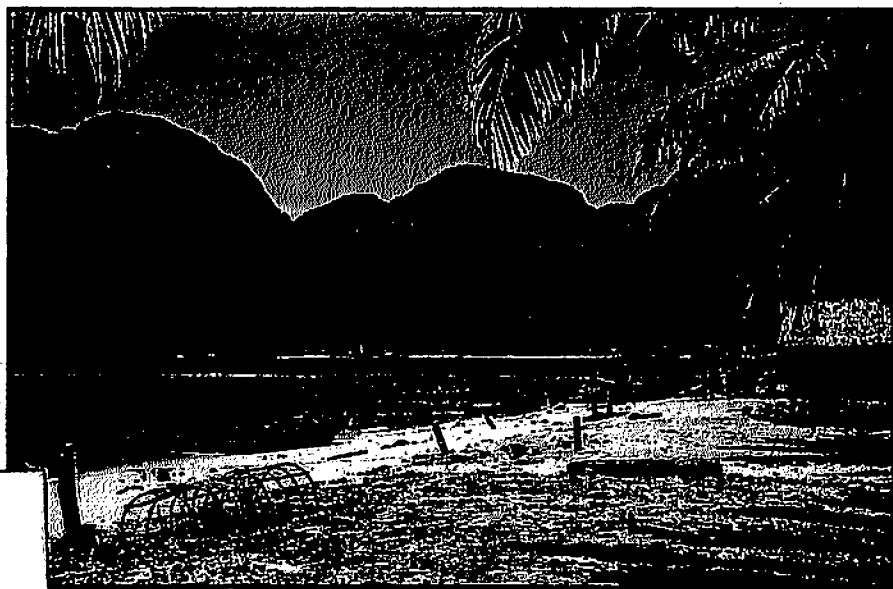

COASTAL TOURISM

IN SOUTHEAST ASIA



SH
207
E3
#13
c.3

P.P. Wong

SH
207
E3
#13
C-3

#83

Coastal Tourism in Southeast Asia

P.P. WONG

1991



ICLARM



Association of Southeast Asian Nations/
United States Coastal Resources Management Project
Education Series 8

Coastal Tourism in Southeast Asia

P.P. WONG

1991

Published by the International Center for Living Aquatic Resources Management on behalf of the Association of Southeast Asian Nations/United States Coastal Resources Management Project.

Printed in Manila, Philippines.

Wong, P.P. 1991. Coastal tourism in Southeast Asia. ICLARM Education Series 13, 40 p. International Center for Living Aquatic Resources Management, Manila, Philippines.

**Cover: A beach resort at Mu Ko Phi Phi, Thailand.
(Photo by Alan T. White.)**

Color plates by P.P. Wong.

**ISSN 0116-5720
ISBN 971-8709-07-x**

ICLARM Contribution No. 715

Contents

Acknowledgements	v
Foreword	vii
Introduction	
Popular and research perspectives	1
Objectives	1
Terminology	2
Distribution of beach resorts	3
Physical Environment	
What are coasts?	7
Physical factors	7
Southeast Asian coasts	11
Beach resort sites	16
Stages of Beach Resort Development	
Evolution of beach resorts	17
Resort models	18
Typologies of resorts	19
Impact of Coastal Tourism	
Nature of impact	23
Conflicts and issues	24
Impacts: some examples	26

Planning and Development of Coastal Tourism in Southeast Asia	
Environmental guidelines and the environmental impact assessment	29
Planning strategies and concepts	31
Standards and development controls	32
Plans	35
References	38

Acknowledgements

This book would not have been possible without the following:

- the National University of Singapore (NUS), for its continued support for my research on coastal tourism initially in Peninsular Malaysia and then extending to other resort areas of Southeast Asia;
- Dr. Chua Thia-Eng, Director, Coastal Area Management Program, International Center for Living Aquatic Resources Management, Manila, for inviting me to write the book and for his encouragement;
- Mrs. Lee Li Kheng, senior technician, Department of Geography, NUS, for a marvelous job on the diagrams;
- Mr. David Tarnas of the University of Hawaii at Manoa Kailua-Kona and Dr. Richard Tobin of the State University of New York at Buffalo, for their helpful comments and suggestions;
- the ASEAN/US CRMP editorial staff - Ms. Marie Sol M. Sadorra and Ms. Katherine I. Chua for copyediting the manuscript; Ms. Rachel C. Josue for typesetting it; and Ms. Rachel C. Atanacio for preparing the layout;
- my wife, Judy, and my three sons, for putting up with my frequent absences from home, especially during the school holidays; and
- the many beach folk whom I have spoken to during my fieldwork or whose beach property I have unknowingly trespassed.

Foreword

The coastal waters of Southeast Asian countries have some of the world's richest ecosystems characterized by extensive coral reefs and dense mangrove forests. Blessed with warm tropical climate and high rainfall, these waters are further enriched with nutrients from land that enable them to support a wide diversity of marine life. Because economic benefits could be derived from them, the coastal zones in these countries teem with human settlements. Over 70% of the population in the region live in coastal areas that have been recently characterized by high-level resource exploitation. This situation became apparent between the 1960s and 1970s when socioeconomic pressures were increasing. Large-scale destruction of the region's valuable resources has caused serious degradation of the environment, thus affecting the economic life of the coastal inhabitants. This lamentable situation is mainly the result of ineffective or poor management of the coastal resources.

It is essential to consider coastal resources as valuable assets that should be utilized on a sustainable basis. Unisectoral overuse of some resources has caused grave problems. Indiscriminate logging and mining in upland areas might have brought large economic benefits to companies undertaking these activities and, to a certain extent, increased government revenues, but could prove detrimental to lowland activities such as fisheries, aquaculture and coastal tourism-dependent industries. Similarly, unregulated fishing efforts and the use of destructive fishing methods, such as mechanized push-nets and dynamiting, have caused serious destruction of fish habitats and reduction of fish stocks. Indiscriminate cutting of mangroves for aquaculture, fuel wood, timber and the like have brought temporary gains in fish production, fuel wood and timber supply but losses in nursery areas of commercially important fish and shrimp, coastal erosion and accretion.

The coastal zones of most nations in ASEAN are subjected to increasing population and economic pressures manifested by a variety of coastal activities, notably, fishing, coastal aquaculture, waste disposal, salt-making, tin mining, oil drilling, tanker traffic, rural construction and industrialization. This saturation is aggravated by the expanding economic activities attempting to uplift the standard of living of coastal people, the majority of whom live below the official poverty line.

Some ASEAN nations have formulated regulatory measures for their coastal resources management (CRM) such as the issuance of permits to fishing,

logging, mangrove harvesting, etc. However, most of these measures have not proven effective due partly to enforcement failure and largely to lack of support for the communities concerned.

Experiences in CRM in developed nations suggest the need for an integrated, interdisciplinary and multisectoral approach in developing management plans providing a course of action usable for daily management of the coastal areas.

The ASEAN/US CRMP arose from the existing CRM problems. Its goal is to increase existing capabilities within ASEAN nations for developing and implementing CRM strategies. The project, which is funded by USAID and executed by ICLARM in cooperation with ASEAN institutions, attempts to attain its goals through these activities:

- Analyzing, documenting and disseminating information on trends in coastal resources development;
- Increasing awareness of the importance of CRM policies and identifying, and where possible, strengthening existing management capabilities;
- Providing technical solutions to coastal resources use conflicts; and
- Promoting institutional arrangements that bring multisectoral planning to coastal resources development.

One of the information activities of CRMP is to produce or to assist cooperating agencies in producing educational materials on coastal environments that are targetted for general audiences. In the form of books, booklets or leaflets, these materials primarily purport to create public awareness on the importance of rational exploitation of living coastal resources, environmental conservation and integrated CRM planning.

Intended as a primer, *Coastal Tourism in Southeast Asia* discusses the various forms of tourism development along the region's coasts, their environmental and socioeconomic impacts and the issues that arise from conflicting resource uses. It also outlines the basic physical aspects of the coast, particularly in Southeast Asia, that must be assessed prior to development. Moreover, the book presents some guidelines, planning strategies and development controls for sustainable coastal tourism.

Chua Thia-Eng
Project Coordinator
ASEAN/US Coastal Resources
Management Project

Introduction

Popular and Research Perspectives

Popularly, "coastal tourism" conjures up images of resorts on the seaside, beaches, sand, sea and plenty of sunshine. Advertisements and travel and trade literature have helped promote the three S's that beach resorts usually offer--sun, sea and sand.

Tropical coastal areas, in particular, are actively sought for the development of tourist resorts. Compared with the coasts in the temperate latitudes, those found in the tropics are more able to offer the combination of sun, sea and sand to the tourists year-round. The presence of beautiful extensive coral reefs is an added attraction. Southeast Asia's tropical climate and fringing coasts have made it an important area for coastal tourism development. The best-known resorts in the region are Pattaya and Phuket in Thailand, Bali in Indonesia, Penang in Malaysia and Cebu in the Philippines.

To the researcher, coastal tourism deals with two complex systems--the tourism system and the coastal system, the former being primarily a human system and the latter, an environmental one. The interaction of these two systems involves a wide variety of human and environmental aspects and some of these have been the focus of a number of recent academic discussions.

The planning, development and management of seaside resorts have also been discussed in several publications on resort development.^{4,21,50} The physical environment is a major component of coastal tourism, and various guidelines for its protection have been drawn up by the United Nations Environment Programme (UNEP) and the World Tourism Organization (WTO).^{1,50} With the recent implementation of coastal zone management programs, coastal tourism is likely to be planned, developed and managed as part of these.

Objectives

Coastal tourism development has caught the attention not only of coastal area planners and managers, but also of lay persons. This book aims to orient all these individuals with the development and impact of, and issues regarding coastal tourism. Some environmental guidelines, strategies and standards for a

sustainable coastal tourism are also given, citing actual situations that can be used as models for Southeast Asia.

Terminology

Several terms found in coastal tourism literature indicate visible forms of the phenomenon, some of which are used interchangeably, causing confusion. Table 1 shows eight terms wherein the physical (coast) and human (tourism) attributes of coastal tourism are related.

Table 1. Commonly used terms regarding coastal tourism.

	Huts/bungalows	Hotel	Resort
Beach	*	*	*
Seaside	X	X	X
Island			*
Coastal			*

* - for coastal tourism in Southeast Asia.

The following are expressions that refer to the most commonly observed forms of coastal tourism in Southeast Asia:

1. "Beach huts/bungalows" refer to the rudimentary accommodations on or near beaches that are popular with budget travellers. These are associated with local forms of coastal tourism, e.g., *kampong* or village tourism in Malaysia.
2. "Beach hotels" are hotels located near the sea. These are limited in number, with a few improved to become resorts.
3. A resort is a specialized type of hotel and the "beach resort" is just one with a seaside location. The beach resort, which is actively promoted in travel journals and guides, can be considered the most representative form of coastal tourism in Southeast Asia.
4. Where one or more beach resorts are located on a part of an island or an entire one, the term "island resort" can be used. These are becoming popular as their accessibility has improved.
5. "Coastal resort" refers to the settlement that is developed with coastal tourism as its main function, and whose facilities and services are parallel to the coastal morphology. Pattaya in Thailand is the best example.

In this book, the term "beach resort" is used in a general sense to include the beach huts or bungalows, seaside hotels, island resorts and the seaside margin of the coastal resort. This makes it easier to identify the beach resort and relate it to the coastal environment.

Distribution of Beach Resorts

In their *Atlas for marine policy in Southeast Asian Seas*, Morgan and Valencia identified 110 existing and potential tourist sites along the coasts of Southeast Asia.³³ Of these, only 31 were identified as beach resorts, almost all of which are found in the Philippines, Malaysia and Thailand. Based on the availability of accommodations, a total of 61 beach resorts in 1981 to 1982 were identified by Franz.¹⁹ The majority of these were found in the above three countries, eight in Indonesia, and one each in Burma, Singapore and Vietnam. The distribution of the beach resorts shows the importance of infrastructure, accessibility to urban centers and the relative absence of efforts to develop tourism in coastal areas in the socialist countries.

Researchers have commonly identified the major beach resorts in Southeast Asia, with the exception of Cebu.^{19,34,17} There is really no consensus on the manner of identification of the smaller beach resorts, and there is a marked variation in naming the secondary, minor or other resorts. For example, Muqbil identified Kuantan and Kota Bharu (Malaysia), Hua Hin and Cha-am (Thailand), and Manado and Ujung Padang (Indonesia) as secondary beach resorts.³⁴ Edwards considered Songkla, Hat Yai, Kuantan, the beach areas near Johore Bharu and Kota Kinabalu, Batangas and Cavite minor beach resorts.¹⁷ He also had a third category of beach resorts in which the majority have fair-sized, isolated and recently developed hotels, or more established ones catering mainly to domestic tourists.

Thus, the number and the distribution of different types of beach resorts in Southeast Asia largely depend on the manner of resort classification used, and the availability and reliability of information. Since qualitative data as a basis for accurate categorization of beach resorts are not readily available (e.g., number of visitors/resort), a general method of classification, which differentiates the major or international beach resorts from the secondary beach resorts, is given. The first category is important mainly to international tourism and recognized as such in nearly all tourist or travel literature. The second category is of value to both international and domestic tourism (Table 2). The major beach resorts are identified by location names and often refer to the amalgamation of several separate resort areas, e.g., Bali consists of Kuta, Sanur and Nusa Dua; Cebu refers to the main resort area on Mactan Island, Argao and Sogod on Cebu Island and Badian Island; and Penang is mainly Batu Ferringhi

Table 2. Secondary beach resorts in Southeast Asia. (Refer to Fig. 1 for exact location on map).

