



Cambodian school children put EMS basics into practice to preserve Angkor site

Cambodian primary school children are playing an innovative role in the implementation of an ISO 14001-based environmental management system (EMS) as one of the measures to protect the world-famous architectural, historical and cultural site of Angkor from deterioration caused by increasing tourism-related development.

by Un Moninita



The APSARA Environmental Promotion Team. The front row includes, from left, author Un Moninita (third), Ariura Shunsuke (fourth), and Lao Ki Leong (fifth), both of the Japanese support team.

The standing row includes, from left, Seng Sothira (fourth), of the EMS Secretariat, Tan Sambon (sixth), Deputy Director General and Environmental Representative of the Cambodian Government's APSARA Authority, and Tan Rachana (seventh), of the EMS Secretariat.

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Cambodia's famous historic temples of Angkor, designated by UNESCO a World Heritage site since 1992, have become endangered by extensive road and hotel construction driven by a dramatic increase in tourism. A by-product of all this is a growing problem of waste which threatens the local environment.

The Cambodian Government Authority for the Protection and Management of Angkor and the Region of Siem Reap (APSARA Authority) has risen to the challenge by launching a programme to implement an ISO 14001-based environmental management system (EMS) to protect the Angkor site (see "EMS to help protect Angkor – 'Crown Jewel' of Cambodia", *ISO Management Systems* September-October 2004).

As well as the implementation programme, APSARA Authority has also decided to pursue ISO 14001:2004 certification to

"ensure the protection, preservation, conservation, and showcasing of national cultural property for the Siem Reap/Angkor region, in particular for the Angkor historic site that is included on UNESCO's world heritage list".

The planned scope of certification also includes taking the lead in managing and developing tourism in Siem Reap province, supervising related programmes, and promoting sustainable development projects in the region to help alleviate poverty. This involves local people in protecting and preserving the environment, and providing education to increase their professional skill levels.

Involving children

As well as famous temples like Angkor Wat and Bayon, Angkor is also home to some 23 000 Cambodian villagers. Traditionally, they earn their

livelihood by agriculture, but growing numbers are supplementing their income as vendors of souvenirs and refreshments at the temple sites.

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Among numerous initiatives to raise environmental awareness among these communities is one to involve their children through the local primary schools in a three-step environ-



Sustainable development

APSARA launched the EMS programme “in order to manage the region, conserve and maintain the buildings of historical significance as well as develop the region, and also to create a society based on a sustainable development for the next generations in harmony with the environment, culture and communities.”

The programme has three main objectives combining environmental, social and economic aspects:

1. Environmental protection of Angkor and its periphery (including environmental improvements despite increasing numbers of visitors).
2. Better standard of living for local residents.
3. Model case of environmental education in Cambodia.

ISO Secretary-General Alan Bryden has commented: “The Angkor EMS programme is a striking illustration of the flexibility of the ISO 14001 approach which can not only help industrial sectors to improve their environmental performance, but also encourage the development of sustainability in such an important service sector as tourism.

“In addition, it is a matter for pride that ISO 14001 is one of the tools used to preserve Angkor, which is part of the world’s cultural heritage and also a matter for optimism to note that the children of Angkor are being trained in the rudiments of ISO 14001 in order to become actors of their own destiny.”

Un Moninita (centre) is a member of the APSARA Environmental Management System Unit Secretariat which is leading ISO 14001 implementation at Angkor, Cambodia. He is pictured here introducing ISO Press and Communication Manager Roger Frost to a group of Cambodian school children carrying out an environmental project at the Ta Prohm temple site at Angkor.

mental education programme to address the issue of waste.

The programme is being conducted by the APSARA Environmental Management System Unit, in collaboration with the eight departments making up APSARA and the support of a Japanese Joint Team (see box, “Japanese support”).

The programme recognizes that the children of the villagers are custodians of Angkor’s future, and that the children have an important role to play in making the EMS work.

Pioneering steps

As a first pioneering step, we selected two primary schools in the local villages of Kravan and Srah Srang. Both are located close to the historical ruins of Angkor, with the focus on the Ta Prohm temple for the participating pupils of the North Srah Srang primary school, and the Banteay Kdei temple for the Kravan primary school.

