

GALAPAGOS AT RISK

A Socioeconomic Analysis



Graham Watkins & Felipe Cruz
CHARLES DARWIN FOUNDATION
Puerto Ayora, Santa Cruz Island, Galapagos Islands, Ecuador
May 2007

This document should be cited as Watkins, G. and Cruz, F. (2007). Galapagos at Risk: A Socioeconomic Analysis of the Situation in the Archipelago. Puerto Ayora, Province of Galapagos, Ecuador, Charles Darwin Foundation.

The Charles Darwin Foundation operates the Charles Darwin Research Station in Puerto Ayora, Santa Cruz Island, Galapagos Islands, Ecuador. The Charles Darwin Foundation is an *Association Internationale Sans But Lucratif (AISBL)*, registered in Belgium under the number 371359 and subject to Belgian law. The address in Belgium is Avenue Louise 50, 1050 Brussels.

Galapagos at Risk

Executive summary – key points

1. During the last 15 years Galapagos has experienced drastic economic, social, cultural and ecological changes.
2. The principal cause of these changes has been economic growth driven by tourism whose gross income has increased by an average 14% each year.
3. The changes in tourism are demonstrated by the increase in available beds from 1,928 in 1991 to 3,473 in 2006, and a rise in the number of visitors to Galapagos from 40,000 in 1990 to over 145,000 in 2006.
4. Instability in the national government and a complex institutional framework in Galapagos have weakened leadership of the state in Galapagos.
5. The weak state presence, combined with municipal and provincial leadership focused on local benefits, has enabled tourism to grow without a long-term strategy.
6. Tourism markets are shifting toward higher volumes and away from the main comparative advantages of Galapagos; concurrently there is a shift toward multinational investors and operators away from local ownership.
7. At present, Galapagos tourism represents a total value of \$418M, of which an estimated \$63M enters the local economy.
8. Tourism, central government investments, bilateral and multilateral support, and individual donations are the largest sources of income in the Galapagos economy.
9. Fishing represents less than 4% of the total income in Galapagos. This activity was more important at the peak of the sea cucumber fishery in the early to mid 1990s.
10. The financial flows from tourism promote unregulated growth in local small enterprises, which, in turn, contributes to increased migration to the islands.
11. The local demand for public services and jobs contributes to a vicious cycle of growth. As jobs and public services are provided, they create a higher standard of living, making the islands more attractive to immigrants.
12. Subsidies and economic incentives in Galapagos have also contributed to uncontrolled growth.
13. The growth of tourism and the population stimulate the arrival of more flights and more cargo ships, decreasing the isolation of the archipelago and thereby increasing the arrival of invasive species – the greatest threat to the native biodiversity.

Galapagos at risk

The risk of losing the extraordinary biodiversity of Galapagos can be viewed from three principal perspectives: 1) this is the world's last oceanic archipelago that still retains 95% of its original biodiversity and thus represents the global "gold standard" for biological and ecosystem integrity; 2) the archipelago is unique and its biodiversity has substantially influenced the history of science and human philosophy through Charles Darwin's work; and 3) the biodiversity of Galapagos is the basis for the local economy and is an important contributor to the Ecuadorian economy.

Continuing the present direction of development in Galapagos will lead to the failure of tourism and its associated businesses. This failure will cause the loss of an important economic resource for both Galapagos residents and for the nation of Ecuador. The introduction of invasive species, pollution and the over-harvest of natural resources are symptoms of an unsustainable economic model. The ecological damage that will result from this model has irreversible consequences and will result in the loss of an irreplaceable global treasure.

Like other archipelagos, Galapagos is fragile. Its biological diversity is highly susceptible to invasive species, over-harvest of its natural resources, pollution, natural and anthropogenic disasters and climate change. To date, Galapagos' biological diversity has been kept relatively well-conserved. The situation is arguably better than a century ago when scientists focused on specimen collection rather than ecological restoration. However, the long-term future of the biodiversity of the archipelago will depend on the decisions taken regarding sustainable development in the short term.

Sustainable development in Galapagos is complicated by the same factors that affect the development of islands all over the world. The majority of the world's islands are resource-poor, have few marketable products, and have high transportation costs to external markets. Production costs in islands are high because of the absence of economies of scale, and because most raw materials must be brought from the mainland. In addition, islands usually face a shortage of trained human resources because the resident population size is usually small and training is costly.

These limitations to sustainable development also affect the capacities of local authorities that must supply the resident population with public services like water, education and health. The provision of these services in islands also suffers from the lack of economies of scale, the lack of trained human resources, and the high costs of raw materials. In short, life on islands tends to be difficult and more expensive than life on continental land masses.

The socioeconomic and ecological characteristics of islands and the global importance of Galapagos conservation mean that the archipelago requires a special model for development.

To date, development in Galapagos has been based on a “frontier mentality” with a focus on market-driven development and minimal consideration to equity and long-term sustainable development. This is reflected in businesses that have experienced periods of rapid growth and prosperity followed by collapse. Such was the case with the exploitation of fur seals and the Galapagos-based whaling industry, as well as contemporary examples in fisheries. We now see a similar pattern with the development of tourism.

There has been a lot of discussion about the causes of the current situation in Galapagos. In general, debates are based on assumptions and perceptions instead of solid information. The following opinions are prevalent in discussions about Galapagos: 1) *foreign interests are taking control of tourism*; 2) *tourism does not provide local benefits*; 3) *the Galapagos National Park Service and the Galapagos National Institute (INGALA) have failed as institutions*; 4) *the international community has spent considerable resources on conservation, with minimal impact*; 5) *instability in the national government in Quito generated the crisis*; 6) *the Government does not think about the people but only in the plants and animals*; and 7) *political leadership in Galapagos is at the root of current problems*.

To date, the discussion has focused on interpretations and the specific perspectives of stakeholders, instead of holistic technical analysis. In this document, we summarize several studies of Galapagos, including analyses of biodiversity (Bensted Smith 2002), conflict (MacDonald 1997; Heylings and Cruz 1998; Bonilla 2007), tourism (Epler 1993; MacFarland 2001; Blanton 2006; Epler 2007), the Galapagos economy (Taylor, Dyer et al. 2003; Taylor, Hardner et al. 2006; Taylor, Stewart et al. 2006), and migration (Kerr, Cárdenas et al. 2004).

Disagreements in Galapagos seem to result more from differences in perspectives rather than from real differences. Many recognize that Galapagos is experiencing a crisis involving governance, institutions, the education system, the economy and delicate ecology of the islands. Many stakeholders believe that the direction of development in Galapagos is wrong and they are worried by the exponential rate of change. There is also general agreement that the driving underlying force of change in Galapagos is the growth in tourism.

It is critical to recognize the urgent need to focus on the underlying causes of the problems in Galapagos and on implementing solutions through leadership, holistic analysis, and true collaboration among different interest groups. Failure to address the causes will result in more complex problems with no real hope of long-term solutions.