Burma

B1. Sandoway (Ngapali Beach)

Indonesia

Sumatra

I1. Lagundi Beach (Nias Island, Indonesia's surfing mecca)

I2. Nongsa Beach (Pulau Batam)

I3. Trikora Beach (Pulau Bintan)

Java

I4. Pulau Seribu (several islands)

I5. Anyer Beach

I6. Carita Beach

I7. Pelabuhanratu

I8. Pangaderan

I9. Parangtritis (best known of the southern beaches, black sand beach with dunes)

I10. Pacitan (bay enclosed by cliffs)

I11. Pasir Putih (East Java's most popular local resorts)

Bali

I12. Singaraja (number of beaches)

I13. Candidasa (most popular after the major resorts)

I14. Balina Beach (major scuba diving center in Bali)

I15. Nusa Lembongan

Lombok

I16. Gili Islands

I17. Senggigi Beach

I18. Kuta Beach (several bays and less touristic than the other Kuta Beach in Bali)

Flores

I19. Waecicu Beach

I20. Waiara Beach

Maluku Islands

I21. Halmahera (Tobelo)

I22. Ambon (Pulau Pombo and Natsepa)

I23. Neira (Bandaneira)

Malaysia

M1. Pulau Langkawi

M2. Pulau Pangkor

M3. Port Dickson (popular local resort)

M4. Pantai Cinta Berahi

M5. Pulau Perhentian Besar

M6. Rantau Abang

M7. Cherating

M8. Kuantan (Telok Chempedak to Chendor Beach)

M9. Pulau Tioman

M10. Islands off Mersing (Pulau Rawa, Pulau Babi Besar, Pulau Sibiu)

M11. Desaru

M12. Tanjong Aru Beach (near Kota Kinabalu)

M13. Pulau Sipadan (diving spot)

M14. Damai Beach (near Kuching)

Continued

Table 2 (continued)

Philippines

Luzon

- P1. Lingayen Gulf (from Bolinao to San Fernando)
- P2. Zambales coast (between Iba and San Antonio, R & R resort)
- P3. Subic Bay (R & R resort)
- P4. Cavite (Ternate)
- P5. Batangas (the most popular local resort near Manila, composed of Nasugbu, Matabungkay and Calatagan)
- P6. Quezon (Atimonan to Gumaca)
- P7. San Miguel Bay (most popular in Southern Luzon)
- P8. Lagonoy Gulf
- P9. Albay Gulf

Mindoro

- P10. Puerto Galera (increasingly popular international resort)
- P11. Apo Reef (reputed to be the best diving spot in the Philippines)

Palawan

- P12. Bacuit Bay
- P13. Puerto Princesa coast

Panay

- P14. Boracay Island (increasingly popular international resort)
- P15. Sicogon Island
- P16. Guimaras Island (Isla Nagarao and Isla Naburot)

Negros

- P17. Bacolod coast
- P18. Dumaguete coast

Bohol

- P19. Panglao Island

Leyte

- P20. Biliran Island
- P21. Tacloban coast

Camiguin

- P22. Agoho-Bugong coast

Mindanao

- P23. Davao City coast (includes Samal Island)

Singapore

- S1. Sentosa

Thailand

- T1. Ko Chang
 - T2. Ko Samet
 - T3. Rayong coast
 - T4. Ko Si Chang
 - T5. Cha-am
 - T6. Hua Hin
 - T7. Chumphon coast
 - T8. Ko Tao } Part of Ban Don Bay islands
 - T9. Ko Phangan } Part of Ban Don Bay islands
 - T10. Ko Samui }
-

Continued

Table 2 (continued)

T11. Songkhla
T12. Ko Tarutao
T13. Trang coast
T14. Ko Lanta
T15. Ko Phi Phi
T16. Krabi coast
T17. Similan Islands

Vietnam
V1. Nha Trang

and Teluk Bahang. In the second category, the list is highly selective and can include individual beach resorts or seaside hotels. There are so many of these in the Philippines that it is difficult to locate or name all of them. Fig. 1 (center spread map) shows the distribution of major and secondary beach resorts in Southeast Asia.

Within Southeast Asia, Thailand offers the widest range of beach resorts. The Philippines has no shortage of such resorts, but these face problems related to accessibility, development of supporting infrastructure, facilities and services, and active promotion. In Malaysia, the potential for coastal tourism is not yet fully realized, while in Indonesia, extensive coastal resources are yet to be developed for that purpose. The pattern of distribution of coastal tourism in Southeast Asia will likely change in the future with the development and addition of new, probably larger, beach resorts in other areas.

Physical Environment

What are Coasts?

The coast, which extends from the seashore inland to the first major change in terrain features, is a necessary component of any beach resort. Coasts include not only those facing the open sea but also those of inland seas or large lakes. The major difference between them is the absence of tides affecting the coasts in lakes and inland waters.

Coasts have distinctive ecosystems, or communities in which the various living forms are related functionally. Odum identified three major world coastal ecosystems and these are well-represented in Southeast Asia: mangrove-dominated coasts, open beaches and dunes with two subtypes (narrow exposed beach, and wider and sheltered beach), and coral reefs.³⁶ Currently, nearly all of Southeast Asia's beach resorts are located in the open beach and dune and coral reef ecosystems.

Physical Factors:

There are basic physical aspects of the coastal environment that need to be evaluated regarding beach resort development, particularly siting of the resort and its related facilities. Information on these physical aspects can be obtained from various standard sources—hydrographic charts, topographic sheets, aerial photographs and other published sources on geology, soils, etc. It may also be necessary to collect data on some aspects that are not commonly available in published reference materials, such as extent of beach changes, beach gradient, limit of storm waves and grain size of beach material.

Tides. Irrespective of the type of open coast, the tides are one of the first factors to be considered when evaluating a coastal environment for beach resort development. The frequency with which they occur (diurnal, semidiurnal, mixed) and their range should be noted.

The tidal range is the difference between mean high tide and mean low tide. The maximum range occurs during spring tides, and the minimum during neap tides. It is useful to have an idea of what the coast looks like at high tide and at low tide, since this will indicate how much of the shore is left dry in

between tides. Depending on the gradient of the beach, the tidal range has a direct bearing on the extent of the beach. For any given beach gradient, a small tidal range results in a narrow beach and a large tidal range results in a wide beach.

For low-lying areas, particularly on small islands, the occurrence of extremely high spring tides is critical as it can result in substantial reduction of dry land. Such areas are even vulnerable if they are affected by storm waves.

Waves. Wave energy is particularly important if the coast is exposed and not protected by nearby islands, headlands or submerged barriers such as coral reefs. Generally, steep beaches are associated with exposed coasts, or those facing the open sea, and more gentle beaches with protected coasts.

The seasonality of climate should be considered, too, since waves are dependent on wind systems. Thus, wave energy is a significant factor in the seasonal changes of beaches. Beach erosion, in which material is removed through the action of factors like waves, currents and wind occurs during high energy waves. Beach accretion, or the buildup of material through the action of such factors, takes place during low energy waves. The presence of fringing coral reefs helps in protecting coasts from erosion by causing waves to lose their energy. On coasts characterized by the presence of swell, a succession of massive waves travelling across oceans, surfing is a suitable sport that could attract foreign and local tourists.

Currents. Currents, which are portions of the water moving continuously in one direction, constitute the third aspect. Currents transport material and can be a danger to swimmers. There are two major types of currents--tide-generated and wave-generated.

Floods and ebb tides generate separate currents flowing in almost opposite directions. The dangers posed by tide-generated currents are particularly evident in narrow straits.

Wave-generated currents are significant during strong wave action. One particularly dangerous current is the rip, popularly known as the undertow. This is the seaward return flow resulting from oncoming waves. Rips can be identified in the field but they normally do not stay in the same location. On reef flats, the rips can be confined to defined channels. On low sandy beaches, rips are associated with moving shoals of sand or rhythmic topography.

At the river mouths, there are also currents generated by river discharge. These currents are variable, largely depending on the stage of the tide and the volume of discharge.

Character of Coast and Beach. An overall perspective of the coast, including its character, spatial extent and the availability of beaches or coral reefs, is necessary before going into its detailed description. Field investigation is usually necessary to get more information on such features as beach morphol-

ogy, nature of coral reef, presence of rock outcrops, streams, dunes, lagoons, etc.

The beach material has a direct relationship to the type of beach. Gentle beaches are generally associated with fine beach materials. Headlands and cliffs contribute pebbles and cobbles. Such materials can be localized at the top of the beach or they can become lag deposits to form a distinctive gravel step near the low tide level. Near the mangrove coast, muddy tidal flats are exposed at low tide.

For coral coasts, sandy material can sometimes be restricted to certain areas with well-defined sand shoals, showing the importance of local wave and current systems. The reef flats can have a varied sand cover.

Bacon et al. listed four important variables that determine a beach's character: exposure to wave attack, coastal type, littoral drift and human interference.³ Three main types of beach stability have implications on beach resorts: long-term stability, where changes are brought by infrequent storm waves; seasonal stability, where changes are seasonal; and stability over a tidal cycle.

Coastal Zones. The zonations of the coastal environment and the identification of its major features can be useful in the initial planning for any form of coastal tourism development.

Fig. 2 shows the zonations and features of the sandy coast and the coral coast, the two most common environments for coastal tourism. The high- and low-tide levels differentiate the three zones of a sandy coast--inshore, foreshore and backshore. Sandy beaches may be subdivided into those with a gentle gradient (wide low-tide terrace) and those with a steep gradient (virtually no low-tide terrace). As mentioned earlier, a gentle gradient is associated with finer beach material and excess sand can be used for the formation of dunes and beach ridges.

Fringing coral reefs are most common in Southeast Asia and they are found on the mainland coasts and around islands. An important feature is the reef flat, which can be partially exposed at low tide. Part of the reef flat can be deep enough to form a moat or lagoon. Cays are small islands that may or may not have a vegetated core. These consist mainly of coralline sand or shingle materials and are surrounded by a reef flat.

In their text on tourism and recreational development, Baud-Bovy and Lawson used several terms that may be applied in beach surveys for tourism development: sea, strand or beach, backbeach, coastal stretch and the country around.⁴ "Sea" refers to the inshore area including atmospheric conditions, "strand" and "beach" are the same and refer to the foreshore, "backbeach" is the backshore and the last two aspects would be the hinterland. Obviously, the paramount factors to be considered are the physical, particularly the geomorphological, factors.

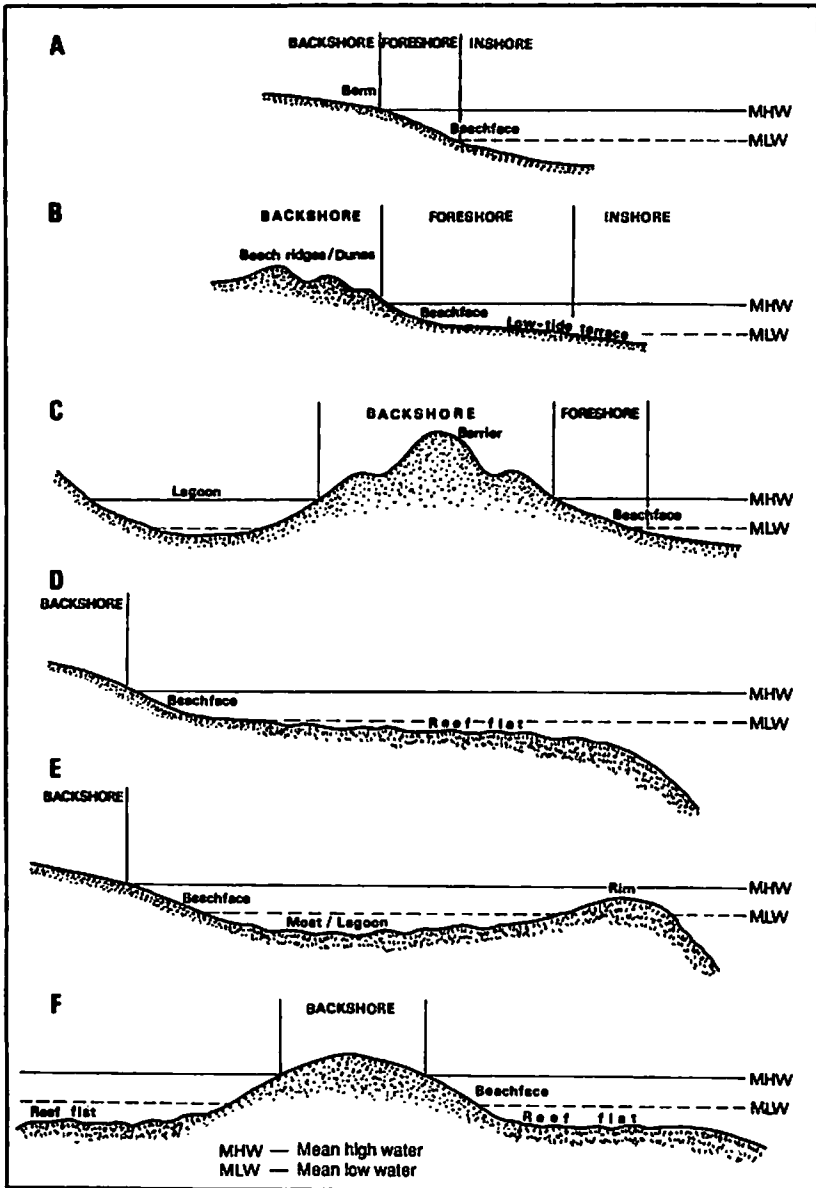


Fig. 2. Diagrammatic representation of major sandy and coral coasts in Southeast Asia: A. Steep sandy beach. B. Beach ridge/dune coast. C. Lagoon-and-barrier. D. Fringing coral reef. E. Fringing coral reef with moat/lagoon. F. Cay.