Essentially, this is a three-year programme, with a group of about 50 children from each school participating from

Grade 4 through to Grade 6, their final primary school year. Each school has a total of about 400 pupils graduating through the six primary years from Grade 1 to Grade 6. Eventually the educational EMS programme will extend to all 4th-6th graders.

The APSARA team launched the programme in 2004, working with the teachers to give Grade 4 pupils a basic understanding of the Plan-Do-Check-Act cycle on which ISO 14001 is based, as well better understanding of environmental issues, and of the waste issue in particular.

Now in Grade 5, the same children are currently working in competing teams to help implement the Angkor EMS in cooperation with local vendors and temple guards operating in and around the temple ruins.

Next year, as Grade 6, the pupils will involve their families and villages in waste prevention and collection strategies, using the EMS knowledge and experience gained.

Passing EMS awareness to others

We are now well into the second year of the programme – essentially the “Do” and “Check” stages – and we can already see the signs of success. Objectives, targets, and environmental management programmes have been set up for each of APSARA’s departments. In addition, we are holding EMS internal auditor training for secretariat staff and the promotion team. We do monthly checks, and then evaluate the results of the process every three months.



For example, in the schools, pupils have a better understanding of the environment, and especially of the waste issue. As a result, they have been encouraged to find better solutions for waste management in their school and temple areas.

This has included collecting garbage, separating it into combustible and non-combustible types, encouraging others to use litter bins provided, and making sure garbage bags are rounded up for truck collection at the designated locations. Happily, the local vendors and guards have been very cooperative in helping pupils.

Now they know the sources of waste, understand how to set up waste reduction strategies and have been putting these initiatives into practice – and



Cambodian primary school children, who have been trained in the basics of the Plan-Do-Check-Act cycle, on a visit to the Ta Prohm temple site at Angkor to implement refuse management solutions. Guidance is provided by Seng Sothira, of the APSARA EMS unit. Observing are Tan Sambon (right), Deputy Director General of the Cambodian Government’s APSARA Authority, and Roger Frost.

they have been checking these activities to make them more effective and successful. So the children are already following the ISO 14001 principles of Plan-Do-Check-Act and continual improvement and are passing their knowledge on to others.

As a further incentive, pupils who perform particularly well will receive appropriate recognition from the APSARA Authority and the State Government.

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'Keeping our monuments clean'

Following that first step – “Keeping our schools clean” – which the younger grades are now progressing through, we are well into the second step of “Keeping our monument sites clean”. This involves:

- cleaning and tidying the vegetation in the Angkor Park and Bakong Temple moats, and in the Srah Srang pond,
- planting trees and sowing grass in the gardens near the Siem Reap river bridges,
- planting and labeling over 500 tree seedlings along the road in the Angkor Park, and
- restoring two ancient canals.



Being noticed

It is rewarding to know that our activities are being noticed by the outside world. Many tourists have taken photographs of the school activities and have shown genuine interest. Typically, they see it as a good way to educate young people to think and solve problems themselves, and to be aware of the benefits to the public.

Although we do not have formal contacts with other cultural sites, we have presented our project to the International Coordinating Committee for the Safeguarding and Development of the Historic Site of Angkor (ICC), and many world cultural heritage committee members have also been watching our progress closely.

Japanese support

The stimulus for the Angkor ISO 14001 project came from Japan and several Japanese organizations have been providing support for its implementation.

The Cambodian authorities were introduced to the EMS concept and ISO 14001 by Professor Yoshiaki Ishizawa, President of Sophia University, Japan (www.sophia.ac.jp), one of the world's foremost historical specialists on Angkor and head of the first UNESCO Angkor research team. He also leads the Sophia University International Angkor Mission

Environmental education, EMS guidance, EMS training support and technical assistance for environmental surveys has been provided by the following organizations:

- The Quality Assurance Institute Inc. (**JQAI** – www.jqai.jp) provides support for EMS training.
- The Japan Quality Assurance Organization (**JQA** – www.jqa.jp) provides technical support to help the APSARA Authority conduct surveys on water, air, and waste management, and educate school children on environmental issues.
- The International Standards Research Institute, Inc. (www.isri.co.jp) provides environmental education and guidance in building and operating an EMS.