MARKET INTEGRATION AND ECOSYSTEM DEGRADATION: IS SUSTAINABLE TOURISM DEVELOPMENT IN RURAL COMMUNITIES A CONTRADICTION IN TERMS?

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Abstract. Neoclassic economic theory suggests global market integration as a strategy to reduce poverty. In line with this paradigm, an increasing number of developing countries have focused on tourism to generate foreign exchange earnings and to meet rising workforce pressure. Coastlines in particular, have been at the forefront of tourist infrastructure development. The article describes tourism development in the village of Kiwengwa on the east coast of Unguja Island (Zanzibar), Tanzania. It is shown that changes caused by tourism are far more complex than economic theory suggests. Economically, tourism has substantially increased local income, but it has also led to a focus on individual benefit and dissolving kinship relationships, encouraged the abandonment of traditional resource-use strategies, contributed to the commoditization of local natural resources, and spread the idea that these resources can be replaced with imports. Overall, tourism has fundamentally disrupted the local socio-economic system and led to a self-reinforcing cycle of ecosystem degradation. Tourism development is nevertheless perceived as positive and sustainable, because (i) changes are complex and damage becomes perceptible only in the medium- or long-term future, (ii) the tourist industry tends to shift its impacts to remote areas, i.e. a supplying periphery, (iii) the village has become a center of resource allocation itself, with imports compensating for the losses in local ecosystem capacity. As a development option imposed by the transnational tourist industry, tourism leads to the creation of new centers (i.e. the former periphery) while simultaneously creating new peripheries. In a finite world with a limited hinterland for such a continuous expansion, this cannot be sustainable.

Key words: ecological capacity, ecosystem, sustainable development, Tanzania, tourism, Zanzibar.

1. Introduction

Theories of modernization and economic growth dominated 'western' development discourses in the late 1950s. These theories proposed modernization and economic development as the solution for the structural problems of the developing countries. Growth paradigms are still prevailing today and have even experienced a revival and extension through neoclassic economics, suggesting that the spatial globalization of the economy will reduce poverty even in the too remote areas of the world and subsequently lead to high standards of material wealth for all human beings. The preconditions to be met in order to achieve this goal are largely seen in free, globalized markets, in which all human beings should be integrated and actively

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participate (cf. Sachs, 2000). The positive view of tourism as a sustainable development option – currently supported by the World Bank (1998), environmental organizations like the World Wide Fund for Nature (WWF, 1995), the international tourist industry (Iwand, 1999), and the World Tourism Organization (WTO, 1997) – thus largely corresponds to neoclassic economic thinking. If managed properly tourism is believed to initiate and support local development, while transferring capital resources from the developed to the developing world. Furthermore, tourism integrates remote areas in the world economy, which otherwise would remain isolated (such as for example small Pacific islands), and even finances the necessary infrastructure in this process (e.g. airports).

Coastlines and their ecosystems have historically supported the world's densest populations with food and contributed in many ways to local income (e.g. Lindén and Lundin, 1996). Today, increasing and unsustainable use of natural resources has forced degradation or even destruction of coastal ecosystems in many regions of the world (e.g. Moffat et al., 1998). In search for alternatives tourism has been advocated as a non-consumptive, sustainable development option more favorable than destructive exploitation methods (e.g. Cesar et al., 1997; Pet-Soede et al., 1999). In consequence, coastal zones have been at the forefront of tourist infrastructure development, and an increasing number of developing countries in the tropics now focus on tourism to generate additional jobs and income, raise foreign exchange earnings, and diversify the economy. In a nutshell: tourism development is initiated to avoid a continuing process of impoverishment. More often than not, this is achieved in top-down development processes, in which the international tourist industry cooperates with governmental bodies, basically excluding local stakeholders from participation.

2. The case study setting

Unguja Island and Pemba are the two major islands that make up Zanzibar. Unguja Island, in the following also referred to as Zanzibar, is located between 5°40′ and 6°30′S, approximately 40 km off mainland Tanzania and has a surface area of about 1600 square kilometers. International tourist arrivals on the island have increased by up to 20% per year since 1984 (8967 arrivals) to a total of almost 87 000 in 1999 (Commission for Tourism, 1996; 2000). Tourist development is concentrated on the east coast, where white sandy beaches provide the precondition for infrastructure development. Here, a great number of hotels with a total of about 2570 beds have been built within the last five years. Further hotels are under construction or planned. In total, the area is expected to reach a capacity of 8000 beds by 2015 (MWCELE, 1993).

Kiwengwa, the study area, is a small fishing village on the east coast of Zanzibar with 555 inhabitants living in 165 houses and huts. The socio-economic situation of the village was investigated using a written questionnaire, which was provided

systematically to local residents with the household as the unit of analysis ($n = 30$, for a detailed discussion of the methods used see Gössling, 2001).