Southeast Asian Coasts

Some of the features of Southeast Asian coasts summarized here are based primarily on the atlas by Morgan and Valencia and the accounts by Eisma, and Morgan and Fryer.^{33,18,32} More detailed description of the coastal morphology of individual Southeast Asian countries can be found in Bird and Schwartz.⁶

Most of the coasts in the region have a tidal range of less than 1.5 m, none having more than 4.6 m (Fig. 3). The largest tidal range is found in the northern Andaman Sea and the Gulf of Tonkin. Tides in the Andaman Sea are primarily semidiurnal or occurring twice daily, a characteristic of Indian Ocean tides, and these extend into the Strait of Malacca. Diurnal tides predominate in the South China and Java Seas while mixed tides prevail in the eastern Indonesian archipelago and in the Philippines.

Low-wave energy conditions prevail in the sheltered coasts and high-wave energy on coasts exposed to the northern and southern monsoons or traversed by typhoons and cyclones (Figs. 3 and 4). During the north or northeast monsoon (December to March), the most exposed coasts are the east coast of Peninsular Malaysia, the eastern coast of the Philippines and the coast of Vietnam. The most vulnerable coasts during the south or southwest monsoon (mid-May to September) are the west coast of Sumatra, the south coasts of Java, Bali, Lombok, Sumbawa and Sumba, and the west-facing coasts of Burma. The central and northern Philippine coasts and Vietnamese coasts are subject to typhoon waves from July to November. Local winds or *sumatras* occur during the south monsoon and affect the west coast of Peninsular Malaysia.

The region's seasonality element has a marked impact on coastal resorts facing the Andaman Sea and the east coast of Peninsular Malaysia. Seasonal changes are accompanied by reversal of currents, reversal of sand movement along the coast, seasonal flow and water levels in rivers, and other phenomena. The effects of these phenomena include beach erosion, overwashes on resort facilities, closing of river mouths, and flooding from increased rainfall, poor watershed management and poor drainage. Wong has described a number of such seasonal effects on the beach resorts on the east coast of Peninsular Malaysia.⁴⁶

The extent of seasonality has to be determined by field observation, as this is not easily evident or available on maps. Information supplied by the local population and measurements of the seasonal impact on the coast made at the end of each monsoon would be useful.

A number of locations in Southeast Asia also suffer from tsunamis, also referred to as tidal waves, which are impulsive waves associated with underwater volcanic activity, submarine landslides and earthquakes (Fig. 4). The most well-known tsunami is that one caused by the volcanic eruption of Krakatau in

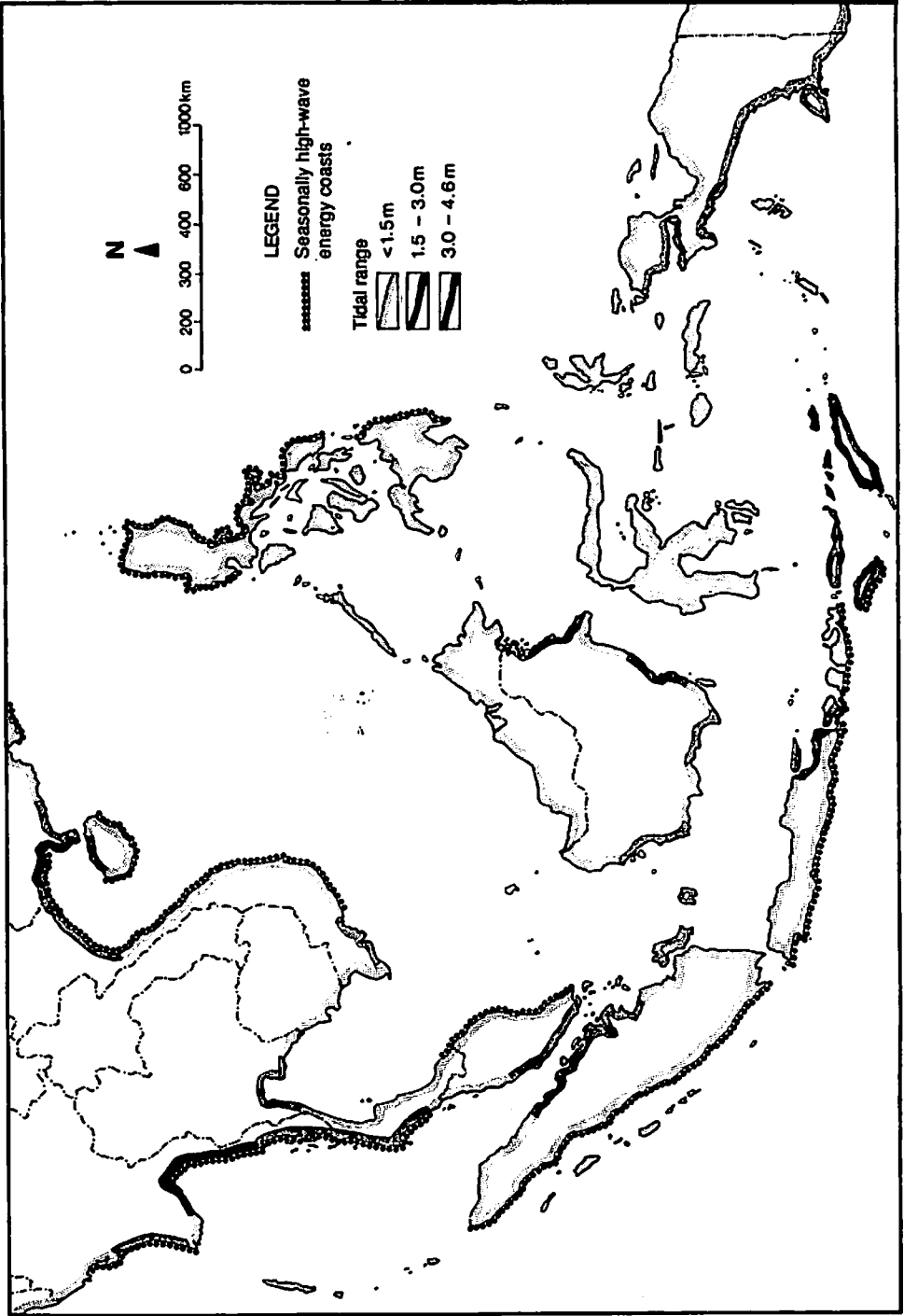


Fig. 3. Southeast Asia: tidal range and seasonal high-wave energy.³³

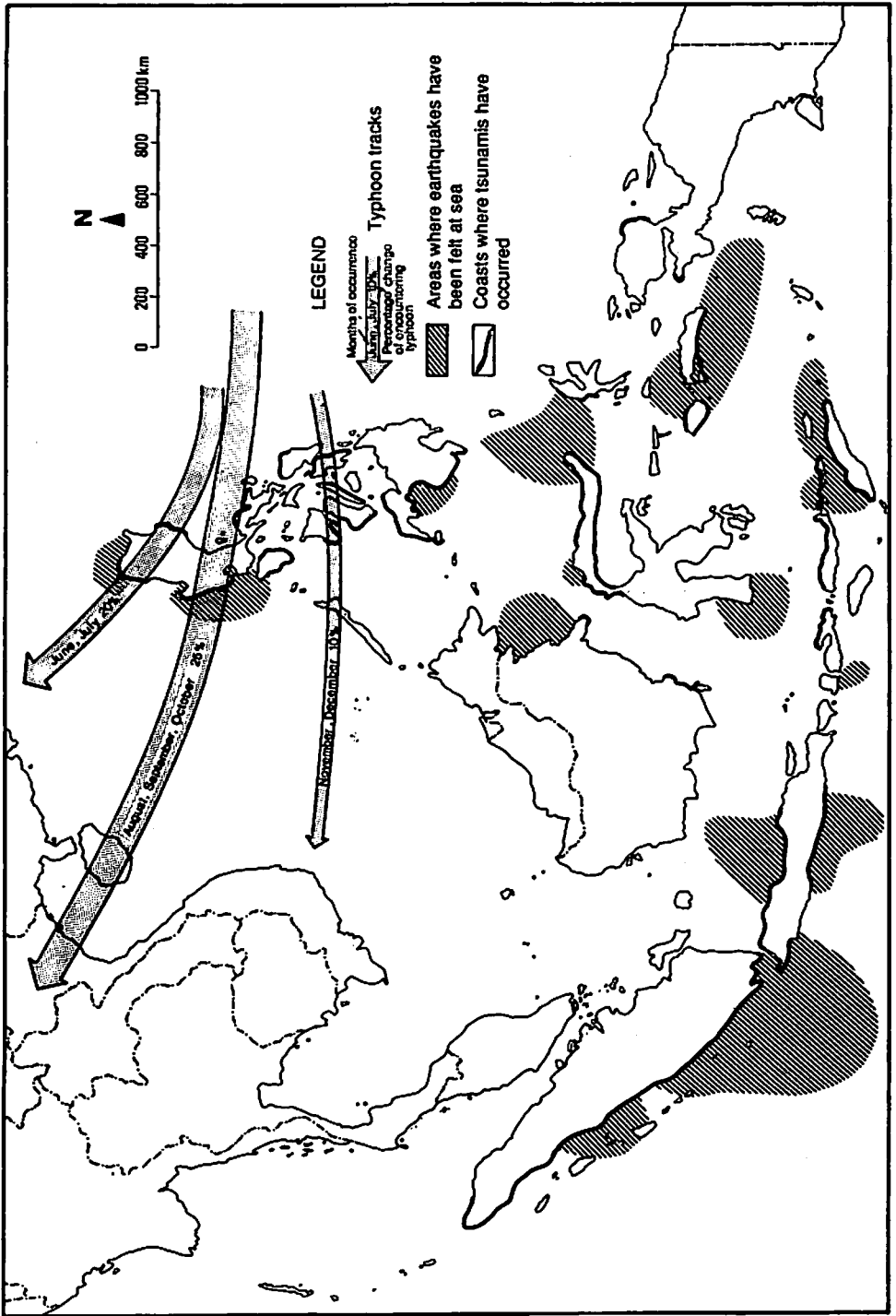


Fig. 4. Southeast Asia: typhoon tracks, earthquakes and tsunamis.³³

Sunda Straits in 1883, producing a wave more than 30 m high in the vicinity. Twenty tsunamis were reported in the period between 1900 and 1965. The most destructive since 1900 were those that occurred in 1918, 1921, 1928, 1965 and 1976.³³ Coastal locations inundated by tsunamis correlate well with undersea regions that have been rocked by earthquakes. At present, there is no effective warning system against tidal waves in Southeast Asia.

Beaches in Southeast Asia are both extensive and localized in nature. The extensive stretches generally occur on the coasts exposed to high-wave energy, like the south-facing coasts of Java and the Sunda archipelago, the east coast of the Malay Peninsula, the Gulf of Thailand, central Vietnam, the exposed eastern and western shores of the Philippines, and northwest Borneo (Fig. 5). The localized beaches, which are associated with coral reefs, small islands and specific circumstances of coastal formation, longshore currents and sediment supply (particularly from rivers), are widely distributed. As Morgan and Valencia noted: "...beaches serve as a prime function in tourism. The most important coastal tourist sites in the region are associated with white sand beaches and often with coral reefs."³³

The popular beach resorts operated by Club Méditerranée at Phuket, Kuantan and Bali illustrate the importance of good beaches. Indeed, Club Méd is reportedly looking at sites in Cebu (Philippines), Lombok (Indonesia), Langkawi and Sabah (Malaysia), and Thailand for possible development and is interested in "sites with beautiful natural environment, unspoilt beaches and suitable infrastructure" and that are about an hour's drive from an international airport.⁴⁹

Coral reefs are found along the more exposed coasts or around small islands, well-removed from rivers, estuaries and silt-laden shores. Fringing coral reefs are found throughout the region and are usually associated with small- to medium-sized coastal islands. Larger islands and continental coasts support reefs to a lesser extent due to high sedimentation rates, turbidity and low salinity associated with river mouths. The most extensive reefs are in Indonesia, on its southern rim, the eastern archipelagoes, the Mentawi archipelago, many coasts in the Sunda archipelago, and most coasts in the Banda and Molucca Seas and Halmahera. Most Philippine islands have extensive reef growth where mangroves are absent, e.g., the Sulu archipelago and Sulu Sea islands, Palawan, Cuyo Islands, some smaller Visayan islands and some Pacific-facing coasts. Most islands in South China Sea also have fringing reefs (Fig. 5).

