department of Monuments to develop the car park at Phnom Bakheng Temple. All the vendors agreed to move to a new area.

[slide] Another point is the website. We are now working on a new website for tourism purposes. It is a very simple and easy to read website where there is a lot of information, also useful for travellers. In this website you can get access to the APSARA National Authority link and those of UNESCO and UNWTO. There is also information on the history of the site and the design is simple but authentic. [slide] In the history you have that of the Empire then of the restoration done, the UNESCO inscription, and also the Angkorian chronology. In the 'Visit Angkor' tab people get information on the components of the Park: people, temples, and environment. People are also kept abreast of the latest events and

the timetable of the Park. The Code of Conduct is also mentioned, which can be downloaded in different formats and languages (French, English, Japanese, Korean and Khmer).

[slide] There are also the different circuits proposed and visitors can choose them based on their interests. [slide] Other attractions are also mentioned for their promotion, such as Flight of the Gibbons, cycling, oxcart tours, boat rides and etc. We also promote surrounding areas of the park: the Tonle Sap Lake, Kulen and Run Ta Ek ecovillage among others. We also informed visitors on forthcoming events so that visitors can plan their stay in Cambodia. We also have a news page where we talk about what's happening and for example the ICC is already posted as you can see. One more point is that this Website is still a work in progress and has not been launched yet.

[slide] The other priority action is to re-train tourist guides. We are now working closely with the tourist guide association to design a new training course which focuses on new Angkor research and discoveries, with the main objective of promoting the value of the site and at the same time to offer better services for visitors coming to Angkor.

[slide] We are a member of WTO and recently we sent 20 guides to Macau for a training course where they studied the management of visitors at World Heritage sites and improvement of the visit through guiding.

[slide] We also would like to strengthen temple management. We focus strongly on building capacities. At the temple, we have selected and promoted 21 heads and 23 deputy head guards. They are now working at the temple. They passed interviews and an exam with us to be selected. They have followed a training course with other departments joining and we focused on the importance of World Heritage sites, why Angkor was listed, tourism hospitality and their duties and responsibilities as heads and deputy heads of the temple. At the same time we proposed a site visit and practice at the temples.

[slide] We also have trainees and this is the new one, Camille from France. Finally, I would like to draw your attention to the fact that according to initiative 8 of the TMP, we have conducted a study on the ticket price. This idea is supported by different stakeholders (Angkor Enterprise, travel agencies, guides, and visitors) because it will help in increasing revenues for the development of the country, by providing improved services and facilities. We are now finalising the new price and will discuss its application in the future.

[slide] I would like to take this opportunity to thank the top management of the APSARA National Authority for their help in getting these results and to thank all the guards and staff of the TMP team. Thank you for your attention."

### **III.B.2 Aquatic vegetation in the re-flooded North Baray reservoir by Dr. Yuji Araki, member of EMSB and ERDAC teams**

[OrigE] "Ladies and Gentlemen,

[slide] My name is Araki and I am member of the EMSB and Erdac teams. We carry out research on the environment in the Angkor region and the Tonle Sap Lake. Today, I will present on the aquatic vegetation in the re-flooded North Baray. [slide] The North Baray reservoir, which was established in the year 1200 around the Angkor area of Cambodia, was abandoned for several hundred years after water leakage and secondary forest subsequently developed. However, in connection with recent city planning to supply underground water, the area was re-flooded with the developing forest still existing in 2008. Dissolved organic matter derived from dead trees is suspected to cause water pollution in this area.

[slide] These photographs were taken in rainy season. We can see big dead trees and

aquatic plants on the surface. [slide] The aim of this study was to describe the current distribution pattern of aquatic vegetation in the North Baray reservoir in relation to environmental factors, such as topography and water quality. [slide] This is the study area with the Neak Poan, the trees and the North Baray. If you look at the map you will see black circles called quadrates.

[slide] Next, let me tell you about our methods. The field survey period was undertaken in September 2014. We set 64 quadrates randomly for vegetation research, and recorded species names. We also measured water depth, electrical conductivity, pH, dissolved oxygen, water temperature, and chlorophyll concentration using a multi-item water quality meter and portable pH meters.

[slide] For the data analysis methods, we used TWINSpan to classify the vegetation community, and used CCA to ordinate sampling plots. And, we used these two diversity indices.

[slide] Before the result I show you this figure. Generally, aquatic plants have four life forms: Merged plants, floating leaf plants, floating plants and submerged plants. We recorded aquatic vegetation, which is a community of aquatic plants in water such as lakes.

[slide] The results: This slide shows the results of community classification by TWINSpan. TWINSpan is an analysis that makes a dendrogram of samples with indicator species for each division. We used 64 samplings of vegetation research in this analysis. In total seven vegetation types were separated.

[slide] Let's look at the pictures of the seven communities. Community A was established under the title shrubs. In Community B submerged plants and floating plants dominated. Community C is mostly made of submerged plant and community D submerged plant growing.

[slide] In this slide we can see *Naja oguraensis* dominating, which is a very common plant in the North Baray and the waters of tropical areas. In community E we can also see the same plant and two more communities near the water gate.

[slide] This table shows the species component of each plant community, but today I will skip the detailed explanation of all of them. I would just say that 18 species were recorded and that Arian plants have not invaded yet. [slide] This is the data of chlorophyll concentration among communities which was higher than eutrophic. [slide] This graph shows the chlorophyll concentration of each community for eutrophic and hypertrophic.

[slide] Let's see the distribution on this figure. Different colours mean different chlorophyll concentrations. For example, the chlorophyll concentration is higher far from the water gate where water stagnates. On the other hand, on open water chlorophyll concentration is much lower.

[slide] On the next viewgraph I would like to describe CCA (canonical correspondence analysis) ordination. Each plot was arranged for every vegetation type. Canonical correspondence analysis suggested that the distribution pattern of aquatic vegetation is determined based on the water depth, chlorophyll concentration, and coverage of the water surface and bottom.

[slide] In conclusion, 18 species were confirmed (Arian species have not invaded yet); seven communities of aquatic plant, distributed in relation to topography and water quality; Chlorophyll concentration was higher in location with stagnant water, where *Najas oguraensis* is the dominating community.

At the moment we are not sure about the North Baray's aquatic environmental future so we are going to take more time for the dynamic change of aquatic vegetation and the water quality of the Baray. Thank you for your attention."

### **III.B.3.a Activity report of the ADF Foundation by Dr. Jean-Baptiste Chevance, Director of the Archaeology and Development Foundation**

[slide] "Your Excellency Deputy Prime Minister,  
Excellencies,  
Ladies and Gentlemen,

We report today on the activities at Phnom Kulen of the Archaeology and Development Foundation (ADF) since the last technical session of June 2015 and on forthcoming activities.

[slide] These are some pictures recalling the importance of the massif in the region and its statute. It includes the APSARA area and the boundaries of the National Park, the communes, villages and protected areas and how important this mountain is for the whole of the Angkor watershed.

[slide] Our conservation and maintenance programme has been undertaken in collaboration with the APSARA National Authority for the past seven years. Mine clearance is necessary prior to any interventions for conservation and excavations. We have coordinated the CMAC teams on 35 sites and secured 36 hectares since 2008. In 2016, an additional seven areas have been cleared of mines prior to an archaeological diagnosis.

[slide] This conservation programme also aims at better management of the Phnom's archaeological sites. In the most visited areas, Preah Ang Thom and Kbal Spean, exhaustive topographic surveys, led, in 2015, to the design of informative signs which texts are yet to be drafted.

[slide] Regular coordinated activities with the Department of the Sites Outside of the Angkor Park which resources have been bolstered, has enabled us to manage these sites in a more effective manner. To this end, we have finalised the complete inventory of sandstone artefacts that will be handed over to the APSARA National Authority in the next few months.

[slide] Nevertheless, there are still some hurdles: the sale of Angkorian artefacts to tourists at Preah Ang Thom, waste management, graffiti on pedestals and etc. that we regularly flag to the APSARA National Authority.

[slide] ADF also collaborated with the APSARA National Authority and its Department of Water Management, acting as a facilitator between the communities of three villages that asked for a restoration of the ancient Angkorian dike called Thnal Dac. We were in an emergency situation and we still managed to act as an interface between the communities and the APSARA National Authority, so that it could intervene and collect some archaeological data. The breaches to be repaired and the control of the water flow will improve the water supply condition of the villages.

[slide] We have also demarcated and determined the protected archaeological areas, leading to 800 hectares now protected and acknowledged by the provincial authorities, the APSARA National Authority and the Ministry of the Environment.

The legal status of these areas remains to be defined but their efficiency has been partly tested, as besides the logging of large trees still going on, slash and burn agriculture has ceased. But the destruction of the forest has increased on the periphery of these areas.

[slide] ADF has filed a dossier to be awarded a grant from the US Embassy (Ambassador's Fund for Cultural Preservation) so that these areas could be scaled up to other areas of the massif. The Ministry of the Environment seems to have taken the same approach. This exemplifies the absolute necessity and urgency of demarcating these risk areas to preserve what is still left of the natural environment of the National Park.

[slide] Also, the protected archaeological areas must be granted a final legal status and the institutions in charge must be clearly indicated. The establishment of a joint team made up of staff of the APSARA National Authority and of the National Park would make it an exemplary and adequate collaboration to carry out this assignment.

[slide] The reforestation programme has continued in collaboration with the APSARA National Authority. It includes identifying each farmer and monitoring the affected plots of land. The protected archaeological areas of *Prasat Neak Ta* and of *Thnal Dac dike* strongly impacted by cashew nut plantations should be prioritised.

[slide] Regarding archaeological research we have continued our activities focusing on the remains of the ancient capital revealed by the LiDAR. The *in situ* verification of the new archaeological remains located by the 2012 LiDAR campaign was scaled up with the recent survey implemented in 2015 in the framework of the CALI/EFEQ project.

[slide] The work now consists in continuing these verifications, especially on the whole area occupied by the ancient city and this in collaboration with the CALI project. [slide] As was the case for the 2013 and 2014 seasons we were able in 2016 to target our excavations on a type of sites identified by the LiDAR. Following diagnosis of the mounds and platforms of the previous seasons, this time we focused on the plots of land and neighbouring ponds located along the main axes dividing the city of Mahendraparvata.

Numerous and unequally distributed all over the city, we selected four plots, always linking with a trench the plots of land, ponds and dike along these axes.

[slide] The 2016 season was completed on the 8<sup>th</sup> of April and the data are still being analysed. Yet, it is already clear that these plots were occupied in the 9<sup>th</sup> century and sometimes even longer for some of them. The dikes, sometimes difficult to see on the surface and in stratigraphy include levels of occupation that extended up to the plot of land, on the surrounding areas of the ponds and up to the temple, when a monument is associated with the dike.

[slide] ADF also works in the field of development. You all know that Kulen Mountain is populated with about 4,000 people over ten villages. The map that I am showing you here presents the latest aerial pictures depicting the scale of deforestation and the protected archaeological areas. There is a strong discrepancy in terms of people, tourism, development, livelihoods and infrastructures between Preah Ang Thom and the other villages and archaeological sites.

We recall the different issues still affecting the Mount. [slide] The massive tourism in Preah Ang Thom and the lack of infrastructures and human resources do not allow for solving the flow regulation, especially during celebrations. Bad waste management, lack of respect for the regulated areas, chaotic car parking, illegal constructions and, as was said earlier, the sale of artefacts, and etc.

[slide] With regard to protected archaeological areas and CPA the results are promising, but our monitoring showed that it is necessary to strengthen human and technical resources for better protection.

[slide] Outside of these areas, devastating farming practices still endanger the forest of the National Park and the archaeological sites. Once again cashew nut tree farming is to be mainly blamed for this.

[slide] You already are familiar with these pictures; but let me show them to you once more. This activity is so widespread that the plots of land are cleared outside of the area traditionally earmarked for slash and burn agriculture and impact areas of forest until now untouched. The whole of the Kulen massif, which has been affected to the exception of the northern end.

[slide] Illegal logging is still ongoing at Phnom Kulen, as these pictures and maps are evidencing. [slide] Finally, the environment of the National Park suffers from the gradual encroachment on its outer borders due to the lack of clear delineation and staff.

Our solutions include increasing our development activities to face these issues. Locals are sometimes the cause of these issues and also the first to suffer from them. [slide] For the past few years we have offered and continue to promote alternative farming practices generating income (support to handicraft production, [slide] fish and [slide] poultry raising, [slide] mushroom and vegetable farms). [slide] Initially, we supported with materials and techniques the beneficiaries and facilitated their access to an output market so that they can gradually become autonomous. There are now about 40 families that practice these activities, which is a too small percentage to reverse the trend.

[slide] This programme has been extended [slide] at the community level. The opening of a co-operative in Preah Ang Thom gave access to additional revenues for several workers. The aim is also to centralise the existing agriculture and handicraft products from remote villages, thus establishing a link between the producers and the large output market.

Nevertheless, these activities cannot compete with cashew nut farming, which is illegal but widespread, and which operational costs are low and revenues high. Our activities are hard to develop, as the National Park regulations on the environment have not been enforced. For example, banning new cashew nut tree plantation could for example slow down the deforestation phenomenon and foster new practices.

The protection of the Park also includes economic development from other sources remedying shortages. [slide] To this matter, we also collaborate with the private tourism sector to develop stays in the villages and community activities benefiting the population.

[slide] The nutrition and sanitation programme continues. The first 2011-2013 phase succeeded in decreasing malnutrition by 30 per cent for all participants. With renewed financing, we now focus on four villages reaching to newborn babies until five-year-old children.

[slide] The Rice bank of Thma Chruogn village brings food security to the poorest families and in the same vein does [slide] the upgrading of the water network in villages. [slide] Finally, the last item in the development field has strived to consolidate the equipment of the most remote primary schools and villages. ADF is thinking of a new activity linked to education and the environment.

[slide] In conclusion, we are satisfied with the progress made in terms of conservation by the APSARA National Authority, for example with the restoration of O'Paong temple, additional staffing with workers and guards and with the reforestation and dike upgrading projects.

In the field of the environment, the attendance at the ICC of His Excellency the Minister Mr. Say Sam Al testifies of his personal commitment to this dossier. Rangers have already commenced some activities in the field such as scaling down slash and burn agri-



culture. ADF stands at the ready to collaborate with this momentum portrayed this morning and actually recently approached the Ministry for future collaboration.

Nevertheless, I fear that my conclusion will be similar to that of last year. We would like to recall some matters that are urgent and among them a clear definition of the role and responsibilities of the different stakeholders, the consolidation of the technical and human resources of the APSARA National Authority and of the Ministry of the Environment at Kulen to control the Park's protected areas, the demarcation of new protected areas, law enforcement of course and finally development of activities generating additional income to local populations.

All these actions combined could allow for Phnom Kulen National park to uphold its name as the water tower of Angkor and to preserve the remains of one of the first Angkorian capitals on this sacred mountain of Cambodia, in harmony and for the benefits of the locals.

[slide] On behalf of all the ADF team, I thank you for your attention."

***b Technical assistance of the APSARA National Authority to the community development on Phnom Kulen by Dr. Hang Peou, Deputy Director General, APSARA National Authority***

[OrigE] "Excellency Deputy Prime Minister,  
Co-chairs,  
Ladies and Gentlemen,

[slide] I would like to present on the assistance given by the Department of Water Management of the APSARA National Authority to the population living on Kulen. As a background my colleague talked about the role played by ADF as facilitator with the local people. Last year, the locals asked the APSARA National Authority to help restore an ancient dike. Needless to say that the Park of Kulen Mount is the most important in terms of water for the Siem Reap region, as the Siem Reap watershed is mainly supplied by the Kulen.

In the previous presentation you saw deforestation happening which created a lot of problems for the recharge of the underground water. When the vegetation cover disappears so fast like was the case, then it creates floods like those that occurred in the Siem Reap region, not only in the archaeological Park but also in the city centre. It had a big impact. This year is a very dry year and this does not only concern Siem Reap but also the whole of Southeast Asia.

[slide] The local community asked the APSARA National Authority to restore an ancient dike to enable the supply of water for three villages and for irrigation for their small-scale farming. This map shows you the area of this reservoir built in the 9<sup>th</sup> century according to Mr. Chevance's team. At the time, this reservoir had an original spillway over there. In the Khmer Rouge era the locals tried to fill it to increase storage for their use. But when they tried to enlarge it on the area of the ancient spillway they created too much pressure and this led to overflow in this area and this area here broke. You have to imagine that this reservoir worked for more than one thousand years and that it is only due to these developments in the 70's that it stopped working normally.

[slide] If you look at the solution to restore this dike sustainably, with the help of the local people, you can see the laterite stones there that we used to protect the dike upstream. This means that the upstream area is entirely protected by the laterite stones from the wind and subsequent waves. This is really strong and enough to protect. But looking at it in detail you can see that the flow of water has damaged this area, knowing that the flow

is 2.5 metres higher than the maximum original level. To summarise, the dike was overall in a good condition apart from that area where the water overflow can create the collapse of the whole dike.

[slide] This picture shows you the villagers that took part in the upgrading of the dike. More than 150 people joined in and the APSARA National Authority provided them with assistance showing them the best way to preserve and store water for them in the future. Note also that school children came to help. For the APSARA National Authority, restoring this reservoir means that we can catch the water in the rainy season and store it to recharge underground water during the dry season. As this is one of the main sources of providing water, once this storage is functioning again then water will flow in the dry season and the three villages can use water for daily consumption. We did this in early March of 2016.

[slide] For this work we were fortunate to benefit from funds from New Zealand, as we got the villagers' request just before a meeting with our donor. It was a small budget to bring soil but you can see here how they worked hard under our supervision.

This dike is 9.5 metres high and at the top it is only 2.5 metres, whereas at the foot downstream of the dike we have 35 metres. As you can see water storage increased, but if you compare the ancient dike was higher than what we did. So, we helped the locals to restore it by giving them the key features of the dike and we allowed the local people to continue by themselves the restoration of the dike to its original size. Once this has been done, water will not only supply the villages but the locals can fish and develop tourism in this area. We have already done this in the North Baray and Banteay Srei, where we encourage people to preserve the forest and also to organise canoe trips inside the reservoir, as is the case in the North Baray and Banteay Srei.

We thereby plan to help them not only by restoring the core part of the dike, but also we intend to show them what we are doing with the local communities in the Angkor Park. I would also like to mention that it is the first time that the locals have requested our intervention. In the Angkor Park, the APSARA National Authority is the instigator of rehabilitation or upgrading works, but this time it came from the people, which means that they know and understand heritage and they want to preserve and restore it. Some of the people who lived during the Khmer Rouge area still believe in the restoration of this dike.

Basically, it is not only the people living on the top of the Kulen that benefit from this, but also the whole region. If the case happens again and villagers would like to restore any water constructions we should help them to keep them operating, as was the case in the old days."

#### **III.B.4 Community heritage and economic progress at Angkor: Current issues on the collaboration between APSARA and the government of New Zealand, by Dr. Hang Peou, Deputy Director-General, APSARA National Authority, Mr. Tous Somaneath, Acting Director of the Department of Land Planning and Habitat Management in the Angkor Park, and Mr. Jady Smith**

**Dr. Hang Peou:**

[OrigE] "On behalf of our team and of Mr. Khuon Khun Neay, who is leading this project but is absent for health reasons, [slide] I will give you an update about the co-operation between New Zealand and the APSARA National Authority and before I would like to give you a brief background on this co-operation.

[slide] The only country that has worked for the development of communities since

1997 is New Zealand, which launched the Angkor Forest Rehabilitation and Landscape Enhancement Project beautifully illustrated on the bottom of this slide. This gave us a vision of what we wanted to achieve and when I arrived at the APSARA National Authority in 2004, we found it very useful.

[slide] Then they continued with the Angkor Park: Management Plan & Community Development 2003-2007 and you can see some of the pictures of our colleagues here, with the New Zealand experts that came from Wellington and Auckland to assist us. [slide] This was followed by the Angkor Management Plan that gave us an overall vision of the Park.

[slide] This triggered the next project, called the Angkor Participatory Natural Resource Management & Livelihoods 2009-2013. These are activities in the field with the locals. We also tried to show them how to use and benefit from natural resources without damaging them. This was disseminated to schools and to villagers. Simultaneously, we also tried to help because in the region the underground water is heavily charged with iron, so we gave them portable water filters and showed them how to protect their village and the temple from water with simple infrastructures.

[slide] The third phase is the Angkor Community Heritage & Economic Advancement (ACHA) 2014-2019. This project has as its purpose to achieve sustainable management of the Angkor Park, protecting heritage while providing economic prosperity and food security for the people who live within the Park. In this project we have three main components: 1/ Economic Development; 2/ Capacity & Engagement and 3/ Natural Resource Management with the local people.

[slide] This map shows you the areas we work on which are not all within the boundaries of the Archaeological Park, but also outside and near the water catchment areas. In the area north of the West Baray it is very dry in the hot season and they are close to an ancient canal. We built a flood management canal there and we helped the communities to use it. We also showed them how to efficiently consume water, for example, here, with drips for irrigation or small sprinklers. The families doing this have become smallholder model farms and demonstrate how to understand new technology and how saving water can bring benefits and higher income. We have kept the original canal path, but we have also planted trees or plants that the locals can use.

[slide] In component I we have the village of Srah Srang where local communities have developed oxcart tours and handicrafts. We have helped them: For example, the toy in wood representing an oxcart often broke if a tourist wanted to bring one home, so we assisted them in developing this flat box that can be taken home by the tourists with no breakage.

[slide] Component II is capacity building; we had people from Bangkok coming after a request from the Director General to provide training. They contacted the Department of Conservation in New Zealand which looks after heritage but also after all natural environment and related topics. The latter came quickly to train our liaison team, so that they could develop the project and improve the relationship between the APSARA National Authority and the community, as you can see in this picture.

[slide] One of the outputs of component III is New Zealand technical assistance. In March they visited Run Ta Ek to see how they could help Run Ta Ek develop farming and some of the experts will provide more development regarding this assistance, which was requested by the Director General as well.

[slide] We also set up a project with the monks, as they have a lot of power to help us protect our heritage. This year we set up a new activity for the monks. At a pagoda, monks do not have a master plan; all they do is build when they have the money. A Monk Committee (COMAPA) was set up to try to explain to the monks how to establish a master plan and to maintain the pagoda. We also held educational activities.

[slide] Another output is the water infrastructure and natural resources. We helped people prevent flooding and showed them how they can protect their heritage. People can also benefit from the water in the dry season thanks to the preservation of the ancient canal and irrigate in that area once again using water-saving techniques. [slide] We also organised a community meeting, as you can see here from last February.

[slide] Solar station recharged batteries are used to reduce carbon dioxide levels in the park. People can recharge their batteries at a cheaper price and the money saved is used to develop other activities. You can see the village chief is satisfied with the activities proposed and we try to recycle energy and propose it to the locals. We also have an animal monitoring system with camera capture; you can see it in this picture. We have identified a lot of species of animals in the Angkor Park, especially between the North Baray and Angkor Thom. We try to preserve and to sustain these natural resources and also think about ways tourists could enjoy all of this.

Thank you for your attention."

## General Discussion

Comment from the Co-chair for France: "Thank you very much Dr. Hang Peou. The time allocated for the general discussion is less than scheduled, but still some questions or observations from the floor can be heard, if there are any. Professor Lablaude, please, take the floor."

Comment from Mr. Pierre-André Lablaude: "I would like to come back to the flooding of the North Baray. This project was previously presented at the ICC and the choice was made, that, despite the forest that grew in the Baray it was decided to come back to a hydraulic feature. What happened for the ecology is that we have lost the forest and developed a pond ecology that will grow its own fish and aquatic fauna and flora and birds. This choice was made and should be fully assumed. Obviously, water does not allow for forest to grow. This choice was made, let us assume it. As for the outcome, positive or negative, I think it is positive. All of the Angkorian territory must be homogeneously distributed between urban, farming and hydraulic areas — the latter is one of the features of the landscape of the site and we must be fully at ease with it."

Comment from the Co-chair for France: "I give the floor to Professor Beschaouch if no one else is asking for it."

