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Trends in ocean and coastal tourism: the end of the last frontier?

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Abstract

Marine and coastal tourism is one of the fastest growing areas within the world's largest industry. Yet despite increased awareness of the economic and environmental significance of marine and coastal tourism it is only in recent years that a substantial body of research has emerged. This article provides a review of some of the coastal and marine tourism literature which focuses, in particular, on the environmental impacts of tourism. The article then notes the manner within which tourism is a component of integrated approaches towards coastal and marine management and some of the strategies that are utilised to manage tourism in a sustainable fashion. © 2001 Elsevier Science Ltd. All rights reserved.

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Ocean and coastal tourism is widely regarded as one of the fastest growing areas of contemporary tourism [1–4]. While tourism development has been spatially focussed on the beach for much of the past 50 years, as witnessed for example, in the slogan of the four 's' of tourism—sun, sand, surf and sex—the ocean and the marine environment as a whole has become one of the new frontiers and fastest growing areas of the world's tourism industry [5]. The exact numbers of marine tourists remains unknown. Nevertheless, the selling of 'sun, sand and surf experiences', the development of beach resorts and the increasing popularity of marine tourism (e.g. fishing, scuba diving, windsurfing, and yachting) has all placed increased pressure on

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the coast, an area for which use may already be highly concentrated in terms of agriculture, human settlements, fishing and industrial location [6–8]. However, because of the highly dynamic nature of the coastal environment any development which interferes with the natural coastal system may have severe consequences for the long-term stability of the environment [9]. Indeed, the United States National Oceanic and Atmospheric Administration recognised:

Of all the activities that take place in coastal zones and the near-shore coastal ocean, none is increasing in both volume and diversity more than coastal tourism and recreation. Both the dynamic nature of this sector and its magnitude demand that it be actively taken into account in government plans, policies, and programs related to the coasts and ocean. Indeed, virtually all coastal and ocean issue areas affect coastal tourism and recreation either directly or indirectly. Clean water, healthy coastal habitats, and a safe, secure, and enjoyable environment are clearly fundamental to successful coastal tourism. Similarly, bountiful living marine resources (fish, shellfish, wetlands, coral reefs, etc.) are of critical importance to most recreational experiences. Security from risks associated with natural coastal hazards such as storms, hurricanes, tsunamis, and the like is a requisite for coastal tourism to be sustainable over the long term [10].

The purpose of the present article is to provide an overview of some of the key issues facing ocean and coastal tourism as well as highlight the substantial growth in literature on the subject from both academic and industry sources. The primary focus of research has been on the environmental and sustainable dimensions of ocean and coastal tourism. However, as the latter section of the article discusses, there is a clear need to gain a better understanding of the institutional and policy dimensions of integrated coastal and marine management in order to better incorporate the significance of tourism as a component of coastal and ocean development.

1. Defining marine and coastal tourism

The concept of coastal tourism embraces the full range of tourism, leisure, and recreationally oriented activities that take place in the coastal zone and the offshore coastal waters. These include coastal tourism development (accommodation, restaurants, food industry, and second homes), and the infrastructure supporting coastal development (e.g. retail businesses, marinas, and activity suppliers). Also included are tourism activities such as recreational boating, coast- and marine-based ecotourism, cruises, swimming, recreational fishing, snorkeling and diving [5,6]. Marine tourism is closely related to the concept of coastal tourism but also includes ocean-based tourism such as deep-sea fishing and yacht cruising. Orams [4] defines marine tourism as including ‘those recreational activities that involve travel away from one’s place of residence and which have as their host or focus the marine environment (where the marine environment is defined as those waters which are saline and tide-affected)’. Such a definition is significant for in addition to its

biological and recreational foundation it also emphasises that marine and coastal tourism must also include shore-based activities, such as land-based whale watching, reef walking, cruise ship supply and yachting events, within the overall ambit of marine tourism.