Mangroves occur in association with rivers, estuaries and sheltered bays or coasts and are extensive particularly along the coasts of Irian Jaya, Sumatra, Borneo, West Coast of the Malay Peninsula and Palawan. The distribution of mangroves is limited to calm and warm areas where the temperature remains above 20°C most of the year. In their natural state, mangroves help to stabilize

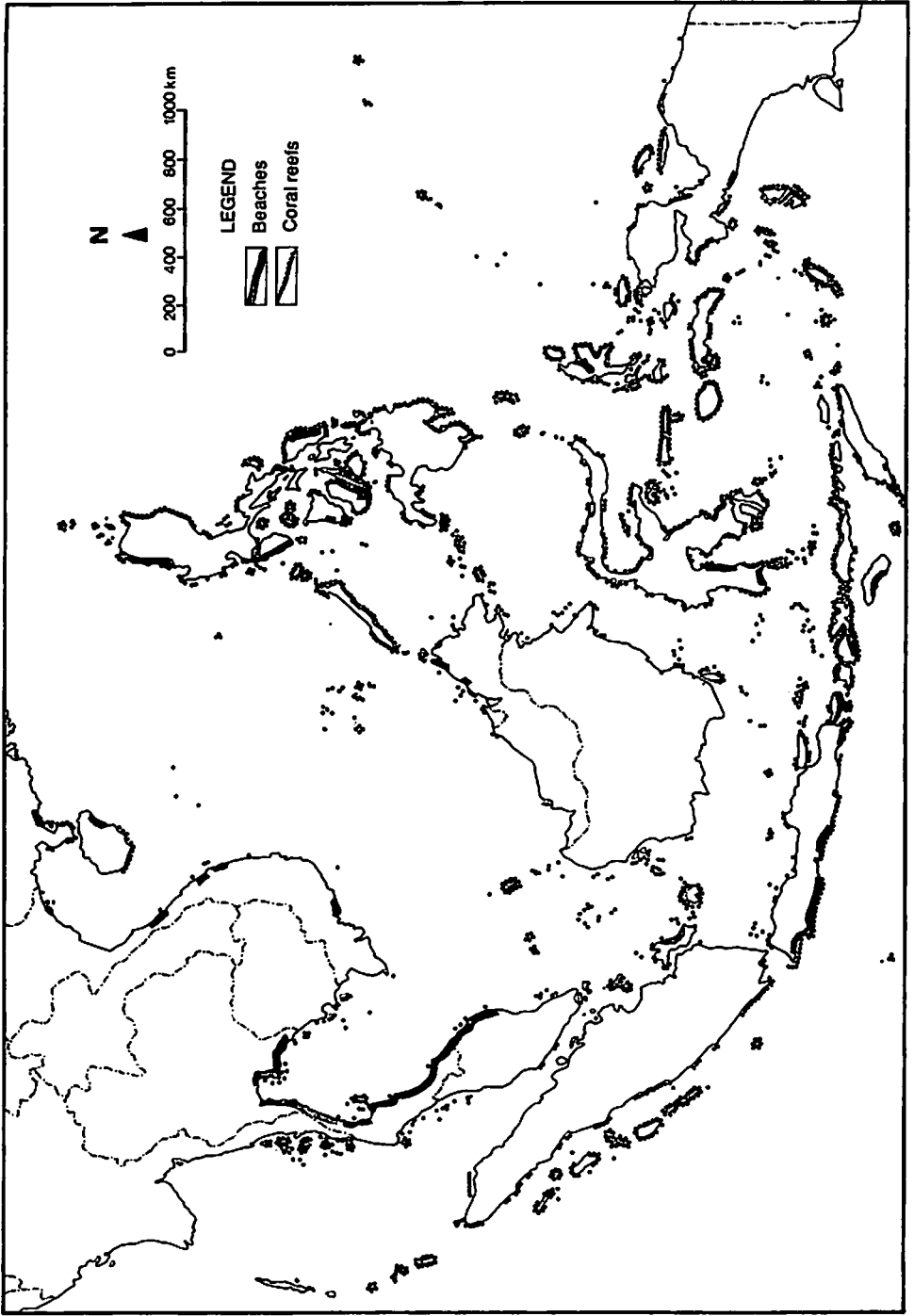


Fig. 5. Southeast Asia: beaches and coral reefs.³³

the coastal zone through slow, long-term sedimentation. They also provide a significant nursery habitat for finfish and shrimp. However, they are often viewed as being undesirable because of their association with swampy areas and mudflats. Generally, mangroves have not been developed widely for coastal tourism.

Beach Resort Sites

Although sandy and coral coasts are considered the most suitable environments for tourism development, there is actually a wide variety of beach resort sites. Wong identified five general types of beach resort sites for the east coast of Peninsular Malaysia: zetaform bay, nonzetaform bay, barrier coast, nonbarrier linear coast and estuarine coast.⁴⁸ This classification is useful in evaluating the suitability of a coastal site for resort development, considering its physical aspects.

Table 3. Types of beaches for resort sites.

Type	Significant features
A. Hard coast beaches	Found at the base of coastal cliffs and steep coasts.
B. Gravel beaches	Consist of gravel or larger-sized materials.
C. Low sandy beaches	Along low, nonswampy or beach ridge/dune coasts; several subcategories depending on the configuration of the coast and the presence of headlands.
1. linear	
2. seaward concave	
a. crescentic bay	
b. zetaform bay	
c. horseshoe bay	
3. seaward convex	
D. High sandy beaches	Along barrier coasts; generally linear; lagoon can be present behind barrier.
E. Coral beaches	Associated with coral reefs and made of coralline material; several subcategories depending on nature of fringing reef flats and presence of lagoons and islands.
1. no moat/lagoon	
2. with moat/lagoon	
3. cay	
F. Estuarine beaches	Formed in estuarine environment, i.e., spits.
G. Artificial beaches	Man-made beaches, e.g., in lee of breakwaters, between groins, in artificial lagoons, etc.

This classification can be revised into a more comprehensive one, based on morphological and process variables in the Southeast Asian coastal environment (Table 3). Although some overlaps in its categories are inevitable, this new taxonomy provides the lay reader with beach types that he or she can easily identify or immediately recognize.

Stages of Beach Resort Development

Evolution of Beach Resorts

Coastal or seaside recreation had been present in Southeast Asia even before the era of beach resorts. Such recreation used to be practised by the local elite and aristocracy only and later adopted by the European administrators and business community. It was mainly characterized by one-day excursions with passive activities such as sitting under the shade of trees rather than swimming or sunbathing. Overall, it was an alternative to the hill resorts, which were used for longer stays.¹⁹

The first beach resort in Southeast Asia was established at Hua Hin, Thailand, developed after the 1910 visit by the brother of King Rama IV. A hotel was built and eventually, Hua Hin had developed into a popular resort for Thais and foreigners.¹⁹ There were few beach resorts before the Second World War, mainly because of poor accessibility. There was very little progress in this area even in the early postwar years because the demand for beach resorts was low. However, there were some isolated cases of beach bungalow development, such as the six-room Lone Pine Hotel, the first beach bungalow at Batu Ferringhi, Penang, which was built in 1948. At Pattaya, primarily a fishing village then, a few beach cottages belonging to embassies, foreign companies and wealthy Thais were constructed in the late 1950s and early 1960s.¹⁹

The 1960s and 1970s saw a major boom in beach resort development in Southeast Asia due to several factors. These were the introduction of the jet aircraft and the inflow of tourists, though not yet in masses, to Southeast Asia. Subsequent factors were the increasing affluence in the West and Japan and the introduction of excursion air fares and charter flights. During the period of the Vietnam War in the 1960s, R and R (rest and recreation) by American troops was another contributing factor to the growth of beach resorts, particularly in Pattaya. Accessibility was also important. With the improvement of roads in the late 1960s, the travel time from Bangkok to Pattaya was reduced from three to two hours.²⁰ In Peninsular Malaysia, the replacement of ferries by bridges in the first half of the 1970s opened the east coast to rapid resort development.⁴⁵

Well-planned resorts offering special facilities for popular sports such as scuba diving and water skiing were also established in the 1970s. These resorts, like the ones built at Batu Ferringhi in the late 1970s and at Nusa Dua in the late

1970s and early 1980s, have almost become the norm for modern coastal tourism in Southeast Asia. Muqbil saw the well-planned resort as the opening stage for a larger and more upper-class potential market.³⁴

Massive resort and airport development in the 1970s brought in a flood of local and international tourists. On the other hand, resort construction slowed down in the mid-1980s. Overdevelopment, often with improper or nonexistent planning, has been seen as leading to environmental damage, an increased crime rate and the demise of local traditions.

Resort Models

Several researchers have attempted to conceptualize the evolution of Southeast Asian resorts into a generalized beach resort development model with various stages. At least three to as many as eight stages have been identified.

Franz considered three generalized stages of tourism development to be valid for most of the major beach resorts in the region: (1) "discovery" by few travellers; (2) "development" in which local entrepreneurs provide facilities for the tourists; and (3) "institutionalization" in which mass tourism dominates with further development including that by nonlocal agencies.¹⁹

However, this model does not provide details on the processes or morphology of beach resorts, unlike the five-stage model proposed by Dobias:¹⁴

1. Small bungalows built by local people attract mainly domestic tourists and low-budget backpackers. The environmental awareness is low as most bungalows are built on beaches, proper refuse disposal is nil or almost absent, and wastewater is discharged with little or no treatment. The environmental impact remains limited because development is on a small scale. Overall, there is a positive effect on the local people.
2. The local people upgrade the beach bungalows and outsiders begin to buy land for their own operations. The improved accommodations attract wealthier tourists. Roads and other forms of infrastructure develop. The environmental impact remains minimal, and the major economic benefits still accrue to a small group of local people.
3. Tourism development, particularly hotel construction, continues at a brisk pace and is largely unrestrained and haphazard. Existing legislation, such as regulations prohibiting construction within 10 m of the beach, is ignored or loosely enforced. More and more outsiders are buying land and properties from the local people. An increasing cost of living accompanies the benefits from tourism, but environmental degradation becomes a noticeable problem.

4. The majority of hotel, bungalow and restaurant owners are outsiders. Large-scale development continues without adequate regulation, and degradation of resources becomes a major concern. The developers fear a decline in tourism if environmental deterioration continues.
5. Environmental degradation calls for action to lessen damage brought about by unchecked development. Initial costly measures are taken to undo the damage. Later, serious action is taken to prevent or minimize future damage.

This sequence was based on the developmental history and wide range of Thailand's beach resorts. Dobias saw the country's major beach resorts at different development stages: Pattaya is entering the fifth stage, Phuket is in the fourth stage and Ko Samui is at the beginning of the third stage.¹⁴

Smith proposed eight stages in his tentative beach resort model based on a study of Thai, Malaysian and Australian resorts: (1) pretourism; (2) second homes; (3) first hotel; (4) resort established; (5) business area established; (6) inland hotels; (7) transformation; and (8) city resort.⁴⁰ This model is by far the most comprehensive and includes a diagrammatic representation of the eight stages. It considers the major changes that take place at each stage covering the physical, environmental, social, economic and political aspects. This model can be used as a predictive tool for development trends and is being applied to the planning and development of beach resorts in Pulau Batam and Pulau Bintan, Indonesia.⁴¹

The various models on beach resort development take into account the processes and the morphological changes but not the basic physical aspects of the coastal environment. In the models by Dobias and Smith, the appearance of the negative impact is implicit in the growth or the transformation of the beach resorts.^{14,40} While Dobias' and Smith's models include the negative impact of development, this aspect may be absent in some of the present and future better-planned resorts since increasing consideration is given to the coastal environment. Also, the evolutionary processes of the different resorts may vary, depending on the intrinsic physical bases. Resorts that are being developed on small islands with fringing coral reefs, for instance, would be different from those along linear "hard" coasts or large sandy bays on the mainland. In some cases, the advantageous and disadvantageous physical aspects (e.g., abundant coral reefs, coastal dune systems, sand bars at river mouths) can greatly influence the final choice of resort sites.

Typologies of Resorts

A common criterion for classifying Southeast Asian beach resorts is the quality of accommodations. Thus, Franz identified three simple types: (1) the

well-established resort towns (e.g., Pattaya, Penang and Phuket) with a wide range of accommodations from numerous hotels (with or without seaside location) to more basic accommodations; (2) the individual beach resorts of international standard and associated with particular beaches (e.g., Tanjung Jara in Malaysia, Carita Beach in Indonesia); and (3) the bungalows or hotels of moderate standards that cater primarily to domestic or backpack tourists.¹⁹

Based on the scale and quality of the resorts, the extent of public and private participation, and the development processes, Wong proposed a tentative hierarchical typology for beach resorts on the east coast of Peninsular Malaysia: planned resort complex, individual resort of international standards, individual resort of national/local standards and basic accommodation unit (dormitories or *kampung* accommodation).⁴⁵ This type of resort typology can be revised for application to other developing countries in Southeast Asia.

The above typologies, and those implicit in the forms of coastal tourism and the evolutionary models of resorts, may not be applicable to future resort developments, since these may not necessarily pass through an evolutionary sequence. Planned resorts can be discrete types depending on specific purposes or objectives, such as development strategy, tourism planning purposes, etc.

