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TOURISM DEVELOPMENT AND THE ENVIRONMENTAL ACTION PLAN FOR MADAGASCAR

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Trip Report
Tourism Development and the Environmental Action Plan
Madagascar

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Tourism Development and the Environmental Action Plan

Introduction

Tourism development and environmental conservation are rarely seen as complementary activities. While the natural environment represents the resource base for virtually all forms of tourism, the expansion of tourism activity brings increased pressure on the environment and inevitably results in some degree of environmental degradation. The negative impacts arising from tourism range from loss of natural landscape, destruction of flora and disappearance of fauna as their habitats are eliminated, pollution (of the air, water, and soils), degradation of historic sites and monuments, and conflict with local social and cultural mores.

However, tourism can also have beneficial effects on the environment by generating the funds needed to halt pollution and by stimulating local interest in preservation of the environment and restoration of sites. Funds generated from tourist activities can be used to extend protection to areas of great natural beauty. Because the environment is the resource base for tourism, government officials in Mediterranean countries which have been dealing with environmental problems for several decades have established a "polluter pays principle" and they have begun to bridge the gap between tourism promotion and environmental conservation, two groups who operated at loggerheads. The factors which separated both groups include: differences in the time-scale of their operations, the scale of tourism development, and the rapidity with which projects have been implemented.

Developers of tourism, whether governmental or private, frequently have a short-term perspective, while environmental conservationists have a long-term perspective. The producer of tourist services wishes to have his capital investment returned as quickly as possible so that profits can then be maximized. Maintenance costs are kept to a minimum and capital gains are realized in the shortest possible time. This strategy has led to inefficient consumption of environmental resources (albeit at a profit to the tourism developers) which results in rapid resource depletion. On the other hand, damage to the environment has a long-term impact; environmental damage can only be reversed over a long period of time. For this reason conservationists have argued against large-scale tourism development because the full environmental impact of development can be measured only gradually, and damage can be repaired only over a long period of time.

The conflict between tourism development and environmental conservation is exacerbated when development occurs rapidly and when tourism demand has strong seasonal peaks. When tourism develops rapidly, the sudden impact on the ecosystem can have severe long-term effects. When tourism activity is seasonal (e.g. during the hot, dry, sunny months of the year) the impact on ecosystems is greatly increased if this activity may occurs at a time when the ecosystem is most vulnerable. Conflicts such as these can be resolved by a carefully planned rate of growth for tourism and by careful management of tourism promotion to encourage year-round activity rather than peak-season demands.

Spain is a good example of what happens when rapid, large-scale tourism development occurs. Tourism was promoted in the 1950s and 1960s when Spain was experiencing balance of payment difficulties. Few constraints were imposed and tourism development was very rapid. The result was soil erosion, water pollution, congestion during the summer months with increased consumption of fossil fuels, resulting in dramatic air pollution under stagnant atmospheric conditions. In short, there was a sharp drop in environmental quality as tourism reached a saturation point. The number of tourists did not decline, but there was a qualitative change in the nature of tourism as upper and middle income tourists sought other vacation locales and were replaced by budget tourists. This trend inevitably resulted in a decline in foreign earnings and an increase in conflicts with the local population.

The experience of several Mediterranean countries (Cyprus and Tunisia mainly, in addition to Spain) suggests that more careful management of tourism development is possible with a view to reducing negative environmental impacts. The steps which they have taken include: encouraging the producers of tourist services to develop long-term strategies for returns on investment, managing the tourist demand so that it is less concentrated during peak periods, and ensuring that a portion of earnings derived from tourism is used to restore and protect the environment.

Sectoral Planning and Policy Development

It is of critical importance that central governments formulate a sectoral plan and national policies which will be used to implement tourism plans and link tourism with development in other sectors of the economy. The sectoral plan establishes the role which tourism will play in attaining national goals (expansion of foreign exchange earnings, reduction of the national debt, increased employment, reduction of income inequalities, balanced regional growth, diversification of exports, protection of environmental resources). The sectoral plan identifies negative impacts which should be avoided, foreign domination of the economy, depletion of national treasury, increased income inequalities, lopsided regional development, degradation of the environment). The sectoral plan defines the goals and policies of national development generally and of tourism development in particular, thereby creating a framework within which national and international developers can formulate and implement plans and projects. This framework is particularly important for conducting negotiations between the government and foreign investors for new development projects in tourism.

In April 1984, the Government of Madagascar decided to update a 1973 plan for tourism according to the following principles:

- increased contribution by tourism to reducing the balance of trade (deficit) through a policy of opening up to international tourism
- stabilization of national resources
- improvement in the distribution of revenues
- reduction of inequalities among tourist regions of the island.

NOTE: Several policies need further elaboration. There is no indication of the proportion of national resources which will be committed by the national government to tourism development and the role of the domestic private sector in tourism development should be more clearly stated.

This plan will be implemented within an overall framework, the objectives of which, are to integrate tourism with related activities in the process of national development-

-the objectives of which are to develop natural resources, to promote productive sectors (agriculture, industry, handicrafts), and to promote, equally, activities in the same sector. The plan goes on to establish a number of policies incorporated in the new plan:

- a policy of (tourism) information and promotion
- a policy of stabilizing national resources
- a policy aimed at reducing inequalities among tourist regions of the island .
- a policy of primacy given to tourism of discovery
- a policy of entertainment, not neglecting the different aspects of Malgasy culture and exceptional quality of the environment for tourists
- a policy of air transportation which would enable tourists to travel from their country of origin directly to Madagascar.