Comment from Mr. Beschaouch: "I wanted to talk about Kulen, but first let me second what my colleague said. This is not only a choice that we made, it is also imposed by history. This Baray was filled with water historically speaking. This is in the same vein as people who would like to preserve trees where there are monuments. This is not possible. This is a historical environment and history is our first consideration. Ecology and history have imposed this choice on us. I understand that our colleague, the professor, studies these issues. I am going to be ruthless, but what is the point of preserving trees in a Baray? Let us be clear. I know that a specialist would say that you know nothing. But a Baray is a placed filled with water and if we leave trees in it then it is not a Baray anymore."

I would like to move on to something more important; that is, the outstanding work of Mr. Jean-Baptiste Chevance. We have been monitoring his work for many years. I am not going to beat about the bush. Today, we were fortunate to hear the commitment of the Minister of the Environment. He will draw up a master plan. I believe that it is the duty of the government to set up a Master plan with all our contributions. ADF has demonstrated for several years that it is at the foreground of the action and not only for heritage, but also

for the community and ecology. I would look at things differently. The Minister of the Environment has announced a Master Plan and the Deputy Prime Minister has supported its prioritisation. We all, the ICC, ADF as it works in Kulen, and the APSARA National Authority, as a public institution, are all going to serve this master plan.

The bitterness in the conclusion of Mr. Chevance is understandable and could be repeated, but in a working group, as wished by the Deputy Prime Minister. We would also be more efficient within this working group. It is time to stop being on the fringes but to seize the opportunity. This is how I see it. I might be too optimistic, but I have a long experience of this type of affair and I believe that one should seize an opportunity when it is offered. Thank you."

Comment from the Co-chair for France: "Thank you Professor. Are there any more questions? A hand is raised. Please you have the floor."

Question from a representative of the French Agency for Development: "My question is on the Phnom Kulen. I would like to know whether the activities regarding improvement of the resources of the communities started by ADF could be scaled up. The second question is on site management. Is the two-headed management of this site working? For example, at the West Baray there was previously joint management between the APSARA National Authority and the Minister of Water Resources, which was problematic. Thank you."

Comment from the Co-chair for France: "I believe that one of the questions is directly addressed to Mr. Chevance."

Reply from Mr. Jean-Baptiste Chevance: "With regard to your second question on the collaboration between the Ministry of the Environment and the APSARA National Authority, I cannot answer for them. What we can say is that the APSARA National Authority has beefed up in the last years and it came to Kulen Mountain thanks to ADF, as it did not operate there before we set up the project. The institution is now well staffed and efficient on the archaeological sites. As for the environment, I said previously that the resources are limited, as mentioned by the Minister this morning, and I believe that the collaboration will only work efficiently once the resources are available. I cannot speak on behalf of the Cambodian government. As for your first question, I have not understood it. What do you mean by scaling up activities in the villages?"

Question from a representative of the French Agency for Development: "For the moment, you only work in a few communes and impact only a few people. Could you extend it and use resources earmarked for the Angkor fund to support the development of activities and of the economy of these villages."

Reply from Mr. Jean-Baptiste Chevance: "This is an interesting proposal and I would like to discuss it with you. The main problem we have is to set up alternative activities to those that are damaging, such as slash and burn agriculture and cashew nut plantation, knowing that the latter brings high yield and spreads like a cancer on the massif. To be working daily on activities that bring more revenues is harder than working a few days a year to collect cashew nuts. The real issue is to compete with alternative products as these plantations, I repeat, are illegal in a National Park. Thank you."

Comment from the Co-chair for France: "Thank you. With regard to the second question on the joint management, maybe Mr. Sum Map would like to add something."

Reply from Mr. Sum Map: "Only to say that the APSARA National Authority and the Ministry of the Environment co-operation is still good. The APSARA National Authority looks after the safeguarding of the archaeological sites of Kulen and will continue to do so."

Comment from the Co-chair for France: "Thank you Excellency. I think that these will be today's final words. I would like to thank the Excellencies, experts and all of you in attend-

ance. I invite you to join the round table organised outside, as it is not raining. This round table deals with the success of the ICC-Angkor, which can be considered as a model.”

#### **Thursday 23 June 2106**

*Comment from the co-chairman for Japan:* <sup>[OrigE]</sup> “Your Excellency Dr. Sok An, Excellency Minister of the Environment, Ladies and Gentlemen, good morning; we are resuming our proceedings. Before that, let me say a few words about the very interesting round table, with a retrospective of the 23 years of the ICC-Angkor honoured by the presence of His Excellency Sok An. We were also fortunate to count four members of the French and UNESCO delegation that attended the 1993 founding conference. We will listen to a summary of the content of this round table later during the day. We start with the presentation on the Code of Conduct for researchers.”

### **IV- NEW PROJECTS: CONSERVATION, RESEARCH AND ARCHAEOLOGY**

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#### **IV.1 Code of Conduct for Researchers in the Angkor Archaeological Park by Professor Tan Boun Suy, Deputy Director General, project leader, APSARA National Authority and Her Excellency Ms. Helen Jarvis, advisor to the Royal Government**

**Mr. Tan Boun Suy:**

“Your Excellency Deputy Prime Minister,  
Co-chairs,  
Ladies and Gentlemen,

<sup>[slide]</sup> My presentation is on the Code of Conduct for Researchers. There will be an additional presentation by Ms. Helen Jarvis after mine. The aim of the code is to enforce the mechanisms of the founding texts (Tokyo Conference 1999, Paris Conference 2003 and the Siem Reap Conference 2013) through the drafting of ethical standards and to advise researchers that are APSARA National Authority staff or staff of an international or national team and individual researchers who work in partnership with the APSARA National Authority.

This Code of Conduct applies to all members of research teams and individual researchers, either mainly working in research or in the field (anthropologists, archaeologists, architects, restorers, conservators, historians, hydrologists, managers and any other scientific or technical professions).

The APSARA National Authority has drafted this Code of Conduct in co-operation with national and international teams working in fields under the purview of the APSARA National Authority and in collaboration with other experts. After a review of a major code of ethics adopted by several national and international associations and organisations, this Code has been finalised after a consensus was reached. It sourced in the different Codes of Conduct and especially that of ethic of the European Association of Archaeologists.

I now give the floor to Ms. Jarvis.”

**Ms. Helen Jarvis:**

[*OrigE*] “Your Excellency Dr. Sok An,  
Co-chairs,  
Ladies and Gentlemen,

It has been an honour for me to be working for the past few years with Dr Tan Boun Suy on the development of this draft Code of Conduct that we are presenting today. It was circulated to all the teams working in Angkor and it was discussed among the staff of the APSARA National Authority at that time. We held a meeting on the 20<sup>th</sup> of January with good participation of the teams and we received eight written comments from the participants on the proposed draft.

We organised a second meeting in early February, presided over by the Director General of the APSARA and with the international teams and we have circulated the Code since then. I understand that it is presented formally at the technical session today for consideration and we hope that we will get formal approval at the plenary session.

[*slide*] We know that the Code of Conduct for visitors has been very well-received and discussed many times. This is a different type of document. It is an internal document for the work of the APSARA National Authority and, as Dr. Tan Boun Suy said, it is for all the people working in Angkor, the staff of the APSARA National Authority and their partners. We hope that everybody will feel comfortable with this Code.

On the one hand it is really codifying what has been practised in the main. Some of these points are in individual Memoranda of Understanding of different teams; some others are in procedural documents. We thought it would be useful to bring them all together and standardise them, so that we all know our framework for operating in Angkor. Of course, the main legal documents, the Laws of the Kingdom of Cambodia, are our guiding principals, as are the conventions and recommendations of UNESCO and the Advisory Bodies, the Charter of Angkor, the Heritage Management Framework, and the specific recommendations of the ICC-Angkor and its *ad hoc* experts. These are the frameworks and we move on to what we are presenting as a Code.

[*slide*] We have divided it into several sections. The first one is Research Teams and their Responsibilities to the Community: ‘It is the duty of every member of a research team (hereafter: researchers) to ensure the preservation of the cultural heritage of Angkor’ — it goes without saying but it should be repeated. Right at the top we also say: ‘Respect the traditions and practices of the local communities, particularly in sacred places or sites of special significance. In carrying out their work, researchers shall, in co-operation with APSARA, undertake prior evaluations of the ecological, social and cultural implications of their work, especially for local communities’. Also, ‘Researchers shall make every effort to involve local communities in their work’.

Further on: ‘Researchers shall take active steps in co-operation with the APSARA, to inform the general public, and especially the local communities and other stakeholders, of the objectives of their work in general and of individual projects in particular, using all the appropriate communication techniques at their disposal: before commencing work, during the course of the project and at its conclusion’.

We have added a couple of points here that should be borne in mind: ‘Nobody shall engage in, or allow their names to be associated with, any form of activity that has a detrimental impact on the cultural heritage of Angkor, in accordance with the relevant UNESCO conventions ratified by the Kingdom of Cambodia, and that researchers shall inform APSARA before engaging in activity deriving directly from the cultural heritage of Angkor that is carried out for profit’. Of course it is delicate point. We are not saying that you cannot engage in activities, but the APSARA National Authority should know

about it and it should be done in consultation.

Finally on this section: 'It is the responsibility of researchers to draw the attention of APSARA to threats to the cultural heritage, including the plundering of sites and monuments and illicit trade in antiquities, so that action may be taken in such cases by the competent national authorities'. This was the section on responsibility on the communities.

The next section is Professional Responsibilities, which are normal, what anyone would expect from any professionals or academics, we think. As Professor Tan Boun Suy said, we based this Code on other Codes of different professional associations. It encompasses the standard to be followed. 'Related institutions and individual researchers shall provide evidence to APSARA of their researchers' adequate training or experience specific to the projects they propose to undertake', not just a general background. One important point is that 'interns, students and volunteers shall be placed under the supervision of a designated member of the research team'. Sometimes this is a bit loose and no one knows who is responsible.

A particular point that needs specific approval is 'subcontracting, pay for information, hire anyone to work on their behalf or use tools or methods other than those specified in the relevant Memorandum of Understanding'. Of course, as would be expected, a research designed to be approved before commencement of work. Then we go into some details of legal obligations regarding finds and the property: 'The national cultural heritage comprises cultural property created or discovered on national territory' and 'Immovable and movable cultural property discovered by scientific institutions shall be the property of the State' and this always remains the case according to the Royal Decree of 1996.

Following that: 'Significant finds shall be promptly reported to the territorial authorities and to APSARA (the concerned department/s and the Angkor International Centre for Research and Documentation (AICRD)) and appropriate protective measures shall be determined.' Also: 'Detailed lists or catalogues of all finds shall be provided to APSARA and updated regularly. Researchers may be authorised to hold temporary custody'. Ownership stays with the State, but temporary custody for research and analysis is normally expected. 'At the conclusion of the current research project, unless specific exemptions are given, all finds must be handed over to APSARA'.

We'd like people to think in advance about the storage in accessible public repositories. Some details of would-be normal professional practices of diary logbooks and we specify that this should be 'in a comprehensible and durable form'. We know that computer technology is always developing and these records should not be in a form that cannot be read and understood.

Something normal, which I think is practiced by all the teams now: 'Researchers shall provide interim reports and/or summaries of all significant data and records deriving from the research to the Director General of APSARA at the end of each field season to be held in a confidential deposit until the expiry of the period mentioned in Paragraph 2.7 unless specific permission is granted by the concerned researcher.'

We move on to the scientific ownership or property: 'for a reasonable period, not exceeding five years after the completion of the work. During this period, researchers are entitled to scientific ownership according to the 1996 Royal Decree'. But during this time we hope that 'they shall make their results known' at least in summary form, and would be 'giving sympathetic consideration to requests for information from colleagues and students outside the research team. When this period has expired, the records should be freely available for analysis and publication by APSARA and others'

We asked that 'Researchers and APSARA shall acknowledge each other, and the con-



tributions of individual key participants' – sometimes this gets forgotten when the material is published –, 'as co-author/s or as appropriate, in any publications concerning the research mentioned in the relevant MoU'. One point that I think most teams are not even aware of is 'the Cambodian national deposit laws and regulations for material published in Cambodia, and shall provide at least one copy of all related publications, regardless of the place of publication, for deposit at the AICDR'. Also something that we request is 'A summary in Khmer, and also in French or English, shall be provided for all such materials'. It is essential that our Cambodian colleagues have access, at least in summary form. It would be wonderful if all were in Khmer, but at least summary in Khmer, French or English. Of course 'Researchers must avoid plagiarism and fraud of any kind.'

Some concluding points like capacity building, management of research funding, no discrimination in the employment and the due 'respect of the Cambodian Labour Law and other national standards relating to conditions of employment and health and safety'.

Those are our responsibilities to the community and the profession and I think that Dr. Tan Boun Suy is going to conclude. I would like to thank Mr. Im Sokrithy, who has contributed significantly to the development of this work."

### **Mr. Tan Boun Suy:**

[slide] We now reach the chapter on the responsibilities of the APSARA National Authority towards the researchers. '1/ The APSARA National Authority shall provide passes to all researchers concerned with an approved research project. 2/ The APSARA National Authority will positively review any requests for temporary passes or authorisation for students and volunteers associated with an approved research project. 3/ The APSARA National Authority shall issue a tax exemption letter for import to Cambodia of materials and equipment brought to Cambodia by researchers within the framework of research specified in an approved Memorandum of Understanding.

[slide] 4/ The APSARA National Authority shall do its best to facilitate permits or any documentation needed for the import and export of materials and equipment brought to Cambodia by researchers. 5/ The APSARA National Authority, taking into account the specific needs of the relevant research team(s) shall assist in hiring technical staff and local workers for approved projects. 6/ The APSARA National Authority, heeding the specific needs of the relevant research team(s) shall assist in the procurement of local equipment to be used for restoration and excavations and to be paid for by the research partner.

7/ The APSARA National Authority shall provide the availability and expertise of its staff, depending on their availability, in co-operation with approved research projects. 8/ The APSARA National Authority shall give free access to some facilities of the central administration of the APSARA National Authority, for example the use of the meeting room and the conference room, the library and the Angkor Ceramic Unit of the AICDR'.

Ladies and Gentlemen, thank you for your attention."

### **IV.2 Metallurgy of the Khmer Empire: A new discovery, Angkor-Salakravan iron smelting site, by Mr. Im Sokrithy, archaeologist, APSARA National Authority**

[OrigE] "Your Excellency Deputy Prime Minister,  
Co-chairs,  
Ladies and Gentlemen,  
Dear Colleagues,

Metallurgy studies in Cambodia started in the late 19<sup>th</sup> century and one of the later fathers of these studies, Professor Bernard Dupaigne, is among us and he will present this afternoon what he has written about metallurgical studies in Cambodia.

[slide] In the field, studies started in the 1960s and were restarted about ten years ago. The APSARA National Authority, in collaboration with a Thai Institute, conducted a joint research project called the Living Angkor Road which has worked in the field on archaeological research in Cambodia and Thailand. We also worked in the metallurgy field and undertook some excavations in both Cambodia and Thailand.

Today's project is a new study in the heart of Angkor. In these three images the discoveries we made in November 2015. The site is located in the middle of a rice field and as shown in the left hand pictures the harvest was not done yet. The images on the right hand side show the artefacts we found in the middle of the rice field.

[slide] The site is located in Zone 2, in Salakravan village, near Phnom Bok. Iron slag, fragments of the furnace and ceramic pieces were found on site. It was the first time that a metallurgy site has been found in Angkor since the start of metallurgy studies in Angkor 150 years ago. The site could not be detected by any aerial photograph or remote sensing technology. The landscape of the site is completely different from the sites ever found in Preah Khan of Kampong Svay, Preah Vihear province or other places. It is located in the middle of rice fields and there were no remains visible.

[slide] As said, it is located in Zone II, two kilometres from Phnom Bok. [slide] Anthropological research has been conducted on the area of Angkor and the team established by Professor Ang Choulean still works with other teams in Angkor and is led by myself. We found interesting information through a traditional healer who uses iron slag powder to cure skin diseases. The second thing is that we organised a seminar on the results of our studies and we invited the locals to participate and the chief of the commune told us that in their community there is something looking like iron slag. We went on site and found this.

[slide] With the permission of His Excellency the Deputy Prime Minister, Dr. Sok An, Chairman of the APSARA National Authority, and with the support of the CRMA Research Centre, a research team of the APSARA conducted a preliminary research last March, 2016. The objective was to discover how important iron was to Angkor and rethink about the provenance of the imported metal to the capital city Angkor.

[slide] Previously, it was thought that iron smelting sites were located 100 kilometres away from Angkor in Preah Vihear province or at the Preah Khan of Kampong Svay. Now we have found a site in the capital city of Angkor. The study was conducted firstly with rigorous mapping of the site and we conducted a small-scale excavation on the site. Based on our study, we have been able to identify remains from iron slag, ceramics and other structures covering an area of four hectares located in the middle of the rice field, as you can see in the photo on the left hand side.

[slide] We dug several pits just after the harvest. One pit was located in the middle of the rice field and another one right below a tree on the dike of the rice field. The excavations processed step by step. We found piles of slags and remains of structures. Our colleague Ea Darith also immediately recorded all the artefacts in the area.

As you can see in these pictures, the ceramic we found was mostly imported from China, and there are also iron ores, tuyeres, Khmer ceramics and other artefacts. Most of the ceramic found was of Chinese production.

[slide] A list of what we found: Iron slag: 6,772 blocks; iron ore: 49 lumps; ceramics: 85 pieces; charcoal: 49 samples; tuyeres: 19 pieces; furnace base: 127 pieces and furnace structure: 493 pieces.

[slide] We found just, underneath the dike, the almost complete foundation structure and remains of postholes for a shelter and we are very pleased and honoured that Professor Beschouch visited the site and this is where the furnace structure was.

[slide] The results of the research: clay furnace and furnace structure, tap slag, tuyeres, furnace base: 100 x 60 cm, furnace foundation built up over two different soil layers and the postholes belonging to a wooden shelter which covered the furnace. These evidence the existence of a furnace site in the Angkor area.

[slide] In Cooperation with CRMA Research Centre, 13 samples of iron slag, tuyeres, iron ore, clay furnace and fired clay have been sent to USM for Scientific Test in Malaysia and the results will come in the next six months.

[slide] We conducted training on excavation sites to Students from the Faculty of Archaeology of RUFA and researchers from Preah Vihear National Authority. [slide] We also presented to local authority and villagers, 70 attendees. [slide] We also received visitors on a regular basis to the site.

I would like to submit now a proposal for the future plan: Archaeological research, preservation of the site and community cultural development. In the villages nearby there are no archaeological remains apart from this one and the people are not very well-off compared to their neighbours. They are poor and we hope this finding could help the community develop some income from tourism in the future.

Thank you very much for your attention."

#### **IV.3 About the unreleased inscription K1297 by Professor Claude Jacques, Director of studies at E.P.H.E (PARIS)**

"Excellencies,  
Ladies and Gentlemen,

First, let me recall that Khmer history, as reconstituted by historians and in particular George Cœdès, has been based solely on inscriptions, a literary genre which main goal is to glorify a king (or an outstanding person). This means that inscriptions are laudatory and are not very objective, to say the least. In a nutshell, these texts only express the view of one person without any contradicting elements.

[slide] A French collector recently purchased in Paris a large stele which text was tentatively deleted. This is not an exception in Khmer epigraphy, but fortunately in this case the portion of the text on the history and of interest for us is still legible. We understand that some facts were clearly disguised which actually turn upside down the history of the second part of the 12<sup>th</sup> century as we imagined it. The legible portion is easy to read, whereas the portion deleted is in the middle although the ends are still barely legible.

[slide] This is a list of the Kings: Jayavarman VI (1080-1107) a Buddhist king, his brother and successor Dharanīndravarman I (1107-1113) also Buddhist; Sūryavarman II succeeded him (1113-ca 1150) and he is called shaīva although he was thought to be Vishnuite. Here shaīva means that he was probably Hindu contrary to other kings that were Buddhists. The novelty here is his younger brother Tribhuvanādityavarman, king in 1149. The inscription was carved during his reign. We have here a succession of kings that greatly modifies that established by George Cœdès.

This is the list: Jayavarman VI (1080-1107) these dates are confirmed, Dharanīndravarman I (1107-1113), his brother, killed in a fight, probably by his nephew.

Sūryavarman II, who according to Coedès will reign until 1152 — he also said that he fought against Champa but the dates do not match. Dharanīndravarman, the father of Jayavarman VII has been subjected to interrogation; this is still the case. The next was Yaçovarman II, circa 1160, but there is no evidence of his death, also unverified, in 1664, killed by a usurper, Tribhuvanādityavarman (1165- 1177). This latter is described in the Phimeanakas stele, ordered by a spouse of Jayavarman VII, as an ambitious servant eager for the supreme power and certainly not in favour of Jayavarman VII.

The new inscription gives a succession of kings with confirmed dates. According to this, Tribhuvanādityavarman would have reigned from 1149 until 1177, when the Chams killed him: A total of 28 years of reign followed by Jayavarman VII and the known dates (1182 - ca 1220). Yaçovarman II appears as a historic character, although there are no dates to locate him between 1149 and 1777.

This text supported by another text which recently surfaced is proof of an unknown fact: that King Tribhuvanādityavarman, previously considered as a mere usurper was, in reality, a major King; the younger brother of Suryavarman II and probably from another spouse when looking at the age difference, who was crowned in 1149. This 1149 date is interesting, it was not known and it is possible that Suryavarman II died just before and may have found it difficult to access the throne.

A review of Jayavarman VII's 'genealogy', as described in the main steles to its glory, clearly mentioned his lack of esteem for Sūryavarman II. He is listed in the 'genealogy', but considered as a mere King and not a great King of Cambodia. He is mentioned as 'the younger brother of the mother of 'King' Suryavarman' and Tribhuvanādityavarman is not stated.

Two things are noticeable: The absence of the name Yaçovarman II in the 'genealogy' of Jayavarman VII would tend to indicate that he would be the usurper King and not Tribhuvanādityavarman, although we must admit that we are not versed in the rules of succession of kings. We could think that he reigned one or two years or maybe ten years, and that there could have been two supreme kings simultaneously. This had happened before and we do not know when this king reigned.

Additionally, although the name of Yaçovarman II is not mentioned in Jayavarman VII's genealogy — which means that we do not know which grand family he was from — the great esteem that Jayavarman VII had for Yaçovarman II is obvious, as he declared having 'rushed from Champa' to save his life. <sup>[slide]</sup> These are facts and the only possible list of kings is this one.

Not only do we present a different list of kings compared to that previous, but the inscription also mentions the remarkable constructions of the kings it names. We learn that Jayavarman VI (1080–1107) built a large temple at a site called Vamśārāma, or 'Garden of bamboos', a major Buddhist site mentioned several times for centuries but which location was unknown. There was also a monastery. This latter seemed to have been built by an unusual Buddhist sect.

<sup>[slide]</sup> Further on, the inscription says that Suryavarman II built a huge *Prasat* — this is of course Angkor Wat. This is important, as it is the first time that an inscription mentions this temple and gives us the name of the god 'Cāmpēśvara' — we are delighted to finally be able to locate this name also found in epigraphy; no one previously thought that it could be Angkor Wat. Suryavarman II, allegedly, also built a monument at Wat Phu and we can understand that it was the *avant-corps* of the Bhadrēśvara temple, attributed for a long time to his reign. This is a heavily damaged brick building preceded by a sandstone building which we know roughly dates from Suryavarman II's era. Now we can confirm this and it backs up all the data of this inscription.

[slide] The most interesting monuments built that completely change our knowledge are those attributed to King Tribhuvanādityavarman. He built a 'house of fire' in Angkor. We know very well these 'houses of fire' and their particular shape, wrongly called *dharmaśāla*, which look like chimneys. We thought that Jayavarman VII was the creator of them and we are now told that Tribhuvanādityavarman had them built before him.

Moreover, Tribhuvanādityavarman also carried out diverse works at Vamśārāma: Among them, what struck us is 'caturmukha', a 'structure' with 'four faces'. Outside of Angkor these forms are found in Banteay Chhmar, a site probably owned by the paternal family of Jayavarman VII and at the Preah Khan of Kampong Svay or Bakan where *Prasat Preah Stung* has a central tower of four faces and where was also located a giant statue of 16 metres in height made up of four square 'steles' placed side by side. These images show you the head and the body partly rebuilt. Look at the plan of the base to imagine its size. Jayavarman VII also undertook major works at Vamśārāma. If that latter is the Bakan then all comes to light, as we have the face tower and the temple that was more or less already attributed to Jayavarman VII.