Several types of planned beach resorts based on the tourism scale and development strategy or a combination of both criteria can be identified. For the bottom-up development strategy, the planned village-tourism resort with its beach huts and bungalows seems suitable for the majority of the coastal villages in the region. The objectives of this type of resort development are to: (1) bring the economic benefits of tourism more directly to the villagers; (2) encourage local socioeconomic activities through tourism; and (3) encourage local participation in the tourism sector by creating jobs and other income-generating activities for the residents.^{27,35} Implementation of the development is normally in the hands of the villagers with some advice from regional authorities.

At the larger end of planned beach resorts is the large-scale resort with substantial governmental involvement. An example is the Nusa Dua resort development in Bali for which feasibility studies were carried out by the World Bank. The government-controlled Bali Tourist Development Corporation was established to take charge of the Nusa Dua master plan. The physical development began in 1976, with the initial plan calling for the completion of the construction of the first hotel in 1978 and that of the seventh and last in 1984. However, due to a lack of interest from the developers, the pace of development had to be slowed down.²⁰

From the perspective of a desirable development strategy, one often cited type is the enclave resort. The Nusa Dua development may be considered an enclave resort by contrast with those at Sanur and Kuta.³⁹ Outside Southeast Asia, the Maldives are a good example of successful enclave resort develop-



Plate 1. Fringing coral reefs, like these found in Hundred Islands, Lingayen Gulf, Philippines, are important resources for tourism development.



Plate 2. This pollution in Langkawi Island is caused by poorly treated sewage and wastewater, a very serious environmental problem associated with unplanned coastal tourism.

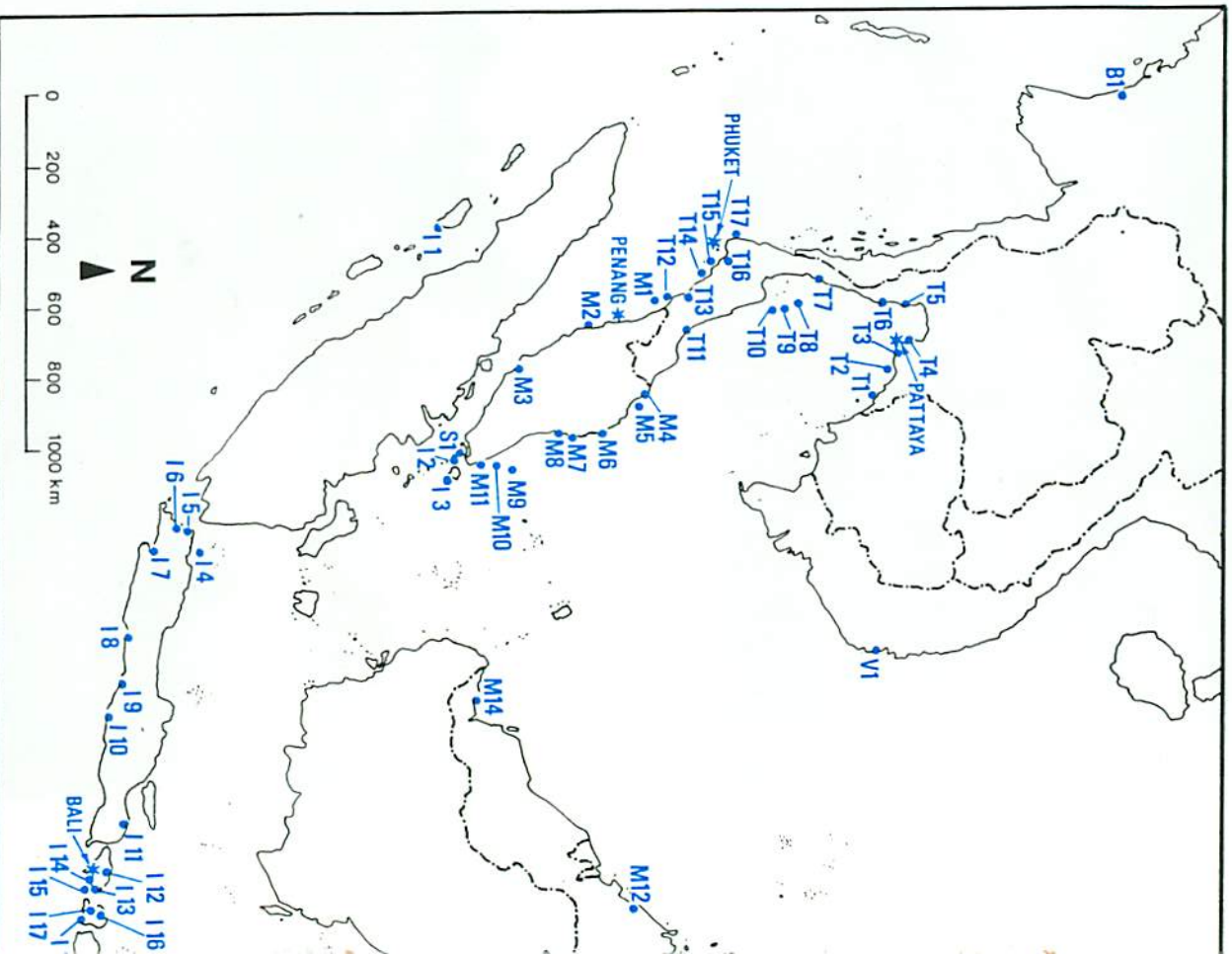


Fig. 1. Beach resorts in Southeast Asia. (Modified from: Morgan, J.R. and M.J. Valencia, editors, 1983. Atlas for marine policy in Southeast Asian Seas. University of California Press, California.)

LEGEND

- * Major beach resort
- Secondary beach resort

B - Burma

T - Thailand

V - Vietnam

M - Malaysia

S - Singapore

I - Indonesia

P - Philippines

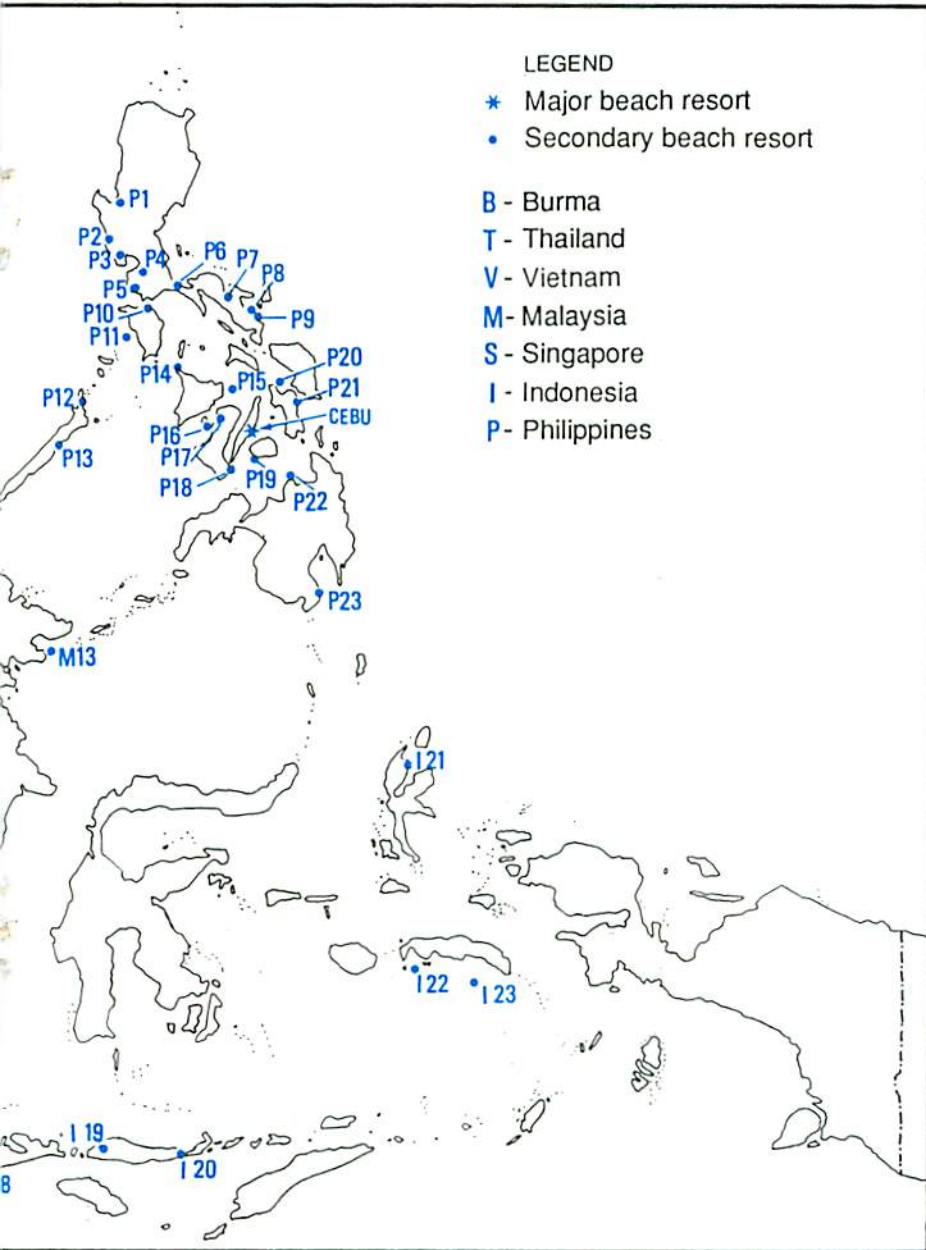




Plate 3. The northeast monsoon and other factors have caused this beach erosion along the east coast of Peninsular Malaysia.



Plate 4. Revetments protect this beach resort in Lingayen Gulf, Philippines.

ment. The beach resorts are constructed on previously uninhabited coral islands. Tourists are not allowed to be accommodated on islands inhabited by the Maldivans although sight-seeing tours to such islands are permitted. With the exception of the male staff, the local population is also not allowed to enter the resort premises. These tourism laws aim to protect the Muslim population from the influence of tourists and acculturation.¹⁶

In the future, beach resorts in Southeast Asia will not only increase in variety, but will also become more specialized. A number of factors that are related primarily to the development of new types of resorts for specific market segments are responsible for this trend.⁴⁹ New and unknown locations may need to develop specialized resorts as a way of gaining recognition, particularly in mature resort areas where competition is stiff. Certain establishments need to make their functions more defined in terms of accommodation and facilities to maintain their clientele, such as the upmarket. On the other hand, there is a small group of exclusive resorts offering tranquility and privacy at a price (e.g., Amanpuri, Phuket). Other resorts at the same time have more and newer activities to cater to a wider market segment. These are the "activity" resorts, which offer facilities for water-based sports and recreation, such as the Pacific Island Club resorts, which are currently undergoing development in Phuket and Bali. These places have become popular particularly among the young Asians.

What is most likely to be watched with interest in Southeast Asia is the development of the planned megaresorts like Phuket's 809-ha Laguna Resort, composed of five hotels. Perhaps the biggest would be the Desaru International Resort in Johore, a project to be developed on 1,700 ha with a 17-km stretch of beach. This project takes advantage of the natural landscape from the sea to the tropical rainforest. Development is planned around seven precincts and a total of 10 hotels. Phase one is expected to be completed by 1993.⁴⁹

The rise of the planned megaresort in the near future has many implications for coastal tourism development in Southeast Asia. The megaresort has obvious marketing benefits--its ability to gain fast popularity due to its publicized construction and size; a wider market appeal catering to a mix of convention, incentive and tour groups; and its ability to capture some of the regional visitors that would otherwise go elsewhere.⁴⁹

If the megaresort is likely to be at the forefront of coastal tourism in Southeast Asia, several issues have to be monitored: What is its desirable mix and zonation of land uses? What critical factors influence tourist flows? What are its implications for regional development? What buffer zone should be created around the megaresort to keep away "undesirable" development? What is the probable scenario of megaresort development in Southeast Asia? Would it approximate the sequence in any of the existing models on resort development? How can resort development be carried out on an integrated and sustainable

basis? How can the local population continuously and increasingly benefit from megaresort development? These issues are likely to make resort development in Southeast Asia more challenging, interesting and exciting.

Impact of Coastal Tourism

Nature of Impact

The impact of tourism on the coastal environment should be seen as an impact on a unique environment. For example, coastlines receive an impact from tourism that differs from the one received by oceanic islands.³¹ Pearce also recognized the uniqueness of coastal resorts by categorizing them separately from other types of resorts.³⁷

Tourism's impact is usually considered from physical, economic and social perspectives. Its effects are more visible on the coast's physical aspect or environment, rather than on the people's economy or way of life. This seems logical as "the environment is the basic resource of tourism; careful exploitation of this resource can lead to its enhancement rather than its destruction."¹ Suphapodok and Dobias stated that the beach resorts in Thailand rely on relatively undisturbed natural resources such as beaches, marine waters and coral reefs to remain viable. Therefore, proper management of these resources is critical to the long-term success of the resorts.⁴²

Other ways of classifying the impacts of coastal tourism are: positive and negative, direct and indirect, or short-term and long-term.^{22,7} Short-term impacts are those related to the construction phase of the beach resorts, which includes site clearance or grading, construction activities, labor importation and landscaping. Long-term impacts are those related to the operations of the beach resorts such as solid waste and sewage disposal, land use changes, tourist activities, employment of local residents, employment of immigrant labor and landscaping.