Kiwengwa residents are of African origin (the society of Zanzibar is composed of African, Irano-Arab, Hindu, and Indonesian ethnic groups), and are Muslim with respect to their religion. The demographic structure of the village is representative for the entire island (MWCELE, 1995): 56% of the villagers are younger than 15 years, 42% between 15 and 59 years old, and 2% older than 59. The average household size is 5.8 persons. The four hotels in the study area have been built within the last five years and are located North of Kiwengwa. In total – including four small guesthouses – they combine a capacity of 974 beds. A fifth hotel with 172 beds still was under construction during fieldwork. The structure of the hotels follows the same scheme: a number of large buildings frame paved public areas, which are surrounded by tourist bungalows. Gardens and swimming pools are located in the center, while the staff quarters and the buildings for the technical equipment (generator, etc.) can be found at the edge of the area belonging to the hotel. The beach is part of the hotel property and reserved for the tourists. However, a small stretch along the waterfront serves as public road for pedestrians and cyclists.

The coastal zone can be divided into coral rag area (cavernous limestone with bushy vegetation), beach, intertidal zone, and open sea. Different local and tourist activities take place in the various zones of the coast. The open sea is important for pelagic fisheries, the intertidal zone to collect octopus and shells, for coastal fisheries, algae farming, as anchoring ground for boats, for swimming, sailing, and snorkelling. The beach is used to repair boats, dry algae, for sports and relaxation. The coral rag serves as housing area, and its vegetation is a source of firewood and building materials.

Due to a lack of qualification, only few people from the local villages are directly employed in the hotels. Most of the staff come from Zanzibar Town, some from mainland Tanzania. About 860 persons are employed in the four hotels of the study area. Most of them live adjacent to the hotels, but there are also daily commuters from Zanzibar Town. Approximately, 450 people working in the informal tourist sector have migrated to the Kiwengwa area in order to sell souvenirs. In total, they run about 110 souvenir stalls.

3. Development of the economic system

Historically, trade has for millennia been a part of the life of the people living along the coast of East Africa and its islands. The mercantile system covered the northern Indian Ocean and the Red Sea, stretching as far as to China and Indonesia. It was based upon the exchange of clothing (cotton, silk, woollen stuffs), food (rice, wheat, millet, sorghum, sesame, and spices), warfare (arms and gunpowder), religious goods (resins and gums for incense), precious metals (iron, gold, and brass), and labor (slaves). For centuries, the merchants in East Africa were at the core of this

trade with Zanzibar representing the most important transhipment market (Sheriff, 1987; Middleton, 1992).

Trade in Zanzibar was concentrated in the markets in Zanzibar Town, the only urban area on the island (Burton, 1872). Even though the island produced important export goods itself (cloves), it can be assumed that the trade had little influence on the villages of the east coast which until the end of the 19th century had no resources of mercantile interest and thus lived close to subsistence, making use of the production alternatives offered by the surrounding ecosystems. In the Kiwengwa area these were coastal and pelagic fisheries, animal husbandry, possibly agriculture in the semi-fertile soil areas about 3.5 km from the village, gathering of wood and construction materials in the coastal rag, and collection of octopuses and shells in the intertidal zone. Some hunting might also have been common. Overall, the coastal communities at the east coast seem to have been autonomous in their resource requirements except for imports of a few essential goods like iron and textiles (Sheriff and Fergusson, 1991).

Fishing has traditionally been the single most important activity, involving mainly traps and nets (Jiddawi, 1998; Tobisson et al., 1998). High degrees of risk and uncertainty in terms of personal safety, amount of catch, and income laid emphasis on cooperative behavior, and led to the establishment of share systems built on kinship (Andersson and Ngazi, 1998). Kinship also secured access to resources because the right to use reef areas or tidal zones was exclusive to certain families (Jiddawi, 1998; Tobisson et al., 1998).

Between 1900 and 1994, the economic system changed gradually. The first major transformation took place when the abolition of slavery caused a labor shortage on the clove and coconut plantations and villagers living inland started to provide their labor in return for cash payments. As work was seasonal and wages low it still remained necessary to continue subsistence activities (Sheriff and Fergusson, 1991). The introduction of a cash economy on a broader basis had yet little impact on the coastal villages but patterns of consumption began to shift from locally produced goods to a combination of local and imported products, which were paid for with the cash income received from labor. In the course of this process, coastal resources were increasingly sold outside the local markets: mangrove poles as source of tannin as early as 1903, lime (produced from burning corals) in the 1930s, fish (transported to Zanzibar Town and the plantation belt) in the 1960s (Sheriff and Fergusson, 1991).

The pharmaceutical industry and its demand for carrageenan carrying algae introduced the next phase of economic transition in the coastal villages. Commercial algae farming started in 1989 and rapidly spread to almost every village on the east coast (Pettersson-Löfquist, 1995). It soon became an important cash income activity for most families, even though subsistence production remained the base of livelihood. The importance of algae farming as an agent of economic transition lies in its emphasis on a market-based cash economy. With increasing amounts of cash income available, imports of goods and products increased, and trade intensified.

Tourism triggered the most recent phase of economic transition. The development of tourist infrastructure (since 1994) altered the local economies more rapidly and more effectively than any change before. This is mainly due to two facts: the generation of new job opportunities in the formal and informal sector of the tourist industry, and the building of a tarmac road between Zanzibar Town and the east coast, which reduced travel times and increased the available means of transport by an order of magnitude, resulting in intensified trade.

