

T6123 – REG
Promoting Effective Water Management
Policies and Practices
(Phase 3)

Pilot Demonstration Activity
for Developing and Testing
Environmental Education
and Awareness
Methodologies and Tools

Final Report

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Tonle Sap – Cambodia
April 2005

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I. EXECUTIVE SUMMARY

1. In the agreement, dated 22nd March 2004 the Asian Development Bank (ADB) appointed Live & Learn Environmental Education to carry out a Pilot and Demonstration Activity (PDA) for developing and testing environmental education awareness methodologies and tools. The last report required by this agreement is the Final Report and this document is intended to meet this requirement.
2. The purpose of this report is to (i) record achievements from the project, (ii) record lessons learnt from the field by the Live & Learn team during the inception period, and (iii) provide financial statements and proof of expenditure.
3. The goal of the PDA was strengthened natural resources management coordination and planning for the TSBR. Its immediate objective was to develop and test innovative environmental education and awareness methodologies and tools, in support of the formulation and implementation of the National Environmental Education and Awareness Campaign planned under the Tonle Sap Environmental Management Project (TSEMP) and in the context of the Tonle Sap Basin Strategy (TSBS). A key output of the PDA is the development of a mini-strategy for environmental education.

II. BACKGROUND

4. In August 2003, a mission of the Asian Development Bank (ADB) visited Cambodia to determine whether the Tonle Sap Environmental Management Project offered scope for a Water Awareness Program (WAP) pilot demonstration activity (PDA).^{1 2} The Mission concluded that there are ample opportunities to increase public awareness and understanding of water-related issues on the Tonle Sap Lake.³ Preferably, this should begin with the development and testing of environmental education and awareness methodologies and tools. What is more, ADB's basin-wide approach to the Tonle Sap Lake has uncommon potential for scaling up and systemic impact. This warrants preparation of a water awareness strategy to integrate developed and tested environmental education and awareness methodologies and tools in the context of ADB's Tonle Sap Basin Strategy (TSBS), with emphasis on capacity building in the

¹ The Mission comprised O. Serrat (Mission Leader) and P. Poole (Consultant).

² WAP aims to create an environment supportive of effective water policies throughout the Asian and Pacific region. To this intent, it employs a variety of tools that promote public awareness and understanding, including pilot small-scale community-based education projects on water issues which help to improve the lives of the poor.

³ In the Tonle Sap Basin, water-related issues extend to associated land and biotic resources.

areas of teacher training and curriculum development.⁴ The Ministry of Education, Youth, and Sports, the Ministry of Environment, and the Cambodia National Mekong Committee (CNMC) have expressed interest in a PDA, as has the United Nations Educational, Scientific, and Cultural Organization (UNESCO).⁵

III. ISSUES

5. The Tonle Sap forms a natural floodplain reservoir in the depression of the Cambodian plain. It is fed by three main perennial and numerous erratic tributaries and is drained by the Tonle Sap River into the Mekong River near Phnom Penh. When the level of the Mekong River is high the flow of the Tonle Sap River reverses: water is pushed into the Tonle Sap Lake, raising its level by up to 10 meters and increasing its area from 2,500–3,000 square kilometers in the dry season to 10,000–16,000 square kilometers in the rainy season. This unique hydrological cycle and the vast areas of seasonally flooded low forest and shrubs that it creates result in a very high biodiversity of fish, reptiles, birds, and mammals, and engenders exceptionally productive fisheries. The lake's fisheries directly support more than a million people and provide the single largest source of protein for Cambodia's young and increasing population. The flooded areas offer seasonal breeding and nursery grounds and forage areas for fish that subsequently migrate to the Mekong River, providing thereby a regionally vital resource. The Tonle Sap Lake was nominated as a biosphere reserve in October 1997 under the Man and the Biosphere Program of the United Nations Educational, Scientific, and Cultural Organization. Its catchments include large areas that have also been designated as being of globally important biodiversity, apart from having potential for the storage of water for irrigation, domestic consumption, and hydropower.

6. The Tonle Sap Basin is under severe pressure and consumptive use of its resources is intense. Never has the Tonle Sap been called upon to supply so much to so many, yet threats to the lake's ecosystem are manifold: they include over-exploitation of fisheries and wildlife resources; and dry season encroachment and land clearance of the flooded forest. Degradation of the natural vegetation of the watersheds is destroying natural habitats and also results in a deterioration of water and soil quality and increased siltation rates. And so, despite the inherent richness of the lake, most indicators of poverty in the basin are even more negative than those that characterize the national population as a whole, or indeed other rural areas of Cambodia. Between 40–60% of households in the provinces adjoining the lake are below the official poverty line, with a

⁴ ADB 2003. *Tonle Sap Basin Strategy*. Manila.