2. Sustainable marine tourism

As with many other aspects of tourism, concerns over the impacts of tourism on the physical environment and related dimensions of sustainable development have become substantial interests influencing research on ocean and marine tourism [4,11,12]. Improvements in technology, including transport, e.g. tourist submarines, and recreational technology, e.g. scuba diving, have also made the oceans more accessible to tourists than ever before. For example, marine parks, coral reefs and areas which are in relatively easy reach of scuba divers have come to be widely regarded by governments and the private sector as significant natural resources which can be developed through tourism [13,14].

With respect to using tourism as a tool for economic development, international agencies such as the World Bank have increasingly argued that although marine parks are usually established to help protect endangered ecosystems and maintain biological diversity, trade-offs exist between protection and use, and ways must be found to produce economic benefits from marine areas while still yielding protection benefits. This is regarded as a question of particular importance to coastal regions, particularly of less developed countries and island states, for which marine tourism is an important, if not the major, component of their economy [15–22]. For example, Dixon et al. [23] argued that in the case of the Bonaire Marine Park in the Netherlands Antilles results indicated that proper management can yield both protection and development benefits although it was noted that questions of ecosystem carrying capacity and retention of the economic benefits of tourism within the country did raise important issues for longer term sustainability of the marine-based tourism product. Indeed, issues surrounding the impacts of tourism on island microstates, whose territories are dominated by their maritime areas, is a major focus of research on the impacts of tourism in coastal and marine areas [24]. Nevertheless, the extent to which tourism has been a contributing factor to environmental, economic and social change in coastal areas and, in turn affected by such factors remains one of the central issues of research on coastal and ocean tourism. However, while the concept of sustainability has been one of the major factors influencing tourism research [12], concentration on the environmental dimensions of tourism in coastal and marine areas have been the main foci of tourism research.

3. The impacts of tourism

That tourism can have harmful impacts on the physical and marine environments has now become well recognised [25–28]. However, that tourism automatically has a

negative effect has now become something of a truism in much of the contemporary travel literature. Undoubtedly, unplanned and poorly managed tourism development can damage the natural environment, but the overall understanding of the interaction between tourism and the environment particularly within coastal areas is quite poor, with debates over the impacts of tourism development often dealing in generalities rather than the outcomes of scientific research on tourist impacts in a specific environment or on a specific species [29].

In the majority of coastal regions of the world basic data on tourism and its associated impacts is extremely poor [4,24,30]. For example, within the context of the South Pacific, an area which is highly dependent on marine and coastal tourism for its economic wellbeing [24], there has been no systematic study of the environmental impacts of tourism over the region as a whole. Data and information are highly fragmented [31]. Base-line data, i.e. information regarding the condition of the natural environment prior to tourism development, is invariably lacking [32]. Even in Australia, one of the most economically developed nations of the region, information about the environmental impacts of tourism is relatively poor and, where it does exist, it tends to be available for areas, such as national parks or reserves, which are under government control, rather than for private lands [33,34]. In addition, development-specific reports, such as environmental impact statements on resort or tourism developments, required by law in many Western countries, are often not required in the countries of the South Pacific because environmental planning legislation is still being developed or is not adequately implemented [35–37].

The lack of information on the environmental impacts of tourism in many areas, and in island microstates in particular, has arisen for several reasons. First, substantial business and political concern over environmental conditions has only emerged in recent years. Second, many of the governments of the less developed world have had far greater priorities, e.g. economic development, health, welfare and education, for their limited financial resources than environmental monitoring or conservation. Third, and as a partial consequence of the above two factors, the resources and scientific expertise were not generally available to undertake the vast amount of research required [29].

In recent years, however, greater concern has been expressed over the condition of the coastal and marine environment. This has not been due to tourism alone. Nevertheless, the increasing economic significance of tourism, the growth of nature-based tourism activities, and the perceived desire of many consumers to experience the pristine environments of the tourist image has contributed to an increase in research on the physical impacts of tourism [11,28].