The economic system of Kiwengwa now consists of two components: a subsistence economy based on the use of local resources, which are still of fundamental importance for the livelihood of the coastal dwellers, and a market-oriented economy based on (i) the provision of services for the tourist industry and (ii) the trade of local resources. Among kin, however, resources (especially fish) are still exchanged for free. In the village, payments are often made in products as well. For example, if a boat is rented out for fishing, the owner will receive a share of the catch.

Traditionally, households on the east coast have followed a diversified production strategy and participated in different subsistence and cash income activities. This is basically still the case in Kiwengwa, where 17% of the households investigated had five income sources, 27% four, 27% three, 17% two, and only 13% just one. The survey revealed, though, that young men in particular tend to concentrate on a single income source, which in all cases was tourism. Within five years, tourism has become of fundamental importance for the local economy. Presently, 10% of the households rely entirely on tourism for a living and another 10% have focused on tourism, keeping one additional production alternative. Overall, 84 persons are directly and indirectly employed in this industry. This represents a share of 36% of the working population above 14 years. In detail, 56 locals are employed in the hotels, 20 involved in offering boat rides, and 8 residents have started to operate companies, offering excursions to the tourists.

Overall, fishing is still the single most important activity in Kiwengwa, involving about 73% of the households. However, one-third of the fishermen are now specialized in offering boat excursions to tourists and continue fishing only during the monsoon period, when the hotels close. In consequence, only every second household participates throughout the year in fisheries. Algae farming is the second most important activity, in which about 67% of the households are involved, followed by agriculture (60%), tourism (50%), and animal husbandry (43%). Fifty-three percent of the households carry out at least one additional activity, including cooking and baking for the local market (cookies, cakes, rice, beans, porridge), tailoring, repairing bicycles, carpeting, construction work, shop-keeping, teaching, nursing, mechanical work, and selling milk, honey, or coconut oil. As some production alternatives are in part or entirely for subsistence, they rank differently in terms of their contribution to the cash income.

Fishing, which contributes with 22% to the total annual village cash income, is first of all a subsistence activity because only surplus catches are sold. Similar is true for agriculture and animal husbandry, which are mainly subsistence activities as well. These contribute with a minor 3% and 8% to village cash income.

Algae farming and tourism, in contrast, are pure cash income activities. Tourism is the major income earner, accounting for 41% of the total. Algae farming brings in 11% of the money and a wide range of other activities the remaining 15%. The annual village cash income (subtracting income related expenses) was calculated at US$ 155 000 or about US$ 1615 per household (exchange rate January 1999: US$1:TSh 681). However, the available cash income is heavily dependent on tourism. For households involved in tourism, the average annual income was found to be 43% higher (US$ 2055) than for those not involved (US$ 1175). Without tourism and assuming that off-season jobs would be carried out throughout the year, village income would decrease by 35% to about US$ 101 000. These figures stress the importance of tourism for the local cash economy and explain its enormous attraction for local residents. In the future the trend of increasing involvement in tourism is thus expected to continue.

Local resources have remained the base of the diet in Kiwengwa, with fish being the main source of protein. Other protein sources are octopuses, squids, gastropods, and bivalves. Agricultural products include bananas, potatoes, *mchicha* leaves (a vegetable), tomatoes, cassava (leaves and roots), maize, and papaya. However, there are also large amounts of imported products consumed in the village. Bicycle traders offer mangos, oranges, onions, tomatoes, and eggplant (the latter two seasonally), bread, shoes, and fabrics. Imports from the mainland include wheat and maize flour, potatoes, and industrially produced goods like soda drinks, sanitary products, pharmaceuticals, washing powder, soap, and batteries. The only export products of the village are algae and fish. Dried algae are collected from the villages by the pharmaceutical industry. Most of the surplus catch of fish is sold at a local auction to traders from other villages. Some locals have also started to travel to Zanzibar Town, where the fish yields higher prices. This is a recent development, which was initiated by the construction of the tarmac road. A minor amount of valuable fish species is sold directly to the hotels, and some hotel employees buy fish in Kiwengwa before returning to Zanzibar Town.

A comparison of the resource use in the tourist industry and the village reveals that the per capita demand for food (excluding fluids) is substantially higher in the tourist industry (2.22 kg d^{-1}) than in the village (1.78 kg d^{-1}). This might be due to the fact that the hotel guests are almost entirely adults, while village averages include children as well. Another reason might be that hotels usually provide more food than is eaten by the tourists. In terms of nutritive value and energy content, food consumed by the tourists is far more valuable. This becomes obvious looking at food composition, which varies considerably between the village and the tourist industry. In the hotels animal protein sources (fish and other seafood, meats, eggs, and milk powder) account for 34.7% of the diet, while in Kiwengwa the corresponding figure is 11.9%. Carbohydrates (including rice), in contrast, represent 35.1% of the diet in the hotels, but 53.2% in the village (including cassava roots). Fish is the main source of protein in the village and is not likely to be replaced, because meat is more expensive and traditionally only consumed during feasts. Other products rich in protein like beans play a minor role in the village (1.0%). Fruits and vegetables

account for 18.2% (fruits) and 3.1% (vegetables) of the diet in the village, and for 18.7% and 9.5% in the hotels, respectively. Overall, the tourist industry has increased the demand of resources substantially. Extrapolated, the four hotels in the study area consume 2.5 times (about 950 tons) as much food and products as the entire village of Kiwengwa (about 360 tons).