Due to the lack of documentation, besides that offered by the tower itself, this tower was subjected to a debate between Philippe Stern, eminent savant and conservator of the Guimet Museum in Paris and Bernard-Philippe Groslier, the last French conservator in Angkor. Philippe Stern thought that this tower was the first face tower built, the model of all others, while attributing it to Jayavarman VII, whereas Bernard-Philippe Groslier thought the opposite that it was the last built. Both of their arguments left us unconvinced.

Now, things are changing with this inscription: Jayavarman VII would not have built this tower towards the end of his reign, but Tribhuvanādityavarman would have and can subsequently be honoured with the paternity of this shape. Another point is that the inscription confirms that the site of Vamśārāma and the Preah Khan of Kampong Svay are one.

It is too early to yet understand the consequences of this discovery of the close relationships between Tribhuvanādityavarman and Suryavarman II and conversely the strong enmity of Jayavarman VII for this cousin of his.

Contrary to what we thought, it is most likely that Jayavarman VII never visited the Preah Kahn of Kampong Svay and that he avoided it, as he was on bad terms with those living there. This site, contrary to what is reported, is not on the way to Champa. The five 'houses of fire' located along the road linking Angkor to Preah Khan should not have been built during the reign of Jayavarman VII. It is clear that at Preah Khan there was no road leading east and that the Champa road followed a different route. This means that these five 'houses of fire' could have also been the work of Tribhuvanādityavarman, although there is a big question mark associated to this.

I have no idea where we are heading to; there are numerous consequences that I have already sketched, but I wanted to inform you of the existence of this inscription that changes completely many facts of the late 12<sup>th</sup> century — the history books will have to be reviewed. I am sure that many other questions will surface and this is the job of historians.

Thank you for your attention and forgive me for having been so long."

Comment from the co-chairman for Japan: [OrigE] "Thank you very much. It is scheduled to have a short break, but we are slightly behind and we are also waiting for the important recommendations of the next session. Let's take the short break now and we will listen to the *ad hoc* expert reports after. A question to the organiser: Are we going to be distributed the reports or will they be only screened?"

Comment from the Co-chairman for Japan: "I will now hand over the floor to my colleague Pascale, just to say that we do not have time for a general discussion on the three topics presented this morning. I would suggest listening to the experts' report and we will take some time for a discussion on this morning's topics, the Code of Conduct of Researchers, the iron site and the inscription. Thank you."

Comment from the Co-chair for France: "I suggest that we move on to the report of the experts in conservation with professors Croci, Bouchenaki, Lablaude and Hidaka. Mr. Croci could not be with us but he co-wrote the recommendations. Mr. Hidaka I think that you should kick off."

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## V- REPORT FROM THE *AD HOC* GROUP OF EXPERTS

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### V.1 Report from the *ad hoc* group of experts for conservation, by Professor Giorgio Croci, Mounir Bouchenaki, Pierre-André Labalude and Kenichiro Hidaka

#### Mr. Kenichiro Hidaka:

[OrigE] "Good morning; my name is Hidaka and I will report on six sites that we have visited over the past few days. I start with Tower 8 at Bakong. [slide] The *ad hoc* experts appreciate the efforts made by the conservation team of DCMA in order to set back the lintel: They have carried out research about the original structure of the door, finding one of three original wooden beams just behind the lintel position. This technique has been found also in other brick towers like Bakong and Lolei. The absence of two of the three original beams is probably closely connected with the collapse of the structure that occurred six years ago. The main concept of their operations is to revive the original structural scheme with the same technique, but nowadays these operations should be guaranteed by accurate structural analysis based on the mathematical model. [slide] This is a slide of the site visit and [slide] here is a section.

[slide] The recommendation for the tower 8 of the Bakong is the following: the *ad hoc* experts, while appreciating the achievements attained by the conservation team of DCMA on four stages of operations, — we heard a presentation yesterday — encourage once more having analytical data regarding the work of resetting the heavy lintel. We wait for a detailed feasibility study of the lifting-up/resetting operation with numerical structural analysis regarding the distribution of forces caused by this operation over the whole tower. Co-operation with a proper structural engineer is required.

[slide] Second recommendation: In order to protect the moonstone from further deterioration and in order to keep the tourists off the slippery irregular stones, we recommend the introduction of wooden pedestrian facilities which stop visitors from approaching directly along the axis of the temple, but somehow deviate to sidewalks on both sides of the temple's gate. The pedestrian route should be appropriately designed, allowing tourists to undersand the axial layout of the complex. [slide] Here is a picture of the moonstone.

[slide] Third recommendation: Both sides of the western entrance before the bridge should be properly protected from vehicles with a wooden balustrade. [slide] Here in this picture.

[slide] The second site visit was at Preah Ko. There is a concern about the traffic passing through the road in front of the monument. We *ad hoc* experts also felt the necessity of better tourist management: In fact, the visiting route runs on the main axis of the temple,

which is not in good conservation condition. [slide] The picture here shows it.

[slide] First recommendation: The *ad hoc* group of experts recommends keeping the boundary stone blocks, as they are now along the eastern side of the existing road, according to the necessity of having space free from vehicles in front of the temple. [slide] You can see here the alignment of stone blocks on the left side of the road.

[slide] Second recommendation: Similar deviation of tourist flow as proposed in Bantay Kdei is needed to protect the stones at the central entrance. After proceeding along lateral walks, preferably done with wooden planks, visitors may be induced to walk on the principal axis to enjoy the frontal view of the facade.

[slide] Third recommendation: Tall leaning blocks beside the entrance should be secured properly for the safety of visitors; furthermore, it is recommended to re-erect the northern fallen pillar that we found on the ground, [slide] in this picture.

[slide] Next site is Preah Khan. The *ad hoc* group of experts takes note of the widespread and pervasive presence of trees and vegetation in the temple area and its surroundings; this matter, even while giving an additional scenic value to the site, can also be dangerous for heritage and tourists. In fact, a few weeks ago a strong storm knocked down one large tree branch which destroyed one portion of the enclosure wall, [slide] in this picture.

[slide] First recommendation: The *ad hoc* experts recommend a proper survey of trees to be made in the area of the temple and its surroundings, clarifying the risk that vegetation can cause to heritage and to tourists as well. Furthermore, a guideline should be produced on the types of trees and their manner of growth, in order to anticipate risk.

[slide] Second recommendation: The *ad hoc* group of experts advises to enhance the interest of tourists about the particular relationship between heritage and forest, which is especially prominent in Preah Khan temple, by producing information panels to be put in the temple area.

[slide] Next site we visited is Bantay Kdei and the report is a bit long. This temple has a typical Khmer structure made of stone with horizontal joints. In this way the compression forces flow vertically, creating a very favourable behaviour for the stability. To prevent the risk of slide along the joints, the huge load of the tower is necessary. During centuries, also in relation with the lack of maintenance, the favourable structural scheme has progressively degraded. Appropriate reinforcement measures must be applied in relation with the damage: a crack on the block, outward inclination of the wall due to the soil subsidence or effect of the water and so on. The criteria of intervention should be based on the interpretation of the original structural scheme in two scales: structure as a whole and local stability of single blocks. On both scales, the work should be associated with a monitoring system.

Bantay Kdei represents the typical structure that we can see in several other temples. This fact suggests creating a common strategy of interventions, among the concerned temples, in order to have homogeneity and coherence of interventions in the different phases, starting from the first survey to the last design of intervention. [slide] You can see here the temporary props.

[slide] *Ad hoc* Experts recommend: 1) To create a relationship and co-operation among all the people that work on this type of structure. [slide] 2) To make the risk map on the scale of structural problems in order to provide a common basis of work. [slide] 3) That the proposal of interventions in various temples, apparently different, but similar from the structural point of view, has to be coherent with the general logic and interpretation of structural behaviour of the temples considered. [slide] 4) That the choice of intervention should be not only on the base of the risk map but also on the cost and the intrinsic histori-

cal value which may be well described by the map of priority.

[slide] Next site is the Gate of the Dead. This report will be followed by the general comment on Risk Map intervention. [slide] This gate has suffered serious damage in particular, disconnection of stones, partial collapses, and inclination. Stone blocks composing this gate show remarkable displacements. Openings and cracks are visible throughout the structure. The evaluation of the risk has been done on the basis of observation. Through the observation of the risk a series of emergency measures were undertaken. Methods and material for this emergency intervention were decided upon not only against the risk, but also cost, in order to optimise the solution. In particular, reinforced concrete elements were introduced to guarantee durability and efficiency. The pentagonal frame and the support on the elephants' trunks were thus made of concrete, cast on site, which we *ad hoc* Experts saw last year, still exist on the spot.

These interventions, we were explained, were carried out as emergency measures. In fact the reversibility of the operation is guaranteed by the insertion of geotextile and bricks between the old stones and the concrete frame. As emergency measures this is acceptable, though we expect an additional aesthetical consideration. The use of concrete should be strictly limited to temporary and reversible support in lieu of wood.

Even if in principle, the Charter of Angkor is cautious in accepting this kind of material, prefabricated concrete elements may be restrictedly applied according to the cost-benefit evaluation. As concerns the cost, it has been cheaper compared with timber, which may be easily attacked by insects. The colour of the concrete has less visual impact compared with steel.

In our last recommendation we encouraged making a deep and appropriate analysis of the structural problems of the monument. We again emphasize the necessity of this study to be undertaken. As was said above, after urgent measures already being carried out, now it's time to assign the real conservation to proper professionals of the APSARA National Authority to be found in the conservation team of DCMA, with the assistance of international teams specialists.

We, *ad hoc* experts, are seriously concerned by the negative effect caused by the clay inserted to close the cracks and openings, together with bricks. The clay goes deeper into the structure and widens the openings. In many places the clay mortars shows no adhesion to the inner stones and water enters into the construction. Termites eat the reinforcement straw mixed into the clay mortar; additionally, it spoils the flames of the joints and cracks. Now, it is time to assign real conservation to the proper professionals of the APSARA Authority to be found in the conservation team of DCMA.

The recommendation: 1) The intervention of this gate should be entrusted to fully competent professionals who would design a comprehensive conservation-restoration programme immediately, in order to save this significant monument now in danger with beautiful sculptures of Elephants.

Now, I move on to the comment on the Risk Map. The system of the Risk Map mechanism is composed of three successive phases:

- Observation and assessment of the risk (operation carried out by competent staff on site: A team of professionals that, relating to their special expertise, would be able to observe, identify and evaluate the different symptoms);

- Mapping in the field with standardized methods is an efficient tool to visualize all observations and processing of data (operations carried out by computer, automatic action: we should not be overtaken by this mechanical phase, as this process is just a tool to clarify the complexity of the risk) using tools such as GIS;



- Analysis of results, evaluating the risk degree but also the multiplicity of issues involved (tourism, stone conservation, water management, structural analysis etc.), but keeping the possibility to look at the risk from different points of view (operation carried out by the same professionals involved in the first phase). A map of priorities must follow risk mapping.

Three phases are being taken into consideration: It is recommended to proceed to an effective division or, if necessary, co-operation between the risk map team and the other departments of the APSARA National Authority, with the support of international specialists, in order to utilise the map as a useful tool for the assessment of risk. Following the instructions stipulated in the Angkor Charter, the action on the site is transferred to the relevant departments according to related expertise and skills to keep the quality and effectiveness of the intervention, avoiding confusion and ambiguous responsibility of the task. The periodical site inspections by *ad hoc* experts ensure this process of practice.

Thank you very much: I pass the floor to my colleague Professor Lablaude.”

**Mr. Pierre-André Lablaude:**

[*slide*] The site of the temple of Kapilapura: I start by recalling the revolutionary movements that shook Europe in the 1830s and which ended with the constitution of a new country, Belgium. Fifty years after its establishment, King Leopold II decided to establish in Brussels a centenary Museum that included in 1905-1908 an Asian art wing with, among others, a beautiful room dedicated to Khmer art. [*slide*] The masterpiece at the centre of the room is a lintel labelled as originating from Kapilapura in Angkor. Where is this unknown site located? It is hidden in the forest, 200 metres from the northeast corner of Angkor Wat moat and has mostly been ignored.

In 1908, Commaille and Marchal searched for it and discovered an inscription translated by Finot in 1925 which mentions the consecration of a temple in 968 by a Hindu sage named Kapila, hence the Sanskrit name of Kapilapura. This temple, which seems to have been dedicated mostly to Shiva, comprised of three brick shrines with three sandstone lintels at the time dismantled to store them in a safe place. The most beautiful of them is that of the central shrine and is conserved at the Brussels Museum while the two others still need to be located.

[*slide*] The temple site is still in the condition it was in after the excavations conducted by the EFEO one century ago. Considering the condition of the temple, close to ruin, the *ad hoc* group of experts would recommend the following to the APSARA National Authority:

a. In terms of maintenance and immediate conservation, set up a minimally invasive general site clean-up operation, ridding the ground of brush, but taking great care to preserve the temple's tree cover. Make an inventory of all the significant stone ruins still in place and provide protection for them.

b. In terms of scientific knowledge of the monument, do planned measured drawings of the various components of the temple, rounded out by a photographic documentation of the conserved elevations. Seek the current location of the various major remains that belong to it but are found in storage fields, once documented and put in locations that have yet to be identified (inscriptions, two lintels with carvings, etc.).

c. Finally, in terms of sustainable conservation of the monument, design and carry out in the near term a general site improvement programme, including: Disposal of the old excavation rubble still found around the temple and currently acting as a catchment basin that pools rainwater, thus degrading the architectural ruins discovered earlier. Such a clean-up operation should include an archaeological component which could legitimately include further investigations in order to better identify the original layout of the monument

on its site.

Generally, this example of the Kapilapura temple should be an incentive for the APSARA National Authority to give special attention to the many minor monuments scattered over the Angkor site, sometimes right in proximity to major monuments and therefore left out these days in terms of scientific concerns and conservation. If a modicum of effort was put into their development and they were identified with discreet signage, they could also provide points of interest for specific tours into forested areas, farmland or village locations as a complement and counterpart to the very popular major locations.

All the following items deal with Angkor Wat. <sup>[slide]</sup> The ornamental balusters that ornate the hundreds of windows of Angkor are major architectural decor elements. But, as they have been turned in sandstone that was cut vertically, they are more exposed to rain-water infiltrations and more sensitive to thermal dilatations which caused numerous cracks and weakened them.

<sup>[slide]</sup> A comparison of ancient photos of the temple with its present condition highlight the gradual decay of the past decades, even accelerated by the visitation increase of the monument and subsequent potential risks. Their state of decay and their instability may nowadays represent a real danger for the safety of visitors.

Also, their style, open construction, let the balusters protect against whipping rains and their gradual disappearance can only increase the water seepages inside the temple with serious decay to the stone impacting on the inner bases of the windows and breasts until the floor pavers of the galleries.

The pilot project recently started by the Italia Group with the support of the APSARA National Authority plans to intervene on a first series of windows of the second west gallery of the temple that has lost an average of 30 per cent of its original balusters.

<sup>[slide]</sup> The ongoing works focus on the consolidation of the preserved balusters, following the traditional approach associating with cleaning using demineralised water compresses, consolidation of fractures where necessary with limited injections of epoxy glue, overall consolidation with Ethyl Silicate and final jointing of the cracks with lime mortar mixed with sandstone powder.

After inspections of the first trials, the *ad hoc* group of experts recommend the following:

- 1/ Expresses its satisfaction with this programme, having repeatedly pointed out its importance and urgency over the past several years.
- 2/ Subscribes to the principles for the reinforcement of the preserved balusters,
- 3/ Stresses the necessity of reconstructing part of the missing balusters, by making an inventory and collecting the different fragments scattered here and there in the temple and by applying the philosophy that materials coming from a monument must be returned to the monument,
- 4/ Adheres to the principle of making additional new balusters, using sandstone, in accordance with the ancient lathed profiles, without attempting a complete duplication, but keeping a certain degree of wear and oldness in these restored bay openings, observing a balance and harmony with that of other components of the monument.

Given the relatively simple nature of this work, to be phased in over several years based on a master plan, it seems to lend itself particularly well to an early stage of training

for junior stone conservators and repairers, before confronting them with more complex issues involving carved decorations.

[slide] The northwest tower of Angkor Wat's second enclosure: The GACP team has worked continuously for several years in Angkor Wat for the stone conservation of different elements of the carved decor of the temple and dealt with the following items: apsarases, pediments, bas-reliefs and etc. This team has accumulated a proven, specialised knowledge of specific issues found on this monument and drawn up protocols for specific conservation in the monument.

On the work sites, the team has also implemented constant training activities to Cambodian specialists on these complicated techniques that have benefited, in particular, members of the Stone Conservation Unit of the APSARA National Authority.

It has started working on the northwest corner tower of the second enclosure of the temple with a new element to study and preserve the coping stones of the different towers of the temple.

[slide] The scaffoldings here installed, with the help of the DCMA of the APSARA National Authority, have allowed for close inspection of the monument and confirmed the terrible state of decay of the stone that can be seen from the ground. This is due to the combination of several damaging factors (weathering, and also physical, chemical and biological factors) which put together have caused this disastrous condition.

[slide] The masonry seems to be more and more deeply invaded by soluble salts (sulphates, nitrates, and etc.) which expand after crystallizing and when in contact with the composition of sandstone (lithologic and porosity) and the way the stone was laid, very often on a vertical course provoked disastrous and dangerous consequences — powdering, flaking of the material— with the potential for stones to fall from the top of the tower.

The numerous jointing and Portland cement patching applied in the early 1990s, that also created a lot of soluble salts, have exacerbated these alterations.

[slide] The interventions on the decor of the pediments undertaken in 1999 by the GACP on this northwest tower have efficiently slowed down the general decay of the façade materials, but only in some areas.

The recent comparison of the present condition of some of the pediments to mouldings made by Louis Delaporte for his Indochinese Museum of the Trocadero in Paris let us assess the extent of the decay within a little bit more than a century of the decor lost on these carved decors.

[slide] This reminds us of the more or less rapid, but inevitable, ageing of the construction materials, whichever their nature in any given monument.

As is the case in medicine, the conservation work of such monuments that are exposed to uncontrollable external alteration factors can only be to slow down, as much as possible and with all preventive or curative resources today available, the inevitable process of ruin.

Given the different elements (and striving to remain optimistic), the *ad hoc* group of experts:

1/ Reminds once again the ICC and, in particular the Cambodian authorities, insisting on this point, that the Angkor Wat temple represents unquestionably today, in terms of monument preservation, the focus of greatest urgency on the whole of the Angkor site. This urgency is related to the spectacular speed of the degradation of the decors and carved motifs on its façades and superstructures, continuously exposed to water runoff,

infiltration and pooling

2/ Given this deterioration process, it invites the APSARA National Authority to urgently implement, through its DCMA and with the participation of international teams, in particular GACP, a pioneer in this field here and involved for two decades now in protecting this flagship monument of Cambodia's heritage, and beyond the specific one-off restoration campaigns, a genuine supervision and maintenance programme aiming:

a. To carry out a regular inspection of the different constituent parts of the monument, using all the modern facilities available today (drones in particular, much more economical than scaffolding, for superstructure examination), b. To facilitate the routine locating and systematically updating of the areas suffering the most critically from ongoing and rapid deterioration and, based on that, identify the risk zones on the monument. c/ Target as precisely and effectively as possible, and therefore economically, the features requiring specific on-off consolidation and conservation operations

[slide] I move on to the stone storage at Angkor Wat. The inner courtyards of the different higher enclosures of Angkor Wat are populated with numerous stones and architectural fragments, moulded or carved, originating from surrounding architectural structures. The sheer numbers of visitors visiting the central areas of the temple often use these remains as seats or climb on them to take pictures, which is dangerous, as it could break and wear out the stone but also make it fall. The conservation of these remains *in situ*, close to their original locations, is to be favoured rather than having to store them outside the temple.

The *ad hoc* group of experts recommends that the APSARA National Authority:

1/ Collect up, level by level, these remains in certain courtyard corners and inventory them at the same time; 2/ Separate visitor flows with appropriate barriers bearing signs showing that access is prohibited; 3/ Leave in place, in the areas accessible to visitors, stones without any moulding or sculpture and that can therefore be used without risk as seating by exhausted visitors. Such a solution appears preferable to putting in modern-style benches that would never be aesthetically compatible with the quality of the location.

[slide] The item before last is the ceiling of the Churning of the Sea of Milk Gallery. This was presented yesterday and I will not dwell on it and directly read the recommendations.

In light of the project progress report submitted by the World Monuments Fund and DCMA, the *ad hoc* group of experts:

1/ Notes with satisfaction, based on viewing a new test panel, how the carving work is being fine-tuned, moving toward a less refined, more spontaneous execution, which follows much more closely the ancient model used as a reference.

2/ Agrees with those in charge of the project of the value of a new prototype, to be displayed at the next plenary session.

3/ Asks that a master plan for the ceiling project be put together quickly, so that the impact of irregularities in the outer stone ledge sections can be better assessed in terms of defining the ceiling framework.

4/ Invites those in charge of the project to continue looking for the required rare koki wood, in the original sections, to complete the ceiling.

5/ Asks that, when the decor is done in the future, several different [wood] carvers be called upon, which will result in certain variations in the overall finished product.

6/ Confirms the previous recommendations made at the 25<sup>th</sup> technical session regarding variation in the width of the wood beams, fitting the configuration of the ceiling into the deformations of the stone supporting ledges, the artificial ageing of the carved decor using sand blasting and achieving a final patina using a whitewash treatment

[slide] The last item is Angkor Wat and the outside passageways. The strict conservation requirements of monuments should not put aside the qualitative requirements for enhancement of the monument at hand.

[slide] The present quality of Angkor Wat's outside presentation is clearly underdeveloped because of a network of peripheral pathways created some years ago. Their orthogonal layouts and grey gravel surfacing is not appropriate to the overall aesthetics of the site, nor suited to any genuine functionality with regard to visitor flows. Look at the right hand side of the picture and you can see spontaneous flow of visitors who do not pay attention to the manmade pathways.

Given this unsatisfactory situation for the image of the temple as it stands, conspicuous at ground level as well as from the upper parts of the temple and even in aerial views, the *ad hoc* group of experts recommends that the APSARA National Authority remove completely this unnecessary network of pathways and simply grass over the soil surface, thus re-establishing the continuity and harmony of the temple's inner green space.

I thank you for your attention."

**Mr. Mounir Bouchenaki:**

"Excellencies,  
Co-chairs,  
Dear Colleagues and Friends

I will present four sites visited with my colleague experts in conservation and two sites that we will jointly present with the sustainable development experts. This is a novelty which highlights the continuity between the work of our colleagues of the APSARA National Authority and the different international teams for the conservation of heritage and the interaction between heritage and sustainable development.

[slide] The first visit was at Srah Srang, where we joined Mr. Sok Soseila, Dr. Ly Vanna and Professor Hans Leisen and collaborators. The site visited assessed the almost completed state of the Royal Terrace.

[slide] The restoration and conservation project of the Royal Terrace or jetty of Srah Srang is almost completed. This has been a complex effort, reworking a former restoration carried out by the EFEO in the 1960s.

The expert group considers that the first stage of the project spearheaded by the APSARA National Authority started in 2009 undertook correct study and analysis of all the supporting courses of the structure of the Terrace, notably following the removal of the very damaged concrete layer cast more than 60 years ago, that could not guarantee the satiability of the structure any longer. A total of five courses of foundations have been consolidated.

[slide] The group thinks that the project lacked an integrated approach with regard to placing the different courses of stone blocks which did not meet restoration expectations, especially the treatment of *lacunae*, the placing of blocks and their more harmonious distribution.

The recommendations are as follows: [slide] The group of experts recommends that further work be done, including a further cleaning of the blocks that bear visible numbering and seeing to it that newly added stones are given a sensitive, appropriate treatment and are more pleasingly integrated. It is vital to have a restoration expert on hand during all phases of the restorative work on this terrace.

The group also recommends that the APSARA Authority do more to make qualified experts routinely available on all sites. This would help provide a technical, scientific basis for the stone restoration work and the treatment of stone pathologies. The presence of such experts on the teams would make their experience available to teams working on similar projects, in harmony with the principles embodied in the Angkor Charter.