The President of Ecuador has indicated that Galapagos is at risk and that it is a national priority for conservation. The United Nations Education, Science and Culture Organization (UNESCO) and the World Conservation Union (IUCN) have also expressed their concerns about conservation in Galapagos and its future. The President's declaration and UNESCO's inclusion of Galapagos on its List of World Heritage in Danger offers the best and last opportunity to assure the future of the conservation of Galapagos, through building a sustainable society.

Galapagos is undergoing constant change

Galapagos is experiencing a period of accelerated change that began over 15 years ago (Figure 1). In economic terms, tourism has grown at 14% per year during the last 15 years¹ (Epler, 2007). This extraordinary rate of growth has occurred despite the small increase in the number of tourism boats from 67 to 80 during the same period (Epler, 2007). Before 1998, the Galapagos National Park Service allowed smaller boats to increase their capacity to 16 passengers. This change partially explains how the total berth capacity grew from 1,048 to 1,805 in the last 15 years (Epler, 2007). Today, ships and boats are working more days (on average 60 more days per year); operators now work an average of 222 days a year (Epler, 2007). At the same time, the average number of days that a tourist remains in Galapagos has declined, but the major reduction in time spent in Galapagos occurred prior to 1991. These changes have allowed tourism to grow at an accelerating rate. Perhaps the best measure of the impact of tourism is passenger-days in boats and ships, which has increased by 150% from 145,408 in 1991 to 363,226 in 2006 (Epler, 2007).

Hotel-based tourism has grown at the same rate as boat-based tourism. In the last 15 years, the number of hotels has doubled from 33 to 65 and the number of beds in hotels has grown from 880 to 1,668 (Epler, 2007). In the same period, the number of restaurants and bars has increased from 31 to 114 (Epler, 2007). The markets available for hotels are limited because they cannot provide access to the majority of visitor sites (marine or land-based), except through island-based day trips.

Hotels now have almost the same number of available beds as boats, but they receive only 10% of the revenue that boats receive (Epler, 2007). This occurs because the majority of the hotels provide service to a market segment with lower purchasing power, including budget travelers, and because tourist volumes through hotels are much lower than in boats. Similarly, the growth of hotel-based tourism is tied to the growth in the numbers of land-based day operations. The owners of hotels recognize the need to either own day-tour operations or associate with operators running day tours.

The Galapagos National Park Service finds itself under pressure to release new tourist concessions. The driving force behind this pressure is the premise that these new concessions are necessary because they would increase benefit flows to local residents. Several groups are interested in these new concessions, including the hotel and fishing sectors, locally-based dive operators, outside investors and the existing tourism private sector seeking to increase economies of scale.

¹ Tourism is growing at an accelerated rate, which appears to be limited only by the capacity of the private sector to access markets, through the existence of guide controls, trails, itineraries and a limit on the number of tourism concessions (described in MacFarland, 2001).

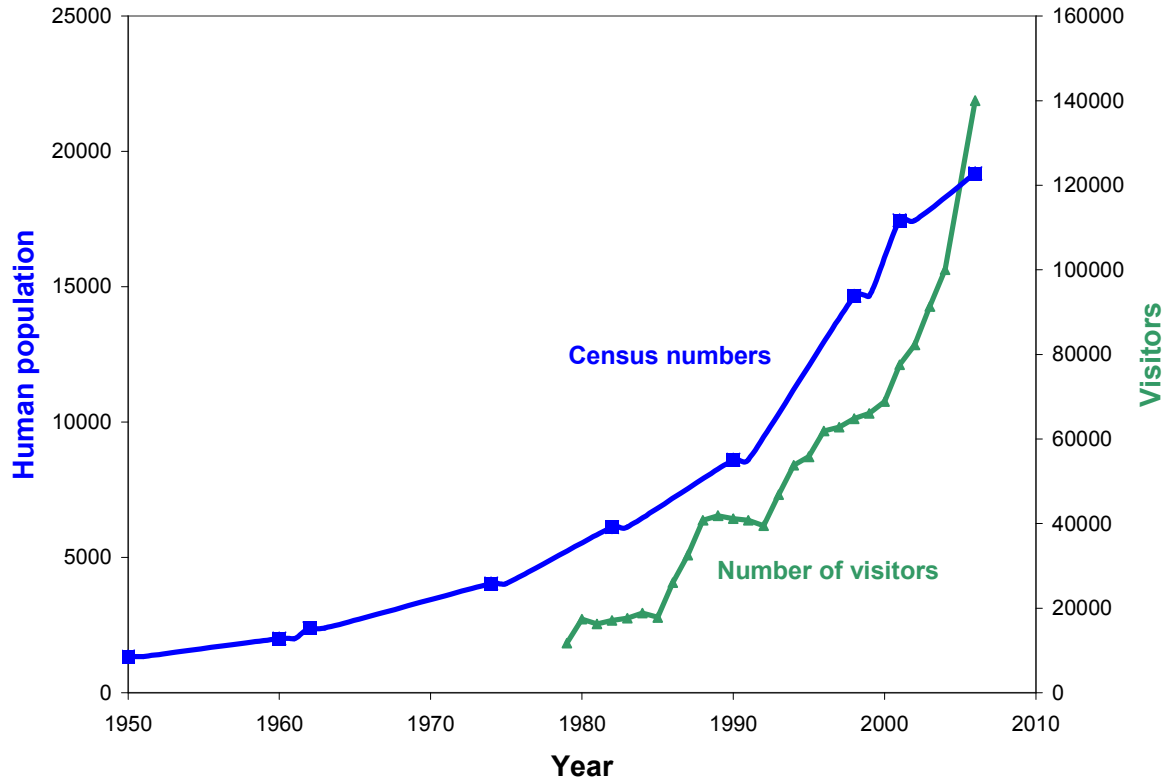


Figure 1: Growth of the population in Galapagos and numbers of visitors to Galapagos

To date, discussions about tourism growth have focused on the use of studies of “carrying capacity” of individual visitor sites as the basis for deciding on new tourism concessions. Carrying capacity studies examine the impacts of visitors at specific sites, but do not provide a strong technical basis for determining the impact of the total number of visitors in a larger system. Given that the most serious impacts of tourism in Galapagos do not occur directly, rather indirectly through the towns and increasing access to the islands, decisions related to new concessions should be made based on a more holistic analysis of the regional impacts of tourism.

Increasing the number of concessions in Galapagos would increase short-term financial flows to residents, but would not necessarily contribute to long-term sustainability. Growing tourism through new concessions will lead to a more rapid cycle of growth that we already recognize as unsustainable. It is likely that there would be an increase in the transfer of concession rights from the original owners to those with economic power, exacerbating inequity in Galapagos.