With respect to the origin of the products, 42.6% of the food consumed in the village are local produce, while 28.5% is imported from other areas in Zanzibar and another 28.9%, mostly carbohydrates, from the Tanzanian mainland or overseas. The hotels cover almost two-thirds (63.4%) of their food requirements with imports from Zanzibar (i.e. foods and products produced on the island, excluding purchases from local supplies which might be imported), with the remainder (36.5%) being imported from the mainland or overseas. Imports from overseas include a high proportion of industrially produced goods (chili sauce, tomato ketchup, cocoa, mushrooms, soy sauce, coffee, tea, baking powder, jam, yeast, cleaning detergents). In the village, some of the most important imports are bicycles, tools, kerosene candles, aspirin, chloroquine, mosquito coils, insect spray, lotion, batteries, glue, razor blades, and tin foil.

4. Tradition and indigenous knowledge

Traditional resource-use systems of coastal dwellers in Zanzibar are characterized by three major elements: indigenous knowledge, diversified production strategies, and property rights. Indigenous knowledge is accumulated over historical time. It is passed on from generation to generation and represents an important precondition for the efficient and sustainable use of ecosystems (e.g. Gadgil et al., 1993). Tobisson et al. (1998) have shown that coastal dwellers in Zanzibar possess a very complex and intimate environmental knowledge. Fishermen, for instance, know about tides, seabed morphology, and seasonal variations in wind and precipitation. They are able to read and interpret the constellation of the stars, changes in the color of the water and the behavior of birds, indicating rainfall or changes in the direction and intensity of the wind system. They have developed different technologies to fit specific fishing conditions and they have acquired the skills of sailing, navigation, gear handling, bait collection, construction and maintenance of boats, and the marketing of the catch. Tradition is thus an important reason to choose a certain production strategy. Traditionally, coastal dwellers have never been entirely dependent on a single source of food and income. Diversified activities allow the accumulation of wealth, or, in times of reduced production, to cope with uncertainty, unpredictability, and risks present in economic and ecological systems (Andersson and Ngazi, 1998; Tobisson et al., 1998). Finally, as open water fisheries are open access regimes, mechanisms to govern these are an integral part of traditional use systems. Basically, most fishermen will catch as much as they can but exploitation techniques leading to the overexploitation and degradation of the ecosystem are well known, and self-regulation and control strategies have thus existed in many

areas of the east coast (Jiddawi, 1998; Msuya, 1998). The use of many reefs and intertidal zones has traditionally been exclusive to certain families, representing efficient (private) property rights (Tobisson et al., 1998).

With population growth, rising tourist numbers, and coastal migration, demand for resources has increased rapidly in recent years. This development coincides with the introduction of technological innovations, like snorkel and masks, spears, etc., which lead to changes in the traditional resource-use systems. Tradition as a reason to choose a certain production strategy has rapidly lost importance. A survey conducted in 1993 by Andersson and Ngazi (1998) showed that 70% of the respondents followed the production strategy of their ancestors. Four years later, in 1997, this percentage had decreased to 46%, mostly as a result of women turning to commercial seaweed farming in favor of collecting intertidal products (gastropods, bivalves, and octopuses).

Other examples show that traditional systems are given up or collapse on their own (Tobisson et al., 1998). The prawn (*kamba*) management system in the mangroves of Mapopwe Creek, for instance, has collapsed because the closure period during hatching was disregarded by migrants moving to the Creek. Traditionally, village elders had been in a position to punish violations of the local regulations, but the government classified the area as common property, undermining local control. The result was the overexploitation of the system. Another example is the crab (*kaa*) system in Chwaka Bay. Here, the number of crabs has decreased due to the additional demand of the tourist industry, a development parallel with the introduction of snorkels and masks, which allow for more efficient hunting. In this case, technological innovation (snorkels and masks) caused a disruption of the traditional management system, because crabs could now be hunted all day around, instead of being, as was formerly the case, restricted to low water during spring tide. Here as well, overexploitation was the result. Conflicts caused by tourism have also forced the abandonment of traditional use systems. In some cases, locals had to refrain from the hereditary use of the intertidal zone (Tobisson et al., 1998), while in other areas, scuba diving and snorkeling have been reported to conflict with local fishing activities (Johnstone et al., 1998). In other parts of the island fishermen have turned to selective fishing to meet the specific demands of the tourist industry (Bakari, 1998). The examples illustrate how susceptible traditional systems are to change.