Examples of the negative effects of tourism on the coastal environment include nearshore water pollution from liquid effluents, uncontrolled development of beachfront hotels and no proper drainage facilities at Pattaya; the dumping of solid wastes and beach degradation from pollution and erosion at Phuket; and the discharge of sewage into the sea at Batu Ferringhi, Penang. In many parts of Southeast Asia, the developers build the hotels as close to the beachfront as possible and construct seawalls, which cause erosion, to protect their property.

Conflicts and Issues

Southeast Asia's coasts have 30% of the world's coral reefs, 25% of its mangroves and 10% of its fish produce.⁵¹ Sandy beaches, coral islands and reefs are the most widely demanded resources for resort development. These resources, though, are also being utilized in other industries such as fishing and mining, resulting in conflicts that could adversely affect one or more parties involved.

Conflicts between tourism and other sectors regarding the use of coastal resources are not uncommon occurrences. Dixon discussed the problems between logging and tourism in Bacuit Bay in Palawan, Philippines.¹² Suphapodok and Dobias elaborated on the differences between tourism and conservation involving Ko Samet National Park, which almost led to its closure.⁴² The village residents wished to expand tourism service operations but the park officials refused expansion requests, citing environmental damage already done by existing establishments. For coral reefs in Phuket, Lemay and Chansang identified the tourism-related problems and advocated a protection strategy for these.³⁰

To conceptualize the nature and magnitude of conflict between tourism and other coastal uses, a simple compatibility matrix can be used to show the intersectoral conflicts. This is helpful in the evaluation of potential areas or sites for coastal tourism development. For example, for the Upper South Region (Ban Don Bay and Phangnga Bay), Thailand, tourism is in conflict with other uses in the coastal lowlands and with capture fisheries in the coral reefs (Table 4 and Fig. 6).

It is therefore indubitably recognized that both government and private sectors must be involved in identifying the issues as well as in resolving the conflicts, and public awareness (education) is crucial to the success of such endeavor. However, application of learned concepts and ideas is another thing. In Thailand, for example, there is no shortage of theoretical models, hypotheses, plans and policies to reconcile tourism development with nature conservation. The main problem is implementation, a complex process requiring not only plans but training programs, better pay and a respect for the value of the natural resources.

The government has a significant role in legislating, monitoring, supervising and directing actions of development through strict policing and enforcement of environmental laws. Also, more institutions are needed to respond to matters at the local level, e.g., controlling the environmental standard of sewage effluents.³⁵

The private sector, likewise, has a responsibility to minimize the harmful impact of coastal tourism. It must understand nature conservation and the balance of the ecosystem. For instance, tourists must be made aware that coral reefs

Table 4. Major and sub-issues associated with coastal tourism in the Upper South Region, Thailand.^{13,15,44}

Resource degradation

- coral reef: boat anchoring, coral and shell collecting
- beaches: shoreline construction, improper waste disposal
- nearshore water: domestic wastes from tourist facilities, sediments from construction
- forests: clearing for construction

Socioeconomic and cultural concerns

- inequitable distribution of tourism benefits: some tourist facilities are not owned by locals
- increasing cost of living
- erosion of cultural values

Legal, institutional and administrative concerns

- no control over tourism development
- lack of planning at the local level
- lack of cooperation among government bodies
- poor enforcement of laws

Education and public awareness

- little public appreciation of resources supporting tourism
- poor management of tourist operators
- poor participation in tourism due to lack of skills, knowledge and capital

		HABITAT					
		Mangroves	Coral reefs	Islands	Beaches	Soft bottoms	Coastal lowlands
KEY ECONOMIC SECTORS	Industry						
	Plantation / agriculture						
	Urban development						
	Aquaculture						
	Capture fisheries						
	Tourism						
	Wildlife						
	Mineral resources						
	Forestry						

Fig. 6. Intersectoral conflicts in the Upper South Region, Thailand.⁴⁴

act as havens for fish and other marine life, so that they would not pick and collect corals for souvenirs. The sector should also cooperate with the government in promoting tourism while conserving the environment.

Public awareness as an important tool in helping reduce the negative repercussions of coastal tourism can be seen in a program proposal for Surat Thani province.⁴² The program intends to educate the local people on the need and means to protect coastal resources for tourism. It focuses on the disposal of domestic wastes, the destruction of corals through collection and anchorage, and sanitary maintenance of public areas, particularly the beaches. For the program to succeed, the public authorities could provide the necessary infrastructural and technological support, such as low-cost waste disposal systems and proper incentives for their use, enough refuse disposal bins in public areas and garbage collection on a regular basis.

Conflicts between tourism and other sectors that also make use of coastal resources may be minimized with the provision of a database of water quality, marine life and coastal zone uses. This includes a baseline survey and ongoing long-term monitoring. Since the private sector is likely to be involved, it should undertake such activities.

Impacts: Some Examples

Empirically, the effects of coastal tourism and the issues and conflicts that arise from these change and become increasingly complex as the beach resorts evolve.^{14,40} To some extent, the nature of the conflicts and issues is also dependent on the original natural state of the coastal environment (e.g., excellent coral reefs, rich fishing grounds and offshore tin deposits). With better planned coastal tourism development, some conflicts and issues could decrease and the nature of the impact could be better understood.

Here are situations illustrating some of these conflicts or impacts on two major forms of coastal tourism in the region.

On Coastal Resorts. From a fishing village in the 1950s, Pattaya has grown to become currently the largest coastal resort in Southeast Asia.^{19,34,14} During its rapid growth, particularly from 1970 to 1982, the planning carried out by provincial authorities was inadequate. The result was a tourism sprawl concentrated within a small land area. A 300-m stretch known as "The Strip," where bars, nightclubs and massage parlors are concentrated, has given Pattaya its image. The problems of poor environmental control are manifested in the majority of the beach hotels. Those without proper treatment plants release their sewage directly into the sea. On one stretch of beach where boats, visitors and vendors tend to converge, there is much littering. The deterioration of the

beaches and nearshore waters was already a serious problem in the mid-1970s. With insufficient infrastructural planning, the resort is suffering from chronic shortages of public utilities (water, electricity, telephone lines, roads and sewage disposal facilities) and security for visitors. Efforts are now underway to improve services and facilities.

The warning signs of uncontrolled growth are also evident in Phuket, the second largest Thai coastal resort, where land and freshwater shortages, waste management problems and coastal erosion occur.³⁵ Kuta has undergone a similar experience, but to a lesser extent, as it grew from a fishing village in the 1970s to a coastal resort today. There are other interesting findings from Hussey's study of Kuta that have implications on the development of traditional villages into coastal resorts.²⁴ One finding was that villagers (farmers and fishermen) can quickly develop considerable economic activity without external intervention, and budget travellers can have an important role in tourism and small-scale development projects.

On Islands. Tourism development on Ko Phangan and Ko Samui in Ban Don Bay is small-scale and largely unplanned, its impacts ranging from environmental to socioeconomic.

Degradation of coral reefs around these islands is not only caused by harmful fishing methods, e.g., blast fishing, pounding corals and poison use. It is also a result of factors brought about by tourism-related movement--sedimentation from construction activities, churning of bottom sediments by boats and damage by anchorage.

A major issue is disposal of solid waste (especially glass bottles), which at present is mainly done in coconut plantations. This has created more problems since the garbage becomes unburied and much of it is washed down during heavy monsoon rains. In Hat Rin, the bay's most developed beach, solid waste is dumped at the shore in several areas. The inadequate treatment of wastewater on both islands poses a threat to the nearshore water and beaches. Muqbil reported that each tourist on Ko Samui produces 2.56 l/day of wastes but district authorities can collect only 25% of the total.³⁵

The socioeconomic impacts of tourism on Ko Samui and Ko Phangan are variable. It is likely that the larger proportion of Ko Samui's population receives few direct benefits from tourism. The indirect benefits, such as improved transportation routes and utilities services, are thought to be offset by cost-of-living increases caused by tourism growth. The cultivation of vegetables for tourist demand, as a means of livelihood, has not been successful for several reasons: (1) lack of initiative of villagers to patiently tend to the plants; (2) production output that is too small to maintain a regular clientele such as hotels and restaurants; (3) financial constraints; and (4) personnel problems at the District Agricultural Office, which slowed down the process of giving financial aid to the

local residents. Tourism also affects Ko Samui's culture with the erosion of traditional ways, the embracing of Western habits and the worsening drug abuse problem.

The impact of tourism on Ko Phangan is less because of the early stage and comparatively low level of tourism development. The major problem is the lack of funding sources for villages to establish bungalow operations. Also, in some cases, the district's strict enforcement of the hotel tax can wipe out the villagers' income from bungalow operations. Thus, the villagers are forced to sell to wealthier operators from Surat Thani and more distant provinces. Cohen's studies on bungalow tourism on these islands showed that the extent of local and outside participation depends on the rate of development here (i.e., to determine whether low or higher quality facilities should be established), and the scope of tourism positions sought by outsiders.^{10,11} He identified four types of entrepreneurs in such operations: the locals, and three groups of outsiders--the islanders, the mainlanders and the foreigners--each group playing a different role.

For Malaysia, the issues and conflicts in tourism development on islands are equally variable, whether tourism is more planned, as on Pulau Langkawi, or less planned, as on the islands off the Mersing coast.^{5,28,47} For most islands, the problems of steady water supply, the disposal of solid waste and sewage, and accessibility need attention. Domros' study of the Maldives implied that a high degree of planning and control is necessary for successful tourism development on small islands.¹⁶ Planning and control must include environmental monitoring (of water quality and marine life population, for example) and enforcement of mitigation measures if (environmental) standards are exceeded.

The impact of tourism on the coastal environment should be taken in the context of two basic issues. One issue deals with the conflicting uses of the coastal resources, and the other is on maintaining the integrity of the resources for sustainable use. Many questions have been raised regarding these issues, but the most essential is whether or not tourism development is really the appropriate development for a particular coastal area.

Planning and Development of Coastal Tourism in Southeast Asia

Environmental Guidelines and the Environmental Impact Assessment

Proper guidelines are required in the planning and development of beach resorts. Odum provided some general management guidelines with an ecological bias, with relevance to coastal ecosystems.³⁶ These guidelines deal with the protection and proper utilization of valuable ecosystems, the prevention of adverse alterations of air and water quality, the consideration of physical factors and the manipulations that can be ecologically beneficial.

The UNEP booklet on coastal tourism spelled out more specifically the environmental guidelines for a beach resort covering the following aspects:¹

1. site identification
2. site development
 - a. clearing
 - b. access
 - c. accommodation
 - d. recreation
 - e. services: water, waste disposal, energy, manpower
 - f. sundry

The history of coastal tourism in Southeast Asia has shown that for many years, beach resorts had not adhered to existing environmental guidelines.² In some cases, such guidelines did not exist at all, and if they did, these had not been properly enforced. In recent years, though, with the increasing public awareness of pollution and its negative effects, Southeast Asian governments have been paying closer attention to the environment. Some have passed new environmental laws while others have tightened on existing ones. For many projects, including beach resorts that exceed a certain size, it is now mandatory to conduct an Environmental Impact Assessment (EIA).

Although the EIA refers to a formal document, it is actually a process to predict the future state of an environment arising from a certain economic activity. An assessment is conducted so that environmental considerations are incorporated while a project is still at its planning stage. Bacon et al. outlined the

steps for carrying out an EIA for a coastal development project.³ Carpenter and Maragos provided several case studies in which the EIA was employed to reflect on some of the issues related to the impact of tourism development on the environment.⁷ In Southeast Asia, the status of environmental legislation and the application of EIA to coastal tourism projects are variable as the following examples show.

Malaysia has had an Environmental Quality Act since 1974. EIAs became mandatory for certain economic activities when the Environmental Quality on Prescribed Activities (EIA) Order 1987 came into force on 1 April 1988.²⁶ Two of the four types of resort and recreational development specified as prescribed activities are related to coastal tourism. The first involves the construction of coastal resort facilities or hotels with more than 80 rooms. The second involves the development of tourist or recreational facilities on islands whose surrounding waters are gazetted as national marine parks. Although the EIA is required in Malaysia, there is still no single environmental authority with the power to decide on the appropriateness of a certain type of tourism development in specific areas.

Malaysia's Department of Environment published a handbook on EIA guidelines, which includes a checklist of the prescribed activities related to resort and recreational projects at various stages: investigation, development and construction, operation and maintenance, and consequent projects.²⁶ However, some new development regions seek independent action to deal with environmental issues. The Pulau Langkawi Development Authority, for instance, has developed a set of tourism guidelines within its own jurisdiction. It plans to prohibit construction work along the seafront.

In Thailand, the EIA is applicable to hotels of 80 or more rooms.¹⁴ Government agencies such as the Ministry of Science, Technology and Energy, the Office of the National Environment Board (ONEB) and the Ministry of Industry have set environmental guidelines related to beach tourism to address issues like refuse disposal, surface water quality, wastewater treatment and vehicular noise. Construction is also prohibited within 10 m of beaches.¹⁴ Enforcement is a problem as it requires the cooperation of various government agencies to enforce the national policy directives. Like most national tourism organizations, the Tourism Authority of Thailand (TAT) has limited power to control or organize tourism development standards or management actions.