The vicious cycle of growth is reflected in Figure 2. The population continues to grow through migration, which leads to increased demands and pressure for jobs and access to resources. This leads to an increase in tourism and fishing, and ultimately a higher standard of living. This, in turn, increases the need for immigrant labor and further increases the population.

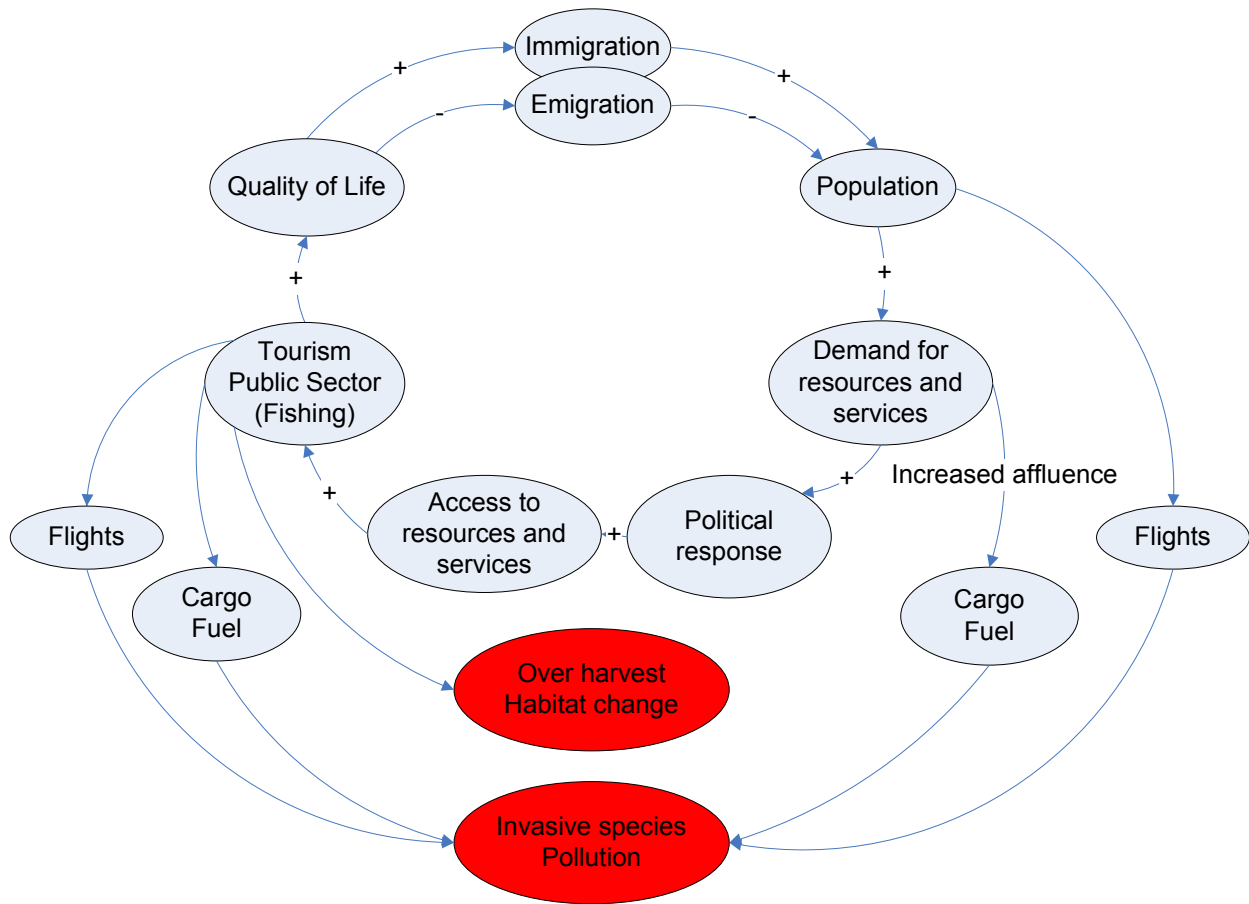


Figure 2: Cycle of growth in Galapagos

The consequences of this cycle of growth for the biodiversity of the archipelago are well documented (Bensted-Smith 2001). Galapagos now has 748 species of introduced plants compared to 500 species of native plants. The number of registered introduced species in the archipelago in 2007 is 1,321, 10 times more than the 112 species registered in 1900 (Figure 3).

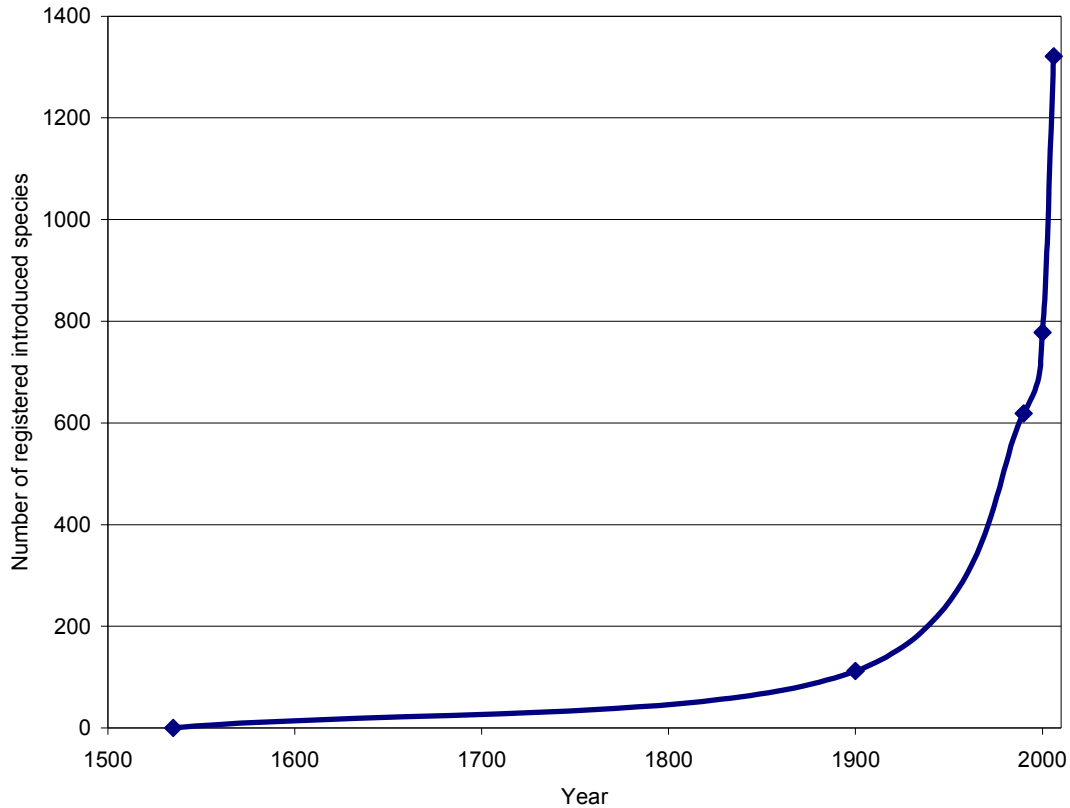


Figure 3: Totals of registered introduced species in Galapagos

Up to 60% of the 180 species of endemic plants in Galapagos are now considered threatened according to the IUCN Red List of Threatened Species. At least 490 insect species and 53 species of other invertebrates have been introduced to Galapagos; 55 of these species have the potential to cause severe impacts to native biodiversity. In addition, scientists have recorded 18 introduced vertebrate species, 13 of which are considered invasive. New vertebrate species continue to arrive and extremely invasive species may soon establish themselves in Galapagos with devastating results similar to the impact of the brown tree snake in Guam. Marine resources, including lobster, sea cucumber and grouper, have diminished precipitously. The Jessica oil spill in 2001 was also a consequence of the rapid economic growth in Galapagos.