⁵ To promote environmental education for a sustainable future, UNESCO has been assisting the Ministry of Education, Youth, and Sports in reforming the existing curriculum by introducing environmental sciences into primary and secondary levels. Details of UNESCO's activities so far are at <http://portal.unesco.org/phnompenh>.

peak of 80% in some areas; many households are entirely dependent on fishing and foraging, with access to common property areas often under dispute. Because of the large number of male fatalities during the 1970s and 1980s, there is a disproportionately high level of female-headed households, which are particularly disadvantaged. The lake-dwelling communities also include a significant population of ethnic minorities who, being more or less excluded from decision making, have less ability to improve their livelihoods. The destruction of the natural resources of the basin is an issue not only of national importance but also has serious transboundary environmental implications. Hence, the challenge is to achieve the right balance between production and preservation. Without a doubt, increasing public awareness and understanding of water-related issues, for example by educating children and youth, can help.

IV. STRATEGIC CONTEXT

7. The TSBS marks the introduction of basin-level strategic planning in Cambodia. It was formulated in July 2003 to support ADB's Country Strategy and Program Update, 2004–2006 for Cambodia and will also form the basis for setting priorities and planning assistance in the Tonle Sap Basin over the next 5–10 years.⁶ The strategic planning process is iterative and provides regular opportunities for inputs in support of the Country Strategy and Program, 2004–2006 and its annual updates; the Poverty Reduction Partnership Agreement entered into by the Government and ADB; the goals of the United Nations Millennium Declaration of September 2000; and Cambodia's international obligations vis-à-vis the Tonle Sap. The details of ADB's thematic and sector support programs will be laid out in the annual updates of the Country Strategy and Program.
8. The Tonle Sap Environmental Management Project approved in November 2002 opened channels for dialogue among stakeholders.⁷ More recently, ADB approved technical assistance to design, and plan the development of, the institutional framework for integrated basin planning and management that involves all stakeholders.⁸ Since the TSBS highlights informing and listening as a key operating principle, these channels

⁶ In the Tonle Sap Basin, the development objectives are to foster, promote, and facilitate (i) pro-poor, sustainable economic growth, (ii) access to assets, and (iii) management of natural resources and the environment. The strategy is based on three underpinning principles (i) sustainable livelihoods, (ii) social justice, and (iii) a basin-wide approach. Operations will be based on (i) a long term perspective, (ii) selectivity and concentration of resources, (iii) partnerships, (iv) country ownership and delegation, (v) informing and listening, and (vi) judicious use of funding modalities.

⁷ ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Cambodia for the Tonle Sap Environmental Management Project*. Manila. The goal of the project is sustainable management and conservation of natural resources and biodiversity in the Tonle Sap Basin. The objective is to enhance systems and develop the capacity for natural resource management coordination and planning, community-based natural resource management, and biodiversity conservation in the Tonle Sap Biosphere Reserve (TSBR).

⁸ ADB. 2003. *Technical Assistance to Cambodia for the Establishment of the Tonle Basin Management Organization*. Manila.

will continue to be developed under the suite of loan and technical assistance projects that comprise ADB's Tonle Sap Initiative. In the immediate, in partnership with UNESCO, the Tonle Sap Environmental Management Project is to formulate and implement from February 2004 a national environmental education and awareness campaign to strengthen natural resource management coordination and planning for the TSBR.⁹

9. The TSBS has specifically identified the WAP as vehicle to showcase Tonle Sap Initiative activities as they progress, especially environmental education and awareness programs that stimulate critical thinking and local community ownership of community problems associated with water-related issues. A key outcome of this PDA is a mini strategy which aims to support the implementation of the TSBS.