5. The consequences of economic change

A description has been provided of how the economy of Kiwengwa has changed over time, successively turning from a subsistence-based economy to a globally integrated market economy, which can be seen as part of a broader pattern of modernization. At present, the village economy is still semi-autonomous. Local residents have remained dependent on the local ecosystems, with especially fisheries being of fundamental importance, but they have also entered a capitalist mode of production, which started with commercial algae farming and has now, with the

rise of tourism, become an integral part of the economic system. Simultaneously, the import of essential parts of the diet (mainly rice, flour, potatoes, vegetables, and fruits) necessitates a cash income: on average, almost two-thirds of the household's income are spent for food. Overall, village residents have started to allocate more labor input to commercial production sources, especially tourism, and less for traditional and ecosystem dependent activities. Tourism is expected to gain further importance. Both push and pull factors are responsible for this:

- Despite increasing fishing effort, total catches are declining in Zanzibar (e.g. Bakari, 1998), and alternative sources of income become sought after opportunities.
- Tourism allows for higher cash income than traditional activities. As long as it is cheaper to buy fish with the surplus income, tourism will remain the favored activity.
- Tourism offers 'clean' and 'easy' job opportunities. Fishermen, for instance, often have to leave the village during the night (with the tides). They might find it more agreeable to offer boat excursions to tourists. Similar could be true for women, who might prefer cleaning in the hotels to collecting intertidal products or seaweed farming.
- In the informal tourism sector higher income can be obtained during shorter working periods. Tourist excursions, for instance, allow easily for cash incomes twice as high as those from fishing but involve only a fraction of the working time.
- Those directly employed in hotels might perceive their work as a more reliable source of income in comparison to, e.g. algae farming or fisheries.

Tourism has also set in motion local economic developments. Substantial amounts of surplus money are re-invested in tourism, for example to build huts (which are then rented out to migrant souvenir sellers) or to operate cars for tourist excursions.

The new focus on tourism has a range of consequences. Presently, the economy in Kiwengwa is still diversified but in the medium-term future new dependencies could arise. Tourism is an exclusive activity, for which other activities have to be abandoned. Fishermen offering boat rides, for instance, have to give up fishing. Similarly, employment in the hotels demands continuous presence. Accordingly, there is a trend – especially among younger residents – to focus on tourism and to give up more diversified production strategies.

In the following, the consequences of tourism are discussed for fisheries, because most of the population of Zanzibar is dependent on fish protein for their diet. As has been stated earlier, total catches of marine resources like, e.g. lobster, octopus, sea cucumber, and sharks have declined in recent years, a development mainly caused by the overexploitation and degradation of ecosystems (e.g. Bakari, 1998; Johnstone et al., 1998). While little is known about other marine sources of protein such as octopuses or shells, observational evidence suggests a decline in these resources, too. Simultaneously, population growth and tourism have increased the

demand for these resources. Kiwengwa residents claim that prices for fish have risen by an order of magnitude between 1993 and 1999. In comparison, the Tanzanian Shilling has lost only one-third of its value to the US-Dollar in the same period. The changes in demand and availability of fish seem thus to be reflected in prices as well.

According to economic theory, increased prices cause a decrease in consumption. On the other hand, increased prices could also increase a willingness to sell. In Kiwengwa, however, the amount of fish consumed by the fishermen themselves is not likely to change. Andersson and Ngazi (1998) have shown that a potentially higher profit has little or no effect on home fish consumption. Tourists are not expected to be particularly price elastic in their demand either, because the amount of money paid for food is minor in comparison to the total retail price. A week's vacation in one of the better hotels, for instance, costs US$ 2000–2200. This raises the question of the consequences of scarcity. Basically, the total amount of fish available for the part of the population not involved in fisheries will decrease, while prices for fish will increase. It can thus be expected that part of the population will be excluded from access to fish and other marine protein sources. In times of scarcity, Kiwengwa residents substitute fish for vegetables, carbohydrates, and beans. Meat is unlikely to compensate for seafood because it is even more expensive than fish and consumption is usually restricted to festivals. Therefore, the proportion of protein in local diets will decrease, which might have health consequences. The Ministry of Water, Energy, Construction, Lands and Environment (MWCELE) reported already in 1995 that 60% of all children in Zanzibar suffered from malnutrition.

Higher prices will also affect fisheries because they justify higher hunting efforts per unit of catch and more expensive fishing gear. In Kiwengwa, for instance, one boat has now been equipped with a motor, which allows for more efficient and far ranging operations. This, in turn, will increase pressure on fish populations and other marine species. Sharks are one example for this development. In the past, they were caught for their liver oil, which was used in the maintenance of fishing vessels, and for their meat (Barnett, 1997). Commercial trade in shark fin with countries in the Far East (mainly Hong Kong) began in the 1960s. In contrast to the shark meat, which has a comparably low value (US$ 0.95 per kg), the fins yield substantial prices. In Zanzibar Town, dried shark fin sells at US$ 17.9–80.4 per kg depending on size and shark species (Barnett, 1997). Sharkskin, which is rather seldom exported, earns US$ 0.039–7.2 per kg. With the rise of tourism, jaws and especially teeth have become sought after souvenirs, the latter being sold for about US$ 1.5 each in Zanzibar Town. On basis of the values given above and the average weight of sharks caught in Zanzibar (40 kg, Barnett, 1997), tourism could raise the value of sharks by more than 20%. This might also increase hunting pressure. Barnett (1997) reports that annual shark/ray landings in Zanzibar have risen from 129.2 tons in 1990 to 939.6 tons in 1994, with an increasing percentage of small shark catches – possibly a sign of overexploitation. The disappearance or extinction of shark species, however, could lead to structural changes in the marine ecosystem with unknown consequences (cf. Johnstone et al., 1998).