In the past, linkages between tourism, economic growth, local business development, immigration and public service demands, on the one hand, and invasive species, over harvests and pollution, on the other hand, have not been made explicit. However there are several studies that emphasize these links and demonstrate that they are cyclical (Kerr, Cárdenas et. al. 2004; Taylor, Stewart et al., 2006; Cruz Martínez and Causton, 2007; Proaño, 2006; Epler, 2007).

Changing tourism markets

Early tourism in Galapagos was characterized by nature-loving tourists who visited Galapagos to learn about Darwin and see the amazing species that helped him to develop his theory of evolution by natural selection. For many, visiting the archipelago was the realization of a life-long dream. This type of tourist provides the foundation for the comparative advantage of the uniqueness of Galapagos; for these visitors, other destinations cannot compete. These tourists are highly sensitive to the growth of tourism and are concerned about the damage that tourism causes in Galapagos. They are also very easily accommodated by smaller, locally-owned tour operators and operators that specialize in Galapagos.

Over time, this “pioneer market” has expanded to include more mainstream “ecotourists,” who also visit places like Machu Picchu, Ngorongoro, Komodo Island, Easter Island, and Australia’s Great Barrier Reef. This new type of visitor is often more selective in terms of required comfort and is better-served by multinational tour operators that can also offer trips to other locations around the world.

Today we are also seeing new investors in Galapagos trying to enter into very different, activity-driven tourism markets. These new markets include sport fishing, beach camping, large cruises, biking, kayaking, and even parachuting. Such activities are available in many locations around the world and have, relatively speaking, little comparative advantage in Galapagos. The development of these new markets and associated infrastructure is opportunistic and reflects an absence of well-structured planning. In the short term, these activities may serve to attract new tourists. In time, however, these products will have to compete with similar offerings in other locations. This will lead to a cycle of price-cutting and increased expenditure on marketing and infrastructure. In the long term, opening these markets in Galapagos will reduce the average value per visitor and push the system towards continued excessive growth.

This change in tourist markets is perhaps the greatest threat to the future of tourism in Galapagos (Blanton, 2006). Analyses of market cycles in other tourism markets as described by Plog (2001) identify patterns of change that are self-reinforcing and result in visitor reductions and lower revenues over the long term. Market cycling in tourism can eventually lead to complete collapse. In Galapagos this would mark the boom and bust of yet another lucrative industry, and with this collapse would come inevitable ecological degradation (Figure 4).

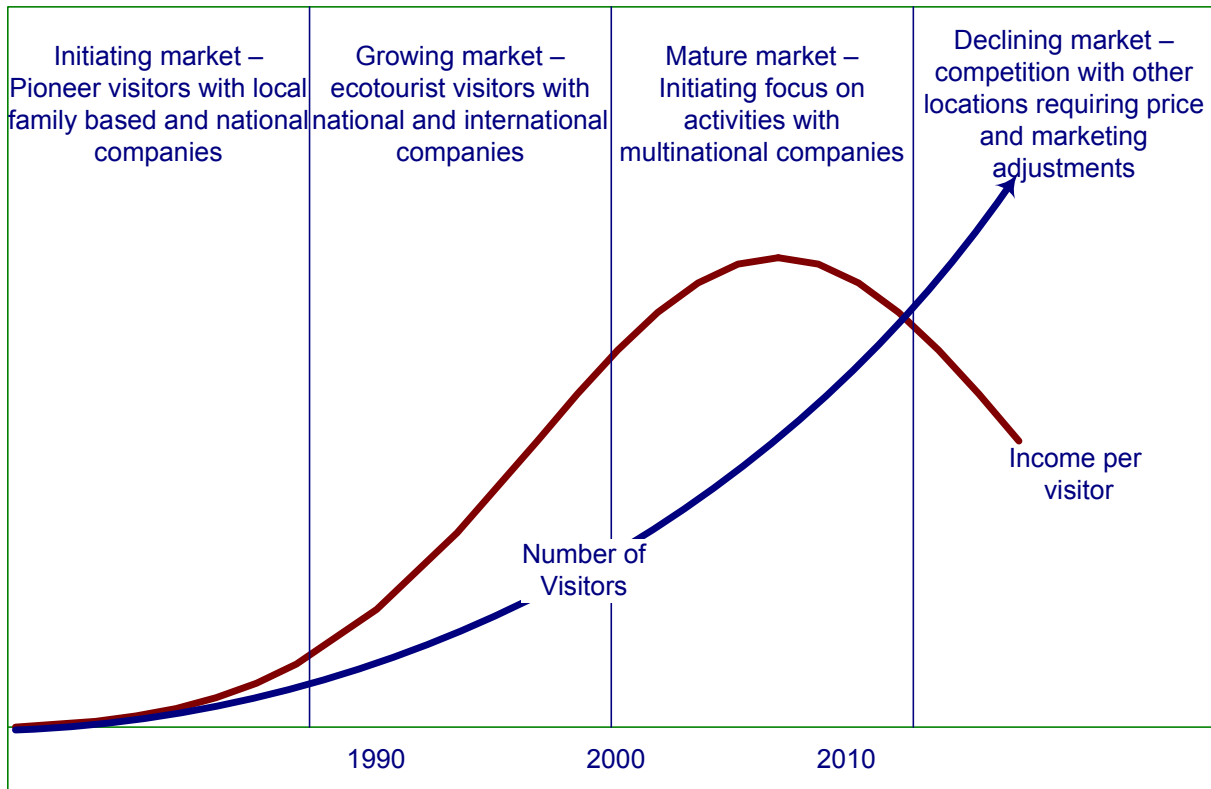


Figure 4: Predictive Model of changes in markets and operators in Galapagos

Changing tour operators

Changes in tourism markets have also been associated with changes in the kinds of tour operators. Local operators represent about 40% of the boat owners in Galapagos, but they are losing ground against international operators (Taylor, Stewart *et al.*, 2006). Operational costs of tourism in Galapagos are higher than on the mainland, which means that larger companies that focus on cost reduction and efficiency can provide a better product to visitors. In this environment, it is difficult for smaller companies to compete with large operators. This competition is reflected in the greater volume of visitors on larger boats (45-100 passengers) and the fact that the eight largest vessels in Galapagos earned half of the total gross income generated by all tour boats combined (Epler, 2007).