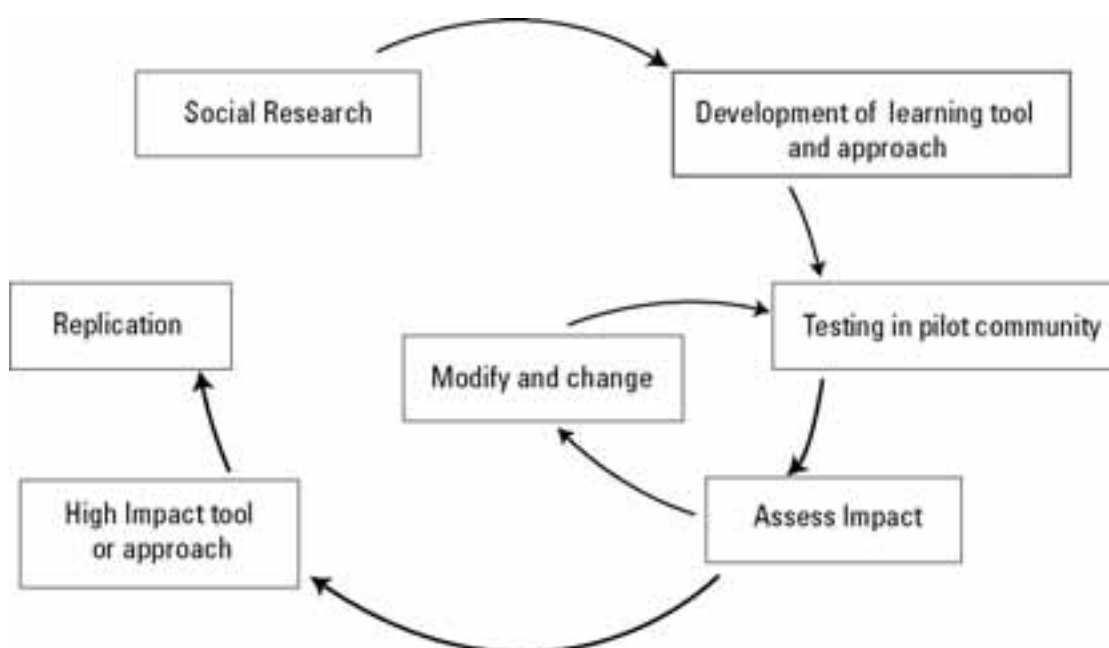
⁹ To accomplish its objective, the Project has three closely interrelated components (i) strengthening natural resource management coordination and planning for the TSBR; (ii) organizing communities for natural resource management in the TSBR; and (iii) building management capacity for biodiversity conservation in the TSBR. The formulation and implementation of the national environmental education and awareness campaign is to be carried out in conjunction with component 1.

V. RESULTS FRAMEWORK

Proposed Outputs	Key Activities Undertaken	Actual Outputs	Means of Verification
1. Perceptions of links between education, attitude and change are rapidly assessed	Carry out RAP through qualitative interviewing with community leaders and teachers and analyze the data gathered to underpin development and testing of environmental education and awareness methodologies and tools, and to permit monitoring and evaluation	Rapid Assessment of Community Perceptions of Environmental Issues on the Tonle Sap. (Social Research Investigation)	RAP (Social Research Report)
2. Two environmental education and awareness methodologies and two tools for community-based problem-solving are developed and tested	Select and develop two environmental education and awareness methodologies and two tools based on the RAP and conduct participatory field-testing of these methodologies and tools in four communities	Facilitators Guide on Learning Circles. Community Theatre Guide	Guides
3. A practical teaching methodology for environmental education and awareness highlighting water as a demonstration issue is developed	Conduct focus group discussions on the applicability and effectiveness of the environmental education and awareness methodologies and tools and modify the methodologies and tools as required	Teaching Guidelines for Environmental Education Across the Cambodian School Curriculum.	Guidelines
4. The environmental education and awareness methodologies and tools developed are evaluated, in consultation with UNESCO	Prepare teaching guidelines conducive to sustainable management of natural resources and biodiversity in the Tonle Sap Basin and community empowerment in collaboration with teacher training colleges and curriculum development units.	Teaching Guidelines for Environmental Education Across the Cambodian School Curriculum.	Guidelines
5. A mini strategy for integrating effective education and awareness methodologies and tools in the context of the TSBS is formulated	Formulate a mini strategy for integrating effective environmental education and awareness methodologies and tools with clear steps for practical integration into the TSBS	Building a Sustainable Future: A Strategic Approach to Environmental Education in the Tonle Sap Region – Cambodia.	Mini Strategy
6.			
7. Lessons are learnt and disseminated	Include lessons learnt on ADB's website and in relevant ADB publications, in consultation with the Water Awareness Program	Website links to various outputs established.	ADB Website www.adb.org/projects/tonle_sap