The policy of stabilizing national resources clearly establishes the need to protect the resource base for tourism although the proportion of tourism revenues to be used for environmental protection, for an extension of the natural reserve areas, or for repairing environmental damage caused by tourism has not been elaborated in the Tourism Development Plan.

The tourism plan, however, goes on to establish several priority actions which should be undertaken immediately to facilitate the expansion of tourism. One step is to create new legislation and regulations which are designed specifically for the tourism industry. (Existing legislation and regulations cover "industry" in general and is not appropriate for the special needs of the tourism industry). A second step urges immediate training of local personnel to meet international service standards together with increased coordination and promotion of tourism among local professionals in the industry. Finally, the plan recommends the development of a tourism of discovery which explores the natural and cultural resources of the island--ecological, cultural, scientific, and sport tourism. If private investors are to play any significant role it is also necessary to adopt supportive policies and regulations.

In the medium term (1987-1992), the plan establishes some goals to be reached. The plan notes that tourism arrivals increased from 11,901 in 1984 to 28,136 in 1987-- an increase of 136% in just three years.[1] Given that foreign tourists stay an average of 9 days and spend FF 6,600 for international air travel and FF 4,500 for accommodation and travel within Madagascar, the national revenue derived from these tourists (assuming 10% from air travel and 50% from domestic services) in 1987 was FF 81.5 million. The specific goals established by the plan include:

- an increase in the number of foreign tourists to 100,00 by 1992
- construction of an additional 1,500 new hotel rooms in two-star to five-star hotels (international class)
- increase of 1,800 new jobs directly in the tourism sector with appropriate training of personnel

The long term (1992-1997) goals include:

- increase in tourist arrivals to 200,000
- increase in new hotel rooms by 1,500 rooms for international tourists (two-star to five-star hotels) and by 300-500 rooms for national tourists (in one-star hotels)
- increase of 1,800 to 2,000 new jobs in tourism industry with appropriate training of personnel.

These goals represent extremely ambitious targets which will be dificult to attain. The implications for reaching them, in terms of increased accommodation, the capacity of the construction industry, and capital resources for investment and transportation will be considered in subsequent sections of this report.

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[1] It should be noted that a dramatic increase occurred in tourist arrivals for 1985, immediately after the new policy on international tourism promotion was introduced, but since that year the rate of growth has levelled off.

Regional Development

Madagascar has been divided into five regions, each having a distinctive potential for tourism development. The regions include: I. Central Highland, II. Northern Coast, III. Capricorn Coast, IV. Spice Coast, V. Eastern Coast. The present distribution of hotel space underlines the fact that in the past tourism has focused on the classic beach vacation; most of the better quality hotel space (three-, four-, and five-star hotels) is found in the Central Highlands and on the Northern Coast. In fact, there is a heavy concentration in the capital, Antananarive, and in the beach resort of Nosy Be. The two regions combined account for 58% of the hotel rooms on the island. Region V. on the East Coast has a fair proportion of hotel space, although all of that space is in one-, two-, and three-star hotels. The region includes the island of Ste. Marie where the emphasis is on beach tourism. The current pattern of development, based mostly on beach tourism in those three regions, has resulted in a decidedly lopsided regional allocation of tourism facilities in Madagascar. Among the goals of the new tourism development plan is to reduce inequalities among tourist regions. (Another goal is to give primacy to "discovery tourism" based on indigenous fauna and flora.) The regions which have a marked underdevelopment of tourist accommodation are Regions III and IV, the Capricorn and Spice coasts in the southwestern and southeastern parts of the island. These two regions combined account for only 15% of all hotel space in Madagascar. Figure 1 demonstrates that there are no four-star or five-star accommodations in either region. Ironically, these regions contain some of the most spectacular parks and nature reserves for wildlife--the resource-base for discovery tourism. It follows, therefore, that if a more equitable development among tourist regions is to be achieved, and if primacy is to be given to discovery tourism, new tourism development should be directed into these two regions.

A major problem with developing tourist facilities in Regions III and IV is the lack of existing infrastructure and services. Areas such as the Plateau of Bemaraha have superb resources for discovery tourism, but they are virtually inaccessible since local roads are poor and are not always passable. The cost of road construction to these sites is very high and might also be very destructive of the natural areas which make the regions attractive. Given the limited resources of the national government for new

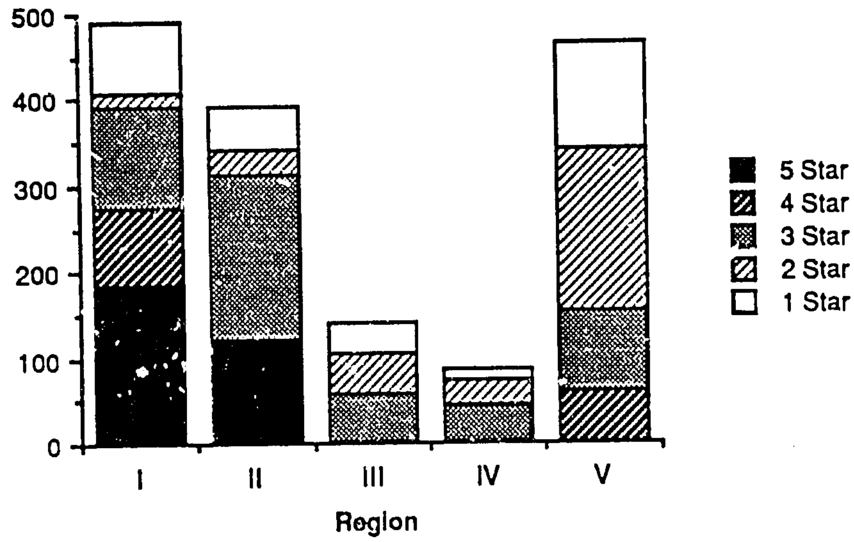


Figure 1 **Regional distribution of hotel rooms by class of hotel**

infrastructure development of this kind, alternatives will have to be found. One alternative may be to create landing strips for small aircraft such as has been done in the game parks of Kenya. While this approach lowers the cost of infrastructure and minimizes the environmental impact, it severely limits the numbers of tourists and makes the cost per visitor very high. Unlike building roads or rai lines it provides virtually no secondary developmental impacts on the region.