The Philippines has a different experience with enforcing environmental legislation in coastal tourism development.²⁵ Although clearance for development is required from the Department of Tourism and the Department of Environment and Natural Resources-Environmental Management Bureau, this is sometimes bypassed by smaller beach resorts. In the new tourism master plan of the Philippines, environmental preservation is given top priority.

As small coral islands and sand cays in Southeast Asia are likely to be developed for coastal tourism in the future, it may be worthwhile to study some of the environmental guidelines that served as a basis for the tropical Australian experience.²³ The guidelines, which would be of particular importance to small- and medium-scale resort development in traditional villages, included the following:

- exclude development from the geologically unstable zones (like high erosion areas);
- define zones for development;
- provide adequate buffer zones between development and existing shorelines;
- minimize wind effects by keeping the height, shape and location of buildings within the canopy of the natural vegetation, which should be preserved;
- design all facilities and services with minimum environmental destruction;
- where possible, ensure that construction materials and methods are compatible with the reef-cay environment;
- control strictly the disposal of all rubbish and surplus or worn-out items; and
- control effluent disposal to prevent disturbances to the reef-flat ecology.

Planning Strategies and Concepts

Various planning strategies and concepts are useful in coastal tourism development. For example, one can start with a general strategy based on simple environmental zoning to identify the areas for coastal tourism development. Odum identified three such sectors in the coastal environment: those zoned for intensive development, conservation and strict conservation.³⁶

In a similar type of generalized approach, the Japan International Cooperation Agency (JICA) recommended two possible strategies for coastal tourism development for Thailand's Upper South Region.²⁷ The strategy on environmental protection concentrates future development in the resort town and prohibits development at the beach areas. The strategy to cope with actual development and future demand, on the other hand, involves development on a limited number of beach areas to maintain a balance of tourism activities between these and the resort town.

One concept in recreational planning is the idea of carrying capacity, which has been applied to coastal tourism since the early 1960s. The carrying

capacity of a certain area, e.g., the beach, refers to the maximum intensity of use of a certain resource that can be sustained without its deterioration. The operationalization of the concept is not easy as there are different types of carrying capacity, and both tourism and coast are complex in character. Pearce and Kirk presented schematically the different types of carrying capacity (physical, environmental and social) that can be applied to the various parts of the coastal environment (hinterlands, dunes, beach, sea) and specific aspects of the tourism system (accommodation and service, transit, recreation activity) (Fig. 7).³⁸

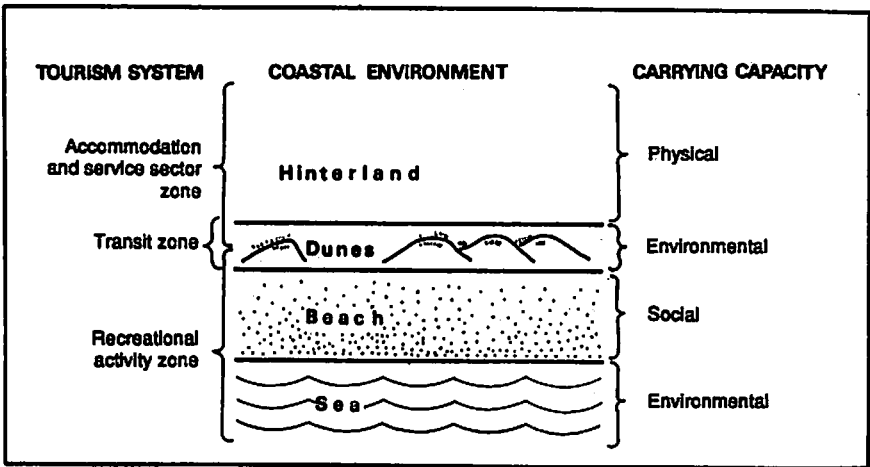


Fig. 7. Carrying capacity in relation to coastal tourism.³⁸

The application of the concept of carrying capacity can be seen in the JICA proposals for Southern Thailand.²⁷ The carrying capacities in terms of rooms per km of beach are 200, 100 and 0 rooms for intensive development, limited development and preservation, respectively. Several proposals were also given to increase the beaches' carrying capacity: reservation of some part of the beach for international tourists, reservation of other parts for the general public and provision of transportation links between different tourist areas.

Standards and Development Controls

A World Tourism Organization (WTO) report indicated the importance of planning standards for coastal tourism,⁵⁰ which are developed through years of building and evaluating resorts and other establishments for tourism develop-

ment. These standards vary, depending on factors such as location, quality of resort, development policies and legal framework. Their main purpose is to provide statistical measures for assessing visitor numbers relative to the threshold levels, carrying capacity, land and building areas, infrastructural requirements, and the needs of support population and services. These parameters can be used in resort planning, and in making development proposals and plans.

At the beach resort level and in actual practice, the specific needs of the site and the plot ratio (total floor area to total site area) have to be considered.⁵⁰ The needs of the concept and image of the resort are also related to the characteristics of the site and the environment. The site area depends on the image, location, building height and density, site characteristics and type of hotel, and it can be related to the plot ratio. For example, in low-density development, resorts have a plot ratio of 1:0.15 or even less with chalet development. An important factor is land costs, which can vary from 1 to 20% of the total development costs.

There are two categories of planning standards for resorts.⁵⁰ The common standards, some of them summarized in Table 5, are applied to aspects common

Table 5. Selected common planning standards for beach resorts.⁵⁰

1. Accommodations	
a. Hotels	
Economy	10 m ² /bed
Average	19 m ² /bed
Luxury	30 m ² /bed
b. Seaside holiday villages	15 m ² /bed
c. Apartments in beach resorts	
Studio	36 m ²
1-bedroom unit	53 m ²
2-bedroom unit	80 m ²
3-bedroom unit	110 m ²
2. Infrastructure	
a. Water (daily consumption per person)	
Mediterranean resorts	200-300 l/day
Tropical beach resorts	500-1,000 l/day
b. Sewage disposal (no main system)	0.3 ha/1,000 persons
c. Access road and parking	
Parking lots	1/2-4 bedrooms
Overall density	5-25% of site
3. Tourist facilities	
a. Swimming pool (resort hotel)	3 m ² of water/user
b. Open space (seaside resort)	20-40 m ² /bed
c. Shops	0.67 m ² /bed

to all resorts, e.g., accommodation, infrastructure and tourist facilities. The special standards are applicable only to specific resorts (Table 6). All these criteria are based primarily on European and American experiences and should be modified to suit the ASEAN environment.

Table 6. Selected special planning standards for beach resorts.^{4,50}

1. Beach capacity (for resort excluding facilities)		
	m ² /person	person/m of coast for 20-50 m of beach
a. Low standard	10	2.0-5.0
b. Medium standard	15	1.5-3.5
c. Comfort	20	1.0-2.5
d. De luxe	30	0.7-1.5
2. Beach facilities	Sanitary facilities in ratios of 5 water closets, 2 lavatory basins and 4 showers for every 500 persons	
3. Resort density		
a. In Spain, Greece, Bali, Honolulu	60-100 beds/ha	
b. Club Méditerranée Village	20 beds/ha	
4. Marina facilities		
a. Size	150-200 boats minimum to about 500 boats maximum	
b. Harbor capacity	75-100 boats/ha	
c. Land area	100 boats/ha for parking, boat storage, maintenance and administration	

Certain concepts and planning standards can be operationalized in the development controls of the various government authorities. Like the EIA, the implementation of the development controls for coastal tourism in Southeast Asia is variable.

For example, in Indonesia, new development controls for coastal tourism include a setback line of 100 m from the waterline for all construction so that beaches are not affected. Likewise, proper sewage outlets are required to ensure that beaches and marine life are not harmed.⁴⁹ Nusa Dua in Bali is often cited as perhaps the best-planned beach resort in Southeast Asia because of its effective development controls, with construction setbacks predating the recent 100-m setback line.³⁴ Grants were obtained from international lending institutions to evaluate the resort development, its benefits to the local population and its environmental impact. The resort is separated from the rest of the island, properly landscaped, and has good roads and drainage. The hotels are confined to 310 ha of beachfront area, based on the studies by the World Bank.

In Thailand, several controls have been proposed in the development plans for resort areas. Those for Phuket include: a density of 32.5 rooms/ha for beach resorts; building height of less than four stories; building coverage of less than 10% of property; a required rubbish and sewage treatment plant; establishment of a centralized system within the treatment plant when the tributary population density is more than 30-40 persons/ha; and enforcement of an individual treatment system in accordance with ONEB regulations for areas with lower density.^{27,35} Priority is also to be given to the conservation of beachfront areas, including artificial measures to reinstate the natural environment.

In view of increased tourism development on the coral islands in Southeast Asia, certain controls based on the experience of the atolls from the Maldives should be considered.¹⁶ Some of these control measures were: the limit of one resort to two uninhabited islands; holding all resorts and their companies responsible for providing nonpolluting refuse and wastewater disposal (e.g., refuse compactors for disposable water, incinerators for combustible garbage, composting for all kitchen wastes and multichamber soakaways); and noninterference of tourism with the local industries, e.g., fishing and agriculture.

Plans

The four Southeast Asian states with a booming coastal tourism industry--Thailand, Malaysia, Philippines and Indonesia--have one or more plans on coastal tourism development, but these differ in quality and type.

Thailand is probably the best example in Southeast Asia to illustrate the diversity and evolution of plans dealing with coastal tourism development. In general, the Thai plans have evolved from economic and sectoral to more environmental and integrative, but with attention to specific characteristics of individual resort areas.²⁹

From 1962, sectoral planning had been routinely used in the five-year National Economic and Social Development Plans. In the mid-1970s, ONEB adopted the "economic-cum-environmental" development of coastal resources. The TAT also prepared tourism development plans for all well-established coastal resorts, notably Pattaya, Phuket and Ko Samui. The major problem with the master plans is their reliance on the full cooperation of several implementing agencies. Some of the social and environmental factors, such as security for tourists, control of tourism resources and degradation from mining activities, are beyond the mandate of TAT.

Between 1975 and 1976, several manuals on environmental reconnaissance were prepared for selected coastal regions experiencing severe tourism development impacts: Pattaya, Phuket and the Inner Gulf. These manuals set the stage for many subsequent developments in coastal area management planning.

Reflecting an increased concern for the environment, ONEB and the National Economic and Social Development Board undertook the Upper South Region project in 1987, with technical assistance from the University of Rhode Island and funds from the United States Agency for International Development. Pilot projects were established at Phuket and Tarutao National (marine) Park for investigating the problem-related issues with a view to developing appropriate coastal resources management (CRM) strategies.

The pilot project at Phuket dealt with several issues on coastal water quality (to determine its carrying capacity, especially at the more densely populated beaches, so that ONEB can fix the "permissible load" of hotels and restaurants on the beaches); soil erosion (to develop preventive measures to stop erosion at construction sites where sediment buildup occur, affecting coral reefs and water quality); land use (to develop a proper building code to cover unregulated land use); solid waste management (to search for a solution to the garbage disposal problem that affects particularly the smaller islands where collection systems are inadequate and garbage cannot be buried); and public awareness (to conduct training programs for wastewater treatment plant operators of hotels, tour boat guides, village headmen and others, focusing on the importance of conserving natural resources); and to erect signs and publish information materials.³⁵

Some of the policy recommendations made for the islands in Ban Don Bay in the CRM project for the Upper South Region have implications on the two important coastal environments (coral reefs and sandy beaches) and should be noted for any development plan in such environments in Southeast Asia.