Multinational operators are attracted to the Galapagos market because volumes have grown and the market has shifted toward travelers searching for vacation opportunities in key ecotourism locations throughout the world. The profits of multinational operators are likely to be greater than those of smaller operators, because they have market access, access to investment capital, economies of scale, greater efficiency, provide more comfort, and have well developed alliances with international and national airlines.

Tourism in Galapagos has begun to shift away from the principal comparative advantage of nature-oriented and Darwin-linked tourism. Adventure tourism, larger cruise ships (up to 500 passengers), low-budget hotels, and activity-based tourism including sport fishing are now being offered and will have to compete with similar offers in other equally attractive locations in the world. If new visitor sites are opened, they are unlikely to meet the same high level of biological value of existing visitor sites and will therefore reduce the overall quality of a visit to Galapagos. Some visitor sites already appear to be over-visited, the quality of guides has decreased, and a shift has begun toward larger volumes of visitors rather than fewer high-paying visitors. As visitor experiences begin to decline, markets will decay and operators will be forced to reduce prices and increase marketing and infrastructure. These changes will drive tourism towards collapse as has happened in other locations (Plog, 2001).

Local benefits

There has been a great deal of discussion in Galapagos about the flow – or the absence of flow – of benefits from tourism to local residents. This debate is the basis for pressure to create a new model for tourism. It is partially driven by differences among the islands (primarily Santa Cruz, San Cristóbal and Isabela) in the degree to which tourism is an economic driver.

Tourism has grown very rapidly. Total gross income of boats in Galapagos has grown from \$19.6M per year in 1991 to \$145.5M in 2006 (of which \$25M goes to international travel retailers). Gross income of hotels has grown from \$1.1M per year to \$10.7M per year in the same time period (Epler 2007). This economic growth has been more notable on Santa Cruz where the principal economic flows to the community occur through ownership, employment and local purchasing of crafts, restaurants and bars (Proaño 2006). It is difficult to obtain precise economic data, but it is likely that the greatest flow of benefits to local residents is through employment. Taylor, Stewart and Hardner (2006) indicate that tourism is the main pillar of the Galapagos economy, generating substantial local benefit. Today in Santa Cruz, tourism is the basis of many small- to medium-sized enterprises including construction, commerce, service provision, and the markets and laundries that proliferate in Puerto Ayora. Increasing the number of residents employed within the existing tourism framework would increase the benefit flow from tourism to local residents. If one were to compare Galapagos with the Caribbean Islands, it could be argued that Galapagos already exhibits “tourism with local participation.” These benefits can be improved with more effective urban planning and training. However, the benefits are degraded by the arrival of new immigrants (Taylor, Stewart and Hardner 2006).

Kerr, Cárdenas et al. (2004) recommend that the linkages between commercial development, human resources and immigration require much deeper analysis and consideration. Such analyses, including understanding the relationships between wages, inflation, employment and immigration, are required to better plan the sustainable development of towns like Puerto Ayora (Santa Cruz), Puerto Villamil

(Isabela) and Puerto Baquerizo Moreno (San Cristóbal). It appears that the major immigration threat occurs because town-based small businesses employ non-residents because they are cheaper or because family businesses can employ relatives from outside of Galapagos. Sectors such as service provision, construction, agriculture and even fishing are requesting new outside workers because they are unable to find enough local labor. Bars, restaurants and other service providers also seem to use immigrants instead of local residents.

Socioeconomic analyses indicate that immigrant labor tends to cost less than resident labor, and that the income expectations of residents are often too high for smaller businesses (Henderson, Zurita *et al.*, 2005). This socioeconomic and cultural reality means that economic growth almost always results in immigration. INGALA and the Municipalities must take the responsibility for designing sustainable commercial options for Galapagos residents based on the realities of the locally-available human resources. Until then, economic growth will directly affect immigration, often independently of regulatory controls.

Financing in Galapagos

Several analysts (summarized in Taylor, 2006) suggest that the contribution of tourism to the local community in Galapagos is between 7 and 10% of the full value of tourism. This thesis is based on an analysis of purchases in the community (hotels, restaurants and craft stores). Taylor *et al.* (2006) argue that the impact is greater if cash flows through households are analyzed to include employment benefits. Using a model of social accounting that enables the calculation of the direct and indirect effects of tourism in the local economy, they estimate that the annual contribution of tourism to the local community is \$62.9M.

Epler (2007) estimates the total value of tourism to Galapagos as \$418.8M: \$120.5M from tourism boats and ships in Galapagos; \$108M from international airlines; \$105.8M from expenses in continental Ecuador; \$37.7M from airlines flying to Galapagos from continental Ecuador; \$24.6M from retail agencies outside Ecuador; and \$22.8M from hotels, restaurants and services in Galapagos (see Figure 5). Applying Taylor's estimate to Epler's data, approximately 15.5% of the full value of tourism reaches local residents. However, these data need refinement given the difficulty of obtaining precise financial information from all tour operators in Galapagos.

The annual cost of maintaining the national, local and autonomous government institutions in Galapagos was estimated in 2006 at \$36.5M (Díaz Guevara, 2006). This total does not include the budgets of the National Police or military installations on the islands. In economic terms, the most important institutions are the Galapagos National Park Service (representing an estimated 31% of this budget), the Provincial Education Directorate (15%) and the Municipality of Santa Cruz (14%). Approximately 60% of this total amount comes from the central government. About 40% of the budget is generated from Galapagos tourism (Díaz Guevara, 2006).

The non-governmental organizations (NGOs) working in Galapagos (Charles Darwin Foundation, WWF, Conservation International, WildAid and Fundación Galapagos) had a total estimated budget of \$5.8M during 2006 (Epler, 2006).

Between 1998 and 2005 it was estimated that bilateral and multilateral institutions provided a total of \$54.4M of support (an average total of \$6.8M per year). An estimated \$5.5M per year was spent through public institutions and an additional \$1.3M per year through NGOs. In 2006 and 2007, with the completion of several major projects such as the U.S. Agency for International Development support to the Galapagos Marine Reserve and the United Nations Development Programme-Global Environmental Facility Invasive Species Project, there is likely to be a decline in bilateral and multilateral expenditures in Galapagos.