Regional surveys have often proved valuable in identifying the impacts of tourism on marine ecosystems. For example, in the Caribbean adverse effects which have been reported include damage from small boat anchors, boat groundings, and snorkelers and scuba divers. In addition, island report development has brought about erosion, pesticide runoff, sewage as well as oil spills and over-fishing. Anchor damage is regarded as one of the most serious threats to marine resources in the Caribbean particularly given the growing number of medium-sized and large cruise

ships operating in the region [38]. Indeed, the rapid growth of the cruise ship industry in the Pacific Islands [39,40], the Caribbean [41] and the world's polar regions [42] has meant that the impacts of cruising has become a significant area of marine tourism research [43].

Cruise tourism has become significant for a number of ports because cruise tourists are higher yield tourists, spending, on average, much higher amounts per day than other categories of international tourists [39,40,43]. In a study of cruise tourism in Australia, Dwyer and Forsyth reported that home-porting cruise ships, with a marketing emphasis on flycruise packages for inbound tourists, had the greatest potential for generating large expenditure inflows to Australia [39]. In addition, they reported that because of leakages due to foreign ownership and foreign sourcing of inputs, the average expenditure per passenger per cruise injected into the Australian economy is twice as great for the coastal as opposed to the international cruise. Nevertheless, there is significant debate over the impacts of cruise ships. Ritter and Schafer, for example, argue that the ecological impact of cruises is low; spending by individual tourists high, and accultural processes minimal, and claim that although the number of jobs directly created as a result of cruises is low, it compares very favourably against most other forms of travel as a sustainable development option [43]. In contrast, Marsh and Staple in a study of cruise tourism in the Canadian Arctic concluded that given the environmental fragility of much of the region and the vulnerability of small, remote, largely aboriginal communities to impact, great care should be exercised in using the area for cruise tourism [44]. Similarly, in examining some of the cultural dimensions of the cruise ship experience, Wood argued that the global nature of the cruise market has meant that cruise ships have become examples of 'globalisation at sea' with corresponding deterritorialisation, cultural theming, and simulation [45]. In addition, concern over the environmental impacts of cruise ships led the United States Environmental Protection Agency (EPA) to host a series of meetings in 2000 to solicit input from the public, the cruise ship industry and other stakeholders on the issue of discharges from cruise ships. These meetings were part of an information gathering effort on the part of the agency to prepare an in-depth assessment of environmental impacts and existing and potential measures to abate impacts from these discharges. Cruise discharges are currently regulated through a combination of domestic and international pollution prevention laws and the EPA was assessing whether these laws adequately protect the environment and whether there are gaps in the coverage or application of these laws which may pose a risk to the environment [46].

Minerbi, as part of a paper for the Greenpeace Pacific Campaign, recorded a number of environmental and ecological impacts associated with tourism development on Pacific islands (Table 1) [47]. The range of tourism-related impacts is similar to that for many other environments [48–50]. However, in the case of Pacific, tourism impact may be more problematic due to the tendency for tourism development and tourists to concentrate on or near the ecologically and geomorphologically dynamic coastal environment. Indeed, with a few notable exceptions, e.g. the highlands of Papua New Guinea, the small size of many of the Pacific islands means that tourism activities *have* to be located within the coastal

Table 1

Environmental and ecological impacts of tourism on Pacific islands^a*Environmental degradation and pollution*

Degradation and pollution of the environment due to golf courses

Pollution by littering

Destruction of habitats and damage to ecosystems

Poorly managed tourism may result in destruction of high quality natural environments

Unmanaged human interference of specific species of fauna and flora

Dynamite blasting and over-fishing

Loss of coastal and marine resources

Interference with inland and coastal natural processes

excessive ground water extraction by large resorts induces salt water intrusion and deterioration of water quality and recharge of the aquifer