These are pictures showing the non-harmonious restoration and the placing of blocks and new stones.

[slide] The second project concerns the restoration works of Angkor Wat's western causeway dike.

We went twice on sites hosted by Professor Miwa from Sophia University and Dr. Ly Vanna from the APSARA National Authority. Actually, we went twice in a row on site because of the key role of this site, as stated by my colleague Professor Pierre-André Lablaude. This site is held as major and this entrance is of particular importance.

[slide] During the previous session (25<sup>th</sup> technical session) of the ICC the new restoration work of the north end of the west causeway dike of Angkor Wat, undertaken by Sophia University in collaboration with the APSARA National Authority, was mentioned and recommendations taken with regard to the construction of a temporary causeway to facilitate the works on the historical causeway dike.

Archaeological research on the level of the foundations along the central portion of the causeway have been commenced these past months in order to better understand the conditions of the underlying structures usually flooded by the northwest dike to a depth of 1.5 metres.

[slide] In order to carry out the work, a cofferdam was installed with systematic pumping which temporarily dried out the portion and enabled an assessment of the superimposed layers of the fill onto which the different laterite stone strata were laid. The Sophia university team, in collaboration with their colleagues from the APSARA National Authority, have identified and surveyed the different construction stages of the causeway all along the wall of this causeway and noticed that only two segments are constitutive of the original causeway; the others were restored at different periods.

[slide] A project to enlarge the dike right by the temporary causeway dike, here, bottom left, to facilitate the installation of equipment was put forth by the head of the project and approved by the experts.

Based on the causeway foundation and upper layer consolidation project presentation and following a long technical discussion on site, the group of experts considers proceeding to a preliminary study in order to propose additional restoration options of the seriously damaged lower layers that could in particular cause additional damage to the causeway.

[slide] This lengthy discussion with the head of the project also evoked potential intervention with underpinning of the lower courses of laterite blocks with a view to preventing a disassembly and reassembly especially of the original portions, where it would be very complicated to recreate the quality and very refined joints.

Recommendations: The group of experts recommends first of all carrying out some borings of the internal section of the causeway in order to determine the condition of the fill and of the blocks making up the lower layers and only then consider the advisability of doing any dismantling of the entire causeway wall.

Given the complexity of such an operation, the experts group recommends that a structural engineer be immediately added to the team in charge of the project. Moreover, they recommend that a project with more than one option for the restoration of this part of the causeway be submitted to it at the next session of the ICC-Angkor in December 2016, prior to any dismantling work on the central part of the landing being undertaken.

Meanwhile, the test borings recommended in the inner part of the causeway should be carried out and the results thereof used as justification for the one option selected for the project, taking into consideration the cost and implementation schedule.

[slide] The visit of Banteay Samre Temple included Dr. Ly Vanna of the APSARA National Authority and the professors and students of the Chaillot-sponsored Heritage School.

Banteay Samre is a temple dedicated to Vishnu built in the mid 12<sup>th</sup> century, probably just after Angkor Wat, by King Suryavarman II. It is located 500 metres to the east of the east Baray. Obviously, I leave all the historical background to my historian friends and precisely to Claude Jacques.

[slide] Maurice Glaize started in 1936 restoring the temple using anastylosis based on the heaps of stones he found in 1930. EFEO documentation tells us that the reconstruction took nine years. The visit of the temple presented a temple in a satisfactory condition, with this picture telling it all: Despite the fact that the structures had been consolidated with cement and concrete they did not suffer much damage, contrary to those that can be observed in other monuments from the same era.

For architects and art historians, this is historical evidence of the stages of development of the philosophy of restoration and conservation based on stone blocks found on site, a restoration scheme considered at the time, more than 80 years ago, as the best technical solution for safeguarding monuments.

Moreover, this temple is considered as one of the rare fortified temples in the area of Angkor. It boasts an outer enclosure higher than six metres and the inner enclosures were also certainly for defence with only small openings. During the visit, we surveyed some tilting of these enclosure walls that need straightening and monitoring to prevent any potential collapses.

[slide] Additionally, the central shrine tower reaching 20 metres does not seem to have been deformed. In this picture, Professor Lablaude explains to the Chaillot School students the tilting of the walls, probably due to the original construction layout.

[slide] The decor of the temple and in particular the pediment carvings are still in a good state of conservation. Still, some of the architectural members (balustrades, lintels, doorframes, pilasters and etc.) have been altered and necessitate restoration. This is the reason the intervention of the DCMA team of the APSARA National Authority supported by GIZ is welcomed and deemed necessary for the long-term maintenance of the monument.

Recommendations: Aware of the quality of this temple, which deserves to be integrated more into the tourist itineraries of the Angkor area, the group of experts recommends that access to this temple, which up till the present is through the north, could be restored to its historical entrance through the east, with an outstanding visual axis, and which also has a brick causeway with spaces flanked by balustrades and sculptured decors that will only require some minor touch-up work. Getting this project back on track will thus be in harmony with the architectural composition of the monument.

As is the case for the majority of the Angkor temples and monuments, a maintenance programme must be developed with regular monitoring to prevent damage to the sculpted decors.

I stop my presentation and hand over the floor to Professor Shinji Tsukawaki who will talk of Lolei and the Baray Indratataka, as we have made joint proposals on these monuments. I thank you for your attention.”

**Professor Shinji Tsukawaki:**

[OrigE] “I will quickly explain the viewpoint of the group of experts on sustainable development about the Baray Indratataka. [slide] It is located some 15 kilometres southeast of central Angkor. [slide] The rehabilitation project of the ancient reservoir has been planned in order to sustain the water environment of the Roluos area. In this picture you can see the southern dike of the Baray. National Route 6 runs on this dike. Inside the area of the Baray are houses, a pagoda and other roads.

[slide] Lolei is the central temple of the Indratataka water. These are our recommendations: The group welcomes the rehabilitation programme of the Indratataka ancient water reservoir in order to sustain water environment (cultural landscape and etc.) of the Roluos area.

We recommend undertaking a social survey of the population (local society, monks) of the targeted area, including a census, to evaluate the social costs of displacements of the population outside of the baray to be re-flooded with water. We recommend also continuing discussion with the monastic community and in particular to transfer the pagoda to the other location outside of the targeted area. Finally, we recommend setting up an exhaustive programme of archaeological research in the areas of its ancient dikes.”

**M. Mounir Bouchenaki:**

[OrigE] “We only have a couple of things to add. First, the fact that there are a lot of new constructions near the Lolei. These new buildings have not been authorised by the APSARA National Authority, so our recommendation is to make sure that the World Heritage Site is protected that only the old pagoda can remain and that any other constructions should be removed by the APSARA National Authority which should find a solution. The second point we discussed is archaeological research on the new road before any extension of that road takes place to make sure we do not find any archaeological remains.

I have another site, the West Mebon, that yesterday our colleague Madame Beaufeist showed us and I will go straight to the recommendations because the site has been presented before.

[Back to French] The group of experts expresses its satisfaction with the APSARA and EFEO teams [slide] for their thoroughness on this work site and for the deadlines of implementation to be respected, despite an environment that only allows such things as archaeological research work to be done during the dry season and by continuously pumping out water.

[slide] They recommend that the operators continue with the schedule for putting back the embankment steps in accordance with the technical protocol adopted and continue cleaning out the interior basin that will certainly yield a lot of data on the objects found. Given the progress made in the step restoration, it is recommended that the project for the superstructure’s reconstruction be finalised along with consolidation of the causeway leading from the steps to the central sanctuary.

[OrigE] We have another joint project on the Chantiers école at Chau Srei Vibol.



[back to French] An exhaustive visit was organised with our perpetual Scientific Secretary, Professor Azedine Beschouch, Her Excellency Chau Sun Kérya and Professor Hang Peou at the Chau Srey Vibol site that has been suggested for the future site of a field school. [slide] The group of experts has noted the main guidelines of this project which has for ambition to be the 'site to apply the standards defined by the World Heritage Convention', as said by Professor Azedine Beschouch.

The aim is to train young Cambodians in five priority fields: conservation and restoration of the monuments and sites, management of water and restoring the moats, treatment of the vegetation and forest, development of access ways and landscape, tourism development and harmony with the local communities.

It was clearly stated that this field school will not compete with training conducted at other training institutes and it will be directly under the purview the APSARA National Authority. The group of experts is delighted with this initiative and the project's ambitious goals.

One Recommendation: Considering the scope of the project and extension of the Chau Srey Vibol site, it has been recommended to define an overall strategy as well as the results hoped for over a ten-year period.

Furthermore, given the monument's degraded condition, after the project is adopted and underway, it is recommended that the first training programme starts with making a 'risk map' for the site. The analysis of this risk map will provide a basis for defining the priorities and putting in place a detailed plan of action and budget estimation. It is too early to identify the area or monument that will be selected for the *in situ* training within the framework of the first priority field.

In addition, the new interdisciplinary training profiles will need to be defined and the conditions for enrolment in the field school and the type of diploma to be awarded will have to be spelled out. The group of experts finally recommends consulting ICCROM (in Rome), an intergovernmental organisation specialising in the training field."

#### **Professor Shinji Tsukawaki:**

[OrigE] "I will continue with Chau Srei Vibol for the sustainable development group of experts. The temple is located about 20 kilometres east of central Angkor. [slide] It is a large complex of Khmer architecture with a rich natural environment. It is an ideal place to combine conservation and sustainable development that can work together. The temple's size is almost that of Angkor Wat. Our group welcomes the APSARA National Authority's initiative to use Chau Srei Vibol as a new location for the APSARA training centre, combining both conservation of built and natural resources as well as tourism management. Thank you."

#### **M. Mounir Bouchenaki:**

"Forgive us for this toing and froing but this is the last recommendation from all of us conservation and sustainable development experts, which is a general recommendation. This was inspired by the wonderful speech of His Excellency Sok An on the history of the ICC. Our recommendation is as follows:

During long years of conservation work, restoration and enhancement of the Angkor monuments and sites, much experience has been acquired regarding both the flawless organisation of international cooperation for the safeguarding of a heritage of outstanding universal value and the accumulation of scientific and technical data that have tremendously enriched our knowledge of the history of the Angkor Park.

This success on the international level leads UNESCO and many political leaders to consider the ICC experience and the policy of the Kingdom of Cambodia in terms of protecting its ancient culture as an example to follow for the rehabilitation of cultural heritages in countries currently ravaged by conflict, where their museums, monuments and sites have unfortunately become targets in the same way as civilian populations.

We must be duly proud of such remarkable progress made in a short time after the tragedies that devastated the Kingdom of Cambodia as we unfortunately now see, particularly in other heritage-rich countries that are part of the 'Fertile Crescent'.

And it is also entirely legitimate that we take delight in such results which serve to demonstrate the interaction between cultural heritage and sustainable development, notably with the international conference organised in Cambodia in 2014 by two United Nations agencies, UNESCO and UNWTO.

However, account must be taken of the fact that the development of technical capacities in the field of conservation and restoration cannot only be the fruit of a long process of theoretical training along with application in the field which must be made with the greatest caution and sensitivity. This is the reason future meetings will focus on the main topic of training. All experts agree that any intervention on cultural heritage is complex and nowadays requires an integrated and multidisciplinary approach.

Certainly, like all newly established institutions, there can be the risk of retreating into parochialism regarding some structures and a lack of coordination and sharing of scientific and technical information.

In this regard, the *ad hoc* group of experts who, for many years, have been offering their experience and confronting that of the specialist field teams, would like to draw to the attention of the APSARA Authority's senior officials who are consistently present at the semi-annual ICC meetings, the importance of the quality of technical project follow-up and the necessity of efficient co-ordination among the different departments of this prestigious institution.

Thank you."

*Comment from the Co-chair for France:* "Thank you professor for ending with this magnificent general recommendation project and thank you to all the conservation experts' team. If I understood correctly, the floor is now to Professor Tsukawaki, who will report on behalf of the sustainable development group of experts."

## **V.2 Report from the *ad hoc* group of experts for sustainable development, by Professors Jean-Marie Furt and Shinji Tsukawaki**

### **Professor Shinji Tsukawaki:**

[OrigE] "Our group of sustainable development experts will give our observations and recommendations. [slide] We visited many sites, from Kampong Phluk, the Horse Ranch, Indrataka, Banteay Kdei and also around Angkor Wat with the *parvis* facilities, and the proposed roundabout and car park at Phnom Bakheng. We will quickly explain what we saw and considered and our recommendations.

[slide] We start with the massive blaze at Kampong Phluk which, as you all know, is a place of unique culture even in Cambodia. The blaze occurred in the coastal forest areas

around Lake Tonle Sap at the end of this dry season. I read of it in the *Phnom Penh Post* and I had a friend who was studying in Siem Reap at that time, so he went on site and sent me this picture. I was surprised to see the extent of the damage and my colleague believed that the forest of Kampong Phluk had completely burned out. Three fires have been identified in Chong Kneas, Kampong Phluk and Preak Toal and more on the Battambang side of the lake.

[slide] We visited the village of Kampong Phluk to understand what happened and we heard explanations of the outline of the blaze by the chief of Kampong Phluk at the commune office. Locals and the APSARA National Authority representatives of the Forestry Department, as observers, attended the meeting. The chief said that 150 hectares of existing forests were burned in Kampong Phluk. I wondered about the cause of the fire. We know that in Malaysia or Indonesia lightning can cause them but he said that the blaze was not a natural phenomena; this means that somebody started the fire. He explained to us what happened and we found it hard to believe. He said that it was revenge from a neighbouring village and that the culprit set the fire in a perfect place to expand farming area for the village. [slide] The right-hand picture shows you where the fire raged along the canal and the road which now will be used for agricultural purposes and the village did not have measures to stop the blaze although it was on fire right next to the canal filled with water.

This is where it happened and it looks like completely burned land due to the blaze in Kampong Phluk. My colleague identified fresh roots on the ground which means that fortunately the flame has not impacted the underground soil and many sprouts have appeared on the burned land. *Mimosa pigra*, an alien plant, has already intruded in the area of Kampong Phluk. It may easily intrude into the area of the burned land. This plant causes a lot of problems in Cambodia.

[slide] Considering recent large blazes having affected the coastal forests of Lake Tonle Sap, including the UNESCO Biosphere Reserve of the lake, in particular Preak Toal, the group would like to recommend that some security measures in and around the area of the Angkor park should be taken and included within a risk management plan to be prepared within the Heritage Management Framework. I would emphasise that this blaze serve as a lesson to Angkor. Imagine if such blaze were to occur in Angkor: We do not have any measures in place at this moment. In addition, fire prevention in the city centre of Siem Reap should be considered, because if you look at the situation in the Old Market area in the evening there is so much traffic that a fire engine would not be able to access the area. The same situation is found around the night market, which is filled with combustible material and maze-like pathways.

[slide] This was the first site, now I move on to the Horse Ranch. A construction plan of a horse ranch stable has been proposed southeast of Phnom Bakheng's car park. I got these details from the proposal that it should be located south of the elephant shelter and southeast of Phnom Bakheng's car park. The two pictures at the bottom show a projected model of the ranch.

[slide] The proposal illustrates riding routes for both horses and horse carts in the Angkor Park. Plans for a horse ranch stable have been proposed to the southeast. They start from point A, where the stables are located, then go to the Bayon through Ta Prohm, Srah Srang and return through the east gate of Angkor Wat then back to the Phnom Bakheng hill then back to the stable. The yellow line indicates the horse riding route and the blue that for the horse carriages.

[slide] Before visiting we were given some information on the breeding of livestock (examples at an agricultural college of Japan). Chickens, pigs or cattle are kept in very confined and narrow cages and do not need to move a lot. These conditions are miserable. Horses need a wide breeding area to roam and gallop. It is a very different thing to breed horses than to breed cattle.

[slide] We first visited the requested site for the horse ranch stable located to the southeast of the car park of Phnom Bakheng. On the left is the site, a wetland which would be big enough to accommodate a ranch; to the right is a waterway from Angkor Thom to Angkor Wat.

[slide] Then, we visited the 'Happy Ranch Horse Farm' located in the south of Siem Reap city to examine the horse breeding at the farm, where thirty or forty horses are kept. This farm is located south of Siem Reap. We saw that horses are well looked after with sufficient space for them to gallop. The stables were clean and the horses' treatment and health management we understood to be good. You can see the large circular playfield for the horses and the necessary equipment and good organisation.

[slide] The *ad hoc* group welcomes the proposal of the horse ranch stable but invites the APSARA to consider an alternative place outside of Zone I than the one requested. Because it is well known that horses are nervous animals and there is a risk for them to break even from a slight shock. The requested site is at the centre of the core zone of the Angkor Park where many tourists from various countries visit Angkor.

Furthermore, traffic congestion at the South Gate of Angkor Thom is heavy. Various transport facilities (cows, cars, motorbikes mini-bus, elephants and I twice saw two pigs running through this gate and even once monkeys) and animals go through the gate. Thus the group encourages paying particular attention to the visitors' security and the traffic congestion it may cause. This is valid for not only this project but any project. Finally, we have already taken a firm recommendation during the 2013 Technical Session of the ICC-Angkor, as stated below: 'It is strongly recommended that such attractions should be set up outside of the Angkor Park'.

[slide] In order to secure visitors' safe approach to the main temple area of Angkor Wat during the period of the restoration project of the western causeway, a temporary diversion (detour) is going to be set up on the moat of Angkor Wat. Yesterday, we heard a very detailed explanation by Mr. Sok Sangvar, so I will quickly shift to the recommendation.

[slide] The group welcomes setting up a tentative pontoon bridge (plastic cube bridge) in the south moat of the Angkor Wat temple during the restoration project of the western causeway of the temple. This is the location on this map.

[slide] The group recommends calculating the pontoon bridge's width and strength to maintain visitor security. You explained it very well yesterday, but please consider the security of visitors. As for its surface colour and location in the moats, it shall be in harmony with the view of the temple. This colour here would be detrimental to the view and landscape of Angkor Wat.

[slide] The Roundabout of Angkor Wat: This was proposed a few weeks ago to keep a smooth and safe traffic flow in the south of Angkor Wat. Present traffic flows at the 3-way junction south of Angkor Wat use this strange triangular mound before the Angkor Wat Central towers. This area is bizarre and I made a schematic drawing here so all can understand. The green line is the route from the city to Angkor Wat and if a driver wants to go to the west gate it would turn right, but to the east also, so it is a complicated design that does not smooth or secure traffic.

[slide] The group welcomes redesigning the present three-way junction to the south of the Angkor Wat temple for the smooth and safe flow of traffic, and recommends setting up a small, simple roundabout — here an example taken from the USA — (no decor, sculptures or signboards) instead of the present junction to preserve the view of the South Gate and the silhouette of the central towers of Angkor Wat.

[slide] The group also recommends mitigating the project's impact on the environment around the area, particularly to save beautiful trees such as *Dipterocarpus alatus* nearby the junction, and recommends submitting a drawn scheme of the planned roundabout to take advice of both the *ad hoc* expert groups before starting its construction. We would like also to say that we would like this large signboard to be removed, as it obstructs the view from the south of the temple."

**Mr. Jean-Marie Furt:**

[slide] We will continue this two-voiced presentation with some to-and-froing. The sustainable development report has analysed the different projects led by the tourism department teams and those conducted by Mr. Sok Sangvar on the present or future development at Angkor Wat and surrounding areas, notably the drop off zone.

[slide] The development of this zone fits within the overall traffic flow of the temple's surrounding area. It includes closing to traffic the road fronting the main entrance of Angkor Wat and paving and cementing part of the bus parking area. These developments have been completed. The drop off zone and the car park have been opened and are temporary, as they are located opposite the forthcoming *parvis* of Angkor Wat.

[slide] This zone is part of the overall future traffic-free zone of the approach area of the main entrance of the temple and should smooth traffic flow. The organisation needs to be closely monitored (during our visit, they were cars and motorbikes driving in all directions). There are arrows indicating the traffic directions, but they are not clear and it is temporary but it must be respected.

Yesterday I paused as a tourist who would like to visit the small circuit and my driver, like most of the others, that morning at least, did not go to the drop-off zone but drove around to drop me directly at the front entrance, stopping one metre from the barrier without anyone intervening. These developments are interesting but there are issues with regard to respecting them; we will come back on this later.

[slide] As for the new developments planned inside the temple, some of them have been mentioned by Pierre-André earlier and by following different avenues of thought, if I can say so, we arrived at similar conclusions. The first project deals with the passageway layout which changes would boost the visit. Passageways should be laid out on both sides of the main causeway to ease the flows of visitors, organise the visit, and provide a different view of the temple. Hopefully this is to be executed soon. It is noteworthy to underline that it is one of the first opportunities we had to talk about facilitating access for people with disabilities.

The present passageways marked by visitors or the APSARA National Authority do not meet needs. Some go in multiple directions, others are too narrow, the layout is not clear and the gravel surfacing does not drain water and they are flooded when it rains.

The passageway layout project raises some issues: First, do people use them and how? These strolls seem attractive, but we do not have any data with regard to potential users. In addition, to preserve the aesthetic of the place and prevent looking at two yellowish lines (trampled soil) or greyish (bricks, cement, gravels and etc.), landscape planning is necessary, which will impact on the load of work and the finality has yet to be demonstrated.

[slide] Finally, adapting tourism facilities to the disabled is a worldwide problematic that we will have to address and in Angkor it should be part of a global analysis or at least planned for two or three major temples. These different reasons led us to recommend to our colleagues the postponement of this project.

[slide] The second observation concerns setting benches inside Angkor Wat, at the Bakan. The TMP team found that while waiting to climb the tower visitors sit on bas-reliefs and balusters and it was pondering installing benches to prevent damage to the stones.

[slide] Our observations are similar to those of Pierre-André. These projects for new facilities, even minor, at the heart of Angkor Wat, raise some aesthetic issues (material used for benches, stone or wood, shape, how many, etc.) knowing that this could also increase bottlenecks and considerations of misuse that could occur (stalls selling drinks and etc.).

[slide] In a first instance, we think it fit to try solving this issue by beefing up the role of the guards and guides. We realised that among the people sitting down were tourists but also guards and guides, although the latter should better inform their customers and be exemplary and the guards should be brave enough to stop tourists and forbid them from sitting.

[slide] Other developments concern the car park at Phnom Bakheng. The visit took place on Saturday the 18<sup>th</sup> of June and with us were Mr. Sok Sangvar and Ms. Oum Maradith. It is planned to set up a car park for cars, vans and tuk tuks opposite the path leading to the temple. The car park will be at the back of the vendor stall already on site. This development also includes some landscaping (along the road, here in green), the distribution of the stall locations (in orange), slightly set back from their existing location and finally the car park for cars and small buses (in yellow) and tuk tuks (in pale orange at the back of the car park). Traffic direction will have to be indicated to prevent crossing traffic and to make sure they are respected.

This is an interesting operation, as it has been communicated to the sellers and should no be too problematic as the space for them has been preserved. The setting up of this car park should contribute to easing the access to Phnom Bakheng. This is an action that should be fostered and this car park should be quickly developed.

[slide] The last section of the works with the TMP and tourism concerned the follow-up of recommendations and development projects within the framework of the Tourism Management Plan. We had a working session with the TMP team on the 20<sup>th</sup> of June, in the afternoon. Sok Sangvar and Oum Maradith started by introducing the implemented activities meeting the follow-up of recommendations.

[slide] These include, and are not limited to, the establishment of an ethnographic museum at Run Ta Ek, activities to modify the image of the site (traffic improvement, cycle lanes, watering and planting, destruction of 452 advertising signs), and something very interesting in line with previous activities, an activity to improve the quality of human resources (taking on trainees, training of site managers, etc.). Finally, there are the communication activities to promote the Code of Conduct with the enforcement in August of the policy of not selling tickets to visitors whose clothing is not appropriate. The last activity that is of interest, although still at its creative stage, is the construction of an Internet site dedicated to tourists. This site will soon be active. The follow-up of recommendations is of good quality and needs to be continued.

[slide] Other activities we reviewed included the construction of the new ticketing building, which spurred some structural debates. Let us start with space management: The ticketing building is in operation; it is large and airy and includes 48 booths which should fast-track demand, although this is not a digital system yet, and there is a service area and a few shops. The access car park is shared with that of the Angkor Panorama Museum (Korean Museum), where vehicles can enter, drop off their customers and in the future should be able to pick them up in a car park located at the rear of the ticketing building after having been given a number. Basically, you arrive, a number is handed over to you and the vehicle leaves to wait for the customer at the rear of the ticketing building.