Marine species are not the only resources affected by the development of tourism. The traditional coconut thatch used for roofing (*makuti*), for instance, has become scarce, clearly on account of the additional demand of the tourist industry. To give an example: each of the hotels in the study area has used more *makutis* for its buildings than the entire village of Kiwengwa. These have to be renewed every seventh year. The increase in demand is also reflected in prices, which rose from US$ 0.04 per *makuti* in 1996 to US$ 0.06 in 1999 (in 1996 values).

6. Market integration and ecosystem degradation

Tourism has been shown to induce complex socio-economic and ecological changes, which can be described as a self-reinforcing cycle (Figure 1).

Resource-use systems of coastal dwellers in Zanzibar are built on three main elements: indigenous knowledge systems, diversified production strategies, and property rights. The possession of indigenous knowledge is a precondition for reading the environment, interpreting ecological changes, and understanding the limits to the exploitation of ecosystems. Diversified production strategies ensure survival in times of scarcity. Property rights guarantee sustainable exploitation based on self-regulation and control mechanisms. In recent years, stocks of marine resources have decreased in Zanzibar, which is at least partly a result of degraded reefs supporting significantly lower amounts of fish. Environmental degradation is also a major factor reducing the coastal dweller's ability to interpret the environment. It diminishes the opportunities of efficiently using several production strategies, impairs the capacity to incorporate resource-use restrictions, and ultimately results in the weakening of local production strategies. Declining catches make locals simultaneously turn to new modes of production, which are more beneficial. Tourism, initialized by capital

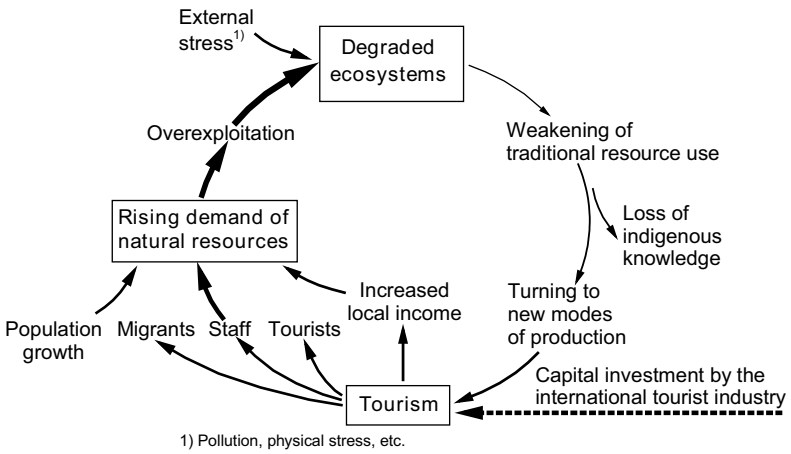

Figure 1. The cycle of ecosystem degradation. Adapted from Gössling (2001).

investments of the international tourist industry, is the favored new production strategy. However, increased market integration and specialization in production also weaken the role of tradition because the comparative advantage of indigenous knowledge decreases when production strategies become less dependent on the local environment. In the final stage of this process indigenous knowledge will be lost. Moreover, the health of the ecosystems becomes irrelevant to coastal dwellers because survival is no longer dependent on these. In turn, control mechanisms over exploitation techniques vanish as well. These were traditionally ensured by effective legislation forbidding, for instance, destructive fishing methods (Msuya, 1998).

Population and tourism growth lead to an increasing demand for natural resources and, in combination with increasing prices, force overexploitation, and ecosystem degradation. Increased local income may also contribute to this process through increased consumption of natural resources (e.g. imported fruits) or by the abandonment of local agriculture, which is replaced by imports from other parts of the island. External stresses add the effects of overexploitation. Direct impacts on the coral reefs, for example, include trampling, breaking, buying/selling, and collecting reef species. Other factors reducing the expansion and integrity of the ecosystems are the conversion of natural areas for infrastructure development, sand quarrying, and deforestation of mangroves for building materials or charcoal. Indirect impacts include the dumping of wastes, which can increase the spread of disease or the introduction of toxic compounds, and pollution, in particular increasing nutrient levels. Tropical waters are typically oligotrophic but there is evidence that they are enriched with nutrients in the Kiwengwa area. Less than 25% of the houses in Kiwengwa are supplied with toilets and the beach is frequently used for toilet purposes. This contributes to the direct influx of nutrients into the sea. Indirect discharge of nutrients results from septic tanks of the hotels, which in some cases leak into the fissured ground, from where the nutrients are discharged into the sea with the groundwater (Gössling, 2000a). Wastewaters also contain substantial amounts of washing powder, cleaning detergents, and soap. In the Kiwengwa area alone, these add to more than 7.5 tons per year. In the village solid wastes are disposed of without treatment of any kind.