Coastal ecosystem damage and destruction through tourism development

Terrestrial runoff and dredging on coastal areas

damage to coral reef and marine resources caused by the construction of tourist infrastructure such as runways, marinas, harbours, parking areas and roads, and use of coral limestone in hotels and resort developments

Destruction by tourist activities

destruction of coral reefs, lagoons, mangroves, saltwater marshes, and wetlands due to excessive visitation and/or unmanaged exploitation of those resources

disturbance to near shore aquatic life due to thrill crafts and boat tours

Introduced exotic species

increased sea and air inter-island traffic creates the danger of accidental importation of exotic species, which can be very destructive to indigenous flora and fauna

tourism enterprises alter the integrity of the environment and encroach on local lifestyles with imported exotic species for safari hunting

Damage to sand-cay ecosystems

Damage to mangrove ecosystems

Damage to coastal rainforest ecosystems

Loss of sandy beaches and shoreline erosion

loss of sandy beaches due to onshore development and construction of seawalls

Coastal pollution

Wastewater discharge and sewage pollution

Coastal water pollution and siltation due to near shore resort construction and runoff from resort areas results in the destruction of natural habitat, coral and feeding grounds for fish

Marine and harbour pollution

coastal oil pollution due to motorised vehicles and ships

Surface water and groundwater diversion

Diversion of streams and water sources from local use to resort use, with resulting decline in water availability for domestic and other productive uses and farming, particularly taro cultivation

^a Source: [29,31,47].

zone. Because of the highly dynamic nature of the coastal environment and the significance of mangroves and the limited coral sand supply for island beaches in particular, any development which interferes with the natural system may have severe consequences for the long-term stability of the environment [29]. The impact of poorly developed tourism projects on the sand cays of the Pacific, for example, has been well documented:

- Near-shore vegetation clearing exposes the island to sea storm erosion and decreases plant material decomposition on the beach, thereby reducing nutrient availability for flora and fauna.
- Maneuvering by bulldozer (instead of hand clearing) results in scarring and soil disturbance and makes sand deposit loose and vulnerable to erosion (e.g. Treasure Island in Fiji).
- Excessive tapping of the fresh ground-water lens induces saltwater intrusion which then impairs vegetation growth and human water use and renders the cay susceptible to storm damage and further erosion.
- Sewage outfall in shallow water and reef flats may lead to an excessive build-up of nutrients thereby leading to algal growth which may eventually kill coral (e.g. Green Island in Australia in the 1980s).
- Seawalls built to trap sand in the short term impair the natural seasonal distribution of sand resulting, in the long run, in a net beach loss and in a reduction of the island land mass.
- Boat channels blasted in the reef act as a sand trap; in time they fill with sand which is no longer circulating around the island; in turn this sand is replaced by other sand eroded from the vegetated edges, changing the size and shape of the island and in time threatening the island's integrity [27].

Another component of the coastal environment, which has been substantially affected by tourism in tropical and sub-tropical areas, is the clearing and dredging of mangroves and estuaries for marinas and resorts. Mangroves and estuarine environments are extremely significant nursery areas for a variety of fish species. The loss of natural habitat due to dredging or infilling may therefore have a dramatic impact on fish catches. In addition, there may be substantial impacts on the whole of the estuarine food chain with a subsequent loss of ecological diversity. A further consequence of mangrove loss is reduced protection against erosion of the shoreline thereby increasing vulnerability to storm surge. Removal of mangroves of course has not only impacted the immediate area of clearance, but has also affected other coastal areas through the transport of greater amounts of marine sediment [51]. Tourism development has been responsible for mangrove clearance in several countries including Australia, Hawai'i, Vanuatu, and Fiji. In the case of the Denarau Island resort development in Fiji, 130 ha of mangrove forest was dredged to construct an 18 hole golf course and create an artificial marina [47,52].