[slide] First, we recall that the rear car park was initially built for electric vehicles that tourists would have used to access the site in order, according to the initial project, to save the environment. As this new ticketing building is in operation, we deem it of importance to rethink the initial electric vehicles option in order to have a proper impact on the environment, which is one of the conditions for the quality of the visit in the future.

Another observation regards the recently opened museum, which visitation will increase, which in turn would impact on the management of the car park, as cars will park in this area. This obviously requires a global understanding of the management of the space of this car park. With the closeness of the museum and the quality of its resources it could be interesting to ponder on the conditions that could turn this museum into an interpretation centre. Visitors that bought tickets could visit the very close-by Museum. Selling a joint ticket could improve the quality of the visit and manage the space globally.

The second part of our reflection is on the economy and the increase of ticket price. The principle of the price hike as long as it is reasonable, as was presented yesterday, is fully justified and does not raise any specific issues. It is logical to ask a contribution from tourists to the management and maintenance of heritage. We would like to talk about the analysis on the planned consequences.

We are not at ease with the systematisation of the benefit that is questionable as the reality with economic development is much more complex. To understand what I will explain, we need to recall that we are not in Cambodia, as in many countries around the world, in a constant phase of growth of tourism, but rather in stagnation phase of the Butler Model on the development of tourism destinations and that tourists become increasingly demanding consumers and that new resources shall be in priority earmarked to an increase of the quality and to calculated repositioning of the tourism destination strategy.

This foreword has led us to make three observations: 1/ The tour operators will pass on the increase in ticket price to their customers and it will feed the APSARA National Authority's budget and there will not be any negative impact on the territory. This means that at a given time, the APSARA National Authority will consider this client as an important strategic target with all the considerations associated with this choice.

2/ Conversely, for individual visitors who need to be informed, the outcome is not guaranteed, as there will not be any price flexibility, which means that individual customers will not react and continue to buy and the receipt growth will not be that obvious and direct as pretended. This type of conclusion can only be worked out based on the knowledge of the clientele (nationality, socio-professional categories, families, individuals, etc.), something we have asked for for many years. With an empirical approach (we need money, we increase the price) the risk is of transferring the negative impact on the territorial offer, which means the increase of the price of the ticket will be felt by lesser consumption from tourists (cafes, hotels, restaurants, handicraft souvenirs and etc.).

3/ Let us look at last year's report, where we insisted on the need to think out different tariffs (for example depending on the time of the year, the temple, the time of the day and etc.). The opening of this new ticketing building and the reflection related to the increase of the ticket price cannot disregard such observations that are inherent to the modernity of a tourism destination and to steer out of the Butler Model's stagnation phase. Last year, we also recalled including in the ticket price a small tax (for example, 50 cents per ticket) that could be directly earmarked to the protection of the environment in the Park and by then breath new life to stagnating or underfinanced projects.

To finish, we recall that the teams work hard and are very often mobilised for small projects: Some progress faster than others and sometimes the absence of results may discourage part of the teams. These teams do not seem to have the time or resources to tackle any global strategy, the philosophical and technical parts of the TMP.

A while ago we set out the priorities that determine the success of a lot of future activities, among which the knowledge of the clientele that we link to the price change and development of digital technology. We said and repeat to conclude that only this deep knowledge will meet the right decisions with regard to visitor flow, investment, itineraries and etc. Otherwise, the approach would be scientific and completely empirical and at times unco-ordinated, which means that one-day or another it will be regretted.

That was the end of the presentation.”

Comment from the Co-chair for France: “Thank you Professor Furt for ending in the imparted time. I would now like to announce two ceremonies. The first one is the decoration of Mr. Philippe Delanghe, who all of you know here, followed by the graduation ceremony of the Heritage Centre students.”

### **V.3 Decoration to the rank of officer of the Sahakmêtrei Royal Order of Mr. Philippe Delanghe**

#### **Introduction by Mr. Azédine Beschaouch:**

“Your Excellency Deputy Prime Minister Dr Sok An,  
Co-chairs,

I recall briefly that today’s ceremony is not only for a UNESCO colleague but also the ICC. Mr. Philippe Delanghe is a Belgian citizen born in the Flemish speaking part of the country, which means that French is not his mother tongue but has become his working language. He has worked for UNESCO for more than 20 years. He graduated in anthropology and archaeology and these are the right fields to be in when working at Angkor.

He commenced his career and developed his skills at the UNESCO office in Jakarta. I will skim quickly through his career; he then went to Amman in Jordan for the safeguarding campaign of cultural properties in Iraq and for many years he has left his luggage in Cambodia at the Phnom Penh UNESCO office.

The highlights of his career include his willingness to work for UNESCO as volunteer in Timor Leste during the fighting between pro-independence factions and Indonesia and he was appointed during a troubled period between Jordan and Iraq. He has been with us for many years, not only for Angkor but also for Preah Vihear. I believe that all of you know what he has achieved over many years at the ICC, as he has been very often with us, as is the case for the representative of UNESCO to Cambodia. Today, we are delighted, as this decoration pays tribute to what UNESCO stands for: a body serving the heritage of humanity for all its State members.

Thank you.”

#### **Mr. Sok An:**

“Co-chairs,  
Excellencies,  
Ladies and Gentlemen,

I am delighted today to make this significant gesture to pay tribute to a personality of UNESCO working in Cambodia. I am talking about Mr. Philippe Delanghe, head of the Culture Section at the Phnom Penh UNESCO Office. The highlights of his career have just been mentioned and so was underscored his unwavering commitment to the efforts under-



taken by the APSARA National Authority in guaranteeing the conservation and development of Angkor and also of Preah Vihear.

I am happy to preside over this ceremony and express my highest appreciation to Mr. Delanghe for his professionalism, his great dedication to the World Heritage cause and his respect for co-operation standards between UNESCO and State members. These are all the qualities that honour UNESCO and it gives me the honour, on behalf of the Royal Government of Cambodia, to confer to Mr Delanghe the rank of Great Officer of the Sahakmêtrei Royal Order.”

**Mr. Philippe Delanghe:**

“Just a few words to say that I am deeply, deeply touched. I would like to thank the government for its trust and acknowledgement of my dedication. For almost all of the past ten years I have had enriching adventures and a great experience. I hope that this will continue.

My deepest gratitude.”

*Comment from the moderator:* “Thank you very much Ladies and Gentlemen. We will now take a picture of the Secretariat with Mr. Philippe Delanghe to once more enshrine this precious moment”

**V.4 Graduation ceremony of the Regional Heritage Training Center - Ministry of Culture and Fine- Arts/Training and French Co-operation in Cambodia, Laos and Vietnam**

*Comment from the moderator:* “Thank you very much Ladies and Gentlemen. Let us move straight on to the graduation ceremony for the recently graduated students from the Ecole de Chaillot and the Heritage Mission of the Ministry of Culture and Fine arts of Cambodia. I would like to invite Mr. Bruno Favel, Head of the department of European and International affairs at the directorate of the Ministry of Culture and Communication of France to make a short speech on this project.”

**Mr. Bruno Favel:**

“Your Excellency Deputy Prime Minister,  
Madame, Director of the Heritage Centre, dear Dévy Sisowath,  
Ladies and Gentlemen,

I am particularly delighted to be in this room today with you to proceed with the graduation ceremony. For ten years we have trained on a regular basis architects specializing in heritage respecting the precepts of the Ecole de Chaillot, a department of the Cité de l’architecture et du patrimoine. Allow me to thank the first President of the Cité de l’architecture et du patrimoine, Mr. François de Mazières, who is now an MP and the mayor of Versailles. The other day he asked me for an update about the training that enables young Cambodians to train to new architectural and heritage techniques.

A total of 60 architects have been trained. This training differs because it is a regional course and it welcomes trainees from Cambodia, Vietnam and Laos. I would also like to specifically thank His Excellency Dr. Sok An for welcoming us today at the APSARA National Authority, knowing that among today's graduates are executives of the APSARA National Authority.

Let me also express my gratitude to other people, like Ms. Mireille Grubert, the Director of the Ecole de Chaillot, who could not attend today and for good reasons, as she defends her budget and the future of the School. I would also like to thank the EFEO and its director Mr. Goudineau that for several years allowed us to keep up the project and to thank all the different successive professors and attendees. Among them are Mr. Pierre-André Lablaude who brought much input to the monument field for the students of the Heritage School and Mr. Alexandre Melissinos for the urban field, but he is not here today.

This training committed several ministries and benefited from the support of my Ministry, that of Communication, which has helped Cambodia since 1992 in the training field. In this room is Mr. Soeun Kong, and in June 1992, with Mr. Claude Jacques, we went to the airport to pick him up when he stayed for one week in France. Since then, we have on a regular basis welcomed people from the APSARA National Authority and from all over the Kingdom of Cambodia in different fields of competence: archaeology, restoration, architecture and etc.

What makes us proud is that we have trained a generation; 25 years have gone by since the first Cambodian trainees came to France and we do not regret this.

I now give the floor to Ms. d'Orgeval. I would like to thank His Excellency Prince Sisowath Kulachad, who helped us a lot, and Mr. Azedine Beschouch and all the others that took part in this project. I cannot name you all but you are in our hearts."

**Ms. Francine d'Orgeval:**

"Thank you for giving me the floor. I would like to add a few words to what Bruno Favel said. Just to mention that the training of Cambodians at all levels in the country was placed at the heart of the ICC action during the first intergovernmental conference in Tokyo. France aimed at assisting the Cambodian institutions with all the human, scientific and technical needs for the preservation of their country's gigantic, magnificent heritage.

France undertook three types of activities: Institutional support to the APSARA National Authority, which materialized in the training of several tens of executives of the APSARA National Authority and more than 60 technicians. Simultaneously, through the EFEO Baphuon project, our late Pascal Royère, within the 16 years of the project, trained more than 300 technicians, carvers, artisans, carpenters and site managers. Finally, in 2007, with the establishment of the Heritage Centre, we conducted a specialised training for heritage specialists. This is an unusual training because it included Laos, Cambodia and Vietnam and we trained more than 60 specialists, I was about to say regional specialists, in this field.

After a request from the Ministry of Culture we set up training for future trainers and this is what this graduation is about, the last session crowning the work of 13 remarkable candidates from Cambodia, Vietnam and Laos.

I would like to thank and congratulate first of all Ms. Sisowath Men ChanDévy, the Director of the Heritage Centre, for her commitment and key role for the success of this programme. I would like to congratulate the Ecole de Chaillot through Ms. Grubert and Ms. Natacha Pakker which for years have conducted this activity. I would like to thank all of the Ecole de Chaillot professors for the quality of their teaching and who are remarkably represented by Mr. Pierre-Andre Lablaude, who is also a member of the *ad hoc* group of experts in conservation.

I would like to thank the EFEO which contributed to the success of this training, the APSARA National Authority and its director Mr. Sum Map and Dr Hang Peou and Mrs. Chau Sun Kérya. Finally, I would like to express my thanks the Deputy Prime Minister, because

thanks to you this programme saw the light of the day. Let me also thank the Scientific Secretariat of the ICC and Mr. Beschaouch who has greatly contributed with his experience. Of course, I do not forget our French Embassy which contributed through its follow-up and co-ordination to this achievement. A first phase of co-operation is complete, but we will open a new page that will meet all the new training needs of the ICC and maybe the management of heritage.

Thank you."

*Comment from the moderator:* "Thank you very much Ms. d'Orgeval and Mr. Favel. On behalf of all of us we would like to express our gratitude for the unconditional love that you have for Cambodia. Thank you very much. We will immediately proceed to the graduation ceremony.

I would like to invite His Excellency the Deputy Prime Minister to hand over the diploma to Ms. Men Sodany from Cambodia, Mrs. Pho Sochivy from Cambodia, who is in reality a Ms., by the way. Mr. Thong Bunthoeun from Cambodia and already married, Mr. Sok Soseila from Cambodia, Ms. Dan To Anh from Vietnam and Mr. Sommalath Vilabansa from Laos.

I would now like to invite Ms. Turquet from the Embassy of France, our dear co-chair, to hand his diploma to Mr. Moan Phanit from Cambodia from the APSARA National Authority, Mr. Heng Lay Hong, also from the APSARA National Authority and Cambodia, then Ms. Huynh Thi Bao Chau from Vietnam and Mr. Phetani Youdthana from Laos.

I would like to ask our co-chair for Japan to give her diploma to Ms. Samoeun Sonita from Cambodia, single, Ms. Sinh Rachana from Cambodia, Ms. Samoeun Chakryia from Cambodia, and Mr. Vuong Phuc Tu Tuoc from Vietnam.

I would like to ask Ms. Francine d'Orgeval if you agree to give his diploma to Mr. Khun Ratha from Cambodia, Mr. Pom Sovannara from Cambodia and Ms. Phan Thuan Y from Vietnam.

To conclude; Mr. Bruno Favel for Mr. Hum Map from Cambodia, Mr. Meng Chansatya from Cambodia and Mr. Sun Pora from Cambodia.

Thank you to all of you and please join us for the ceremonial picture. The professors are also invited to take part in this photo session. Before closing this ceremony, I invite the Deputy Prime Minister to say a few words to the graduated students."

**Mr. Sok An:**

"Co-chairs, Excellencies, Ladies and Gentlemen, students, I will be brief and express my warmest and deepest gratitude to the Ecole de Chaillot. It is a shame that the director could not be with us today. I also thank the Ministry of Culture and Communication represented here by our friend Bruno. We listened to his concise and clear speech. We also express our thanks to the Ministry of Foreign Affairs, represented by Ms. d'Orgeval. Yesterday, I was very impressed when His Excellency Mr. Beschaouch said that after 23 years, Ms. d'Orgeval has kept the same tone of voice as her intervention at the ICC-Angkor 23 years ago in Tokyo.

I present my encouragement and congratulations to the students from Cambodia; Vietnam and Laos. I love this type of ceremony that highlights the co-operation between the three nations, Cambodia, Laos and Vietnam and the continuous and warm collaboration between Cambodia and France. It is thanks to the contribution of the Ecole de Chaillot that

we managed to organise this training. I congratulate the students and wish them full success for the future.

I thank you for your attention.”

*Comment from the moderator:* “Thank you very much Deputy Prime Minister. Enjoy your lunch; we are reconvening in one hour.”

*Comment from the Co-chairman for Japan:* <sup>[OrigE]</sup> “Now, we invite Professor Yuji Hasemi of Waseda University on Autonomous Disaster Mitigation Project in Siem Reap Historic District. Let me clarify that this presentation was originally scheduled for the final part of the new project in the field of sustainable development and we had to modify this according to the availability of Professor Hasemi. We will then listen to his presentation and after go straight to the general discussion.”

## **V. 5 Autonomous Disaster Mitigation Project in Siem Reap historic district by Professor Yuji Hasemi of Waseda University**

### **Introduction by Professor Nakagawa:**

<sup>[OrigE]</sup> “Excellencies,  
Ladies and Gentlemen,

JASA has tried to carry out surveys on historical buildings in the central old district of Siem Reap in collaboration with the APSARA National Authority. As you know this area has developed rapidly and has become denser. Fire is an especially serious risk. Thereby I asked Professor Hasemi from Waseda University, who is a specialist in fire safety planning, to join the project for two years. I am very happy to introduce him on this occasion and I would like to thank the Co-chairs for allowing him to present at this ICC.”

### **Mr. Yuji Hasemi:**

<sup>[OrigE]</sup> “Ladies and Gentlemen,

<sup>[slide]</sup> I am going to talk about fire safety design which I guess in this conference is rather unusual. In this presentation, I would like to explain the general problem of fire safety in the old district of Siem Reap and a proposal for the mitigation of this type of disaster in the district.

<sup>[slide]</sup> The historical district of Siem Reap is a very important cultural heritage and could be a vital resource for the promotion of culture and economy if it is suitably maintained. However, this area is very crowded with piles of combustibles. Despite the general high risk of fire in Siem Reap, the capability of the public fire services is questionable. First defence equipment like fire engines and water tanks are quite underdeveloped and poorly maintained.

Development of a modern fire service requires extensive development of water works throughout the district and of hydrants. It would need a large investment over a long period. Fire engines may not work functionally in the historic district where passages are complicated and narrow. Portable and more manoeuvrable equipment is needed.

[slide] I would like to show you how a fire develops. This is an experiment in a classroom. You may see a fire in the back corner of the room and at the beginning the fire does not represent any threat to life, but now it develops really fast and the flames come out of the windows and it develops rapidly. This is only forty seconds after it started. Potential harm to human life and property is quite different before flashover and after flashover.

[slide] How does the conventional defence try to suppress a fire? This is the progress of a fire. At the beginning the fire is started by a candle or something like a cigarette burning in a rubbish bin or electrical appliances and causes big flames in a room and creates flashover of a building by fire. The level of safety for that range of fire is not life threatening, but from the flashover then it becomes a real threat. [slide] Conventional detection is usually when the flames are getting bigger, then pedestrians will see smoke and flames and call the fire department, then fire engines can arrive and start fire suppression only around 10 minutes after the phone call, even if fire stations are arranged suitably and the road is not crowded. If the fire is detected and reported by pedestrians or neighbours, the fire could be already big enough to reach flashover before the arrival of a fire brigade.

[slide] The picture shows the Kinosaki-spa fire in 2015 during fire fighting. Large numbers of fire engines were brought from across the city. The fire engines discharged water from the riverside. The problem occurred because the early detection system did not work and it shows the importance of an earlier start to fire fighting.

[slide] This is a concept called the Smart Fire Defence Strategy using cheap fire detectors. They can detect fire from the early stage. There are some wireless detectors in place which can transfer their alarm to someone suitable for fire fighting. That person can start fire fighting with an easy to handle fire extinguisher, then fire fighting starts quickly. When the fire is small it is easy to handle. The key is to fight the fire as early as possible.

[slide] Such a strategy has been introduced in Japan in some heritage districts like here in Takayama-Sanmachi with a wireless fire defence system in 1996. They have successfully prevented the propagation of fire using this system. Since then in Japan, there have been rapidly installed wireless fire defence systems and detectors.

[slide] This is an example of easy-to-operate Hydrant in Kyoto, Japan. The hydrant is connected to a hose and nozzle. In case of fire, a person can get to the hydrant and extinguish the fire alone. Usually a hydrant needs two or three people to operate, so you have to wait for reinforcement and this could leave sufficient time for the fire to grow.

[slide] This proposed system for Siem Reap with easy-to-operate hydrants could be installed in the historic district of Siem Reap, although waterworks would need to be improved throughout the city prior to any development. Portable fire pumps should be a reasonable choice because they work with natural water resources such as rivers, ponds and wells and their capability is comparable to that of fire engines. There are big rivers in Siem Reap that could be used for this. We plan to propose a combination of network systems and portable fire pumps which are almost like fire engines and very light. It is more suitable for the town centre than a fire engine.

[slide] We have started preliminary investigations for a suitable system for Siem Reap. This is an investigation on the validation of adaptability of Japanese home fire detectors in Cambodia. This one is cheap and the performance has been verified against Japanese climate and life. Adaptability to Cambodia should be checked. Maybe its performance should be improved. Also, user-friendliness of wireless network of fire detectors or alarms may not yet be common in Cambodia. Issues on its acceptability in Cambodia should be studied through trial installation in JASA buildings. This will give an opportunity for people to experiment and from these results we may have to improve the system.

[slide] We have also investigated fire suppression by portable fire pump, essentially designed for the operation using natural water such as rivers, ponds or wells, but it may need

water intake equipment for smooth operation. Further investigation is necessary to study such necessity. Potential barriers for fire suppression obstacles on passages, backyards or balconies may prevent fire suppression or even evacuation. Such potential barriers should be investigated before the design of any fire suppression programme.

[slide] The proposed project will be conducted under co-operation with the Japan Fire Pumps Association, Hochiki Company (detectors) etc. They have long technical and practical experience. We have tried to simulate a fire in a market in Siem Reap in a Japanese laboratory.

[slide] This is a fire in Phnom Penh I watched last year. Thank you for your attention."

Comment from the Co-chairman for Japan: [OrigE] "I would propose now a general discussion on the presentations of this morning, the Code of Conduct for researchers, metallurgy, inscriptions and the disaster mitigation project. You have the floor. No one would like the floor so we move on to the general interest debate."

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## VI - GENERAL INTEREST DEBATE ON TRAINING

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### VI.1 Introduction by the Scientific Secretary, Professor Azedine Beschouch

"For the past few years and on many occasions we have insisted on training, its components and perspectives. We mainly talked about a concrete type of training. If the Deputy Prime Minister allows me, I would like to repeat what I heard him say when he mentioned that before donating equipment people have to be trained in the use of this material. People should think that equipment alone would not be sufficient to face challenges. I believe that we are talking the same language with the APSARA National Authority and the Royal Government. Since Tokyo, the three intergovernmental conference declarations have all insisted on training.

Instead of talking about training in general, we chose three topics: 1/ training of workers, something very important, as the APSARA National Authority can appoint them to whichever team, but they have to be trained. There has been a collaborative effort between a Singaporean Centre and the APSARA National Authority. We then considered that instead of listening to only a presentation from the Ecole de Chaillot, we should hear a stocktaking exercise on the joint training between Chaillot and the Heritage Training Centre from the Ministry of Culture and Fine Arts explaining what has been undertaken since the last seminar. If you agree this is the presentation you will listen to.

I will try to moderate this session and hand over the floor to Dr. Ly Vanna. I have had an in-depth conversation with him; this presentation was already made to Dr. Sok An and if the training is approved it will be applied in the best conditions. Dr. Ly Vanna, the floor is yours."

### VI.2. Training of 300 workers on art history, archaeology, architecture and conservation by Mr. Ly Vanna, Director of the Department of Conservation of Monuments and Preventive Archaeology, APSARA National Authority

[OrigE] "Ladies and Gentlemen,

[slide] I will introduce briefly the topic that has been initiated by the Department of Conservation of Monuments and myself for the past six months. I would also like to thank professors Mounir Bouchenaki and Giorgio Croci who have already shared their suggestions for the elaboration of this programme.

[slide] We have been working in Angkor for more than 20 years with many workers on duty every day on the site. After my arrival at the Department of Conservation of Monuments two years ago, I discovered that there was a training need for workers. I would like to briefly present the content of my project. It will last one year and is called the Local Capacity Building Programme for Conservation Work. There are more than 338 workers of the Department of Conservation of the Monuments in Angkor and Preventive Archaeology (DCMA). The trainers are my colleagues from the department (archaeologists, architects and conservators of the DCMA). I would like to apologise because we worked with the *ad hoc* expert group and I put their names here without their authorisation but I think that they agree to have their names here as technical advisors.

[slide] The objectives are: To provide comprehensive experience and knowledge in the relevant fields of conservation; consolidate empirical skills in various related subjects in the field of conservation; improve the self-responsibility of technical and skill competency of each worker.

[slide] The technical staff and specialists of the APSARA National Authority are not familiar with lectures but they are familiar with field work on conservation under the guidance of our technical staff. The course outline I propose is still at the draft stage. We need to introduce to the workers the general history of Angkor and the history of Angkorian architecture, architectural plan evolution and stylistic change that are found on the temples. Why is it important for them? I will use an example from the Preah Koh restoration site where we have more than 70 workers and some have been working there for more than 20 years and they do not know who built the temple and the type of architectural elements that should be placed in their original position in the structure.

Bearing this in mind, I came up with several ideas and proposals of the course outline. The third element is recognition and identification of architectural elements. The workers are required to learn how to recognize and quickly identify when they scatter stones to be encountered on the sites or buried under the site surface belonging to the architectural elements of the temples.

[slide] The fourth course is: Recognition and identification of sculptures and statues. Hindu and Buddhist sculptures and statues are always encountered in the temples and their vicinity. Teaching the workers to recognise the basic stylistic attributes and emblems, to able them to identify those sculptures and statues is very necessary in the process of conservation.

The fifth is Documentation of the monuments and their architectural elements for conservation work. Documentation is one of the most indispensable processes in conservation and restoration. The trainees will receive a very basic lecture on this subject through teaching on the work sites a series of subjects such as sketching and drawing of elevation plans, different architectural elements, recording preservation conditions of the temples and associated structures before any items are moved on site. Workers help us every day in doing this and if they do not recognize and do not know how to identify these objects it makes our job more difficult.