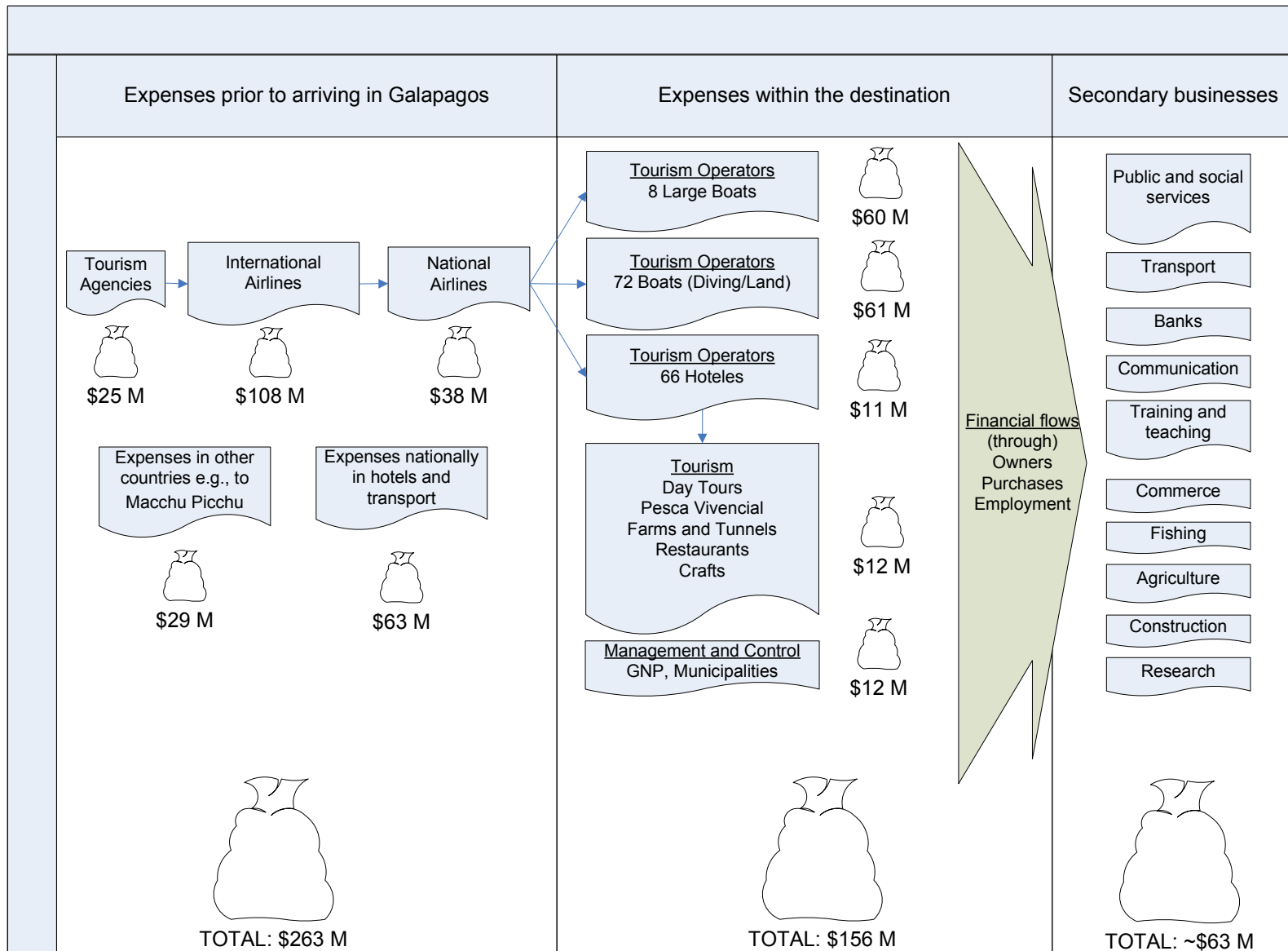


Figure 5: Distribution of Galapagos-related tourism expenditures (From Epler 2007, Taylor et al. 2006)

Unfortunately, economic information is difficult to obtain. As a result it has been impossible to precisely estimate the financial flows into Galapagos and consequently difficult to estimate the gross island product per capita. Taylor et al. (2006) estimate tourism brings approximately \$63M annually to the Galapagos economy. The Government of Ecuador invests approximately \$22M. Bilateral and multilateral² contributions are \$6.8M (including \$1.3M through NGOs). Non-government organizations contribute about \$4.5M from earned income, foundations and individuals. Fishing represents no more than \$3M of the economy (see Figure 6)³.

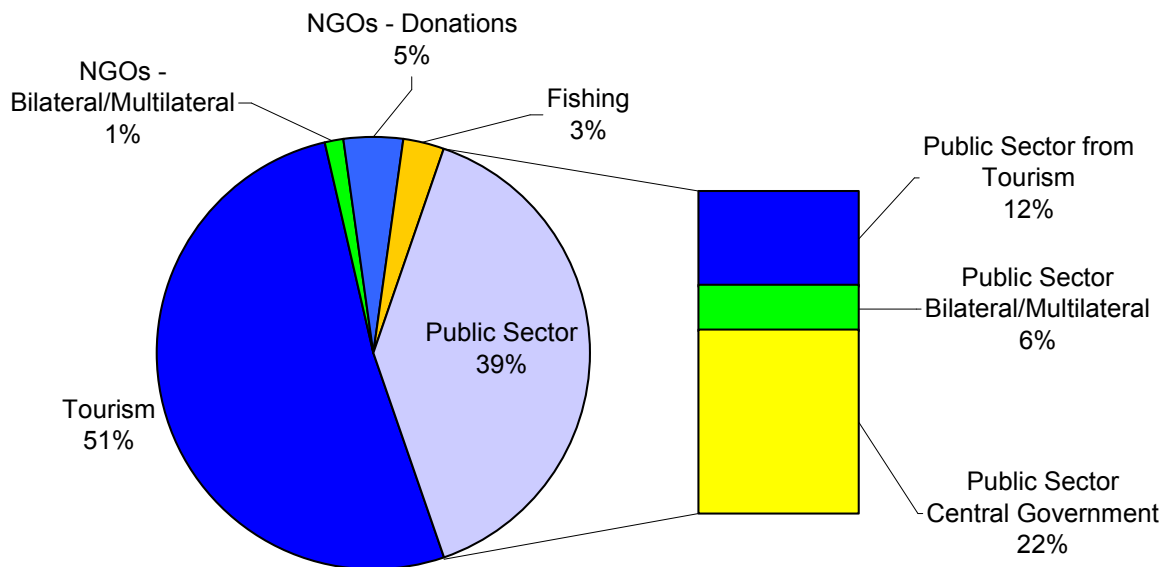


Figure 6: Estimation of financial flows to Galapagos (from Taylor 2006 and Epler 2007)

It is clear that tourism is the economic engine of the Galapagos economy. The public sector is also important. Non-government actors and fishing are the third and fourth largest contributors, respectively.