Markets

The marketing of tourism in Madagascar involves the preparation and selling of local products (hotel space, nature tours, local expeditions) and the promotion of Madagascar in international tourist markets. Madagascar has more than twenty travel agents operating in Antananarive, but about six of them are directly involved in designing package tours for foreign tourists. These tours involve a combination of beach vacation with discovery tourism --short trips to nature reserves to observe lemurs, birds, and wild orchids. One tour operator, however, specializes in nature tours which have no beach component, but which focus exclusively on bird-watching or on visits to the nature reserves.

The six tour operators go to the travel fairs held in London, Paris, B Berlin each winter/early spring and sell their package tours to the larger E operators like Neckermann, Thomas Cook, or Hann Overland who th vacations in Madagascar in glossy promotional magazines which th International advertising and promotion is also undertaken on a limited Madagascar which circulates a glossy advertising booklet in French.

The current marketing approach, then, is the design of local tourist prodı entrepreneurs who then sell them at European travel fairs. The major still on beach vacations although in the last three years discovery touri: given increasing attention. Foreign travel operators promote and sell th‹ their clients and arrange international air travel. This effort is back additional promotion by Air Madagascar. One weak point in the strate pricing and negotiating with foreign travel operators. Local hotels quote in March and April whereas European travel operators need to have confirmed almost ten months earlier so that they can quote prices in brochures. A system of guaranteed pricing for hotel rates and domestic necessary. A recent increase in domestic air rates has created enormous p local tour operators who cannot pass them along to the consumer beca quoted at the trade fairs during the winter.

The Tourism Development Plan's goal of 100,000 tourists within four ye: an appeal to the mass tourism market which normally requires a substa component. The mass tourism market is highly competitive and extre sensitive. (It is also very fickle). It will never produce as much foreign tourist as the specialized market for discovery tourism. The Plan refers tc of Mauritius to attract over 100,000 tourists per year, implying that M should be able to match that figure. One should remember, however, tha has built up its market overs several decades, that much of the origi investment and infrastructure costs have been recovered, and that some e that island's ability to retain foreign earnings from tourism fall as low as 1(of a heavy dependence on foreign investment which resulted in the re earnings. If Madagascar attempts to compete on a large scale with Ma beach tourism it may find the competition very stiff and so targeting the m:

The European marketing approach used to date has been fairly successful, especially in Germany and Italy, and that success has been due in large part to the appeal of beach tourism on a modest scale. Because of this emphasis there has been relatively little effort to reach the North American market. A common perception among local tour operators is that distances are so great and international air travel costs are so high that the North American market is beyond the reach of Madagascar for beach tourism. But promotion of discovery tourism, which sharply targets a specialized and affluent tourist who is interested in a unique travel experience, or who is interested in the conservation of endangered flora and fauna, could be very lucrative. If the Galapagos islands, which are also at a great distance from the North American market, can attract this tourist, then so can Madagascar. A new marketing startegy would require contact with conservation and wildlife tours, in both Europe and North America, which service the top end of the market. They can promote Madagascar to their clients who have already visited the big-game parks in Kenya or Tanzania and who may now be ready for something really unique such as only Madagascar can offer. The North American market for discovery tourism in Madagascar remains untapped. (See Figure 2). A new marketing strategy, other than the present one of advertising at the European travel fairs, may have to be adopted whereby discovery tourists can be reached both in Europe and North America.

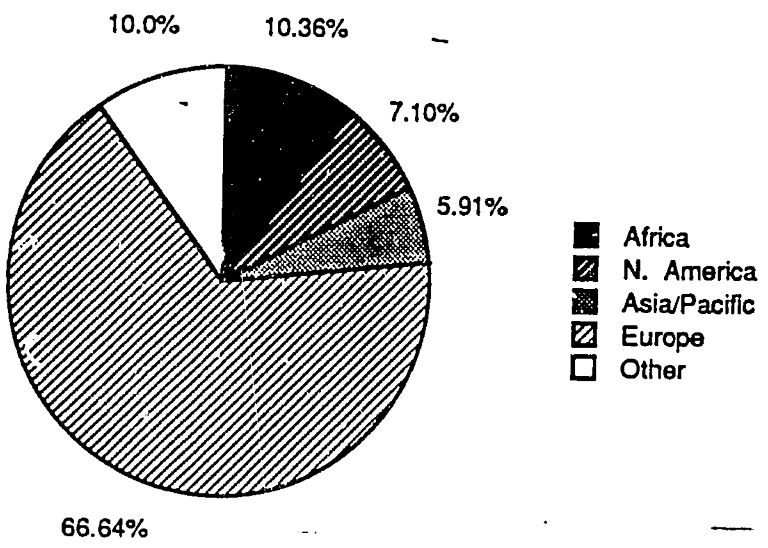


Figure 2 Origin of tourists in Madagascar 1987

The Tourism Development Plan foresees an increase in tourists reaching 100,000 within four years. But this represents more than a 400% increase over arrivals in 1987 and the marketing effort required to achieve such an increase is staggering. Quite simply, it is unlikely that it can be achieved. Local resources for promotional materials are almost non-existent. Air Madagascar has a limited budget for advertising. It is highly unlikely that the current tour organizers can generate such an increase at the European trade fairs within such a short time span. Even if the North American market were successfully tapped, the goal appears unreachable. An increase in tourism of this magnitude would require not only a massive expenditure in promotion, but also substantial additional air service and accommodations, particularly during peak seasons, which current financial and personnel resources do not permit.