The sixth is learning to recognize and identify ancient techniques of construction. Trainees need to recognize as much as possible the construction techniques and familiarize themselves to be able to quickly identify techniques of cutting, polishing, inserting bricks and stone blocks, understanding original layers of arrangement in temple structures, stone and brick connections, notch patterns, anchor systems, various types of stones, etc.

[slide] The seventh is recognition of material behaviours: Brick, sandstone, laterite, wood, iron, bronze, copper, gold and lead were used to build and decorate the temples and other associated objects. Introductory lectures relating to these materials, such as physical properties, colours, hardness, and their functions in temple construction and their necessity in conservation works need to be given to the trainees. This is very elementary knowledge.

[slide] The eighth is the documentation of the Angkorian sculptures for conservation work. We have hundreds of thousands of different, particular conservation conditions and they each need tailored treatment. Making a complete record of preservation conditions, drawing or sketching statues or sculptures or any architectural elements of the temples before starting any actual intervention is necessary. Trainees need to be familiar with such basic preparation in conservation work.

[slide] The ninth is documentation of archaeological excavation and finds. Workers are involved every day in the conservation process, one of which is the archaeological investigation, one of the most indispensable stages in the conservation process or in other fields of sustainable development. We have trained them, so far gradually, not only to dig using their force and find artefacts and collect them in a safe place but also to contribute to any semi-professional work such as observation of soil strata, drawing archaeological features, handling archaeological finds on the site, damaged or not, (packing, labelling, cleaning, and transporting finds). Sometimes you find an item with broken edges which are due to the handling process. To teach them these methods and not those used at university or higher levels, we decided to be as close as possible to the field situation with drawings photos and practices.

[slide] As with regard to trainees and the duration: We will do it for an initial year and see the results. The DCMA has more than 300 workers. We thought it is preferable to have 20 or 30 trainees per session. The DCMA cannot train or lecture all the workers within one year, therefore we select workers suitable for the training needs to be firstly considered, for example for those who really show their willingness to learn our lectures and work in the field of cultural heritage preservation. The duration of the training is scheduled for one year, with a series of sessions, for example two hours per session, two sessions per week. Training must not disturb the daily conservation and restoration work of the DCMA. Daily activities are considered as a practical session or opportunity for the trainees.

Thank you very much for your attention."

Comment from Mr. Azedine Beschaouch: "Thank you Dr. Ly Vanna. We all hope with DCMA that this proposition will be accepted; we would just like to hear your thoughts and suggestions on this. Professor Lablaude would like to take the floor."

Comment from Mr. Pierre-André Lablaude: "I think that the presented methodology seems very interesting, as there are some points that we have only been aware of after some years, the needs in terms of conservation and restoration of monuments are huge. This morning, we talked about Kapilapura, but there are dozens of temples distributed all over the country and if we wish to face the conservation challenge constantly threatened by weathering and urban sprawling, it is important to have teams in numbers that are capable of intervening in several operations.

This is the reason, this ground training work on stone inventory, shape recognition, very important basic methods that should be implemented according to relevant scientific criteria, is relevant. I believe that the APSARA National Authority needs to churn out huge quantities of specialists to face these conservation challenges. I believe that the bottom approach for workers working in the field is the right one."

Comment from Mr. Azedine Beschaouch: "Thank you. The floor is now to Professor Bouchenaki."



Comment from Mr. Mounir Bouchenaki: "I believe that this is the approach we took when visiting the sites for several years with Professors Hidaka, Croci and Lablaude. We have always thought that it would be useful to organise *in situ* training. What Dr. Ly Vanna has presented followed this approach. He also concurred with what a professor from the Ecole de Chaillot like Professor Lablaude would say: that training does not end once you graduate. Today we had a graduation ceremony. I can tell these young graduates that this is not the end of the road. We must always continue and call on new challenges and the complexity of the topic. We fully support such a proposal and hope that it will be rapidly implemented."

Comment from Mr. Azedine Beschaouch: "Professor Hidaka, would you like to add something? No, but you agree and we can consider that you support the project. Before we move on to the next presentation, are there any additional comments? Ms. d'Orgeval from the French Ministry of Foreign Affairs."

Comment from Mrs. Francine d'Orgeval: "I would like to congratulate the person who designed this training because it is really needed. I have in mind what Pascal Royère did when he trained more than 300 workers in different fields and I think that the proposed programme's pro is that it will be formalised. The training will be monitored and the curriculum will be tested in the field. I must admit that this is a leap forward for training. This type of training aims at raising interest among artisans and workers that take an interest in what they do and can better perform."

Comment from Mr. Azedine Beschaouch: "Thank you Madame. We share your point of view, as you said what needed to be said about the philosophy of this training. Moreover, you mentioned the late Pascal Royère and so should it be, as he trained workers remarkably. It is most likely that the representative of UNESCO would like to intervene on this topic."

Comment from Mrs. Anne Lemaistre: "Thank you very much Mr. Beschaouch. I agree and concur with what has been said and congratulate Dr. Ly Vanna for this initiative. You all know that UNESCO deals with culture and education and we would be thankful if a certification could be developed. There are some existing certifications at the Ministry of Labour for vocational training and if that was the case then workers would be recognised as skilled workers. This modifies things in term of career and salary. Thank you very much."

Comment from Mr. Azedine Beschaouch: "Thank you Madame. If His Excellency the Director General of the APSARA National Authority, Mr. Sum Map, allows me, we will submit this idea and scale it up so that training is carried out. When a training course is in the long-term over a week and is continuous then people should expect certification. We need to get it. We are not here to award some sort of university diploma, but throughout the world professional certifications can be awarded that will be used for training. I cannot jump from category 1 to category 2 if I cannot justify a certification and this is the ultimate objective. We will then hold discussion with you Excellency on this idea that will then be extended to the whole issue. Colleagues, are there any other observations from the floor? Mr. Favel, I am actually surprised that you have not commented yet."

Comment from Mr. Bruno Favel: "For many years I have supported what was just said on the official recognition of the duties and training of workers. I believe we should go even further. I think that a general plan of all fields of training is needed. What would be needed is a general scheme that includes archaeologists, architects, workers and restorers. This would give you a dashboard that will let you be aware of the amount of archaeologists or workers you have already, for example. This would enable you to anticipate and train ahead with international teams. This can start with a field school and finish with long-term certifications leading to graduation."

I believe this is fundamental, to use the Angkor Heritage Training Centre supported by a kind of timetable of the staff per field and jobs available. Let me give you an example

and we will talk about it later when Chaillot will present on the Heritage Training Centre in Cambodia. The aim is not only to train two architects, but to know why we train these people. What are we going to offer them? Are they going to find a job? The question of the job market is important. This is all I had to say.”

*Comment from Mr. Azedine Beschaouch:* “Thank you. You have added to the need for certification, the need to think of the job market and employment. Good thinking as training is not for the sake of it. There are some people that study and train in every field but dandies only count for one out of 50 million people. We need to think about training and jobs. Thank you, Mr. Bruno Favel. Are there any more interventions? There do not seem to be any, so let us move on to the next presentation with a couple of researchers and specialists working for the APSARA National Authority and a major Centre located in Singapore, with Dr. Ea Darith and Dr. Kyle Latinis. The training was on Koh Ker. We are fortunate to count among us the Director General of the Preah Vihear National Authority, knowing Koh Ker is now under his purview and I hope that he does not mind that for the last time we will talk about a site which now will be dealt with during the ICC-Preah Vihear. The floor is yours.”

### **VI.3. Outcome of collaborative work between the APSARA National Authority and the Institute of Southeast Asian Studies (ISEAS) Singapore on Kulen Sema stone site, 2015 Koh Ker Field School, and Koh Ker archaeological result, by Dr. Kyle Latinis and Dr. Ea Darith**

**Mr. Kyle Latinis:**

[OrigE] “Excellencies,  
Distinguished guests,

[slide] It is a pleasure to be here this morning to discuss the latest field school initiative between the Nalanda-Sriwijaya Centre from Singapore and the APSARA National Authority. Time is short so I will try to be brief. I lead with a discussion on the field school; Dr. Ea Darith will follow with a discussion of the results.

This is a unique field school initiative funded by the Ministry of Foreign Affairs in Singapore. We decided to do something innovative so we had a systematized end-to-end re-design and innovative ‘new’ type of field school. We had multiple operations designed & managed by young local professionals, especially the APSARA National Authority’s young archaeologists.

East-Asia Summit (EAS) Partnerships were the primary goal and very participant-centred, with a 2:1 professional mentorship to participant ratio. We had primarily ASEAN representatives and East-Asia Summit representatives. This is our third initiative.

Purpose levels were multi-level skills training & capacity building. We really strongly emphasized research design & methodology in addition to technical skills. Participants had to design goal-oriented projects; it was very interdisciplinary — not just archaeology, but anthropology, history, art & architectural history, environmental sciences, museology and various physical and social sciences. Teamwork, experiential learning, institutional collaboration and cross-cultural competencies were very important.

[slide] The theme was two millennia of urbanization, industry, complex policy evolution, networks, multi-scalar exchange & influence: Lots of big topics, primarily from South-east Asia, Central and East Asia through South-East Asia as a region of agency.

[slide] Luckily, Cambodia is a really ideal situation for these kinds of studies. We moved to Funan period Chenla, Angkor and post-Angkor with our site visits, lectures, interactive experiential learning, and questions of research and design.

[slide] The research contribution & primary training site was Koh Ker which, as popularly understood, is a 10<sup>th</sup> century Angkorian temple, from Jayavarman IV's era. It is an ideal area/series of sites for full spectrum training & research, temples, habitation mounds, landscape features, all kinds of questions that can be asked and all kind of data is available for analysis.

[slide] The three primary phases started in Cambodia with site visits, field lectures, research design, method & theory and modular skills training. Stage two: We went to Koh Ker to carry out excavations designed by young Cambodians. We had four operations and three excavations going on simultaneously: Full spectrum skills training, research design and management. This was important, as unique to our field school was leveraging the young Cambodians to design and render their own projects. They were the managers, the instructors. They had to operationalise and design and implement their own projects and were very successful. We ran the students through their projects. It is a new concept to build that level of skills training in management. For the third leg we went to Singapore, did projects and visited sites.

[slide] Again, I mention the important aspect was right here in the multi-level skills training. So, Mr Samnang, Mr. Yao and Mr. Phallay designed their own research projects. They designed what they wanted to do, what they wanted as questions and had to find answers. We provided mentorship but they literally designed their projects. It is important for that level of management training. They budgeted, implemented, organized, provided training sessions and assisted considerably with the full spectrum training. The senior people provided mentorship and these people ran the project, the operation.

[slide] We started with Angkor Borei and Phnom Chisor, with a few examples of our site visit with on-site lectures, historical ecology, architectural history and landscape archaeology. This is an interesting site because instead of looking at the 11<sup>th</sup> century temple we look outwards to the landscape modifications, water management, settlement patterns, and covered a wide spectrum of periods ranging from the Iron Age to the post- Angkor period.

[slide] We then went to Sambor Prei Kuk and we constantly asked the students to ask questions and to design methods to answer those questions. It was very focused on research design, question asking and methodology.

[slide] We had workshops & lectures by local Cambodian experts from the APSARA National Authority here at the APSARA premises. Very effective, especially with what was mentioned earlier, with a strong emphasis on the Code of Conduct for doing research and also for tourism.

[slide] Of course we went to Angkor Wat and Angkor Thom with lectures and training sessions: Reading the epigraphy and examining the bas-reliefs to ask all kind of archaeological questions, such as what did people eat. Of course the art and architectural history was very important.

[slide] Then we went to Singapore and the projects that the team of participants designed were fauna analysis, metal analysis, structural analysis, ceramics and site spatial patterning. How do we measure success? We did a very complex initiative of detailed quantitative & qualitative feedback. It was not just our opinion of ourselves, it was local participants, residents, workers, post interviews with the participants, with the staff, with other APSARA National Authority staff and with local tour guides. I had planned for a 7.5 or 8.0 on this quantitative & qualitative feedback assessment. We ended up with 9.0 or 9.4. I would rank us with an A+.

I will stop here and Dr. Darith will talk about the results. All these slides and more will be made available and if you are interested, contact me and I can give you a full 100 page

assessment of the report to describe everything. Thank you very much.”

**Dr. Ea Darith:**

[OrigE] “Excellencies,  
Ladies and Gentlemen,

[slide] I will continue with our training excavations, which were at Koh Ker, to the west of Rohal and south of Prasat Thom. We excavated three sites: KK 01 and KK 02 which are habitation/activity mounds and KK 03, structural features. At the sites, our colleagues found water around the temple and we were wondering where it came from and how it connected with Rohal the water reservoir.

[slide] Our colleague at the site found a canal that connected with the west of Rohal. We cut a section of the canal and found the wall of the canal and the slopes on both sides. We think it was a man-made canal.

[slide] From the excavations in Koh Ker we found 24,291 fragments, including earthenware, diagnostic earthenware, brown glazed ware and other significant objects and pre-Angkorian pottery. [slide] This is the digital archive of those artefacts. We found pre-Angkorian ceramics and you can see cups and shallow dishes which were probably oil lamps, incense burners and crucibles. We also found Angkorian ceramics such as a bottle and inside it we found gold leaf.

[slide] Other artefacts like metal were found with 168 pieces and [slide] faunal remains, many bones of deer, cows, turtles or fish and very interesting artefacts like deer antlers. [slide] This is very important at the site of Koh Ker; we found a black layer on a natural layer which contained a lot of charcoal, ash, pottery and metal, so we were wondering when the first establishment arrived at Koh Ker.

We selected samples of charcoal and bones for analysis. [slide] The results from KK2 where we selected three samples. Two of them reported a dating from the 7<sup>th</sup> until the 9<sup>th</sup> centuries and one from the 8<sup>th</sup> until the 9<sup>th</sup> centuries. [slide] As for the samples from KK1, they also gave similar results from the 7<sup>th</sup> until the 8<sup>th</sup> centuries. We now know that the first settlements in Koh Ker dated from that period.

[slide] The new field school will take place from November until December 2016. Thank you very much for your attention.”

Comment from Mr. Azedine Beschaouch: “We actually thank you dear colleagues and friends. You expounded on a very specific case, that of Koh Ker, and you gave us precise data on the technical, scientific and thematic dimensions of the training. Earlier on we mentioned the workers that on a daily basis assist us in the safeguarding and development of our heritage. In this particular case you gave us the precise scientific and technical data of the training.

Let me ask my colleagues what they think. Have you got any observations or proposals to make and do you agree with this approach? I do not think we need to debate, as it is obvious. Drs Latinis and Darith have imparted us the methodology that we approve of and it satisfies us. If there are no more interventions, would you agree to move on to the third example, that of the Heritage Training Centre and the outcomes of the training to heritage undertaken at the regional level and not only national. Dr. Sisowath ChanDévy, the floor is yours.”

## VI.4. L'École de Chaillot

### ***a. Overview of training from 2012-2016, by Mrs. Sisowath-Men ChanDévy, Director of the Heritage Mission, Ministry of Culture and Fine-Arts***

[slide] "Your Excellency Mr. Sok An, Deputy Prime Minister and Chairman of the APSARA National Authority,  
Honourable Co-chairs,

I will present ten years of training and the perspective of the Heritage Training Centre which final training session ends today.

[slide] I would like to briefly recall the background of the co-operation project between the Royal Government of Cambodia and the French government. The Training Project was established at the Ministry of Culture and Fine Arts of Cambodia following a request from the Royal Government of Cambodia through its Ministry of Culture and Fine-Arts and based on the convention signed by France in 1993 on the training of Cambodian elite. The Heritage mission was established in 2005 and the Regional Heritage Training Centre in 2007. The two bodies then merged in 2009 after a decision of the Ministry to establish the Heritage Centre.

The Ministry of Foreign Affairs and of International Development and the Ministry of Culture and Communication of France financed the project, joined later on by the Agence Universitaire de la Francophonie (Asia-Pacific branch).

The Ministry of Culture and Fine Arts of Cambodia is tasked with the operation and administration of the Centre in close collaboration with the APSARA National Authority, with a view to contributing to staff training. The Ministry also facilitates additional skills training for experienced heritage site managers. Moreover, the Ecole de Chaillot, departement of the Cité de l'architecture et du Patrimoine of the Ministry of Culture and Communication is responsible for the training design and the curriculum.

[slide] Let me move on to 10 years of training. [slide] From 2007 until 2010, within the framework of the FSP project Angkorian Heritage and Sustainable Development and to meet the needs of our three countries, vocational training was set as a priority and aimed at giving a qualification to specialists in the fields of restoration, protection and management of Cultural Heritage. The organisation and the training curriculum will be presented later on by my colleague Mrs. Natacha Pakker from the Ecole de Chaillot.

These are the results of the training. Three professional training sessions were organised between 2007 and 2010, training a total of 60 students from three countries: 23 Cambodians, 25 Vietnamese and 12 Laotians. The outcome of this training is highly satisfying, as our young professionals work mainly in sites inscribed on the UNESCO World Heritage list of the three countries. The professional impact of the training extended to several levels, from skills acquisition, professional advancement to methodology acquisition. The international scope of this training led to the design of conservation and restoration of heritage tools tailored to each country.

[slide] In 2012, the training changed to become a future trainers' training. It aimed at consolidating the professional and teaching skills of the trainees so that they would be able to convey their knowledge to other professionals. This training was organised over two training sessions and here is the calendar of each of the training sessions that later on will be detailed by Ms. Natacha Pakker.

[slide] During two training sessions from 2012 until 2016, 27 future trainers were trained, with 123 Cambodians, 10 Vietnamese and 5 Laotians. This training also trained in

the same session professionals working in heritage and students of the Cambodian Faculty of Architecture in Cambodia, Vietnam and Laos. The last seminar ended two days ago with positive results. I take this opportunity to thank Ms. Pascale Turquet and Professor Azedine Beschaouch for their contribution to the students' final presentation.

[slide] This is the graduation ceremony of the first session in 2014, under the aegis of Her Excellency the Minister of Culture and Fine Arts and the second session that just happened at lunch time, presided over by His Excellency Dr. Sok An, Deputy Prime Minister. On behalf of the Ministry, of the students and myself I would like to thank His Excellency Dr. Sok An, the ICC co-chairs, the APSARA National Authority, the French delegation and all the experts and friends of heritage gathered here.

[slide] Further on, the Heritage Centre also brought its input in training to heritage to the Faculty of Architecture for students in their fourth year of their Masters' Degrees. These students were then selected to attend the future trainer training as auditors.

[slide] The Heritage Centre also takes part in national or international conferences or seminars with public heritage institutions and in universities in Phnom Penh or the provinces; [slide] for example, here at Battambang University.

[slide] The Centre has also collaborated with higher education schools of architecture in France and organised a Heritage Workshop. As this picture shows, we worked on the Restoration and Development of the Battambang Market Project with teachers of the Toulouse Architecture School and students of the Royal University of Fine-Arts. [slide] We also worked with Jean Jaurés University of Toulouse on archaeology training. Last month a workshop was organised at Phnom Banan temple in Battambang.

[slide] The training programme ended this month and new perspectives are being planned based on the experiences and findings of the two training sessions.

[slide] The Ministry of Culture and Fine arts would suggest official recognition of the certificates awarded to trained professionals. The Ministry recommends adopting a degree course that would replace the presently awarded certificate of competency, to validate a master leading to degrees recognised by France and Cambodia. Initially, the aim will be to select two or three trainees already trained that could continue their degrees in Masters 1 or 2 in France.

They will be able to either enrol at Ecole de Chaillot or in one the French higher educational architecture schools. They will also be granted a scholarship for a Master's degree from the French government for the academic year.

The second suggestion relates to vocational training to heritage. This remains high on the agenda of the Ministry, which will continue its commitment with the support of French co-operation. Its structure, organisation and contents need to be reassessed and better tailored to a more exhaustive curriculum taught to future professional experts in architecture and urban heritage.

[slide] Also, a new avenue is being discussed and proposed by the Ministry of Culture and Communication: e-heritage or distance training. This is a promising prospect. The availability and the on-line availability of theoretical and methodological data is undeniably an asset. The possibility to review study cases and a bibliographical and documentation database on heritage on-line is also something deemed as very relevant. Obviously, field application and study remain indispensable.

Finally, I would like to greatly thank His Excellency Sok An, the Deputy Prime Minister and Chair of the APSARA National Authority for his constant support for the training of human resources and in particular in the field of protection of heritage.

I thank her Excellency Ms. Phoeurng Sackona, Minister of Culture and Fine-Arts, Excellencies the Secretaries of State and his Excellency the Director General of the different departments of the Ministry that saw to the smooth operation of the co-operation and of the training to heritage.

I would like to thank the French government, the French Embassy of France in Cambodia, Mrs. Francine d'Orgeval of the Ministry of Foreign Affairs and International Development and Mr. Bruno Favel and his team from the Ministry of Culture and Communication for their financial and technical support for the operation of the Heritage Centre.

Thank you also to His Excellency Mr. Sum Map, Director General of the APSARA National Authority for his excellent co-operation and Her Excellency Mrs. Chau Sun Kérya and Dr. Hang Peou. Thank you to the teachers and to Professor Pierre-André Lablaude and to the *ad hoc* speakers and organisers and to all of those that took part in this training.

I thank you for your attention."

Comment from Mr. Azedine Beschaouch: "Thank you Director. Your intervention presented all the work undertaken by the school throughout the years. With the presentation of Ms. Pakker to round it up, no one will ignore this regional and not only national training. This co-operation between the three ASEAN countries (Cambodia, Vietnam and Laos) and the great co-operation with France that is not only financial, but also in kind with professors and the guidelines professed by the Ministry of Culture and Communication that do not only concern financial support. Thank you for bringing us the Ecole de Chaillot's perspective."

***b. Overview of the last seminar, by Ms. Natacha Pakker, Director of Studies at L'Ecole de Chaillot***

"Your Excellency Deputy Prime Minister,  
Excellencies Co-chair,  
Ladies and Gentlemen,

You heard how the training operated, now I will present the curriculum of the last session of the specialised seminars.

This training is part of the Solidarity Priority Funds (FSP) signed in 2005 and called Angkorian Heritage and Sustainable Development and its second component, which is strengthening the APSARA National Authority and training. <sup>[slide]</sup> Within this framework the Ecole de Chaillot, in partnership with the Regional Heritage Training Centre, was entrusted with training young Cambodians, Vietnamese and Laotian professionals.

<sup>[slide]</sup> The objectives are to train professionals to conduct studies in the protection of monuments and surrounding areas for the restoration and development of town neighbourhoods and villages, taking into account any restrictions linked with the tourism boom.

<sup>[slide]</sup> The resources allocated were through a necessary financial partnership, an agreed schedule, a multidisciplinary teaching team, an assessment of each stage of the training, the relationship between the theory and practice, the support given by teaching assistants and the continuous co-ordination.

<sup>[slide]</sup> This continuous training is aimed at architects, archaeologists and engineers working in heritage that wish to specialize in all specialities of architectural, urban and landscape heritage. The training of trainers in architecture and heritage of the Ecole de Chaillot and the Heritage Training centre in Cambodia is a higher education teaching for professionals, it is a continuous training.

[slide] The Ecole de Chaillot took charge in 2006 of the curriculum as the heir to traditions developed since 1887 for a teaching based on the restoration of historical monuments. The teaching also included the urban environment and the territory. It took into account the evolution of the notion of heritage and of protection policies, enhancement and development based on the past and future quality of the living environment.

[slide] The curriculum forked into two fields: Architecture and urban sites and landscapes. [slide] The regional scope of the two trainings with three participating countries, Cambodia, Laos and Vietnam, has been deemed a success. The 60 young professionals from the three countries have undoubtedly enriched their experience, either professionally or personally (learning about other cultures).

[slide] What were the pros of this regional endeavour? It enabled each trainee to confront their understanding of heritage and of their professions with others, to know their own heritage and that of the others and to approach different issues and compare different expertise and enrich each trainee's skills.

[slide] The relationship between the monuments and the town was included in the teaching of the different types of heritage, from a monument to a whole built-up territory and/or landscape and was always considered as positive. The teachers of both fields always agreed to co-ordinate the schedules and content of their teaching (in western countries there is a strong discrepancy of scales whereas it is not that obvious in Asian countries).

