Beach Management in Sihanoukville, Preah Sihanouk, Cambodia for Sustainable Tourism

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Key Message

• It is necessary to manage the development of a beach so that sound environmental and aesthetic quality is retained.

• Zoning is necessary to accommodate increasing and varied facilities and visitors as it rationalizes best use of the beach with minimal environmental degradation, use conflicts, and visitor dissatisfaction.

• The participation of stakeholders in the planning and execution of the zoning plan remains crucial to their acceptance and support.

• The integrated coastal management (ICM) program facilitated consultations among the government, private sector, and service providers in a collaborative endeavor to encourage sustainable tourism.

Abstract

The beaches of Sihanoukville were attracting increasing numbers of local and international tourists. Despite the economic benefits of coastal tourism, serious social and environmental problems were arising as investments to improve or even maintain the beach environment and its facilities were inadequate. The lack of regulatory guidelines resulted in haphazard proliferation of tourist facilities, activities, and waste disposal that compromised environmental quality, increased user conflicts, and threatened the beach’s attraction to tourists.

The provincial government initiated the ICM program in 2001 to sustainably manage coastal and marine resources. The primary tool used to attain the Coastal Strategy objectives was coastal use zoning, which was established throughout the province in 2004 and adopted by the National Coastal Steering Committee in 2005. With the burgeoning tourism industry, a special
focus on zoning for tourism was adopted, cutting across the three priorities identified in the Coastal Strategy Implementation Plan: pollution, livelihood management, and habitat protection. Ochheuteal Beach was selected as a pilot site for the Tourism Development and Management Project under the ICM program to address the worsening problem of beach encroachment by tourism facilities and to demonstrate good practices in beach management through a partnership between local government and private sector. This case study focuses on the benefits, outcomes, and challenges of Ochheuteal Beach management for sustainable tourism.

Background

Sihanoukville, the capital of Preah (Province) Sihanouk has seven major beaches and islands. The white sand and clear shallow waters are a major draw for tourists and provide a steady source of income for the province. Tourist accommodations and establishments expanded quickly to cope with the steady upswing of visitors, from 19 hotels and guesthouses in 1993 to 57 hotels and 221 guesthouses in 2014. Between 1993 and 2003, domestic visitors to Sihanoukville increased from 4,585 to 83,888 and foreign tourists, from 8,428 to 33,604 (Libosada, 2004). By 2014, there were over a million domestic and foreign visitors. Today, Ochheuteal Beach is one of the most popular tourist beaches due to its accessibility.

An exponential increase of visitors is expected with the establishment of regular flights to and from the province. The increasing activities are intertwined with the fast population growth. The province’s GDP per capita was US$ 1,095 in 2014 (World Bank, 2015) while the annual population growth rate of 2% was the highest among Cambodia’s coastal provinces. Despite the economic benefits of coastal tourism in the province, serious social and environmental problems were arising compounded by limited investments to improve or even maintain the beach environment and its facilities.

Preah Sihanouk initiated the ICM program in 2001 to sustainably manage its coastal and marine resources amid rising urbanization. Three major areas of concern were identified in the province’s Coastal Strategy Implementation Plan (CSIP): pollution reduction and waste management; food security and livelihood management; and habitat protection and management.

From 2004 to 2008, various pilot projects were implemented under the ICM program. Coastal use zoning was the primary tool used to facilitate the Coastal Strategy objectives. In 2004, coastal use zoning was established throughout the province and adopted by the National Coastal Steering Committee in May 2005. With the burgeoning tourism industry, zoning activities were completed with a special focus on tourism. Against this backdrop, Ochheuteal Beach was used as a pilot site for the Tourism Development and Management Project in 2004.

Approach and Methodology

The pilot project in Ochheuteal Beach was focused on the worsening problem of beach encroachment by tourism facilities and the establishment of good beach management practices through a partnership between local government and private sector. The development plan was initiated with a series of workshops and studies on tourism dynamics and a tourist profile (Libosada, 2004). The results were used as the basis for management recommendations.