Tourism is also responsible for substantial emissions of trace gases. In the study area, more than 1.5 million liters of fuel are combusted seasonally in the generators of the hotels. Fuel used for day trips, air travel, and the transport of imported goods has to be added on top of this. Emissions lead to increased nitrogen deposition and contribute to climate change, both of which impact on the ecosystems (e.g. Sala et al., 2000).

In summary, declining stocks of marine resources and the advent of tourism have set in motion a cycle of ecosystem degradation. According to this model, one expects the local residents to increasingly turn to tourism for income generation and to abandon traditional activities. This trend has in fact been observed in Kiwengwa. In spite of the ongoing degradation of the ecosystems, village income is still increasing due to tourism. In the future, local residents are thus expected to become more dependent on tourism and imports of food, while ecosystem degradation will continue.

Indigenous knowledge is expected to erode rapidly because the younger generation in particular is giving up traditional activities in favor of tourism. Traditional subsistence systems based on kinship are thus likely to be replaced by cash income activities emphasizing individual benefit. Island-wide, tourism has been the major factor turning natural resources like marine species and even beaches, traditionally only exploited for subsistence, into commodities. Natural resources are now increasingly subject to transactions operating outside the preexisting tradition-based systems, and local legislations thus fail to control and manage their exploitation.

The inherent danger of this development lies in the fact that tourism theory suggests that destinations evolve through cycles (Butler, 1980). Tourist numbers will decline when the state of a destination becomes undesirable. Presently, Kiwengwa and Zanzibar still experience a strong growth in tourist arrivals, but there is some evidence that the ecological capacity of the study area (and the entire island) has already been exceeded. Should tourist numbers decline in the future, it is questionable to what extent local residents could return to the use of the local ecosystems. To add a social perspective, many children in the study area have stopped attending school and spend the days in front of the hotels, hoping to receive gifts from the tourists. The focus of the younger generation on tourism has resulted in clashes with the older villagers, who complain about the vanishing of traditions. More generally, the influx of migrants confronts the local residents with different lifestyles, including prostitution, drug dealing, and motorcycle riding on the beach. Crime rates have increased substantially, including theft, burglary, and even armed robbery. In the informal sector, workforce pressure resulting from the high and uninhibited influx of new migrants has led to aggressive selling behavior. Politically, local communities are gradually disempowered through tourism and become destabilized, while the influence of the government gradually increases.

7. Development for whom? – a political ecology perspective

In order to understand power processes in Zanzibar, a political ecology perspective is added in the following. The government is the institution in charge of the legal framework for land tenure, tourism development, migration, and resource use in Zanzibar (represented through the Commission for Tourism and the Commission of Natural Resources). As Marks (1996) points out, the government is dependent on foreign aid for 85% of its budget. Further dependency arises from the monostructure of the economy: until 1960s and 1970s, Zanzibar was one of the world's major exporters of cloves, which brought in 85% of the country's foreign exchange earnings. However, during the 1980s world market prices fell substantially, and the government, realizing its dependency on the cash crop, initiated a liberalization policy for the trade and tourism sector in 1984, followed by a tourism investment act in 1986. In order to maximize foreign exchange earnings, economics of scale were the favored development option in tourism, leading to the massive tourism infrastructure development that can be observed today. Developing countries focusing on tourism

as a development strategy are usually enmeshed in the international tourism industry, mainly as a result of the lack of capital, entrepreneurial and commercial knowledge. In consequence, a major proportion of the gross revenue is repatriated due to expenditures on tourism-related imports and services, the ownership or financial involvement of the international tourist industry, or credit loans. In most developing countries, only 20–40% of the retail price will remain within the national economy (Gössling, 1999). In Zanzibar, the exact amount of money brought in by tourism is not known. The hotels in the study area, however, pay substantial amounts in taxes, which are, according to hotel managers, of the order of up to US$ 60 000 per month per hotel. This money is directly available to the government. There are some signs that at least part of it is used by the political and economic elites to accumulate individual wealth. Accordingly, short-term gains are favored to long-term sustainable income and the negative impacts of tourism are neglected, even though the government of Zanzibar is well aware of them (Khatib, 1998). Responsible, socio-economically and ecologically integrated projects are only carried out when international donor agencies provide the funding. One example for an externally funded eco-tourism project is Chumbe Island, an islet in the West of Zanzibar, which is often put forward to promote the green image of the island, but has by no means contributed to a more sustainable tourism development on a broader basis (cf. Honey, 1999).

For Zanzibar, the focus on tourism has two major consequences: (1) The government's view of natural resources has turned into one of utilization and commoditization. This is problematic because coastal resources formerly exploited by local residents are now used by external actors and governed by institutions with little knowledge about the limits of utilization and great interest in economic income. (2) Considering its dependency on tourism, politicians do not want to jeopardize tourism growth through the introduction of management strategies that might be perceived as obstacles to development by the tourist industry.