[slide] The cultural dimension of the environment: Since the early days of the training, any issues related to the environment, whether climate, water or vegetation, were spontaneously presented in the approaches put forth by our trainees in their projects. The local people and tourism was also heeded and presented as per UNESCO priorities. This looked into the different aspects of the cultural scope of environment.

[slide] The curriculum of the training had objectives such as turning these professionals into trainers and training them in teaching techniques such as speaking in public and presenting conservation projects. The method used included practical exercises, role-playing and tasks using teaching tools and theoretical lessons.

[slide] The introduction of a teaching skills module was entrusted to a trainer specialising in the active teaching skills method. The latter facilitates the acquisition of techniques in the fields of conveyance of knowledge, of communication and of management of training courses that the trainees will organise in the future (training, public presentation). This pioneering activity in Cambodia was actually also new for the Ecole de Chaillot.

[slide] These are some examples of the work on site with data collection. [slide] The lectures included the organisation of the project (illustrations with drawings and plans), and the presentation (PowerPoint) in public in front of their colleagues, students and teachers. The individual project is presented in front of the whole group.

[slide] The teaching team included for the monument field chief architects of historical monuments like Pierre André Lablaude, Mr. Dominique Larpin, and Eric Palot. For the city and landscape field we had specialists in urban planning and landscapes: Alexandre Melissinos, urban planner, Michel Brodovitch, architecte des bâtiments de France and inspecteur honoraire, Antoine Bruguerolle, Heritage architect. For the teaching skills, the teacher was Ms. Claire-Emmanuelle Rueda, trainer.

[slide] Teacher' assistants were of key importance and assisted the students. They are all heritage architects who graduated from the Ecole de Chaillot: Marie Catherine Beaufeist, Mirabelle Croizier, Maie Kitamura and Simon Leuckx



[slide] Local assistants and trainees that became trainers and took their first steps to convey their knowledge: Mr. Keav Buntoeun, architect, Ministry of Culture, during the 6<sup>th</sup> and 10<sup>th</sup> seminars at the Mebon site; Mr. Chourn Bunnath, archaeologist, APSARA, presentation of the Banteay Thom and Angkor Thom surrounding walls, during the 6<sup>th</sup> seminar; Mr. Nguyen Hoang Phuong, architect, Ancient Hanoi Management Committee, organisation of the 7<sup>th</sup> seminar in Hanoi, Vietnam; Mr. Tongsavath Sengaloun, engineer, Department of Heritage of Luang Prabang, organisation of the 8<sup>th</sup> seminar in Laos. They were all assisting the trainees when the seminars took place in their respective countries.

The training unfolded initially with a first session 2007-2010 where the training was only taught in Cambodia. For the 2012-2016 sessions the training was organised in the three countries and the Regional Heritage Training Centre became the Heritage Training Centre in Cambodia. With the Ecole de Chaillot, it organised a further training session for the best trainees of the previous sessions. The goal was to reinforce knowledge and to introduce teaching skills so that trainees would in turn become trainers.

[slide] The last session trained 25 future trainers who had graduated from the previous session (2007-2010), with the best of the bunch selected. There was also consolidation of the skills of 60 auditors either working on the sites where the seminars took place and/or students in architecture and archaeology specializing in heritage. Each session consisted of five workshop-seminars of ten days each, organised in different sites in each of the participating countries (three in Cambodia, the host country, one in Vietnam and one in Laos).

[slide] The studied sites were analysed for their values and issues; there were eight sites inscribed on the UNESCO World Heritage List and two sites pending inscription in Cambodia. The work done by the students collected the necessary documentation for the nomination dossier that the Heritage Mission has prepared with UNESCO (Kampot and Battambang).

[slide] The sites in Cambodia were Siem Reap for the monument field and Phnom Penh for the city field. The second course of future trainers' training was located also in the three countries. Cambodia: Temple of Mebon and the West Baray for the monuments and for the cities, Siem Reap, Kampot and Battambang; in Laos: Luang Prabang and, in Vietnam: Hanoi and Hué. Here are some pictures of the places studied.

[slide] The trainees of the first course of future trainers were six Cambodians, five Vietnamese and three Laotians. Some of them became assistants to the trainers. The graduation ceremony was held in 2014 and presided over by the Minister of Culture of Cambodia, who presented the diplomas.

[slide] The second session started in December of 2014 and finished in 2016; it included six Cambodians, four Vietnamese and two Laotians. Auditors attending the session worked on the heritage site where the seminar was organised with students of the Faculty of Archaeology and Architecture of Phnom Penh. [slide] These are pictures of the different years in Luang Prabang, Hanoi and Siem Reap.

This is the schedule of the last seminar, number ten, that ended this week. This is a sketch that is very telling: The trainees worked on a monument. This training was supporting the restoration site of the West Mebon. In agreement with Professor Lablaude it was decided that the trainees should experience a field school. To that end, six trainees worked on topics related to this work site (materials, anastylosis, planning, costs, etc.).

The trainees also worked on the site surrounding the monument: six trainees were asked to work on the West Baray and surrounding areas (water, access to the site, cultures and etc.). Professor Bruguerolle was their teacher.

In his/her role as future trainer, each trainee supervised an auditor. The students of RUFA and the other auditor willingly complied. This supervising work was supervised for

each trainee and for the whole group by the trainer in teaching skills, Ms. Rueda. The trainees and their paired auditor were advised, assisted and supported by Simon Leuckx, a heritage architect from the EFEO, a teacher's assistant and field architect at the Mebon. Data collected on site were then subjected to a presentation in the classroom.

The presentation took place in the Angkor Conservancy classroom of the Ministry of Culture of Cambodia with a jury made up of the aforementioned teaching team. Mr. Beschouch and Ms. Turquet, the co-operation and scientific and technique attachée of the French Embassy, honoured us with their presence during the presentations.

During the training the trainees were also invited to follow the ICC *ad hoc* experts on a site visit and attended this ICC session. The Ecole de Chaillot and the Heritage Regional Training Centre would like to thank Ms. Chau Sun Kérya for the organisation and smooth proceedings of the seminars. The Cambodian, Vietnamese and Laotian trainees have fully enjoyed the visits and conferences. Now that they are experts, maybe they will present their work here and will enrich the region's professional network.

Following their participation in five seminars for the past two years, a certificate was awarded to them this lunch time by His Excellency Dr. Sok An and by Ms. d'Orgeval from the Ministry of Foreign Affairs and Mr. Favel from the Ministry of Culture and Communication. The auditors were also awarded with a certificate of attendance to the seminar. This has honoured and acknowledged all our efforts.

I thank you for your attention."

Comment from Mr. Azedine Beschouch: "Thank you Madame. These presentations after Koh Ker's example described to us a training course organised not only here but in neighbouring countries. Time is of the essence and unless someone would like to make a comment or propose an idea I believe that we can start drawing conclusions.

Initially there is the need to continue training, and to think about the future with a teaching certification and a social certification for the job market. How can we manage to use this for the promotion of the staff at the APSARA National Authority and Preah Vihear National Authority or any other national or regional bodies?

If the Co-chairs allow me, I believe that it is time to move on to the next item on the agenda and to conclude today's general interest debate. Can we move on to the general discussion if there is one or to the next point, Miscellaneous Items? We have already discussed much but it could be that some colleagues would like to add something.

Comment from the Co-chair for France: "It seems that there is no request for the floor. I am sorry, I did not see Professor Bouchenaki. Please."

Comment from Mr. Mounir Bouchenaki: "Co-chair, very quickly. In this morning's presentation on the Researcher Code of Conduct I wanted to add two things. The first is an international meeting on the ethics of archaeological research held on the 26<sup>th</sup> of May, 2016, in Jordan. This meeting brought together researchers from the four corners of the world, including Europe and America, under the chairmanship of the Emir Hussein of Jordan. I was asked to take the floor and I reviewed the different Codes of Ethics that are enforced by the European association of Archaeology or the American equivalent. There is one historical item on one of the first texts presented and adopted on 7<sup>th</sup> of November, 1956, in New Delhi during a UNESCO General Assembly, on the recommendation of UNESCO on applied principles to archaeological research. I believe that it should be added to the reference list that is presented in the document. Thank you."

Comment from the Co-chair for France: "Absolutely; thank you very much Professor. Are there any more observations or questions on the different interventions of this morning?"

No. Let us move on to the next item. It says on the agenda 'Miscellaneous', but it will actually review some points of information and it will be presented by Professor Beschaouch, who will talk about several publications and scientific reviews hot off the press."

## VII - MISCELLANEOUS

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### VII.1 Points of information presented by professor Azedine Beschaouch

#### *a. Tribute to the late Ms. Tep Vattho*

"Co-chairs,  
Your Excellency Deputy Prime Minister,  
Excellencies,  
Ladies and Gentlemen,

[slide] Let me start by the duty of memory. This year we had the sadness to lose one of our colleagues that was an excellent colleague and for most of us a faithful friend. I am talking about Mrs. Tep Vattho, the former Director of the Department of Urban Heritage, responsible for the safeguarding of the historic areas of Siem Reap town. She left us too early if I may say so, as when a person leaves in her fifties it is a wrench. Many of us, as I said, mourn this exemplary colleague and we all here attended the family bereavement and I am convinced that she will not be forgotten. I would like to say that many of us have attended the funeral or the one hundred days' ceremony as I did, which is the Buddhist tradition in Cambodia when the soul leaves for eternal rest. We salute her memory and I would like you to observe a minute of silence."

#### *b. Publications*

"The second part of this item is on publications. First, I would like to inform you on a book I received this morning but that some of you have already mentioned. In particular, Ms. Chau Sun Kérya, who during her thesis read this book and used it and Ms. Anne Lemaistre who told me that the author may pay us a visit. His name is Mr. Bernard Dupaigne, who thirty years ago conducted a PhD on the iron masters and fire of the Angkor Kingdom. You are all aware of the importance of iron and today we did not have time to insist on something remarkable undertaken by Mr. Im Sokrythi and his colleague Ea Darith that presented not only the Hill of Iron which toponym is known to all of us, but how important iron was in the Angkor region.

Historians and in particular Mr. Claude Jacques prefaced this more than 440 page long book published recently by CNRS on the Iron Kingdom. This Iron Kingdom brings us to these inscriptions that mention the kings and political issues as Claude Jacques presented this morning. They rarely talk about the economy. Others talk about water or monuments, but thanks to long-time discoveries and exemplary excavations, as those presented today, we have acquired more knowledge about the economy. One of the explanations of the might of the Khmer Empire of the Angkor Kingdom is iron. This is well-explained in this book.

For a few minutes co-chair would you allow the author, Mr. Dupaigne, to present, as he wrote it and can do that much better than me; I have sparse knowledge of it. Mr. Dupaigne, please take the floor."

Comment from Mr. Bernard Dupaigne: "Thank you very much. I will briefly present my book on metallurgy published by CNRS. As you said, mastering iron was very important for

the development of the Kingdoms of Cambodia. This material was used at war, for farming, and for the construction of monuments, especially the clamps that hold the sandstone blocks together. You will see on the bas-reliefs of the Bayon or Banteay Chhmar many battle scenes glorifying the immortalised kings and in these scenes there are many elephants and many weapons made of iron. This material played a key role in the development of the Kingdom. Chenla absorbed Funan most likely because they had weapons made in iron. In Funan, known presently as Cochinchina, there are no traces of ironwork or its production. Chenla benefited from the iron produced in Cambodia in the north of Kampong Thom in the former province of Kampong Svay, now called Preah Vihear. The Kuy people from the Australasian linguistic group knew how to produce this metal; they still live in this region.

Étienne Aymonier noticed the remains of the reduction of iron ore as early as in 1900 at the Preah Khan of Kampong Svay. Claude Jacques, in this room, was one of the first to consider iron as industrially produced here in Cambodia. The fact is that an enormous quantity of iron was produced from iron ore. The iron ore comes from the hills of Phnom Daek that are still standing and are located north of Kampong Thom. The furnaces necessary to reduce iron ore were low blast furnaces called the 'catalan' type in French as this same type of furnace is found in the Pyrenees region. The crushed iron ore mixed with charcoal resulted in a bloom of iron and slag. When you find this slag in a village or on a site this means that there was at one time the reduction of iron ore. The iron ore is burnt in a furnace supplied with wood from the forest. The production is located in the forest, as a lot of charcoal needs to be produced locally.

To produce iron, the iron ore, the stone, must be broken and this goes against nature and required the protection of the gods. They had extremely intricate rituals that I was fortunate to detail in this book and that were protected by Lord Shiva. Hinduism's influence was strong. The origin of the knowledge of these techniques is usually India. One thing is for sure, it did not come from China. There are in Cambodia some groups from Australasian traditions that came from India. Many still exist and the Kuy who live in Cambodia may have transmitted or learnt these techniques.

I was fortunate to study all these data with students of the Faculty of Archaeology of Phnom Penh. Earlier we talked about training and I was teaching at the time but unfortunately when the Pol Pot regime seized power the students were all exterminated. I did this study 46 years ago and I have been delighted to be able to finish it. I have also been thrilled to notice that there are archaeologists, not only foreigners, but also Khmers that undertake excavations. You heard Im Sokrithy's great presentation. This underscores that Khmer archaeologists can take over and continue studying iron, which was so important. Somehow, it is a kind of novelty to recognised; the importance of it in Cambodia. Just one thing I would like to mention: in the *Cambodia Daily* of last Monday there was an article written by an Australian archaeologist, Mr. Mitch Henderson, who also published."

**Mr. Azedine Beschaouch:**

"You have told us the contribution your book has made, but I noticed something written by the author of the foreword of your book who is one of the specialists of Khmer epigraphy. What he wrote is interesting for us all, as we study the kings or monuments but tend to overlook the daily life and the economy associated with it. At Ta Prohm there is one inscription which mentions the daily life and Claude Jacques has analysed it. This inscription says that they used 615 iron 'baras', knowing that a 'bara' equals 300 kilos. This totals 1,000 tons of iron used for a single temple, producing about 200 kilos per day; this equals a minimum of 5,000 days of work needed to build that temple. This gives you an understanding of the Khmer Empire's wealth, informed through epigraphy and your studies. Imagine, 5,000 working days for a single temple!

The second publication I would like to present is that of Dr. Vittorio Roveda, who is well-known here. A few years ago his health allowed him to attend the ICC and at the time

His Excellency the Deputy Prime Minister inaugurated the remarkable restoration of wall paintings supported by a cement company. Remember the French Company Lafarge? Well, there is also Holcim and that latter bought over Lafarge and also financed the restoration work at the Bakong pagoda. Thanks to Dr. Roveda, funds were raised and Mr. Khuon Khun Neay to whom we wish a speedy recovery led the works. This more than 255 page book is published by River Books in Bangkok, a major publisher in the region that Mr. Claude Jacques is familiar with, as he publishes some of his books there.

Historians will enjoy this remarkable book, as it features beautiful paintings from Cambodia and also Laos and Thailand and I am not a specialist. It presents paintings painted by popular painters inspired by the Ramayana. Some of them are remarkable and if I show it to Mr. Bouchenaki, I am certain that he would say that this reminds him of Pompeii and the Pompeian style. Some of the art featured is of unequalled beauty. I congratulate Dr. Roveda and I will write to him for a copy of the book to be sent to the Library.

This book is the achievement of 30 years of work including the exhaustive inventory and analysis of the iconography of Thailand, Laos and Cambodia. What is striking is how he shows that these three countries, once united under the Khmer empire, have continued a cultural continuity. Today, this is the heritage of Thailand, Laos and Cambodia, but these three heritages are tributary of the ancient Khmer heritage. Within the framework of the ASEAN coming together, it is important to show that these people share common roots.

Let me now move on to magazines. A major review dedicated one of its articles to something that will please you all. The New York based *Journal of Environment, Science and Engineering* has in its Issue Five a great article. It is an accessible article; there is no need to be a historian. Four researchers are the joint authors and it features the stages of the conservation until sustainable development at the Angkor World Heritage site. This communication deals with two topics that we are familiar with here: Conservation and sustainable development. Mr. Hang Peou wrote them and congratulations to him. He not only found time to save monuments: I will never forget when he was on site at 2 a.m. to prevent the West Baray from bursting, and he saved it, with the help of the APSARA National Authority. This must never be forgotten. This was an act of conservation but also of safeguarding.

Another joint author is Natarajan Ishwaran, former UNESCO Director and advisor to the Chinese Academy of Science that co-operates with us in the form of several training sessions. The third author is no less than the recipient of today's medal, Mr. Philippe Delanghe. A Chinese Researcher, Mr. Hong Tianhua, from RADI, an institute that falls under the umbrella of the Chinese Academy and works with the APSARA National Authority, joined the three of them. He recently visited us here. This article will be given to the CIRDA as it is important that Cambodians read this remarkable communication and not only those specialising in water. I immediately pass it over to His Excellency, Mr. Tan Boun Suy.

I mentioned Dr. Hang Peou and as a member of the Académie des Arts et des belles Lettres, there is an article written by him, part of the volume on the proceedings of conferences held at the Academy, talking about the outstanding management of Angkor, Capital of the Khmer Empire. He presented in front of His Excellency His Majesty the King, something that one cannot forget. The King was delighted to realize that a young Cambodian – young compared to me – could in this prestigious Academy deliver such a high-level paper. I will pass it on to CIRDA.

Among the several publications, let us pay tribute to the Japanese team of Waseda University. Professor Nakagawa, my friend, knows that I am a great fan of his quality publications coming on the heels of their work. This is typical of the University of Waseda team or JASA; every year they publish very well-produced yearly reports that outline their discoveries and researches. Then, each academic can develop further any articles or books, but at least we already have information. He gave me a report dated from June, and thank you for that Professor.

It is hot off the presses and called *The Establishment of networks for the safeguarding and development of cultural heritage*. Angkor is used as a case study from the Mekong basin. To support this methodology, there is a detailed map showing the continuity of issues found in the Mekong region. He should be thanked for this work. Earlier on I mentioned the late Tep Vattho, who worked on the town. She worked closely with Professor Nakagawa's team so that his team assisted her for the town. A report has been published, *Project for Siem Reap Angkor*; this is the fourth edition and each issue contains new input.

I thank him because the new management in charge of urban heritage will find in this report the outline of the analyses and suggestions for actions to be implemented in the town. I would like to openly pay tribute to Professor Nakagawa and his team as they found the time and resources to publish this.

Let me recall the article dating from the 26<sup>th</sup> of April and published by the French newspaper *Le Monde* called 'Rebuilding Palmyra'. *Le Monde* rarely prints colour pictures-well, they did for Angkor. Recently, they published a paper called 'Lasers reveal a civilisation in Cambodia'. Tomorrow, there will be a colloquium hold here for Kulen Mount under the aegis of the APSARA National Authority and you are all invited to attend. In the paper about Palmyra the title is the 'Safeguarding of Angkor as a Model'; this related to what we talked about yesterday. These articles are rare and thereby precious and I can confirm that the ICC activities are now communicated throughout the world and not only in newspapers.

I know I have monopolised the floor, but people when getting older love the sound of their own voices. Those who know me, know that I celebrate this year 25 years at the service of Cambodia and logically I should all invite you for a drink. I arrived in 1991 when I chaired the World Heritage Committee and I was sent here to assess the potential inscription of the site on the World Heritage List. This is how I fell in love with Angkor. A 25-year love story is great and it can happen. I say 25 years, but I am not alone in this adventure, as I have a friend, a brother and a colleague, Mr. Mounir Bouchenaki.

He began working on Angkor when he was Director then Director General of UNESCO. We have spent 50 years of fraternity and friendship. He came to Tunisia to launch a field school. This is the reason I am always optimistic when I say that well-organised field schools work well. This field school still exists for the Mediterranean Sea and the town of Kerkouane, a World Heritage Site. We organised this field school with young Mounir and people have learnt excavation and research methodology. Our roads kept on crossing. He was Director General of Archaeology in Algeria and I was in Tunisia. We met. Together we were Maghreb; sometimes people said Azedine Bouchenaki and Mounir Beschaouch!

I thank you for your attention."

*Comment from the Co-chair for France:* "Professor, thank you very much. I felt very emotional. You are not old and you are a faithful lover and friend. Can we wish you more than another 25 years of this beautiful love story that has related you with Cambodia with all your friends, including Professor Bouchenaki. I think it is time we move on to the recommendations that will be recalled, as it is a key moment and it continues what we heard this morning. You have the floor Professor."

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## VIII- ICC-ANGKOR RECOMMENDATIONS

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## VIII.1 Presentation of the recommendations by the Standing Secretariat professor Azedine Beschouch

“Co-chairs,  
Excellency Deputy Prime Minister,  
Excellencies,  
Friends,

Let me recall that the text remarkably analysed by Dr. Jarvis and Dr. Tan Boun Suy was drafted and explained in the meeting. It respects the regulations and prepares us for the future. This will not be adopted today. It was translated into Khmer and I was told that there are some translation mistakes. As a former French Professor, I find the French translation in need of revision. This will be done and the deadline is next December. Please, send your observations to the Secretariat and to Dr. Tan Boun Suy. It will not be adopted now but in December.

With regard to the circulated recommendations, they concern Research and Sustainable Development. We ask you to overlook any language mistakes. Some of you might say there is a comma here or this is not the right translation. Please, let us not lose time with issues that are of importance but of a secondary kind. Do you have any comments on the substance? Would you like to add something? The experts wrote these recommendations and we thank them publicly, including Professor Croci, who has left. This is the outcome of reviews and analyses made on site and of discussions among the experts, between the experts and the Secretariat and we did our best to bring you the core of this work.

As usual, could you please only take the floor when you have something fundamental to say formally; at the plenary session there will not be any more possibilities to make amendments. As some of the topics are urgent and in full respect of the regulations, we give our agreement today and the formal approval is next December. Today, we will process your feedback and suggestions on this technical work without discussing it. This will allow the APSARA National Authority to start implementing the work.

Could you please facilitate the work of the Co-chairs and of the Secretariat so that this remarkable work can be paid tribute to? I can assure you that one day we will have to publish a compendium, a small book, as there are more than 20 years of thinking on heritage and development. There are no other places in the world where this type of reflection takes place. I would be delighted for others to contribute to this compendium, as these recommendations are of the highest level. Please, make some observations, otherwise we will consider that this work as passed to the APSARA National Authority and if there is something fundamental to add or delete this will be done in the next meeting.

Professor Fletcher would like to take the floor.”

Comment from Mr. Roland Fletcher: <sup>[OrigE]</sup> “I would like to make one suggestion in relation to the deposit of the basin of the Western Mebon: That the deposit in the basin should be conserved. When the Greater Angkor Project team cored it many years ago, it was a deposit of continuous stratigraphy from the 19<sup>th</sup> century back to the 11<sup>th</sup> century. It provided critical information at that time about the history of the Baray and particularly crucial information about the deposit inside that basin in the 13<sup>th</sup> and 14<sup>th</sup> century. This should be regarded as a crucial historical source and if possible conserved and, if suitable, buried under a suitable surface so that the pond can be restored above it.”

Reply from Mr. Azedine Beschouch: <sup>[OrigE]</sup> “Is it possible for you if you have time to send the precise wording and we will take note of it. Thank you very much.

Our colleague from the Ministry of the Environment drew attention to the importance of Kulen National Park, so we have added another recommendation which is not on those

that have been distributed: 'Welcomes with satisfaction the announcement made by His Excellency the Minister of the Environment, Dr. Say Sam Al, on the development of a Master Plan for the Kulen National Park. Recalls the recommendation adopted at the 25<sup>th</sup> ICC-Angkor Technical Session in December 2015. Urges the implementation of the Master Plan, as soon as possible, in conformity with the guidelines set by the said recommendations.'

I am sure you will agree with that as it is the reality as portrayed by His Excellency the Minister with the support of the Deputy Prime Minister to start with the elaboration and preparation of the Master plan, on the bases of the recommendations made during the 25<sup>th</sup> Angkor Technical Session and for the future implementation of the master plan."