One of the most obvious ways in which tourism-related development has impacted the coastal environment is the affect of tourism and tourist activities on coral reefs. 'Coral reefs are very vulnerable, and adverse human activities may result in a lower capacity to regenerate, or the death of entire coral colonies' [35]. Tourists can directly impact coral reefs in a number of ways. Skin divers and snorkelers can damage coral by hitting it with their fins. In order to restrict such damage, Vanuatu has been actively educating divers on the importance of maintaining correct buoyancy. On Australia's Great Barrier Reef, reef walking by tourists at low tide has resulted in substantial damage to sections of the reef within easy shore access [34].

The growth of coastal tourism in the Red Sea has also had substantial impacts on coral reefs in terms of both the effects of construction and infrastructure development as well as the direct affects of snorkeling and diving. According to Hawkins and Roberts [14] approximately 19% of Egypt's reefs were substantially affected by tourism in the early 1990s, but this figure was expected to rise to over 30% by the year 2000. Given the accessibility of the coastlines of Israel, Egypt and Jordan and the development plans of government, substantial increases in environmental impacts were reported. For example, Israel plans a further 43% increase in coastal tourism, Jordan 100% and Egypt a massive 11-fold expansion. Of the planned expansion in Egypt, 55% is designated around the established resorts of Hurgharda and Sharm-el-Sheikh. Hawkins and Roberts reported that tourist-related development has already caused substantial damage to inshore reefs near to Hurgharda from infilling, sedimentation and over-fishing for marine curios. Elsewhere in the region, the construction of tourist facilities and infrastructure was also beginning to modify reef habitats which up until the early 1990s has been generally restricted to the direct effects of diving and snorkeling. While the growth in the number of arrivals to the Red Sea area appeared to be sustainable for the planned developments, the authors concluded that the massive expansion planned throughout the northern Red Sea substantially threatened the reef ecosystem and warned that unless the pace of tourist development is reduced the carrying capacity of coral reefs would be exceeded with widespread reef degradation being the likely result [14].

The major indirect aspect of tourism's impacts on coral reefs is therefore the environmental effects of urban and resort development, land clearing, and pollution. Pollutants can come from both land, e.g. resorts, and marine sources, eg. tourist boats. Land-based pollution is often in the form of excessive nutrients from sewage and fertilisers. While both of these types of pollution may come from non-tourism sources it should be noted that septic tanks or inadequate sewage systems at resorts, or fertiliser run-off from golf courses may substantially impact reef systems [53]. Excessive nutrients promote algal growth at the expense of coral, leading to the smothering of coral and its eventual death. Similarly, sedimentation leads to silting and water cloudiness which cuts off sunlight to the coral reef also killing it. In the case of the Cape Tribulation Road constructed near Daintree in northern Queensland by the state government in the mid-1980s in an effort to develop tourism, sedimentation on adjacent coral reefs increased more than six-fold in comparison with undisturbed catchments in the same area [54–56].

In concluding his examination of the impacts of tourism development on Pacific islands, Minerbi [47] was scathing in his criticism of the environmental impacts of tourism:

Resorts and golf courses increase environmental degradation and pollution. Littering has taken place on beaches and scenic lookouts and parks. Marine sanctuaries have been run over and exploited by too many tourists.

Resorts have interfered with the hydrological cycle by changing ground water patterns, altering stream life, and engaging in excessive ground water extraction.

Coastal reefs, lagoons, anchialine ponds, wastewater marshes, mangroves, have been destroyed by resort construction and by excessive visitations and activities with the consequent loss of marine life and destruction of ecosystems. Beach walking, snorkeling, recreational fishing, boat tours and anchoring have damaged coral reefs and grasses and have disturbed near shore aquatic life...

Tourism has presented itself as a clean and not polluting industry but its claims have not come true...