Beach environment

At the time of the study in 2004, Ochheuteal Beach was divided into three areas: the beachfront, terrestrial, and private development, which was separated from the beach proper by a road (Visal and Nay, 2012). Both beachfront and terrestrial areas were owned by the government, while the private development area was a mix of privately
owned and operated hotels and guesthouses. Growth in the number of accommodations in Ochheuteal Beach increased steadily since 2004 (Table 1).

Nonpermanent structures, such as huts and stalls, in beachfront and terrestrial areas were developed into “semi-permanent” structures, with concrete flooring and solid foundation. In 2004, there were 36 stalls in both areas. Revenue was generated from renting out tables, chairs, and beach gear, such as floaters, as well as preparing/selling food and drinks. The zoning plan was focused on beachfront and terrestrial areas as these were public land and the location of most of the informal infrastructure.

There was very little effort to maintain the quality of Ochheuteal Beach, in terms of environmental protection and sustainable tourism. The huts/stalls were not well placed or spaced. Most of them were situated in the beach area while the terrestrial area served primarily as a parking lot, temporary garbage dump, and improvised toilet facilities (Figure 1).

<table>
<thead>
<tr>
<th>Table 1. Accommodations in Ochheuteal Beach.</th>
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</thead>
<tbody>
<tr>
<td>Accommodation</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Hotel</td>
</tr>
<tr>
<td>Guesthouse</td>
</tr>
</tbody>
</table>

Figures:
- Figure 1. Environmental degradation of Ochheuteal Beach at the start of the project in 2004 (Visal and Nay, 2012).
- Erosion prevention using unsightly sand bags.
- Improvised toilets and water containers.
- A stall’s outflow pipe, discharging directly in the middle of Ochheuteal Beach.
- Wastewater discharging at the ground surface.
Studies and site visits confirmed that the lack of sanitation and unacceptable wastewater disposal were causing unsightly and unhealthy conditions. Some toilets were situated very near to creeks that emptied to the beach area. Wastewater pipes were located directly in the beach area, significantly affecting beach aesthetics. A number of establishments were lacking proper wastewater disposal facilities, with wastewater discharging directly to ground surface.

Tourist profile

The tourist profile was observed as follows (Visal and Nay, 2012):

a. Most tourists were backpackers. Tourist operators were generating only a limited income from backpackers resulting in limited investments for improving facilities and services.

b. Tourists were primarily visiting Sihanoukville as a gateway to either Thailand or Viet Nam, and not as their main destination. This limited the duration of their stay and spending. Visitors were staying for a maximum of two days, or for the duration of public holidays.

c. The illegal construction of stalls and huts were making Ochheuteal Beach and other beaches unsightly. Further, the poor condition of such
facilities was turning tourists away as well as creating access problems.

**Tourism plan**

A comprehensive Tourism Development and Management Plan was designed for Ochheuteal Beach (Figure 2) to address environmental concerns, promote it as a primary tourist destination, and increase visitation.

In the tourism plan, zoning was the foundation for beach management. It provided a rational approach to the management of the beach by (a) ensuring the correct placement of infrastructure and facilities; (b) maintaining the beach’s integrity; and (c) creating legal impetus for improved tourist facilities and services (Visal and Nay, 2012). It was foreseen that terrain in Ochheuteal Beach would become increasingly vulnerable with the rise in tourism. Thus, zoning was ultimately a pre-emptive step in preparing for larger numbers of visitors. This was reflected in the plan by the definition of the easement zone, i.e., the distance of permanent structures away from the beach.

Preparation and implementation of the pilot project was undertaken by a Task Team headed by the Department of Tourism, under the ICM Project Coordinating Committee (PCC) and supported by a local deka (provincial ordinance) issuance. PEMSEA provided technical assistance and financial support throughout the project. Figure 3 summarizes the various activities that were conducted for Ochheuteal Beach management over an eight-year period.