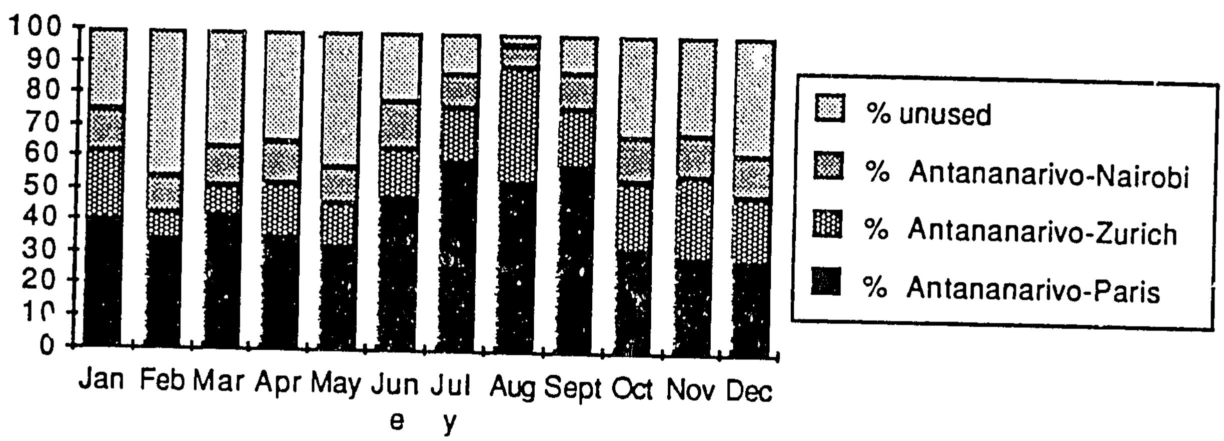
Transportation

Most foreign tourists travel by air to Antananarive on either Air Madagascar, Air France, or a joint venture flight organized by both airlines. These three flights are flown each week with one Boeing 747 aircraft (capacity 287 passengers) from Paris with stops in either Zurich or Marseilles. One flight per week is available from London on Aeroflot via Moscow. In addition there are two flights per week to Nairobi on Air Madagascar.

There is a strong seasonal demand for these international flights. During the peak periods from early July through mid-September and the two-week periods around Christmas and Easter, flights are filled to capacity (see Figure 3). On occasion, a fourth flight from Paris to Antananarive is added to the schedule using the same aircraft and during the off-peak periods the joint-venture flight is sometimes cancelled because of low demand.

The flights to Nairobi and a number of domestic flights are provided with one of two Boeing 737 aircraft. The average capacity of this craft is about 100 passengers plus baggage and cargo. The majority of domestic flights are conducted in the airline's four Hawker-Siddley aircraft which can land on the shorter runways. A major constraint on expansion of domestic service is the lack of infrastructure services for the larger jet aircraft. Only three of the airports have landing lights and can be used for nighttime arrivals and departures; all other airports are operational only during daylight hours.

The existing capactity of Air Madagascar is strained to the limit during the peak season and this represents a major constraint on the expansion of tourism (see Figures 3 and 4). If tourism is to be expanded a major effort will have to be made to manage the seasonal flow of tourists more equitably. This could be accomplished if Air Madagascar offered cheaper rates for the