Despite the litany of damage noted by Minerbi, it must be emphasised that the environmental impacts of tourism are certainly less than many other industries in the Pacific islands such as agriculture, fishing, forestry, and mining. This is not to deny that tourism has had substantial impacts on island microstates and coastal areas, rather it is to emphasise that specific regional research on environmental impacts is sparse [31] and also needs to be seen within the wider context of the effects of different development strategies. Given this situation, it may well be the case that tourism is receiving the blame for various forms of environmental degradation for which it is only partially responsible [29]. Other forms of 'indigenous' impact, such as overpopulation, inappropriate urban development, and land clearance may be far more significant but are perhaps not so easy to blame as an industry as visible as tourism, particularly when businesses will often be owned by foreigners. Therefore, if correctly managed tourism may well be more ecologically sustainable than many other industries in coastal areas.

4. Management strategies

The development of management strategies for coastal and ocean tourism needs to be understood in light of the nature of the management problem, the scale at which the problem is addressed, and the relative extent of intervention by government and quasi-government agencies. Planning for tourism has traditionally focused on land-use zoning, site development, accommodation and building regulations, the density of tourist development, the presentation of cultural, historical and natural tourist features, and the provision of infrastructure including roads and sewage. However, in recent years, tourism planning has adapted and expanded to include broader environmental and socio-cultural concerns, and the need to develop and promote economic development strategies at local, regional and national scales, particularly within an increasingly globalised tourism environment [57]. For example, Gajraj argued that UNEP's (United Nations Environmental Programme) Regional Seas Action Plans provide a good basis to find the best practical solutions for the development of environmentally sound coastal tourism because they provide a transnational basis for environmental action [58].

Planning for tourism therefore occurs in a number of forms (development, infrastructure, promotion and marketing); structures (different government and non-government organisations); scales (international, national, regional, local and sectoral) and times (different time scales for development, implementation and

evaluation). However, planning is rarely exclusively devoted to tourism per se. Instead, planning for tourism tends to be ‘an amalgam of economic, social and environmental considerations’ which reflect the diversity of the factors which influence tourism development [59].

An understanding of tourism policy processes therefore lies at the heart of broader goals of integrated coastal tourism management [60,61]. Yet the diverse nature of tourism has meant that the industry is difficult for policy makers and planners to define and grasp conceptually. This has meant that there have been substantial difficulties for policy makers to develop appropriate policies, while the coordination of the various elements of the tourism product has also been extremely difficult [57,62]. As Hall and Jenkins argued, the formulation and implementation of tourism and recreation public policies present several conundrums [62]. Unrealistic expectations of tourism’s potential are unfortunately combined with ignorance or willful neglect by decision-makers of the potentially adverse economic, environmental and social consequences of tourist development that threaten to curtail its benefits [63]. Yet, as Duffield and Long observed, ‘Ironically, the very consequences of lack of development, the unspoilt character of the landscape and distinctive local cultures, become positive resources as far as tourism is concerned’ [64]. Indeed, much of the driving images of coastal and ocean tourism are closely related to perceptions of relative lack of development [65]. However, in evaluating the effective integration of tourism within coastal areas in a manner which ensures sustainable coastal development one is forced to conclude that effective government involvement in coastal tourism development has been relatively unsuccessful because of the often ad hoc nature of government decision-making [63,66–69]. As Hall and Jenkins observe, ‘management decisions for the allocation of related outdoor recreation resources are seldom guided by strategic policy frameworks. Decisions are typically made in a reactive manner in response to various pressures from groups competing for the same resource or lobbying for different management of a particular resource’ [62].

The reason for such failures lie in a lack of understanding of policy processes, while the goals of tourism development are fairly clear at the regional level, ‘little research has been conducted on the most appropriate policy mix to achieve such objectives and there is often minimal monitoring and evaluation of policy measures’ [62]. Therefore, for each location within which regional development objectives are being sought through the development of tourism, there are a range of policy measures available (Table 2). Five different measures were identified:

- *Regulatory instruments.* Regulations, permits and licenses that have a legal basis and which require monitoring and enforcement. For example, in the Virgin Islands National Park and in national parks in the Florida Keys restrictions have been placed on anchorings and moorings in an endeavour to reduce environmental impact [38].
- *Voluntary instruments.* Actions or mechanisms that do not require substantial public expenditure, for example the development of information and interpretive programmes can be used to educate the public about appropriate behaviours with respect to marine conservation [70–74] or health and safety issues [75]. The