The pilot area for beach zoning was completed covering 704 m length of Ochheuteal Beach. Consultations were conducted at the start of the
project to identify the zones in the beach area, as well as the permitted and prohibited activities within each of the zones. The Ochheuteal task team engaged stallholders and private investors in the process of planning and development, particularly in identifying activities allowed in each zone. Getting the various sectors involved in all aspects of consultations resulted in more positive buy-in on the execution of the zoning plan and in getting local investments. The zoning plan was composed of five major zones (Figure 4 and Box 1). Despite the consultations, implementation was met with the following challenges:

1. The new rules on beach zoning were met with various criticisms from stall owners. This was primarily due to lack of any prior rules and regulations, aside from the payment of a tariff for use of public land (beach area). Furthermore, stall owners were apprehensive that the enforcement of the zoning scheme would be uneven and selective.

2. Stall owners were required to remove semi-permanent structures and invest in new improved ones which were costly and without any guarantee of return.

3. During the construction period, there was a temporary loss of livelihood.

In 2008, zoning was implemented coupled with the construction of lavatories and parking spaces by the local government. This was a concrete means to demonstrate the government’s commitment to improve beach management.

Figure 4. Beach zoning for Ochheuteal Beach, pilot phase (Visal and Nay, 2012).
Box 1. Marine functional zoning.

Beach zone

The beach area was a no-build zone for permanent facilities. Only beach appliances such as chairs and umbrellas were allowed. This zoning condition provided an increased area for beach activities and reduces potential impacts of soil erosion by dispersing the intensity of human activity (Photo 2).

Swimming zone

Prior to the implementation of zoning, no specific areas were devoted to swimming. Jet skis, boats, and other water craft were allowed to operate and park anywhere. Photos 3-5 illustrate the conditions prior to zoning. Photos 6-8 show after zoning conditions; the swimming zone was delineated as the waters extending 100 m seaward from the mean high tide; and the area was kept free from mechanized water craft to avoid accidents and conflicts over sea use.

Photos 1. Tourist facilities are too near the shore, causing erosion as well as solid and liquid waste pollution.

Photo 2. A significant portion of the beach has been cleared of structures. This photo shows the beach area (green arrow), easement (20–30 m, blue portion), and a part of the buffer zone (10–15 m, brown arrow). Only umbrellas and chairs are allowed in the beach area.

Photos 6–7. A pier was established for vessel anchorage and as an embarkation point.

Photo 8. Buoys and markers were used to identify the swimming zone's boundaries.
Easement zone

Photo 9 shows the disorderly condition prior to zoning enforcement, when most establishments were located in the easement area. Photo 10 shows the improvement thereafter. An easement zone was identified to protect the beach area from unwanted sand erosion. Due to the uneven profile of the Ochheuteal Beach area, two easement zones were implemented: 20–30 m from the mean high tide mark and 20–30 m inland. The existing beach vegetation, which is part of the easement zone was protected to prevent sand erosion. The relatively narrow easement zones were recommended to accommodate the limited builtup zone bordering the beach. Finally the easements served as additional buffer against destructive typhoons.

BEFORE ZONING

After ZONING

Photo 9. Concrete posts within the easement and buffer zones were established on public land in the beach.

Photo 10. The easement zone ranged 20–30 m from the mean high tide mark. No permanent structures were allowed in this zone.

Buffer zone

A buffer zone of 10 m from the easement zone was established (Photo 11). This enabled existing beach vegetation to thrive and to reduce potential impacts from development occurring in builtup zone. Most human movements, from builtup zone to easement and beach zones, occurred in buffer zone.

A walkway (Photo 12) was established between buffer and builtup zones to facilitate access and to serve as landmark for beach area, buffer zone, and transition between buffer zone and builtup area. The walkway also served as beach area boundary, beyond which no permanent structures were allowed. This also facilitated tourist mobility along the beach.