² In 2007, Araucaria is supporting the Galapagos National Park Service (GNPS); the Italian Government is supporting PROINGALA within INGALA; USAID to the Municipalities and the GNPS; JICA is supporting the GNPS; UNDP-GEF is supporting INGALA, GNPS, SICGAL and CDF; KFW and the UNDP are supporting the Ministry of Energy and Mines in renewable energy projects.

³ It is important to recognize that a deeper analysis is required of financing in Galapagos, in a need to understand the economy; the data presented here are drawn from budgets rather than actual expenditures.

Fishing and differences among the Islands

The history of the fisheries in Galapagos is one of boom and bust that has provoked serious population declines in sea cucumber, grouper, lobster and possibly of other species (Hearn, Murillo et al. 2007). The principal causes of these failures have been an inability to control fishing and subsequent overcapitalization. Murillo, Reyes et al. (2007) consider that most of the fishing effort in the 2006 lobster fishery involved only 250 fishers out of a total of over 1,000 registered Galapagos fishers.

From the early 1990s, fishing has been based on sea cucumbers, which was arguably an important source of income for local people, particularly so for the islands of Isabela and San Cristobal. In the last three years, fishing has abruptly dropped in importance from annual gross income values of up to \$8M to now less than \$3M (Hearn and Murillo, 2007). The impact of this decline has been conflict-ridden, particularly for those islands where tourism has not grown as rapidly. The perception that most tourism benefits flow to Santa Cruz exacerbates the problem. Any solution in Galapagos must take into consideration the socioeconomic and cultural differences among the islands.

The characteristics of islands already highlighted, including distance to market, absence of economies of scale and the presence of few exploitable high value products means that it is unlikely that any “new fisheries” exist in Galapagos. The most important products at the moment, sea cucumber, grouper, and lobster, must be more effectively managed with a reduced number of fishers.

New local operators in tourism

There is a great deal of interest among local residents in new tourism concessions, and substantial expectations that new concessions will be provided over the coming years. It is critical to consider this option in the context of sustainable development. Without available credit, training, and market analysis, local residents will be unable to take advantage of the ownership of tourism. The end result will be that new concessions will fall into the hands of either the existing tourism private sector or new investors searching to generate revenues from Galapagos. There has been substantial interest in a new model of tourism – “tourism with local participation” – but this concept has not been well developed and as described in Cordero, González et al. (2004), it is unlikely to be successful in either increasing equity or conserving Galapagos.

Rapidly increasing local ownership of tourism businesses is not presently realistic for two major reasons: 1) without investment backing, training and experience, a novice operator will be unable to provide the required services (comfort, security and value) to effectively compete, and 2) there are now 66 hotels and over 80 boats operating in Galapagos and some visitor sites are already considered overloaded. The existing capacity in hotels and boats still has space for expansion by increasing occupancy in the hotels and increasing the number of days working at sea in the boats. Doubling the number of owners (presently about 100) will expand the total supply without having a substantial impact on equity. Increasing the flow of tourists to Galapagos in this fashion

will increase immigration, and exacerbate serious ecological, social, and cultural problems. While it is clearly impossible to create new concessions for the entire local population, there are many possible ways to more equitably distribute the benefits of tourism through innovative concession management.

The pressures to increase local access to concessions is pushing Galapagos toward an additional burst of rapid growth that will be linked to immigration and a continued cycle of growth that will result in ecological disaster as new invasive species arrive. Additionally, as economies grow, it is usual for inequality to increase; Galapagos, with the present direction of development, is unlikely to be different.

Impacts of tourism

The greatest impact of tourism in Galapagos occurs on a regional scale through social, economic and cultural change and not at the scale of visitor sites. The visitor sites are relatively well managed through standard protected area management techniques, including trails, guides to accompany visitors, fixed itineraries and a limited number of concessions (MacFarland 2001). The Galapagos National Park Service monitors visitor sites and can close sites or change itineraries in response to growing pressures; as a result the direct site impacts have been minimal.

However, the growth in tourism has not been well managed at a regional scale. Tourism has provided benefits to Galapagos residents and the wealth generated is the basis for the local economy of secondary businesses. Unfortunately, many of these businesses have not been effectively regulated through urban planning. Growth in tourism and the local economy has led to an increase in immigration and an explosion of new local businesses. At the same time, the demand for public services such as water, health, education and sanitation has grown, overwhelming the capacity of the local municipal governments. Providing the local population with public services is costly and needs to be covered by local tax payments. Unfortunately, many immigrants are not registered and taxation systems are not well developed. Therefore public service demands have increased without concurrent ways to cover the costs of these services.

When both tourism and population grow, the number of flights to Galapagos and the number of ports of entry and exit grow the arrivals of cargo boats increase and more fuel is brought to the islands increasing the risk of oil spills such as that of cargo ship Jessica in 2001. Commercial flights to Galapagos increased by 193% from 2001 to 2006 (Cruz Martínez and Causton, 2007). New access routes break down natural barriers to the arrival of new species and potentially bring an increasing number of invasive species – the greatest threat to the archipelago. During the same time period, the number of inspectors working for the quarantine service (SICGAL) of the Ecuadorian Agricultural Sanitation Service (SESA) decreased by 20% (Cruz Martínez and Causton, 2007).

Leadership and governance

Over the last few years, instability in the national government has generated substantial volatility in the leadership of public institutions in Galapagos. In the absence of effective national and regional leadership, the private sector (local, national, and international) has taken advantage of market opportunities. Tourism has developed in the absence of effective regulation and enforcement and has focused on short-term gains rather than long-term sustainability.

Interestingly, there has been greater stability at the level of local leadership in the Prefecture, Municipalities, Congress and Military, than in the Galapagos National Park Service, INGALA, and the central government ministries. In this unstable environment, the central government of Ecuador has found it difficult to focus on and work for the best interests of the nation. The Government of Ecuador must play a leadership role in constructing a strategic vision for the future of Galapagos and it must assume responsibility for ensuring its implementation; the presidential declaration on April 10th is a first step in this direction.

Subsidies and incentives in Galapagos

A number of subsidies and incentives that were applied historically in Galapagos and continue today tend to generate individual benefits or benefits for companies, instead of collective benefits (Kerr, 2004; Taylor, 2002). These include subsidies on air travel, energy and fuel, and public services. There are also price distortions in the form of inadequate regulation and fiscal policies in tourism and fishing. These incentives and subsidies result in economic inefficiencies, hide externalities⁴ and distort markets.

Subsidies were initially applied to ensure a minimum standard of living for a relatively small population and to compensate residents for the isolation and restrictions inherent with living in a protected area. Costs of public services are higher in remote areas due to higher transportation costs and because it is difficult to establish economies of scale. Continuing to promote and apply these historical subsidies makes Galapagos more attractive to potential immigrants and means that the cost of living is lower than the real cost of services provided.