Table 2
Coastal and marine tourism development policy instruments^a

Categories	Instruments	Examples
Regulatory instruments	1. Laws	Planning laws can give considerable power to the government to encourage particular types of coastal tourism development through, for example, land use zoning
	2. Licenses, permits and standards	Regulatory instruments can be used for a wide variety of purposes especially at local government level, e.g. they may set materials standards for tourism developments, or they can be used to set architectural standards for harbour or coastal properties
	3. Tradeable permits	Often used in the United States to limit resource use or pollution. However, the instrument requires effective monitoring for it to work
	4. Quid pro quos	Government may require businesses to do something in exchange for certain rights, e.g. land may be given to a developer below market rates if the development is of a particular type or design
Voluntary instruments	1. Information	Expenditure on educating the local public, businesses or tourists to achieve specific goals, e.g. appropriate recreational behaviour
	2. Volunteer associations and non-governmental organisations	Government support of community tourism organisations is very common in tourism. Support may come from direct grants and/or by provision of office facilities. Examples of this type of development include local or regional tourist organisations, heritage conservation groups, beach protection groups, surfrider associations tour guide programmes, or helping to establish a local homestay association
	3. Technical assistance	Government can provide technical assistance and information to businesses with regard to planning and development requirements
Expenditure	1. Expenditure and contracting	This is a common method for the government to achieve policy objectives as the government can spend money directly on specific activities, this may include the development of infrastructure, such as roading, or it may include mainstreet beautification programmes. Contracting can be used as a means of supporting existing local businesses or encouraging new ones
	2. Investment or procurement	Investment may be directed into specific businesses or project, while procurement can be used to help provide businesses with a secure customer for their products
	3. Public enterprise	When the market fails to provide desired outcomes, governments may create their own businesses, e.g. coastal development corporations or regional enterprise boards. If successful, such businesses may then be sold off to the private sector
	4. Public–private partnerships	Government may enter into partnership with the private sector in order to develop certain products or regions. These may take the form of a corporation which has a specific mandate to attract business to a certain area for example

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Table 2 (continued)

Categories	Instruments	Examples
Financial incentives	5. Monitoring and evaluation	Government may allocate financial resources to monitor rural, economic, environmental and socio-economic indicators. Such measures may not only be valuable to the government to evaluate the effectiveness and efficiency of coastal tourism development objectives but can also be a valuable source of information to the private sector
	6. Promotion	Government may spend money on promoting a region to visitors either with or without financial input from the private sector. Such promotional activities may allow individual businesses to reallocate their own budgets by reducing expenditures that might have been made on promotion
	1. Pricing	Pricing measures may be used to encourage appropriate behaviour or to stimulate demand, e.g. use of particular marine areas or permit costs
	2. Taxes and charges	Governments may use these to encourage appropriate behaviours by both individuals and businesses, i.e. pollution charges. Taxes and charges may also be used to help fund infrastructure development, e.g. marinas, coastal defences
	3. Grants and loans	Seeding money may be provided to businesses to encourage product development or to encourage the retention of coastal heritage and landscape features
	4. Subsidies and tax incentives	Although subsidies are often regarded as creating inefficiencies in markets they may also be used to encourage certain types of behaviours with respect to social and environmental externalities, e.g. coastal heritage and landscape conservation, that are not taken into account by conventional economics
	5. Rebates, rewards and surety bonds	Rebates and rewards are a form of financial incentive to encourage individuals and businesses to act in certain ways. Similarly, surety bonds can be used to ensure that business acts in agreed ways, if they do not then the government will spend the money for the same purpose
	6. Vouchers	Vouchers are a mechanism to affect consumer behaviour by providing a discount on a specific product or activity
	1. Non-intervention (deliberate)	Government deciding not to directly intervene in sectoral or regional development is also a policy instrument, in that public policy is what the government decides to do and not do. In some cases the situation may be such that the government may decide that policy objectives are being met so that their intervention may not add any net value to the coastal development process and that resources could be better spent elsewhere

^a Source: [24,57].

development of voluntary codes of conduct for operators and visitors, as in the case of Antarctic and Arctic cruise ships may also assist in ensuring that appropriate behaviours occur in coastal and ocean tourism [42].