Photos 11–12. The buffer zone was the 10-15 m transition between easement and builtup zone. The walkway was part of the buffer zone. The trees lined up in this area were maintained to prevent erosion.
**Builtup zone**

The open space or terrestrial area immediately beyond the buffer zone at the beach’s back end was integrated with the builtup zone. Most tourism development occurred here. Aside from beach-related facilities, utilization of the zone was diversified to achieve dispersal of visitors thereby decreasing density of people and providing more activities.

The builtup zone was composed of two sub-areas: immediately after the buffer zone, which was composed of semi-permanent huts and other permanent facilities beyond the huts.

The semi-permanent huts (Photos 11–12) were designed to prevent infrastructure loss and damage from erosion and other hazards. The rational and efficient use of the area improved the entire beach. To manage activities optimally and improve tourist facilities, the following investments were provided through the collaboration of the provincial government and the private sector (comprising family owners of huts and restaurants and local investors):

- automatic wastewater facility with a capacity of 94.5 m$^3$ serving 39 establishments along the beach; this was completed and operational in 2011, reducing the discharge of wastewater to the sea; it was maintained by the provincial government through the Department of Public Works and Transport
- 74 stalls composed of semi-permanent huts and restaurants
- tourism information center
- parking space
- 8 public lavatories
- 3 souvenir shops
- 979 m of walkway
- stormwater drainage system
- wastewater collection system and storage
- beach signage
- children’s playground
- 74 kitchens and 91 kiosks

To maintain these services, local operators were selected to manage and maintain each service’s daily business operations and share profits with the government for Ochheuteal Beach development and management. The government also generated a revenue share in the income of public lavatories, parking lots, and souvenir shops.

*Photos 13–15* (from left to right): Souvenir shop, lavatory, and parking space beside the main road were established as part of the builtup zone located beyond the semi-permanent huts.
The multi-agency Ochheuteal Beach Task Team, headed by the vice mayor of Sihanoukville Municipality, worked regularly on enforcement, management, auditing, and development issues in relation to the public-private services collaboration.

Photos 16–18. In 2011, an automatic wastewater facility was set up with a capacity of 94.5 m³ serving 39 establishments along the beach.

Photo 19. Infrastructure immediately after the buffer zone included 74 stalls composed of semi-permanent huts and restaurants.

Photo 20. The tourism center was located at the back end of the zone.

Project expenditures

Public funds were used primarily to establish the foregoing facilities. PEMSEA funding was used in initiating the plan and providing the wastewater facility, using a revolving fund mechanism. The total GEF/PEMSEA contribution was 4.6% of the project cost. It served as a catalytic fund, while the government provided 27% of the total infrastructure development. The bulk of the fund was contributed by stall owners, which was about 69% of the total development fund. Details of contributions are provided in Table 2.

Overall management of the project was the responsibility of the Ochheuteal Beach Task Team and the Department of Tourism, in cooperation with the stall owners and private investors.
Table 2. Partners’ contribution on beach management in Ochheuteal beach.

<table>
<thead>
<tr>
<th>Description</th>
<th>Government fund</th>
<th>Private sector contribution</th>
<th>PEMSEA Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation, mobilization, and master plan</td>
<td></td>
<td></td>
<td>21,000</td>
</tr>
<tr>
<td>Infrastructure improvement</td>
<td>235,147</td>
<td>613,453</td>
<td>20,000</td>
</tr>
<tr>
<td>Parking lot</td>
<td>15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lavatories</td>
<td>75,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Souvenir shops (2)</td>
<td>24,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walkway on the beach</td>
<td></td>
<td>21,453</td>
<td></td>
</tr>
<tr>
<td>Rainwater drainage system</td>
<td>15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wastewater pipe, storage, and maintenance</td>
<td>10,000</td>
<td></td>
<td>20,000</td>
</tr>
<tr>
<td>Landscape improvement and other signage</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children’s playground</td>
<td></td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Kiosk, stalls, and kitchens along the beach</td>
<td></td>
<td>492,000</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>384,147</td>
<td>1,136,906</td>
<td>61,000</td>
</tr>
<tr>
<td>Total investment made to date</td>
<td>1,582,053</td>
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<td></td>
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</tbody>
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Results