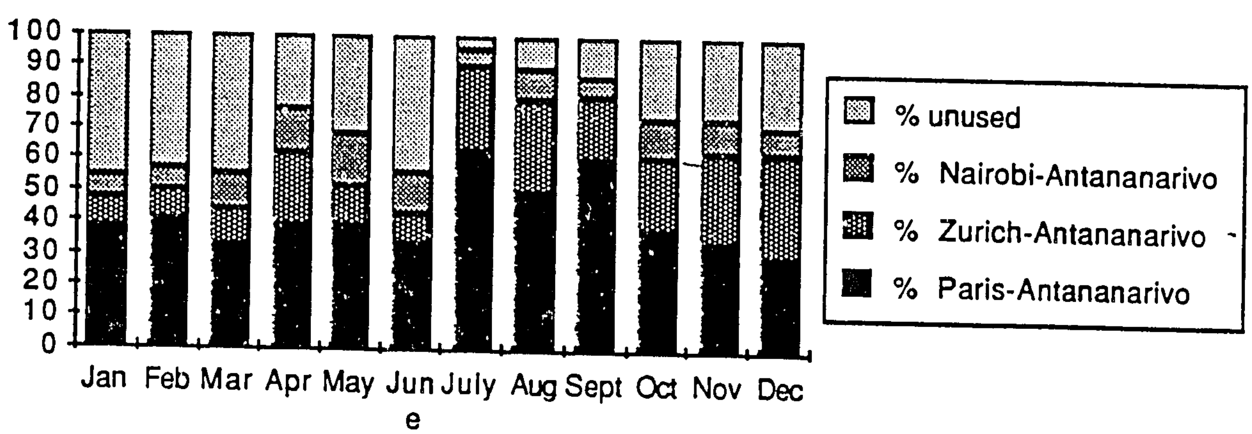


Figure 3 Air Madagascar flights Paris-Antanarivo

off-peak period and low-season period, in order to encourage visitors to come when demand is lower. A second alternative would be to permit other international carriers to bring tourists, although that would result in a loss of revenues to the government for international travel. But one of the goals of the Tourism Development Plan is to facilitate direct flights from the tourists' home country to Madagascar. Such a step is likely to be opposed vigorously by Air Madagascar. The problem would remain, of course, of increasing domestic carrier capacity. More of the larger jet aircraft would be required and this would entail substantial improvement in infrastructure services to a number of airports around the island.

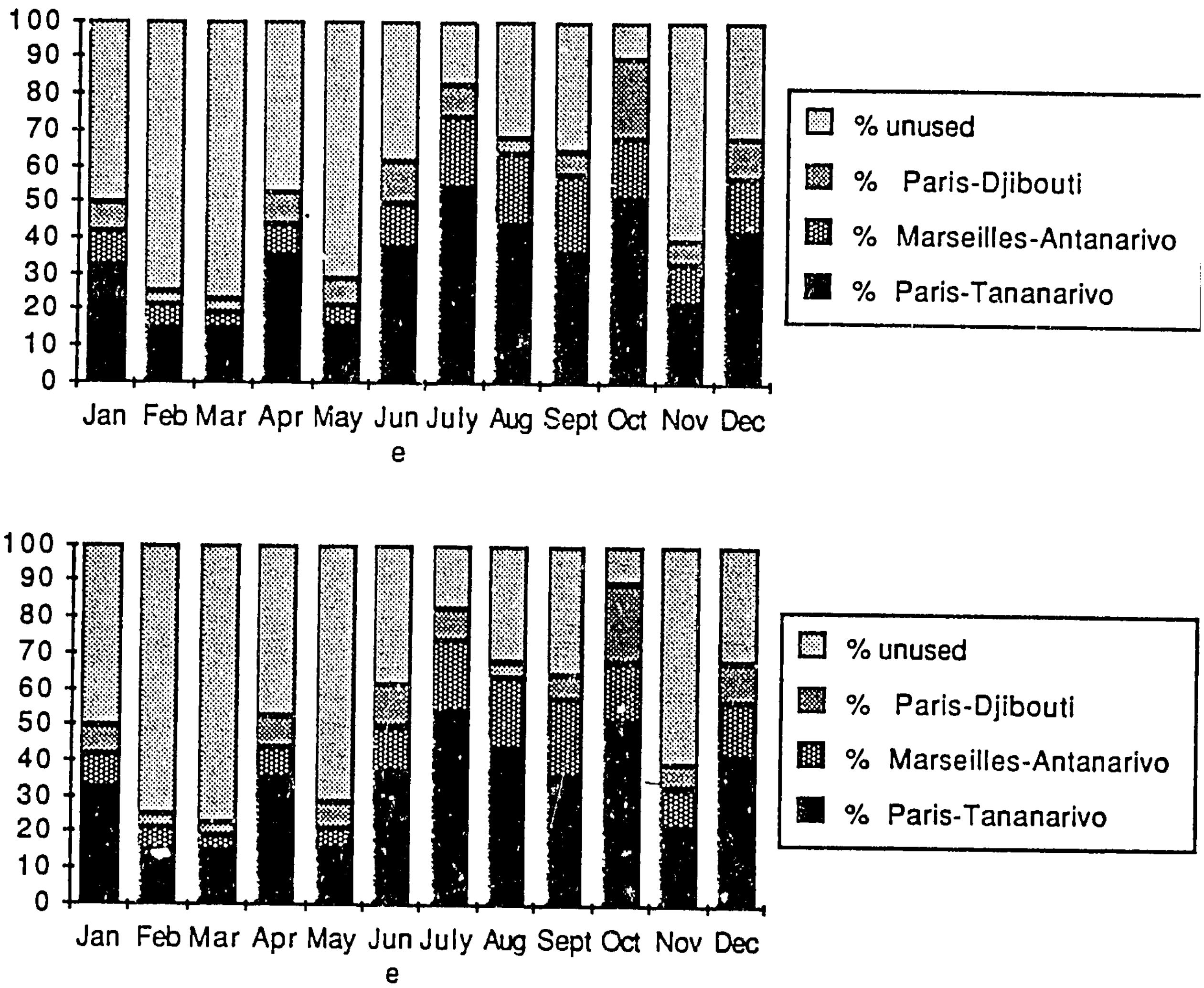


Figure 4 Joint venture flights Paris-Antanarivo

An increase in the number of tourist arrivals to 100,000 by 1992 represents an enormous increase in carrying capacity for Air Madagascar. To transport 100,000 tourists from overseas would require 375 jumbo jet arrivals, or an average of over 1 jet arrival for each day of the year, assuming that the present seasonal peaks are eliminated and that tourists will travel on days when seats are available, i.e. assuming that all planes are filled to capacity each day of the year. (These are assumptions which cannot realistically be made!) Even to achieve this schedule would require the purchase of at least two additional Boeing 747 aircraft. The impact of such an increase on domestic air travel would be almost as severe; the impact might be lessened with the use of road transport facilities where available.