- *Expenditure*. Direct government expenditure to achieve policy outcomes, including the establishment of protected areas such as marine and national parks [76–78].
- *Financial incentives*. Including taxes, subsidies, grants and loans, which are incentives to undertake certain activities or behaviours and which tend to require minimal enforcement [79,80].
- *Non-intervention*. Where government deliberately avoids intervention in order to achieve its policy objectives, particularly with respect to allowing the market forces to determine policy outcomes [79].

With the selection of the most appropriate measure or, more likely, a range of measures, being dependent on the particular circumstances of each region; there is no universal ‘best way’, each region or locale needs to select the appropriate policy mix for its own development requirements. However, this does not mean that the policy and planning process occurs in a vacuum; rather, the attention to policy and planning processes has the intent of making such processes as overt as possible, so that the values, influence and interests of various stakeholders are relatively transparent. For example, an analysis of the effect of NGOs on socioeconomic development in Goa, India, demonstrated that they are essential in managing the adverse impacts on coastal tourism [81], whereas in other locations NGOs may only make a minor contribution to coastal management strategies. There is no perfect planning or policy process which can be easily translated from one coastal tourism management jurisdiction to another [82]. Nevertheless, through an improved understanding of the policy processes and institutional arrangements by which coastal and ocean areas are managed, better integration of tourism development within coastal communities and ecosystems without undue negative impacts may be achieved.

Given the potential impacts of tourism on the coastal environment it is therefore not surprising that organisations such as the United Nations Environment and Social Commission for Asia and the Pacific (ESCAP) have been trying to encourage sustainable forms of coastal development in Asia and the Pacific [83–88]. The policy positions of ESCAP as well as other government and non-government actors reinforce the recognition that sustainable development of coastal tourism is dependent on:

1. good coastal management practices (particularly regarding proper siting of tourism infrastructure and the provision of public access);
2. clean water and air, and healthy coastal ecosystems;
3. maintaining a safe and secure recreational environment through the management of coastal hazards (such as erosion, storms, floods), and the provision of adequate levels of safety for boaters, swimmers, and other water users;
4. beach restoration efforts that maintain the recreational and amenity values of beaches; and,
5. sound policies for wildlife and habitat protection [10].

However, such a statement, while laudable, fails to reflect the complexities and difficulties of the management and regulation of tourism with respect to the physical environment.

Unfortunately, there is usually little or no coordination between programmes that promote and market tourism and those that aim to manage coastal and marine areas [61,63]. Environmental or planning agencies often fail to understand tourism, while tourism promotion authorities tend not to be involved with the evaluation of its effects or its planning and management [57]. Implementation strategies often fail to recognise the interconnections that exist between agencies in trying to manage environmental issues, particularly when, as in the case of the relationship between tourism and the environment, responsibilities may cut across more traditional lines of authority [49,57]. Therefore, one of the greatest challenges facing coastal managers is how to integrate tourism development within the ambit of coastal management, and thus increase the likelihood of long-term sustainability of the coast as a whole [4,9,67]. Solving such dilemmas will clearly be of importance to the many countries in which marine and coastal tourism occurs. A key element is to ensure that coastal managers are cognisant of the extensive research which has been undertaken on tourism, its management, planning and impacts, some of which is referred to in the present article. However, for many in the government and the private sector a more immediate factor may be the increased recognition that the enhancement of the environmental quality of coastal and marine areas provides a significant competitive edge in the tourism marketplace.

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