**Increased tourism.** There was an increasing number of tourist arrivals in the province from 144,995 in 2004 to 1,327,748 in 2014. An initial study indicated that tourists to Sihanoukville visited the beach at least once during their stay. This is well within the carrying capacity set by the World Tourism Council. Additionally, the development of nearby Serendipity Beach has helped to further disperse tourist density to more sustainable levels.

Despite the increased number of tourists, water quality was maintained at acceptable levels as shown by monitoring tests conducted for Ochheuteal Beach in 2005 – 2012.

**Increased length of stay.** Length of stay in the beach increased from two days (Saturday and Sunday) to an average of four days (Thursday to Sunday). This resulted in increased daily income of US$ 80-100 among stall owners, who on average invested US$ 20,000 in building their kitchens and huts and expected a return-on-investment within four to five years.

The appreciation for beach management and its benefits has instilled a sense of responsibility among stall owners. A recent survey revealed that stall owners were receptive to contributing to beach management with the majority willing to provide a US$ 25-30 monthly payment.

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1 Based on 30 m² per person or 1,407 daily visitors of the 704-m beach. Due to expansion of zoning in nearby Serendipity Beach, the visitors have been dispersed in Ochheuteal Beach.

2 Based on the Reports of the Sihanoukville Environmental Laboratory using ASEAN criteria for bathing waters. Parameters monitored include pH, temperature, salinity, TSS, DO, and BOD (PG-Preah Sihanouk and PEMSEA, n.d.).
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**Increased job opportunities.** In 2004, each stall employed only three workers. In a 2012 survey, this increased to five. Similarly, in 2012, the majority of stall owners reported an annual income of US$25,000-30,000. Previous earnings prior to project implementation in 2004 showed that stall owners earned less than US$10,000 to US$15,000 per year. In a 2014 survey conducted by the Taxation Office, annual income rose to US$ 30,000 - $40,000.

**Positive demonstration.** Encouraged by the progress made through beach management, other nearby stall owners adopted the Occheuteal Beach model for management. As a cooperative effort in beach management, 35 stalls voluntarily moved to Serendipity Beach to replicate the Occheuteal Beach model. The government, in a similar recognition of the benefits of beach management, improved road access to O'tress Beach to accommodate increased tourism. Also, after stakeholder consultations, a 1-km long buffer zone designed as a beach garden, was established in O'tress Beach. Similarly, an access road was constructed from the domestic airport to the city in order to enhance traffic security and spread the number of tourists to other destinations.

**Strengthened government and private sector participation.** The development of the builtup zone brought together the local government and the local business people, forging stronger cooperation and collaboration.

**Greater political commitment to beach management.** Having demonstrated the management of beaches, the provincial government applied for membership in the Les Plus Belles Baies Du Monde (Club of the Most Beautiful Bays in the World), based in Paris, France. The initial application was only for Preah Sihanouk, but the government amended its application to include the Cambodian Bay covering all four provinces. Its membership was approved on 25 May 2011, strengthening the national government’s resolve to consciously consider the coastal and marine resources in the country’s development planning. Prior to project implementation, the national government only collected revenue through the value-added taxes and issuance of business permits. By 2014, the Taxation Office started collecting taxes on business profit. Further, part of the income from daily operations was apportioned to environmental management, security, and safety, as well as contributing to the provincial budget. The annual average collection from taxes and user fees at Occheuteal Beach was close to US$50,000 (Table 3).

**Scaling up.** Learning from the beach management in Occheuteal, the project scaled up from the demonstration site to two adjacent sites: Block Kit Meng and Serendipity Beach (Figure 5). Block Kit Meng extends from the right side of Occheuteal Beach to about 250 m. Serendipity Beach, covering 180 m, stretches to Puoy Tamong Cove.