Tour Operations

As noted above, seven tour operators are engaged in promoting package tours in Madagascar, although two are less active than the other five. These tours include all ground transportation, baggage handling, and accomodations with full- or half-pension. Beach tourism represents the largest segment of their business, accounting for more than 60% of the activities (and income) of these tour operators. "Nature tourism" or discovery tourism, is a relatively recent development and has been promoted in the last three years only. Local tour operators are keen to expand this new aspect of tourism but complain that they are hindered from doing so by: the lack of accomodation close to the nature reserves and parks; the lack of good transport facilities; the high cost of vehicle maintenance (as spare parts must be purchased with foreign currency); and man-power training.

The lack of tourism accomodation is discussed elsewhere in this report. However, one point which should be made here is that discovery tourism, where observation of fauna is the objective, requires that tourists be close to wildlife areas especially in the early morning. To achieve this, two operators spoke of using tent camps as a temporary base near or in the nature reserves. Tents and equipment are scarce and the cost of importation (because of import duties) is high. Both companies spoke enthusiastically of developing camps of this kind as a viable alternative to distant hotel accomodation (in three- or two-star hotels) if the equipment could be made available.

Vehicles for transportation are a serious constraint on the expansion of nature tourism. Vehicles are expensive to purchase and many operators have neither the capital nor the credit to purchase vehicles with foreign currency. Similarly, maintenance costs are high since spare parts for repairs must also be purchased with foreign currency.

Almost all tour operators provide guides who also act as drivers of the tour vehicles. These guides require training in where to find the wildlife (and flora too). This training is provided locally. A more serious problem is the lack of guides with adequate language training. Some tour operators specialize in German tours and they have sent some of their staff (who already have university language courses) to Germany for additional training. Almost all guides speak French and a good number also speak English. The major deficiencies, however, are experienced in German, Italian, and most recently Japanese language training.

Tour operators have identified the availability of hotel accomodation and transportation facilities (including space on international flights during the peak season as well as ground transportation) as the major constraints on expansion of discovery tourism. Training needs were perceived as relatively minor.

Accommodation

The majority of hotels in Madagascar are one-star, two-star, and three-star hotels which do not meet equivalent international rating standards. There are only 2 five-star hotels and 4 four-star hotels in the country. Of these only one five-star hotel is used as a tourist hotel; the other, located in Antananarive derives over 80% of its occupancy from business travellers. One of the four-star hotels in Antananarive also derives over 80% of its occupancy from travellers on business. Even the Hotel des Thermes in Antsirabe, which was designed originally for tourists, now has less than 50% of its rooms available for tourists because of semi-permanent guests (businessmen) who stay from Monday through Friday. The point here is that there is very little top-class hotel space that is available to tourism in Madagascar and the small amount that is available is concentrated in the beach resorts of Nosy Be and Sainte Marie.

A second major point is that there is considerable seasonality in the demand for hotel space. Tour operators complain that during the peak season there is an acute shortage of rooms while hotel operators are reluctant to expand due to low occupancy during the off-peak season. Furthermore, tour operators point out that there are virtually no hotels in some of the best areas for discovery tourism viz. in the western and southern regions of the island. The present concentration of hotels in the beach resorts means that tour operators cannot offer a variety of locations when designing tours for visitors, and in particular cannot find accomodation within easy reach of nature reserves for early morning observation of wildlife. Furthermore, all visiting groups must be small in size; large charter groups of up to 120 can only be accomodated in Antananarive and Nosy Be where adequate hotel space is available.

The shortage of space, especially during the peak season, the narrow range of quality and the absence of regional choice, are all severe constraints on the expansion of nature tourism. If a goal of 100,000 visitors per year is to be met by 1992 a major construction undertaking will be required that would produce at least 1,500 rooms as envisioned by the Tourism Development Plan. This assumes that the present seasonal distribution of visitors remains constant, that each guest visits for an average of nine nights, and that there are 17 beds for every 10 rooms, as presently is the case in the four- and five-star hotels. This represents a massive investment in new construction and equipment of approximately $120 million in hotels alone. This figure does not include infrastructure costs (new roads, water supply, electricity, and telephone services) to the new construction sites.

Labor

The Tourism Development Plan estimates that 1,800 new jobs will be created in the tourism industry as a result of the creation of 1,500 new hotel rooms. The actual number of new jobs may rise to 3,800 if one uses a higher ratio of 1:5 direct jobs created for each new hotel bed, with an additional 6,500 indirect jobs as a result of the multiplier effect. Many of these positions will be at the semi-skilled or unskilled levels, but at least 5% will require significant training.

Some of this training may have to be conducted overseas if international standards are to be met. Tourism is a luxury export commodity which is consumed *in situ* . But the consumer, whose needs must be satisfied, is the international tourist and so his expectations and standards will have to be attained. Some of the cost of overseas training may be borne by international developers in the hotel industry. Nevertheless, the training of 1,900 new employees in the hotel industry within a four year period represents a massive commitment of training resources.

Construction

The construction of 1,500 new hotel rooms represents a major demand on the construction industry within four years. The questions which must be addressed are: Does the construction industry have the capacity to handle this dramatic increase in demand? What are the estimated costs of construction? What is the likely impact on the labor market?

The question of capacity is not easily answered in the affirmative. There are only five moderate-to-large construction firms with the capability of building a 100-room hotel within about a year. The largest of these firms, COLAS is very large but is also French-owned (so that the re-export of investment becomes an issue) while SIMTP is a combined French-Malagasy company. Three other construction companies, SNTP (which is state-owned), SARA and TOUZET are Malagasy owned and operated firms. Some of these firms, however, may encounter difficulties in constructing a 200-room hotel within a relatively short period of time. Assuming that capital assets are available for construction, it is entirely possible that 1,500 new rooms could be constructed within three years of ground breaking.