VI. LESSONS LEARNT AND OBSERVATIONS

10. Tonle Sap communities are not deficient in environmental knowledge. Most communities have a good to comprehensive level of environmental knowledge but are unable to make use of it because they lack of access to the power and economic incentives to make change happen. Capacity building and provision of relevant tools for communities to instigate change are two key areas where focus is needed. The main constraints is embedded in a past where any intention to change was bequeathed by the previous Pol Pot regime leaving many people with little desire to trust government bodies or be part of activities where individuals stand out from others in the community.
11. It appears that no in-depth impact evaluations have been conducted of existing Environmental Educative activities around the TSBR. Success, if measured is often measured by the number of materials developed or trainings conducted, which are not indicators of true impact on knowledge, skills and action competencies. It would seem appropriate that such a review is conducted before new tools are introduced. The lessons learnt to date suggest that the delivery of Environmental Education needs redirection to more participative social models.
12. The challenges facing the people of the Tonle Sap are complex, multi-faceted and interlinked. They include education, health, fisheries, governance and biodiversity to mention a few. Given this complexity and the urgency of the issues we have learnt the need to carefully develop and test approaches with high impact and then seek replication of these.



13. The Tonle Sap Region is confronted with having to manage – or “mismanage” the ever-increasing problem of depleting flooded forest & fish resources as well as polluted water. Water pollution poses public health and environmental hazards, leading to a marked deterioration of livelihoods. The project outcomes showed that values differ among individuals and groups of individuals in attitudes toward having a clean environment around the Tonle Sap. Success in working together is underpinned by acknowledging the diversity of needs, attitudes and values.
14. An interesting observation that derived from the RAP was youth and men’s groups rank the government and district officials to have little actual influence over making decisions about the environment around their communities. Conversely decision makers in the research communities rank the government and district officials in higher regard. This feeling of ownership among many community members may provide a good driver for the PDA to empower and motivate change from the community level.
15. Organizations engaged in environmental education initiatives recognize the value of environmental knowledge for development and also the value of inter-organizational cooperation and collaboration in developing EE tools and training. They are supportive of the PDA especially if it can begin a process of streamlining EE modules into formal school curricula. The project also identified areas where EE can be strengthened through:
 - building capacity for real implementation of EE by trained teachers,
 - cultivating domestic expertise in participative EE facilitation techniques,
 - promoting a collaborative focus on local needs,
 - committing centers to community involvement,
 - engagement with traditional knowledge, and
 - promotion of individual and community reflective activities.
16. A delicate balance exists between individuals challenging inequities as an outcome of environmental education with the need to respect long-standing cultural norms and expectations. This is coupled with the danger of increasing community and student feeling of responsibility for the environment that is not matched by increased empowerment. Bureaucratic obstacles and inertia, characterized by decisions invariably being referred upwards rather than delegated, restricts change. The chances of long-term systemic improvement, supported by political will are poor and further compounded by temptations of forms of corruption (a standard method to augment an otherwise low salary). In regards to this institutional segmentation and isolation of responsibility for Environmental Education is a problem. Cambodia has the Department of Agriculture, Forestry and Fisheries, Department of Environment and the Ministry of Education Youth and Sports (MOEYS) all of which are somewhat active with respect to

Environmental Education but at this stage they are not harmonized in approach or delivery.

17. More awareness needs to be raised among local non government organizations and government departments regarding the potential of environmental education. Some of these are raised in the Strategic Approach and include:
 - enhancement of economic capabilities or opportunities and the sustainable use of natural resources,
 - improvement of practice in curriculum development and educational participation rates,
 - development of opportunities for, and skills of, participation in civil society,
 - provision of basic services to local communities, and
 - facilitating the recognition and utilization of traditional skills and practices.

18. Mainstreamed Environmental Education in formal education faces many institutional and economic constraints. The Ministry of Education Youth and Sports is not opposed to Environmental Education, but is expected to be reluctant to divert resources to it unless it is seen to offer a cost-effective way of achieving priority educational objectives. The current education policy embraces the theme of the ‘Child Friendly School Initiative’. The opportunity exists to be able to establish a well functioning tool that integrates itself into this theme. An opportunity exists to work with the Pedagogical Research Department at MOEYS to foster more participative methodologies. The existence of the cluster school system adds to the accessibility of teachers to support each other in the context of new teaching methodologies based on action learning.