Beach management was also extended to cover the 3,150 m O’tress Beach, the second most popular beach among the seven in Preah Sihanouk Province. Similar to the conditions in Occheuteal Beach prior to management efforts, O’tress Beach was confronted by unsustainable tourism development activities arising from the rapidly increasing number of tourist establishments. The

<table>
<thead>
<tr>
<th>Income derived from the establishment</th>
<th>Amount (US$)</th>
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<tbody>
<tr>
<td>5 public lavatories and parking lot</td>
<td>1,500</td>
</tr>
<tr>
<td>65 stalls business permits</td>
<td>975</td>
</tr>
<tr>
<td>65 stalls VAT</td>
<td>7,800</td>
</tr>
<tr>
<td>65 stalls business income tax</td>
<td>19,500</td>
</tr>
<tr>
<td>Cintri waste collection company</td>
<td>8,000</td>
</tr>
<tr>
<td>Wastewater management facility</td>
<td>9,600</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td><strong>47,375</strong></td>
</tr>
</tbody>
</table>

Table 3. Benefits from investment in Occheuteal Beach, by local government and daily operation (yearly).
majority of the more than 40 accommodations and 60 restaurants did not install environmental protection facilities. Based on the pronouncement of the Prime Minister on 11 July 2011, and upon advice by the Ministry of Land Management, Urban Planning and Construction, O’tress Beach became the next priority for development. The O’tress Beach Master Plan was developed on the basis of Circular 01 on the Coastal Area Development and the recommendation from the 2012 Beach Erosion Assessment Report of Ochheuteal and O’tress Beach. Preparation, consultation and mobilization; management framework; and monitoring system were based on the experiences of Ochheuteal Beach management.

**Lessons Learned**

**Data can enable more effective management.** In 2004, there was not enough data on the erosion rate and scientific bases for zoning the beach. One of the proxy indicators utilized was the observed rate of erosion in the adjacent O’tress Beach, where a maximum of 1 m of beach was being lost per year in some areas. This was used as a benchmark and basis for convincing the stall owners to move their establishments farther away from the shore.

The zoning scheme and implementation plan were also based on the premise that moving permanent structures away from the beach would be beneficial, not only for the beach but also for infrastructure investments. The main consideration was beach protection hence, the baseline for zoning was inland from the beach.

**Zoning can be both a technical and political exercise.** Zoning requires a strong understanding of both the environmental aspects and the sociocultural setting. Zoning and development of less than a kilometer of beach was challenged by several issues, particularly existing illegal structures in the easement zone. Dialogues were conducted over a four-year period before the zoning could be fully implemented and enforced. Part of the agreement between the government and stall owners was a three-year grace period in the...
payment of land rental to the government to allow the recovery of their initial investments.

**Good results can improve recognition and acceptance.** As with most environmental sustainability projects, understanding and appreciation of the importance of environmental management comes after people see positive economic benefits from the project. Compared to the initial negative perception, the recent survey indicated full agreement and appreciation among stall owners for the beach management initiatives.

**Public-private partnership can be critical to success.** Obtaining the buy-in from stall owners through the collaborative efforts as well as individual compliance were important in the absence of government funds for infrastructure development.

While this project has shown significant socioeconomic benefits from effective management, much more remains to be accomplished, specifically:

- organizing the stall owners and informal vendors and improving their skills for better services to tourists while increasing awareness on beach protection;
- improving beach security and safety;
- maintaining the facilities and more landscaping improvement; and
- establishing a sustainable financial mechanism to ensure long-term viability.

Lessons learned from the Ochheuteal Beach management over a decade of development and monitoring provided a useful model for sustainable tourism. The solid database, local knowledge, and experience as well as the demonstrated benefits of public-private partnership, strongly suggest that the beach management approach is viable and can be extended to other beaches throughout the entire coastline of Cambodia.

**References**