For the coral reefs, the recommendations include the following: outstanding coral reefs should be designated as "conservation zones" in which all consumptive uses (except tourism) will be excluded; tourism should be allowed initially all year round but closure seasons should be instituted pending monitoring; mooring buoys should be provided in all zones; laws should be made to ban collection and sale of corals and coral products by any agency or individual in the country regardless of their source; and significant silt runoff or discharge of inadequately treated waste effluent near the vicinity of coral conservation zones should also be prohibited.⁴² Lemay and Chansang gave more specific recommendations for coral reef protection in Phuket.³⁰

Some of the recommendations for the sandy beach environment are: the preparation of zoning plans; the immediate prohibition of development (and strict enforcement of this regulation) within 10 m of beaches serving as an interim measure before zoning plans for all major islands and beaches are completed; liquid waste regulation not only for the larger resorts but also for small operations, since dense spacing of individual establishments along the beaches can have the combined environmental effects equal to those of large resorts; a detailed plan for landfill disposal systems that would identify the most promis-

ing sites for establishing landfills, the capacity of sites, the projected volumes of solid wastes to be buried, the provision for separation of biodegradable wastes to be used as fertilizer, equipment and manpower needs, and the feasibility of shipping glass bottles from the island or the resort area to the mainland for recycling; preservation of watersheds; and boat safety.⁴²

Planning for coastal tourism development, at least in the ASEAN countries, is assured in the Association of Southeast Asian Nations/United States Coastal Resources Management Project. Such planning varies according to the needs of the site, although there are also some structural similarities.⁴³

The integrated approach used in CRM planning benefits coastal tourism development, especially since tourism, more than other development sectors, is strongly linked to multisectoral management. The importance of CRM planning for coastal tourism development is best summarized in this statement: "Plans for this [tourism development] should include guidelines for environmental management on sewage discharge, shoreline erosion, maintenance of beaches, coral reefs and other ecosystems and general zones appropriate for tourism. The local government and communities should be involved in implementation so that human and cultural displacement is minimized. Guidelines for use of marine areas by tourist boats, swimmers and fishermen can be developed."^{8,9}

References

1. Ahmad, Y.J. 1972. Guidelines for littoral tourism. UNEP Environ. Manage. Guide. 6: 13 p.
2. Anon. 1989. There's more than seaweed in "hazardous" waters off Pattaya. *Asia Travel Trade* (October): 48-50.
3. Bacon, P.R., C.A. Deane and A.D. Putney. 1988. A workbook of practical exercises in coastal zone management for tropical islands. Commonwealth Science Council, London.
4. Baud-Bovy, M. and F. Lawson. 1977. Tourism and recreation development. Architectural Press Ltd., London.
5. Bird, B. 1989. Langkawi - from Mahsuri to Mahatir: tourism for whom. *Insan*, Kuala Lumpur.
6. Bird, E.C.F. and M.L. Schwartz, editors. 1985. The world's coastline. Van Nostrand Reinhold, New York.
7. Carpenter, R.A. and J.E. Maragos, editors. 1989. How to assess environmental impacts on tropical islands and coastal areas. Environment and Policy Institute, East-West Center, Honolulu.
8. Chua, T.-E. and A.T. White, editors. 1989. Policy recommendations for coastal area management in the ASEAN region. ICLARM Conference Proceedings 20, 10 p. International Center for Living Aquatic Resources Management, Manila, Philippines.
9. Chua, T.-E. and D. Pauly, editors. 1989. Coastal area management in Southeast Asia: policies, management strategies and case studies. ICLARM Conference Proceedings 19, 254 p. Ministry of Science, Technology and the Environment, Kuala Lumpur; Johor State Economic Planning Unit, Johore Bahru, Malaysia; and International Center for Living Aquatic Resources Management, Manila, Philippines.
10. Cohen, E. 1981. Marginal paradises: bungalow tourism on the islands of Southern Thailand. *Ann. Tour. Res.* 9: 189-228.
11. Cohen, E. 1983. Insiders and outsiders: the dynamics of development of bungalow tourism on the islands of Southern Thailand. *Human Organ.* 42: 158-162.
12. Dixon, J.A. 1989. Coastal resources: assessing alternatives, p. 153-162. *In* T.-E. Chua and D. Pauly (eds.) Coastal area management in Southeast Asia: policies, management strategies and case studies. ICLARM Conference Proceedings 19, 254 p. Ministry of Science, Technology and the Environment, Kuala Lumpur; Johor State Economic Planning Unit, Johore Bahru, Malaysia; and International Center for Living Aquatic Resources Management, Manila, Philippines.
13. Dobias, R. 1988. Tourism: resource and economics, p. 37-44. *In* J.N. Paw, S. Bunpaong, A.T. White and M.S.M. Sadorra (eds.) The coastal environmental profile of Ban Don Bay and Phangnga Bay, Thailand. ICLARM Technical Reports 20, 78 p. International Center for Living Aquatic Resources Management, Manila, Philippines.
14. Dobias, R.J. 1989. Beaches and tourism in Thailand, p. 43-55. *In* T.-E. Chua and D. Pauly (eds.) Coastal area management in Southeast Asia: policies, management strategies and case studies. ICLARM Conference Proceedings 19, 254 p. Ministry of Science, Technology and the Environment, Kuala Lumpur; Johor State Economic Planning Unit, Johore Bahru, Malaysia; and International Center for Living Aquatic Resources Management, Manila, Philippines.
15. Dobias, R. and A.T. White. 1988. Island resources management: Ban Don Bay, Thailand. *Trop. Coast. Area Manage.* 3(2): 14-16.
16. Domros. 1990. Tourism in the Maldives: the potential of its natural attraction and its exploitation. *Appl. Geogr. Dev.* 36: 61-77.

17. Edwards, A. 1990. Far East and Pacific travel in the 1990s: forecasts and analysis of potential and constraints. Spec. Rep. 2030. The Economist Intelligence Unit, London.
18. Bisma. 1982. Asia, eastern, coastal morphology, p. 76-82. *In* M.L. Schwartz (ed.) The encyclopedia of beaches and coastal environments. Hutchinson Ross, Stroudsburg, Pennsylvania.
19. Franz, J.C. 1985a. Part 1: The seaside resorts of Southeast Asia. *Tour. Recreation Res.* 10: 15-23.
20. Franz, J.C. 1985b. Part 2: Pattaya-Penang-Bali: Asia's leading beach resorts. *Tour. Recreation Res.* 10: 25-30.
21. Gee, C.Y. 1981. Resort development and management. Educational Institute of the American Hotel and Motel Association, East Lansing.
22. Gomez, E.D. 1983. Direct and indirect impacts of tourism on the coastal environment, p. 209-219. *In* Proceedings of the UNESCO/ROSTEA Marine and Coastal Processes in the Pacific: Ecological Aspects of Coastal Zone Management, 14-17 July 1980. Motupore Island Research Centre, University of Papua New Guinea.
23. Gourlay, M. 1983. Accretion and erosion of coral cays and some consequent implications for the management of marine parks, p. 475-482. *In* J.T. Baker, R.M. Carter, P.W. Sammarco and K.P. Stark (eds.) Proceedings of the Inaugural Great Barrier Reef Conference, 29 August-2 September 1983. James Cook University of North Queensland.
24. Hussey, A. 1989. Tourism in a Balinese village. *Geogr. Rev.* 79: 311-325.
25. Jaleco, B. 1991. Going for green and clean: the Philippines. *Asia Travel Trade* (April): 80-81.
26. JAS (Jabatan Alam Sekitar [Department of Environment]). 1987. A handbook of environmental impact assessment guidelines. Jabatan Alam Sekitar, Kuala Lumpur.
27. JICA (Japan International Cooperation Agency). 1985. The sub-regional development study of the upper southern part of Thailand. Final Rep. Vol. 7, 42 p. Japan International Cooperation Agency, Thailand.
28. Kechik, A.T.H., A. Hamzah and M. Ibrahim. 1989. Coastal resource management for tourism: Malaysia, p. 2850-2864. *In* O.T. Magoon, H. Converse, D. Miner, L.T. Tobin and D. Clark (eds.) Coastal Zone '89. Vol. 3. American Society of Civil Engineers, New York, USA.
29. Kiravanich, P and S. Bumpapong. 1989. Coastal area management planning: Thailand's experience. *In* T.-E. Chua and D. Pauly (eds.) Coastal area management in Southeast Asia: policies, management strategies and case studies. ICLARM Conference Proceedings 19, 254 p. Ministry of Science, Technology and the Environment, Kuala Lumpur; Johor State Economic Planning Unit, Johore Bahru, Malaysia; and International Center for Living Aquatic Resources Management, Manila, Philippines.
30. Lemay, M.H. and H. Chansang. 1988. Coral reef protection strategy for Phuket and surrounding islands. Thailand Coastal Resources Management Project Rep. TR-T 02, 64 p. University of Rhode Island and Office of the National Environment Board, Thailand.
31. Mathieson, A. and G. Wall. 1982. Tourism: economic, physical and social impacts. Longman, London.
32. Morgan, J.R. and D.W. Fryer. 1985. The marine geography of Southeast Asia, p. 9-32. *In* G. Kent and M.J. Valencia (eds.) Marine policy in Southeast Asia. University of California Press, Berkeley.
33. Morgan, J.R. and M.J. Valencia, editors. 1983. Atlas for marine policy in Southeast Asian Seas. University of California Press, Berkeley.
34. Muqbil, I. 1986. Beach resorts in Southeast Asia. *Travel Tour. Anal.* (November): 37-48.
35. Muqbil, I. 1989. The Thai tourism industry: coping with the challenge of growth. Asian Business Press Group, Singapore.
36. Odum, W.E. 1976. Ecological guidelines for tropical coastal development. International Union for Conservation of Nature and Natural Resources, Morges.
37. Pearce, D.G. 1987. Tourism today: a geographical analysis. Longman Scientific and Technical, Harlow.

38. Pearce, D.G. and R.M. Kirk. 1986. Carrying capacities for coastal tourism. *Ind. Environ.* 9(1): 3-7.
39. Rosenburg, E.E. 1980. The effects of scale in economic development: tourism in Bali. *Ann. Tour. Res.* 7: 177-196.
40. Smith, R.A. 1990. Beach resorts: a model of development evolution. Graduate School of Design, Harvard University, Cambridge, Massachusetts. 320 p. Ph.D. dissertation.
41. Smith, R.A. 1991. Down and out on the beach. *PATA Travel News (April)*: 76-79.
42. Suphapodok, A. and R. Dobias. 1989. Coastal resource management for tourism in Thailand, p. 275-304. *In* Tourism Management Development Report of an ESCAP Workshop, 16-20 May 1988. Bangkok, Thailand. ESCAP Tour. Rev.
43. White, A.T. 1989. Comparison of coastal resources planning and management in the ASEAN countries, p. 2123-2133. *In* O.T. Magoon, H. Converse, D. Miner, L.T. Tobin and D. Clark (eds.) Coastal Zone '89. Vol. 3. American Society of Civil Engineers, New York, USA.
44. White, A.T. and A. Suphapodok. 1988. Coastal resources management issues and plan formulation, p. 64-75. *In* J.N. Paw, S. Bumpapong, A.T. White and M.S.M. Sadorra (eds.) The coastal environmental profile of Ban Don Bay and Phangnga Bay, Thailand. ICLARM Technical Reports 20, 78 p. International Center for Living Aquatic Resources Management, Manila, Philippines.
45. Wong, P.P. 1986. Tourism development and resorts on the east coast of Peninsular Malaysia. *Singapore J. Trop. Geogr.* 7: 152-162.
46. Wong, P.P. 1988. Beach resort sites on the east coast of Peninsular Malaysia. *Singapore J. Trop. Geogr.* 9: 72-85.
47. Wong, P.P. 1990a. Coastal resources management: tourism in Peninsular Malaysia. *ASEAN Econ. Bull.* 7: 213-221.
48. Wong, P.P. 1990b. The geomorphological basis of beach resort sites: the Malaysian experience. *Ocean Shoreline Manage.* 13: 127-147.
49. Wong, Y. 1990. Sunny scenario? *Asia Travel Trade (September)*: 42-51.
50. WTO (World Tourism Organization). 1981. Proceedings of the Workshop on Resort Planning and Development, 26-29 August 1981. Baguio City, Philippines. WRP/Info Note 4. WTO Commission for East Asia and the Pacific.
51. Yong, K.T. 1989. Coastal resources management in the ASEAN region: problems and directions, p. xi-xvii. *In* T.-E. Chua and D. Pauly (eds.) Coastal area management in Southeast Asia: policies, management strategies and case studies. ICLARM Conference Proceedings 19, 254 p. Ministry of Science, Technology and the Environment, Kuala Lumpur; Johor State Economic Planning Unit, Johore Bahru, Malaysia; and International Center for Living Aquatic Resources Management, Manila, Philippines.

**ICLARM EDUCATION SERIES
ON COASTAL AREA MANAGEMENT**

Coral reefs: valuable resources of Southeast Asia. A.T. White. 1987. No. 1, 36 p. Out of print - available at cost in photocopied form only.

Marine parks and reserves: management for coastal environments in Southeast Asia. A.T. White. 1988. No. 2, 36 p. \$1.50 surface; \$5 airmail.

May pangako mula sa dagat (comics on blast fishing, in Pilipino). L.M. Cabrera. 1988. No. 3, 26 p. Free upon request.

There is still hope (comics on marine parks). 1989. No. 4, 14 p. Out of print - available at cost in photocopied form only.

Seagrasses: a resource unknown in the ASEAN region. M.D. Fortes. 1989. No. 5, 46 p. \$1.50 surface; \$5 airmail.

Artificial reefs for marine habitat enhancement in Southeast Asia. A.T. White, L.M. Chou, M.W.R.N. De Silva and F.Y. Guarin. 1990. No. 11, 45 p. \$1.50 surface; \$5 airmail.

Coastal tourism in Southeast Asia. P.P. Wong. 1991. No. 13, 40 p. \$1.50 surface; \$5 airmail.

Mail orders and inquiries to:

- International Specialized Book Services, P.O. Box 1632, Beaverton, Oregon 97075, USA (for North America). Airmail price must be used.
- S. Toeche-Mittler GmbH, Versandbuchhandlung, Hindenburgstrasse 33, D-6100 Darmstadt, Federal Republic of Germany (for Europe). Airmail price must be used.
- The Editor, ICLARM, MC P.O. Box 1501, Makati, 1299 Metro Manila, Philippines (for inquiries elsewhere). Send US\$ by international money order, bankdraft or UNESCO coupons payable to ICLARM. We can accept US\$ checks only if from a US-based bank due to high clearance fees of other banks.

Airmail is strongly recommended due to delays of up to 6 months and occasional losses experienced with surface mail.

For more information on the Coastal Area Management Program (CAMP), contact: **The Director, CAMP, ICLARM, MC P.O. Box 1501, Makati, 1299 Metro Manila, Philippines. Cable: ICLARM MANILA. Telex: (ETPI) 64794 ICLARM PN; (US Telex line) 49000 10376 ICL UI. FAX: (63-2)816-3183; (63-2)819-3329 ATTN:ICS 406. Tel. nos. 818-9283; 818-0466; 817-5255.**