19. Environmental Education materials look good on paper, but teachers are not necessarily employing it in classrooms. There is a need to build capacity for more effective and wide spread implementation through master teachers and teacher training colleges. Teachers need incentives for employing Environmental Education in their teaching following training. Currently, financial incentives are offered for Environmental Education to be taught as a separate subject. Incentives alternate to cash should involve the support and recognition of Environmental Education by Education Policy objectives. What is more, Environmental Education teaching strategies must tally with teachers’ perceptions of their own needs and capabilities. Effective teacher inclusion of Environmental Education involves strategies for innovative design, motivation and most importantly, personal and community reward. Innovative incentives should give a sense of empowerment that their situation (quality of life) will improve through participation.

20. Environmental Education along sustainability themes, commonly referred to as education for sustainability, education for sustainable development or simply in this case, all embraced by the term Environmental Education, can be a key tool for educational reform in the longer-term. This comes as Environmental Education can provide synergy between subjects that have been historically and unproductively separated. Environmental Education offers an efficient educational approach that exemplifies and develops linkages between local, social, cultural, environmental and historical themes.
21. The quality, commitment and accountability of teachers are seriously affected by factors such as remuneration. Teacher absenteeism is quite high and is seen as the result of both poor pay and relatively low status of teaching as a career in Cambodia.
22. Education that creates greater demand and incentive for parents to have their children attend school is essential. Formal education will be more valued if it improves capability to participate in civil society and the labor market. Where Environmental Education can be linked to the enhancement of economic opportunity it may increase the probability that children will be sent to school. Quality Environmental Education integrates work in schools with non-formal education in such a way to be both consistent and contemporaneous learning-in-the-community and continuous with learning that occurs later in life.
23. Knowledge seeking and sharing is not always a culturally valued activity in communities in the TSBR. Therefore building a knowledge based natural resource management tool for communities is bound to face enormous challenges unless it demonstrates its value through short-term tangible outcomes.
24. Collective action in environmental knowledge domains is low to non-existent in TSBR communities. Knowledge creation, where it exists, is perceived as a formal teacher-expert-led enterprise and not as a collaborative social process. Collective action needs to be nurtured in schools through collaboration with environmental knowledge organizations and institutions to 'localize environmental knowledge' to enable higher levels of community action and traditional knowledge sharing.

VII. RECOMMENDATIONS

25. The PDA examined the nature of linkages between Environmental Education and poverty eradication in the TSBR it was found that Environmental Education is contextually appropriate however its method of delivery is dependent on the prioritization of immediate and long term needs identified by the communities. Environmental Education must do more than inform communities about long-term benefits of environmental preservation. It must show that environmental assets can provide a stream of income both in the present as well as the future. Environmental education and poverty eradication are linked by the issue of need. For the most poverty-stricken, if the generation of an income stream provides no alternative than to involve environmental degradation, then that degradation must be tolerated, since the choice at the margin is worse.
26. It is important that where Environmental Education promotes good resource management, environmental outcomes are not separated from their social and economic consequences. For example the creation of a Tonle Sap conservation park may be a sound conservation move, however it may serve to alienate fisher-folk, even where the intention is to improve stocks and catches over time. The change must be wanted and perceived by the community and provide some built-in immediate as well as long-term benefits.
27. Catalytic environmental behavior change will only ensue if Environmental Education tools and activities do not create an extra activity to everyday tasks that are generally primarily focused on income generation from fishing. In poorest homes this includes income generation from fishing, to provide day to day meals.
28. The TSBS and the PDA might consider promoting their strategic goals by exploring innovative ways to access, disseminate and further develop existing knowledge within particular areas of Environmental Education. These may include community and parental involvement, changes in pedagogical practice, use and recognition of traditional knowledge and culture, religious influence, empowerment and equality in participation.
29. Teachers' pedagogies are affected more by the examination system than the curriculum. In its early stages, mainstreaming Environmental Education needs to focus on enhancing teachers' pedagogic practices within existing curriculum and assessment frameworks, particularly in relation to using the local environment as a learning resource. In the longer term concomitant change in the assessment system should be

maintained alongside curriculum and pedagogic change, particularly in assessing the more analytical skills taught in areas that involve a more social and economic emphasis.

30. Collective action needs to be nurtured in schools through collaboration with environmental knowledge organizations and institutions to 'localize environmental knowledge'. This would enable higher levels of community action and traditional knowledge sharing.
31. Environmental education's appeal to a multiplicity of disciplines reflects its relevance to local needs and concerns. Using the PDA and the TSBS to promote the mainstreaming of Environmental Education could offer:
 - a pedagogy which is responsive to Tonle Sap geographical, economic, religious and social needs,
 - a possible way of integrating and engaging traditional ecological knowledge into the curriculum,
 - a focus on the learner, the school, and the community and,
 - relevance to environmental health issues.