Comment from Mr. Bruno Favel: "Thank you Mr. Beschouch. Page 1, an observation in the French version: 'We must be duly proud of such remarkable progress made in a short time after the tragedies that devastated the Kingdom of Cambodia, as we unfortunately now see, particularly in other heritage-rich countries that are part of the 'Fertile Crescent'.' It is not only in the 'Fertile Crescent' that there are serious issues and the latter should not be linked to this part of the world. I would rather suggest: '(...) such as those (...)', simply add the words 'such as those' page 1 paragraph 3. '(...) that are part of such as those (...) simply add these words 'such as those', Page 1 paragraph 3."

Question from Mr. Beschouch: "This comes from your experience, as you are a man of details; where should we add 'such as those'?"

Reply from Mr. Bruno Favel: "Paragraph 3, the line before last of this paragraph could read '(...) heritage-rich countries such as those that are part of the 'Fertile Crescent'."

Question from Mr. Beschouch: "'Such as those that are part of the 'Fertile Crescent'."

Reply from Mr. Bruno Favel: "By adding 'such as those' it would be more accurate."

Comment from Mr. Azedine Beschouch: "Thank you, you are right. I repeat: '(...) heritage-rich countries such as those that are part of the 'Fertile Crescent'.' Are you satisfied with this?"

Reply from Mr. Bruno Favel: "Absolutely."

Comment from Mr. Azedine Beschouch: "This is an improvement not on the formal aspect but on the substance as it changes the meaning."

Reply from Mr. Bruno Favel: "Absolutely. My colleague would like to say something with regard to the West Mebon, page 9 in the French version."

Comment from Ms. Francine d'Orgeval: "The point 13: The group of experts expresses its satisfaction with the APSARA and EFEO teams for their thoroughness on this work site and insists on the strict deadlines of implementation being respected (...).' With regard to respecting the deadlines, they are not mentioned and this could lead to confusion. I would like to review this with the EFEO and maybe the *ad hoc* group of experts to set a date, as this is vague."

Comment from Mr. Azedine Beschouch: "You would like a date to be added?"

Comment from Ms. Francine d'Orgeval: "I am not sure, but I would like a different formalization. It is inferred that the deadlines are respected but they are not mentioned. In ten years, one may still write that the deadlines are respected. It concerns me slightly."

Comment from Mr. Azedine Beschouch: "I am afraid that it is a bit difficult to get everyone's point of view now, although the EFEO Director and Ms. Beaufeist are here. The best solution is for you to take some time and that you send us your wording. Already Professor



Fletcher will send us a text and yours will also be taken into account.”

Reply from Ms. Francine d’Orgeval: “Absolutely right; to review this with the EFEO and Mr. Lablaude.”

Comment from Mr. Azedine Beschaouch: “Fine. This paragraph will be reviewed in a fortnight or a month or two. The last deadline will be next October.”

Reply from Mrs. Francine d’Orgeval: “Next week or in a few days, let’s say. Thank you.”

Comment from Mr. Azedine Beschaouch: “Co-chair, the floor is yours.”

Comment from the Co-chairman for Japan: <sup>[OrigE]</sup> “Sorry to interrupt, but before going into the details of the recommendations, let me quickly explain that this text is in three parts. That first is the General Recommendation, the second the Recommendation for the Conservation and third for Sustainable Development. The part on Conservation and Sustainable Development is based on the recommendations made by the *ad hoc* experts. According to the general rules of the ICC the expert group is considered to be an independent body and we respect their recommendations as much as we can. Basically, we should accept it as it is. The draft text has been a little bit modified based on the recommendation of the *ad hoc* experts. So, first we should ask the *ad hoc* experts whether the draft wording is suitable according to your recommendation and then if we accept remarks from the delegates or participants. Maybe let’s start asking the experts if they have any observations.”

Comment from Mr. Azedine Beschaouch: “As stressed legitimately by the Co-chair, please take into account the addition of the words ‘such as those’.”

Comment from Mr. Mounir Bouchenaki: “I added the words ‘such as those’ as I have worked for months on the situation of the cultural heritage in these countries at war and by then I meant all countries in conflict that need to be mentioned. The most at-risk region where there are demolitions in daylight filmed by terrorists; I worded it that way but I entirely agree with my friend Bruno to add ‘such as those’ so that not only this region is mentioned.

As for the deadlines, I based the text on the discussions we had in the field with Ms. Beaufeist. I asked her how they would proceed and her reply was that they will try to manage and respect the deadlines in the different stages of restoration and work on the step tiers. I could word it with the deadlines mentioned by the team in charge of the project, but I cannot at my end be more accurate. I can only rely on the assessment of the team leader with regard to heeding the deadlines they have to respect.”

Comment from Ms. Francine d’Orgeval: “I believe this is a useful addition. I would also like to hear what Mr. Lablaude has to say on this matter, as this is very important for us. In case the worksite was to extend over the set deadlines this would come at a cost and we could not support it. We cannot commit and say this will take three or four years as this compromises our actions. I would agree if we could find a wording that pleases all.”

Intervention from Mr. Azedine Beschaouch: “Please allow me Madame. Mr. Mounir Bouchenaki drafted the text and he is happy to get a new wording in a short time. We will inform the Co-chairs and the experts on this question. Do you agree Mounir? Are there any more questions on the adopted recommendations? You have the floor China.”

Comment from the representative for China: <sup>[OrigE]</sup> “Thank you. Good afternoon to Your Excellency the Deputy Prime Minister Dr Sok An, all the Excellencies and participants. I come from the embassy of China and allow me to mention the previous presentation I heard yesterday. I would like to thank his Excellency the Deputy Director General Mr. Sok Sangvar and his presentation, which impressed me a lot. I would like to add something on visitor facilities at Angkor Wat.

I have browsed the official website of the APSARA National Authority this morning and it looks good and I would like to suggest that there should be a Chinese version due to the huge market offered by Chinese visitors here. I believe this would be very useful. I believe if Chinese tourists had more information they would then behave better in Angkor.

Finally, I would like to send a big thank you to our translators. Thank you very much."

Comment from Mr. Azedine Beschaouch: "Thank you. Does the Director General have anything to add? No. Professor Hidaka, you have the floor."

Comment from Mr. Kenichiro Hidaka: <sup>[OrigE]</sup> "As a member of the Independent Expert Group, I find some sentences added or something has been modified, for example on Banteay Kdei on Point 1. 'Emergency interventions required notably gate into Srah Srang.' I did not say this but I agree that this is a dangerous part of the temple, but there are other parts where I fear something should be done. I believe something has been added. In my presentation I did not refer to this particular point. There are dangerous parts all over the complex, not only the gate. This did not appear in my presentation. I do not object, but I would like to say that dangerous parts are everywhere in the temple, not particularly for the gate fronting Srah Srang. Item 16 on the Priority Maps I am also not satisfied with."

Comment from the Co-chairman for Japan: <sup>[OrigE]</sup> "The recommendations regarding the Banteay Kdei temple and the Priority Maps have not been edited as was suggested by Mr. Hidaka, so the best way is to adopt the text of Professor Hidaka as it is."

Reply from Mr. Azedine Beschaouch: "What do you suggest on Banteay Kdei?"

Comment from Mr. Kenichiro Hidaka: <sup>[OrigE]</sup> "This recommendation is the result of the discussion of four experts. We are given a certain amount of time for modifications or additional changes; we would like to have a discussion among ourselves independently and to draft the final wording. For example, on Banteay Kdei to say that all over the temples there are many parts where emergency intervention is required."

Question from Mr. Azedine Beschaouch: <sup>[OrigE]</sup> "So we should delete 'some parts'?"

Comment from Mr. Mounir Bouchenaki: <sup>[OrigE]</sup> "It would be much better if you could send your wording instead of just doing it like this."

Comment from Mr. Kenichiro Hidaka: <sup>[OrigE]</sup> "As we are only four I think we just need two weeks to discuss among ourselves. Today Professor Croci is not with us, so it is better if we take some time."

Comment from Mr. Azedine Beschaouch: <sup>[OrigE]</sup> "You have two weeks, then we will circulate the new recommendations to our friends and colleagues and the case will be adopted based on remarks agreed to by all."

Comment from Mr. Kenichiro Hidaka: <sup>[OrigE]</sup> "This document was not drafted by myself, but we discussed with Mr. Croci and this is the result of four *ad hoc* experts' discussions."

Comment from Mr. Azedine Beschaouch: <sup>[OrigE]</sup> "The final text will be based on the agreement of the four experts."

Comment from Mr. Kenichiro Hidaka: <sup>[OrigE]</sup> "Absolutely. We will exchange emails."

Comment from Mr. Azedine Beschaouch: <sup>[OrigE]</sup> "Thank you. We are running out of time so I was wondering whether there are any more comments."

Comment from the Co-chairman for Japan: <sup>[OrigE]</sup> "Yes, Mr. Hans Leisen would like the floor."

Comment from Mr. Hans Leisen: <sup>[OrigE]</sup> "I just would like to make one observation on the point 14 b, page ten, with regard to risk mapping: '(...) locating and systematically updating of the areas suffering the most critically from ongoing and rapid deterioration and, based on that, identifying the risk zones on the monument'. This recommendation concerns the northwest tower of Angkor Wat. I would just like to comment that of course we have established for the past years a Risk Map, not only for the apsaras but for all decorated surfaces of the monument. We have also looked into the leakage areas of the roof. We have worked on this now that we have the scaffolding on site and we also have a Map of Priority to manage where to go and how."

But to manage this, and this is my request, we need support from the APSARA National Authority, from DCMA, support by staff and infrastructures. We are limited with our scaffolding and etc. and this would be a request that for Angkor Wat, the APSARA National Authority provides more materials for necessary infrastructures like scaffolding. What would also be very helpful is that we started by documenting with a drone; we got permission to fly for one year, and we noticed that it is a very good tool to permanently monitor the situation. After the request of Mr. Ly Vanna, we have done a documentation of all the towers of Lolei and Bakong and Preah Koh to see what is on top. We discovered the copping stone in Lolei and we assessed its condition. It would be good to have a permanent authorization to use this drone."

Comment from Mr. Azedine Beschaouch: <sup>[OrigE]</sup> "Thank you Professor. Allow me, before Professor Lablaude takes the floor: would it be possible to send your remarks in writing for the final version that we will submit to the *ad hoc* experts, as today we do not have the time to discuss it in detail? Thank you."

Reply from Mr. Hans Leisen: <sup>[OrigE]</sup> "We will do it as soon as possible."

Comment from Mr. Pierre-André Lablaude: "Just an observation. It is actually I who wrote this text. The mapping exists, but as the damage evolves very rapidly, this previous mapping needs to be updated regularly. Maybe we could word it differently and instead of 'mapping' we could say 'systematic updating of the areas suffering the most critically from ongoing and rapid deterioration' or something equivalent."

## **VIII.2 Approval of the recommendations by the ICC-Angkor**

Comment from Mr. Azedine Beschaouch: "We will use the wording 'updating'. Professor Leisen will send us his text and we will submit it. I think Co-chairs that we have now completed the comments and as the rules allow us we can close the debate. The text has been amended, there are three interventions and Professors Leisen, Fletcher and the French delegation will send us their wordings which will subsequently be sent to the *ad hoc* experts."

Co-chairs, this is the end of this session and the closing speeches are to come, but before that, we would like to inform on a great discovery. <sup>[slide]</sup> A boat was found in a sand quarry. I do not want yet to reveal the dating of it to keep the suspense, but we know that it was located in a place historically at the confluence of two water ways, the Roluos and Siem Reap Rivers. The boat was located at this junction between the two waterways. Of course, throughout the centuries, the land has changed and the boat was found in a sand quarry.

<sup>[slide]</sup> Dr. Hang Peou went on site and in this picture you can see him studying the boat. I was fortunate to be in the area at the same time so we went together on site. This

boat has a startling resemblance to those you see on bas-reliefs, which will surely make His Excellency Chuch Phoeurn jump for joy. We took a sample of the boat and it was suggested to the National Commission presided over by His Excellency the Deputy Prime Minister and Ms. Tan Theany that the samples should be sent by DHL, which she did. It is the laboratory located in New Zealand that analysed the samples using C 14 and the results have been sent to us.

[slide] We were told to bury the boat in a humid environment. The boat was rapidly immersed in the Angkor Wat moat as these pictures show you. Any long-term exposure to the air would damage the boat very quickly. The boat is now protected and the dating given is 1207, with a margin of error of less or more 20 years. Carbon 14 always has this type of margin. 1207 is with this margin the era of Jayavarman VII. This boat is dated from this King. The next time we discover something so important I probably will not be here any more. We should be happy and we should all rejoice and applaud, as this is magnificent. We will decide with the APSARA National Authority where this boat will be exhibited as this boat is a great finding.

I congratulate the APSARA National Authority and Dr. Hang Peou for this great discovery and with His Excellency Sok Sangvar, the head of the TMP and Deputy Director General of the APSARA National Authority, we will find a place to exhibit this boat. Thank you Co-chairs and I believe it was worth taking a few minutes to inform you of this great discovery."

### **VIII.3 Date of the next technical and plenary sessions**

Comment from the Co-chairman for Japan: [OrigE] "We should now discuss the date of the next technical and plenary sessions. Are there any suggestions from the Secretariat? Normally it is held early December."

Comment from Mr. Azedine Beschaouch: "Co-chairs, we suggest the first week of December. This is how we proceed, as both sessions are co-chaired by the ambassadors, we give you time to check with them, their availability and also that of the Deputy Prime Minister. We always mention the first week of December, before the tenth, so that people can organise themselves for their holiday or work. The dates can be then locked in. Everyone is usually informed of the definitive date in September. The first week of December is set forth and His Excellency Sum Map will note it down to check if it is ok with his team."

Comment from the Co-chairman for Japan: [OrigE] "December is starting on a Thursday and the week following the Monday is the fifth and the date will be fixed during this period. Last year we had one day of technical session and one day of plenary, so two days so that the schedule of the Prime Minister and others are informed."

Comment from Mr. Azedine Beschaouch: "Yes, the same as last year; a two-day session."

Comment from the Co-chairman for Japan: [OrigE] "Thank you very much. We move on to the closing session and I now invite Madame Anne Lemaistre for her speech."

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## **IX- CLOSING SESSION**

## **IX.1 Speech by representative of the UNESCO Director General, Ms. Anne Lemaistre, UNESCO representative in Cambodia**

"Your Excellency Mr. Sok An Deputy Prime Minister and Chairman of the APSARA National Authority,  
Excellencies,  
Ladies and Gentlemen,  
Friends,

On the 29<sup>th</sup> of April, 1916, one hundred years ago, thieves murdered Jean Commaille while he was carrying the workers' wages. The anniversary of this tragic event gives me the opportunity to recall that Jean Commaille was the first conservator of Angkor and I would like to celebrate him. In 1907, after the retrocession of the western provinces to Cambodia, the monuments were placed under the responsibility of the EFEO and Jean Commaille, and they agreed to take care of them. He was an avid painter and isolated from the rest of the world. He lived in a bungalow built next to the Angkor Wat causeway. If I am not mistaken, his wife left him. Before his official appointment as Conservator, he listed with Lunet de la Jonquière the work to be prioritised, notably the clearing of Angkor Wat and the Bayon. One hundred years on, we gather here, continuing his mammoth endeavour and that of those that succeeded him.

This brings me to salute the 25 years of Professor Beschouch in Angkor and also our two most senior members of the ICC, Professors Claude Jacques and Ishizawa who arrived in Cambodia in 1961, 55 years ago, who with unabated excitement have continued their passion, as is evidenced by Mr. Ishizawa's project on the Angkor causeway and Mr. Jacques' intervention putting forth a new chronology of the Khmer kings.

Our work in progress has benefited from the labour of all and in that matter of the continued intellectual solidarity. I am pleased to confirm that the database on the recommendations of the ICC and on all the projects that have been carried out in Angkor for the past 23 years is almost finalized. This database will be accessible to all, as wished for by the Director General of the APSARA National Authority, with a special section only available to the ICC participants for the follow up of the recommendations. This will be our collective memory and a working tool for all. Mr. Nou Niran, my collaborator, who is in charge of its development, will make contact with you, when necessary, to request additional documentation and this database will be presented at the next session.

These two days have highlighted a general discussion topic for the next session: Ceramics, as mentioned by Ms. d'Orgeval, with the existence of several units and people working with ceramics (Stone Conservation Unit, Angkor Ceramic Unit, and etc.). Each has its respective archaeological storage of stone or ceramics. This is a topic that is common to all the national and international archaeological teams and it could be useful to take stock in order to establish synergies to the benefit of all the initiatives.

Similarly, you may recall that during the third intergovernmental conference in December 2013, on the occasion of the 20 years of the ICC, we mentioned Angkor outside of Angkor, meaning the relationships between all the temples of the Khmer Empire. I am delighted to welcome our colleagues from Laos, the manager and conservator of the Wat Phu site, who have attended this ICC session for the first time. UNESCO is pleased and promotes regional scientific synergies that are mutually relevant, as was the case with this great project of the Regional Heritage Training Centre that for ten years brought together students and professionals from Laos, Vietnam and Cambodia.

On the international scene, Palmyra has been mentioned on several occasions. In order to face the massive destruction of its heritage in Syria, Iraq, Yemen and other countries, UNESCO has developed a new protection strategy for cultural heritage in case of an armed conflict with the potential of the intervention of a professional corps of heritage ex-

perts along with humanitarian operations or peacekeeping forces. While we mention the future, we hope for an end to the fighting and that our ICC-Angkor will be considered as an inspiration and model. Let me inform you that UNESCO Paris has already solicited us for this matter.

We cannot close this ICC without paying once again tribute to our friend Tep Vattho, a gifted architect who knew how to value the traditional delicate splendour of Khmer architecture. Her elegant constructions of hotels such as Angkor Village and Angkor Village Resort have pleased us and they are now considered by many of us as major tourism benchmarks in Siem Reap. Dear Vattho, the city's development will miss you, as it benefited from your informed advice and your taste in creating quality urban developments.

Finally, I would like to express my most sincere thanks to His Excellency Sok An the Deputy Prime Minister and Chairman of the APSARA National Authority and the staff of the APSARA National Authority through its Director General for your unwavering support to the organisation of this ICC and for all the facilities allowing for smooth proceedings. Also, a big thank you to our Co-chairs, including Ms. Pascale Turquet, who completed her maiden session and was helped by her experienced partner, His Excellency Takhisa, to our *ad hoc* experts and our perpetual Scientific Secretary for their personal commitment and to all the speakers that clearly and precisely shared the fruits of their discoveries. Clarity also thanks to our seasoned interpreters, whom I pay tribute to and finally thank you all for your faithful attendance of the ICC.

Let us reconvene next December and thank you for your kind attention."

## **IX.2 Speech by the French Co-chair, Ms. Pascale Turquet, Co-operation Attaché, Embassy of France in Cambodia**

"Your Excellency Mr. Sok An Deputy Prime Minister and Chairman of the APSARA National Authority,  
Excellencies,  
Ladies and Gentlemen,  
Friends,

Let me start with a few words from Romain Louvet who, as said earlier, would have enjoyed being with us during the two-day session. Let me read out this message he sent me addressed to all of you:

'Unfortunately I have to be in Paris and I am greatly disappointed, as this session would have been my last. I wanted to send you a message so that you would not think that I let you down or even worse neglected you; this is certainly not the case.

Let me tell you in a few words how much the ICC was one of the most, if not the most, interesting dossiers that I have worked on during my four years. This is mostly due to the quality of the people that often commit with passion, and always with competence, to serve the development of the Angkor site; I wanted to emphasise this. I have learnt many things in these years and I thank each of you. The ICC dossiers are of key importance for Angkor, but also for the development of heritage at large and I am delighted to have brought my modest contribution to this magnificent endeavour.

I would like to thank the Cambodian authorities and all the stakeholders of this prestigious body for the quality of the relationship, the professionalism and friendship that we have maintained all those years. My future position takes me to Brazil, to Recife, also a heritage-rich land to which I will be delighted to welcome you.'

These were Romain's few words. I concur with Romain Louvet in thanking the ICC participants, which thanks to you, was as exciting as I expected. I also take this opportunity to thank my colleague Tiphaine Ferry for her efficient support as ever.

This 26<sup>th</sup> session was a first for me and I have been able to size up all the efforts carried out through the reform started by the Co-chairmanship to allocate the teams sufficient speaking time. I think this is indispensable with regard to the impressive and meaningful work they carry out and with all the new data, even discoveries, as the last one just mentioned, that participants are informed on and listened to with sure interest.

To this end, I would like to thank all the teams that have co-operated in reducing the number of presentations. A bigger thank you, as you adapted to the new formula with written reports that have been scaled up this year. This does not mean that the teams who did not speak will not be able to take the floor in the near future, actually at the next session that will be held the first week of December. Maybe, the number of presentations should be revised down so that there will be more time for debate and discussion.

In the same line, I would also like to underscore the follow-up part on the recommendations of the technical experts. With two annual sessions, the implementation after six months of the follow-up clearly highlights the reactivity of the teams and the rapidness of some changes.

This new organisation also gives more importance and weight to the recommendations of the experts, deservedly so. To include the General Recommendations' follow-up in the agenda is highly advisable.

As was rightly said by Professor Beschouch, the General Recommendations are not only valid for the period between the sessions but remain always in force and must be continuously respected. I have called for a regular updating of these recommendations during the technical sessions so that the continuity of the works carried out can be evaluated as closely as possible. This is the reason, I would like once again to underscore how important these General Recommendations are, in particular the inventory of the cultural property and the visual integrity that were mentioned at this session. I am sure that all ICC participants share these concerns.

I realise that the quality of the conferences of the ICC is the outcome of strenuous work from the quadripartite members, spearheaded by the APSARA National Authority and the Secretariat of the ICC. Caring for the implementation of decisions taken after consensus, and as French Co-chair, I would like to see eye-to-eye with the suggestion made yesterday by Mr. Beschouch that the teams could provide one month before the sessions not their complete presentations but an abstract of them when time is failing.

As was underscored by His Excellency the Deputy Prime Minister, Dr. Sok An, in his inaugural speech, the temple of Angkor Wat is a symbol and a World Heritage Site that deserves special focus. The urgency of this intervention was recalled no later than this afternoon. I note the decisions of His Excellency who decided to put it at the top of the agenda for the APSARA National Authority, notably because of its international significance. Nevertheless, I would like to add that the diversity of the sites of the Angkor Archaeological Park is a constitutive element of its wealth and tourism attractiveness.

This leads me to acknowledge the effort of the many teams working in other archaeological sites, more or less close to Angkor Wat, in particular at Phnom Kulen, which was talked about during this technical session. This topic raised a lot of interest from the participants. I share it and I would like to acknowledge the commitment of His Excellency the Minister of the Environment on this topic and the project leading to the design of a master plan for the safeguarding of this site.

One more point was highlighted during this 26<sup>th</sup> Technical Session: Training. The  
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graduation ceremony of this morning to mark the ten years of the Regional Heritage Training Centre highlighted the usefulness of this type of initiative. This is a regional, innovative and high quality training.

As was mentioned and reasserted several times by the French Co-chairmanship in previous sessions, training and capacity building, already at the core of several projects, are vital. The transfer of competences must be at the heart of the concern of each of the ICC stakeholders. It will make Cambodia a key and model country on the World Heritage scene.

To this matter, the advisory role played by the ICC to other institutions can also contribute to putting Cambodia in the place it deserves internationally, as was underlined by His Excellency the Deputy Prime Minister. Its operation is exemplary as was mentioned during the round table.

I would also express my congratulations to the new collaboration between INTACH and the APSARA National Authority celebrated yesterday. I must also congratulate the Secretariat of the APSARA National Authority and UNESCO, the interpreters, the scientific experts and the standing Scientific Secretariat without which the high-level of this ICC could not have been reached.

As was expressed by Ms. Lemaistre, I also congratulate all participants, the representative of the Royal Palace and His Excellency Mr. Sum Map. In conclusion, I reiterate my sincere thanks to His Excellency the Minister of the Environment and His Excellency the Deputy Prime Minister, Dr Sok An, for his uncontested attendance to the ICC meetings.

Finally, let me express my thanks to UNESCO and the APSARA National Authority for hosting us on their premises. I thank all the participants for their attention."

Comment from the Co-chairman for Japan: "I declare the meeting over. Thank you very much."

**\*\*Conclusion of the 26<sup>th</sup> ICC Technical Committee Meeting \*\***



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APSARA NATIONAL AUTHORITY, SIEM REAP, 22-23 JUNE 2016**

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