The boost to the construction industry, however, will require massive financial investment. The costs of constructing and fully equipping a hotel to international standards will range from U.S. $60,000 to $80,000 per room. Thus, the investment in hotel construction alone for 1,500 rooms would range from $90 million to $120 million. In remote areas where new facilities will be located close to wildlife habitats, less expensive hotels may have to be built using local materials. Equipment used in the hotel, (electrical, plumbing, furnishings, administration needs, etc.) would all have to be imported. But if local construction materials such as wood and pressed brick are subtstituted for imported materials then costs for construction are greatly reduced. Materials such as pressed brick have been tested and found to be structurally satisfactory, although a prejudice against their use persists as non-domestic materials such as concrete are favored. Cost estimates range from U.S. $300 to $450 per square meter. Thus, if the average hotel room is 30 square meters with an additional 30 square meters per room for kitchen, restaurant, reception, administration, service, etc. we arrive at a figure of from $18,000 to $27,000 per hotel room. If, indeed, new hotel facilities are to be developed adjacent to some of the nature reserves, it would make much more sense to design and build structures using traditional Malagasy architecture and materials. Quite apart from the cost savings, it would provide the basis for a distinctive hotel development that would appeal more strongly to the international nature tourist than the replication of another Hilton or Holiday Inn hotel.

One cautionary note. A suden increase in hotel construction on this scale can have a negative impact on the local labor market as the experience in the Seychelles demonstrated. During the early 1970s a development boom in the hotel construction drew labor away from the countryside into urban areas. By the mid-seventies, however, the boom ended as abruptly as it had begun. The result was high unemployment as labor did not return to agricultural pursuits where it had been employed before the boom began. Employment in hotel construction is notoriously volatile and can have a seriously disruptive effect on employment if expansion is not steady and sustained.

Revenue

The Tourism Development Plan estimated that tourists pay an average of 4,500 FF for a nine-day stay in Madagascar and 6,600 FF for international air transportation in 1987. A review of several tour operator fee charges indicates that the expenditures on the ground might be increased to 5,000 FF or 5,200 FF. The value added to national revenues is 50% of the Madagascar ground costs and 10% of air transfer expense. Thus the average value added in foreign exchange earnings to national revenues per tourist is 2,900 FF (or 3,160 FF if we increase the costs for ground expenditures). The plan, then, estimates total revenue at approximately 81.5 million FF, assuming there were 28,136 tourists in 1987. This latter figure may be an overestimate given that it includes 9,065 visitors from France and 2,919 from Reunion, many of whom were not tourists but Malgaches living overseas who were on a visit home to see relatives. These visitors would not, therefore, spend 5,000 FF on accomodation and ground transportation. Another estimate of national revenues, assuming 5,000 "tourists" from France and Reunion, would come to:

International air transportation (660 FF x 28,136)	18.5 million FF
Accomodation and ground transportation (2,500 FF x 22,151)	55.4 million FF
	73.9 million FF

There are other sources of tourism revenue, some as yet untapped, which could be used to defray development costs in the expansion of tourism and in protection of the resource base for tourism--the natural environment. These include:

- Local property taxes on new hotels which can be used to offset the cost of installation and the continued supply of infrastructure.
- Airport departure tax. Currently the departure tax is 1,500 MGF whereas in Kenya and Tanzania the tax is U.S. $10.00 payable in foreign currency only. Some portion of the increased revenue obtained from this tax would presumably be applied to extending infrastructure for airports, but part of it may be used for protection and expansion of nature reserves.
- Nature reserve admission fee. In North America it is standard practice to charge a fee for admission to national and state/provincial parks. The fees thus obtained are used to offset the costs of patrolling and maintaining the parks. The dedicated nature tourist coming to Madagascar to bird-watch, observe lemurs, and visit the orchid and other flora reserves, would surely not object to a charge of $5.00 for admission to each reserve/park.
- Tourist hotel tax. This tax is not a popular one with tourists but it is used in some countries to generate additional revenues. In Tanzania the government levies a 10% charge on all tourist hotel accomodations and restaurants.
- License fees are being used in some countries for fishing, hunting, and gambling activities.
- Service fees can take a variety of forms. In some areas service charges are assessed for water use (over and above the local tax used to pay for infrastructure) or even toll fees for the use of bridges and roads. These charges would have to be included in the tour operator rates, and so would be a hidden charge to the tourist. Care must be taken, however, to ensure that tour operator rates remain competitive with other tourist destinations e.g. Kenya or Mauritius.