The tourist industry itself has for several reasons neglected the risks of overexploitation of natural resources: (1) The tourists expect a "tropical paradise" environment, i.e. large amounts of food, extensive gardens, no restrictions in behavior, etc. (2) The tourist industry is not as directly faced with the consequences of overuse as local residents and may have the financial means to overcome shortages (buying at higher prices, imports). (3) The tourist industry has little interest in conservation, even though it would seem the existence of the hotels is ultimately based on the integrity of the environment. The neglect of the environment ultimately follows the insight that the political situation in Zanzibar is not stable, as the quotation of an Italian manager reveals: "we are prepared to leave this island if the [political] conditions are no longer suitable". Clashes of the two political parties, the ruling Chama cha Mapinduzi (CCM) and the opposing Civic United Front (CUF) have resulted in major interior problems, which in January 2001 accumulated in civil unrest and the death of 29 Zanzibari. Tourists might be easily scared away through such incidences, and investments by transnational companies might thus often be planned so as to pay off in a few years, which makes it unnecessary to invest in

long-term stability, be it political, social, economic, or ecological. Both the tourist industry and the government have thus economic reasons for the continuation of the current development.

Local stakeholders are those facing the medium- and long-term consequences of tourism development. However, villagers are completely unaware of these consequences because the complexity of change is not easy to understand and negative impacts will become obvious only in the future. Furthermore, there is a perceived advantage with tourism because local income has increased through tourism.

8. Concluding remarks

Tourism has become the most important sector of Zanzibar's market economy. Benefits include foreign exchange earnings, income generated by hotels and restaurants, support to other economic and leisure sectors, and employment opportunities. Rapidly growing tourist numbers reflect the successful marketing of the island. Tourism is thus a suitable means to integrate even remote areas into the globalized world economy, greatly increasing the available local cash income and contributing to the accumulation of material wealth. In line with the theoretical foundations of neoclassic economics, tourism development has thus been positive and to the overall benefit of the island.

The situation is somewhat different if analyzed more thoroughly. The in-depth study of the changes induced by tourism in Zanzibar reveals that turning to a market economy jeopardizes the overall integrity of the ecological and socio-economic system, which is complex beyond the simplistic understanding of economic theory. The main changes caused by tourism can be summarized as follows:

- tourism has given rise to individualism and focus on personal economic benefit;
- tourism has encouraged the abandonment of traditional resource-use systems;
- tourism has contributed to turn local natural resources into commodities;
- tourism has spread the idea that resources can be replaced by imports;
- tourism has both directly and indirectly imparted a negative effect on the local ecosystems;
- tourism has turned the village into an emerging center of resource allocation on an industrial basis.

In Kiwengwa, tourism is the major factor of modernization, leading to the rapid change of the relationships between society, nature, and person. Ultimately, these changes, in combination with tourism development, have resulted in a cycle of ecosystem degradation. Simultaneously, and in line with world system theory, conversion of its natural resources into commodities and the increasing demand of imports has turned Kiwengwa into a center of resource allocation on an industrial basis, being dependent on a supplying periphery, or, *sensu* Wackernagel and Rees (1996), appropriating an ecological hinterland. The latter is of some importance, because it can at least in part explain why tourism can be considered as a

non-consumptive, sustainable development option. Evidence suggests that tourism tends to shift its environmental impacts to distant areas, and – with respect to the cycle of ecosystem degradation presented in Figure 1 – there might be a time-lapse between unsustainable developments and the perceptible outcome of change (cf. Gössling, 2000c). In rejection of the logic of global market integration, it is thus argued here that the expansion of the center/periphery system, i.e. the creation of new centers of resource allocation dependent on supplying new peripheries, cannot be a sustainable development option in a finite world. Furthermore, as the example of Kiwengwa reveals, places turning into centers will not necessarily be better off in the medium- or long-term future.

Many recent studies have attempted to show that tourism can generate income through the non-consumptive use of ecosystems (e.g. snorkeling, diving), outweigh the opportunity costs of the conservation of protected areas, or be a development option more favorable than destructive exploitation methods (e.g. Dixon et al., 1993; Cesar et al., 1997; Pet-Soede et al., 1999). However, in-depth surveys as presented here might arrive at different results because surveys based on economic theory (often cost-benefit analyses) do not acknowledge the presence of ecological hinterlands and socio-economic changes that cannot be captured in monetary analyses. In the long run, tourism might often be a more destructive development path than apparently less sustainable practices. While the results obtained in this analysis might be basically representative for a much larger population of coastal destinations in tropical developing countries, generalization should nevertheless be avoided. Evidence suggests, however, that even projects explicitly aiming at integrated solutions ('eco-tourism') often fail to be sustainable (e.g. Honey, 1999). It should also be noted that long-distance tourism is no sustainable development option with respect to its global impacts (Gössling, 2000b; Gössling et al., 2002).

It is a well-known fact that global ecosystems face degradation, while an increasing number of humans is depending on the protein and other resources derived from these (e.g. UNDP/UNEP/World Bank/WRI, 2000). In many areas, meeting basic needs and self-sufficiency in food production may thus be primary goals of development in the future. These will be based on the integrity of local ecosystems. The central question in the context of Zanzibar and any other destinations in the world thus remains: development for whom, for what purpose, to what end?

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