If several of these revenue sources had been tapped in 1987, the increase income from foreign earning would have been:

Airport departure tax: $10.00 x 28,136	$281,360
Nature reserve fees: assuming 8,800 discovery tourists @ $15.00 per tourist	$132,000
Tourist hotel tax: assuming 198,000 "tourist nights" @ $35.00 per night	$69,300
Total	$1,106,360

Infrastructure Investment

Development of tourist facilities is expensive and a realistic appraisal of costs and sources of financing is necessary if planning is to have an impact. Infrastructure costs will vary considerably according to location within Madagascar, the availability of labor, and the nature of the terrain. For example, the extension of infrastructure services in sites which are already partially developed, such as Tulear or Diego Suarez, will not be as great, but if entirely new sites have to be developed close to the nature reserves, the costs will be much higher. For example, north of Morondava, in the Bemaraha region where low grade roads already exist, the cost of upgrading the roads would vary from $6,000 per kilometer to as high as $150,000 per kilometer. Estimates of road construction can vary widely because so much depends on the nature of the terrain and the availability of material. However, assuming that labor has to be brought into the construction area and housed in camps, that plenty of rock and quartzite were available for the road bed, and that there were no gullies or serious erosional features requiring bridges or major earth-fill, the cost of a simple road for all-purpose vehicles might be built for as little as $5,000-$8,000 per kilometer. If , however, heavy machinery were to be used for earth moving and for laying a slightly better quality finished surface (but not a bituminous surface), the cost would rise to $20,000-$24,000 per kilometer. These estimates are for construction only and do not include engineering costs. If the terrain were severely eroded and required substantial earth-moving and bridge construction, the costs would be much higher rising to $150,000-$200,000 per kilometer, including engineering costs. These estimates are only "ballpark figures" for the western, drier regions of Madagascar. Construction in the more humid eastern regions would probably result in an increase of 20% to 30% of these cost estimates.

The cost of digging wells to supply water to entirely new sites can also vary widely. For example, if a large construction company is used which has the necessary equipment to complete the work on a short time schedule the cost ranges from $1,700 to $1,828 per meter. Thus, a 35 meter dry well would cost between $60,000 and $64,000. Another independent estimate produced a much lower figure for water costs. If no heavy equipment is used and the well is dry, using manual labor for more shallow wells of 5 to 10 meters in depth, the cost would range from $600 to $750 per meter, or only $7,500 for a 10 meter well.

If a new hotel site required: upgrading of an existing track to create an all-weather non-bituminous road 50 kilometer long, the cost may be as high as $1.2 million; and a water supply from a 50 meter well, the cost could vary between $85,000 and $91,400. These data indicate that for road and water services alone the investment in infrastructure is going to be very substantial and may well be beyond the current capacity of the government's financial resources. It is also probably too high for a single project to absorb. But an investment at this level in a runway for small aircraft and a network of roads leading to several hotel sites near a major reserve could make it possible to attract several private investors to build hotels suitable for discovery tourism in a remote area not currently acessible. For that reason, new hotel development may have to remain focused on areas which have existing infrastructure services.

Conclusion

A review of the Tourism Development Plan in light of the proposed Environmental Action Plan raised a number of issues.

With regard to policies in the sectoral plan, several important questions have not been addressed. It is necessary to establish a policy on the proportion of national fiscal resources that will be allocated to tourism development if regional development objectives are to be successful. Secondly, it is important to establish how revenues from tourism are to be allocated. Policies should be clearly established to determine what percentage of tourism revenues should be allocated for environmental protection, for the extension of reserves and parks (which are the resource base for tourism), and for the repair of damage to the environment. Finally, the role of the domestic private sector in the development of tourism must be addressed. There is substantial potential in the private sector which can be tapped if policies are established which encourage and stimulate their participation. Participation by the domestic private sector is critical if the government wishes to capture as much as possible of the foreign earnings from tourism although foreign investors will also be needed to bring the foreign exchange needed for development projects.

On the question of regional development, there are several major issues. Can the government afford infrastructure costs for new development in Regions III and IV where there has been relatively little tourism development to date but where the potential for discovery tourism is great? If not, then the location of new facilities for tourism should be examined very carefully if discovery tourism is to be given primacy. Otherwise, the forces of inertia will result in reinforcing the existing pattern of development designed for beach tourism. Finally, the rate of growth and the goals to be attained within the next four years should be carefully evaluated. Rapid growth can cause strains on the construction industry and labor market, and it can also result in environmental damage as hastened construction rushes to meet deadlines.

The nature of the market being targeted for Madagascar tourism requires careful evaluation. Careful consideration should be given to Madagascar's best tourist market and whether the appeal should include the mass market which is usually more interested in beach vacations. A strategy for targeting a highly specialized, but lucrative market for discovery tourism, especially in North America, should certainly be considered. This strategy will make fewer demands on hotel space and transportation in the initial phases as Madagascar expands its tourism development.

The constraints on transportation are very real. The cost of expanding airport infrastructure, purchase of additional aircraft for international and domestic services, and purchase and maintenance of a dramatically increased ground transportation system are very substantial. The ability of government and of the private sector to overcome these constraints given other fiscal constraints imposed by IMF must be examined realistically.

Local tour operations will have to be expanded if even the modest needs of discovery tourism are to be met. This will involve an expansion of training programs, increase in the number of service vehicles and facilities for financing new purchases and spare parts with foreign currency. In all of this, the participation of the private sector is critical since they produce the tour operations. The ability of the private sector to keep abreast of demand is of basic importance for the expansion fo discovery tourism.

Revenues could be increased substantially with the introduction of several new sources. If new policies are accepted by the Ministry of Transportation and Tourism whereby a portion of tourism revenues can be assigned for environmental protection and for extension of the environmental resource base of tourism, then several of these sources of revenue could be earmarked directly to facilitate implementation of the Environmental Action Plan.

Finally, with regard to investment, a realistic appraisal is needed for sources of investment. The government's ability to create infrastructure for new development is the first major appraisal that must be undertaken. Reliance on foreign investment exclusively for new hotel development will not achieve the major goals of the Tourism Development Plan because a substantial portion of foreign earnings will have to be re-exported to support loans on capital invested. Finally, a review of the domestic private sector's ability to participate in hotel development requires serious investigation as this source has not ben examined in the Tourism Development Plan.