Few studies have estimated the levels of existing subsidies. Kerr, Cárdenas et al. (2004) estimate that, in 2000, the full value of subsidies (air travel, transportation of fuel, electricity and public services) was \$14.4M. Jácome (2007) estimates that in 2005 annual subsidies to the electricity sector totaled \$4.83M and those for fossil fuels totaled \$13M. A complete study of the levels and impacts of subsidies and incentives is needed in order to establish more effective fiscal policies.

⁴ Externalities are understood as a negative consequences of actions or individual decisions on collective benefits over the long term

Conclusion

Many factors have contributed to the present-day situation in Galapagos. However, a central factor has been the impact of unstable national leadership – reflected in institutions such as INGALA, the Galapagos National Park Service and the Quarantine Inspection System for Galapagos (SICGAL). Weak national leadership, coupled with local leadership focused on short-term growth, has resulted in the rapid growth of tourism and unregulated economic development.

The declaration of the President of Ecuador on April 10 2007 offers the local, national and international communities what might be the last opportunity to implement a strategic change in direction in Galapagos. The President has taken the first step in a process of social change: recognizing the need to change (in this case making Galapagos a national conservation priority). This action was then supported by UNESCO's decision to include Galapagos on its List of World Heritage in Danger.

The next critical step is to define the leadership coalition that is needed to implement the changes required in Galapagos. This coalition must construct a vision for the future of Galapagos--a task that has, in part, been accomplished in the Regional Plan and the Special Law for Galapagos. The vision must be communicated effectively and the leadership coalition must focus on implementation and ensuring that an effective institutional framework exists with well-defined roles and responsibilities.

Galapagos is a microcosm of the social, political, economic and ecological changes occurring in the world. Throughout the world, human populations are increasing and demands for resource access are increasing and shifting focus as globalization and market liberalization proceeds; these changes are in turn driving ecological changes. At the same time decision-making is occurring in an increasingly complex social and cultural environment. Institutions need to change to survive under these new conditions, including strengthening their capacity for facilitating social interactions so as to better understand and involve their stakeholders.

Islands, as a microcosm of the world, allow a detailed examination of social and ecological change and have often served as models for these changes. Islands are impacted more rapidly than continental areas. Therefore, the changes occurring in Galapagos may well reflect the future of other areas. Developing a sustainable society in Galapagos and so ensuring the long term conservation of the islands could provide a model for the rest of the world. Conversely, if we cannot achieve a sustainable society and long-term conservation in Galapagos, will it be possible to do so anywhere else in the world?

References

- Bensted-Smith, R., Ed. (2002). A Biodiversity Vision for the Galapagos Islands. Quito, Ecuador, Charles Darwin Foundation and WWF.
- Blanton, D. (2006). The future of Galapagos tourism. IGTOA E-Newsletter. January 2006. <http://www.igtoa.org/newsletter/2006/january/>
- Cordero, S., Gonzales, S., Gourzong, M., Larios, A., Orlich, A., Roe, S. and Wigoda, A. (2004). Proyecto "Redireccionamiento del Sector Turístico en el Archipiélago de Galápagos": Un nuevo modelo para el Desarrollo. INCAE.
- Cruz Martínez, J.D. and C.E. Causton (2007). Análisis del Riesgo Asociado a las Operaciones y Rutas Aéreas al Archipiélago de Galápagos. Puerto Ayora, Fundación Charles Darwin; Proyecto GEF-PNUD Control de Especies Invasoras en el Archipiélago de las Galápagos ECU/00/G31.
- Díaz Guevara, C. (2006). Planificación Operativa Regional 2006: Agregación de la planificación operativa regional, organismos regionales de dependencia nacional, organismos seccionales, y autónomos de la región Galápagos para el año 2006. Puerto Baquerizo Moreno, San Cristobal, Galapagos, INGALA.
- Epler, B. (1993). An Economic and Social Analysis of Tourism in the Galapagos Islands., Coastal Resources Center. University of Rhode Island. Narragansett, RI.
- Epler, B. (2007). Tourism, the Economy and Population Growth and Conservation in Galapagos. Puerto Ayora. Presentada a la Fundación Charles Darwin.
- Hearn, A. and Murillo J.C. (2007). Se agotan los recursos pesqueros costeros en la Reserva Marina. Informe Galápagos 2006. Fundación Charles Darwin, INGALA, Parque Nacional Galápagos.
- Hearn, A. Murillo, J.C. and Reyes, H. (2007). Disminuye la rentabilidad de las pesquerías en la Reserva Marina. Informe Galápagos 2006. Fundación Charles Darwin, INGALA, Parque Nacional Galápagos.
- Henderson, S., P. Zurita, et al. (2005). Conservation Incentive Agreements in the Galapagos Marine Reserve: Feasibility Study for the Reduction of Fishing Pressure, Conservation International.
- Heylings, P. and F. Cruz. (1998). "Common property, conflict and participatory management in the Galapagos Islands." from <http://www.indiana.edu/~iascp/Final/heylings.pdf>.
- Kerr, S., S. Cárdenas, et al. (2004). Migration and the Environment in the Galapagos. Wellington, New Zealand, Motu Economic and Public Policy Research Trust. [Disponible en español también]
- MacDonald, T. (1997). Conflict in the Galapagos Islands: Analysis and Recommendations for Management. Puerto Ayora, Weatherhead Center for International Affairs, Harvard University.
- MacFarland, C. (2001). "An analysis of nature tourism in the Galapagos." from <http://www.darwinfoundation.org/en/library/pubs/journals/br15049801>.

- Murillo, J.C., Reyes, H. and Hearn, A. (2007). Aspectos sociales de las pesquerías. Informe Galápagos 2006. Fundación Charles Darwin, INGALA, Parque Nacional Galápagos.
- Plog, S.C. (2001). "Why Destination Areas Rise and Fall in Popularity?" *Cornell Hotel and Restaurant Quarterly* 42(3): 13.
- Proaño Bonilla, J. (2007). El Proyecto BID FOMIN en el Marco del Modelo del Desarrollo del Turismo con Participación Local: Identificación de Conflictos. Puerto Ayora, Santa Cruz.
- Proaño, M.E. (2006). Evaluación de Escenarios de Expansión Turística. San Cristóbal, INGALA: Proyecto GEF-PNUD Control de Especies Invasoras en el Archipiélago de las Galápagos ECU/00/G31.
- Ramos, A. 2007. Evaluación del soporte legal para el funcionamiento del Sistema de Inspección y Cuarentena para Galápagos. Fundación Charles Darwin, Galápagos
- Taylor, J. E., G. A. Dyer, et al. (2003). "The Economics of Ecotourism: A Galapagos Islands Economy-Wide Perspective." *Economic Development and Cultural Change* 51: 977–997
- Taylor, J. E., J. Hardner, et al. (2006). *Ecotourism and Economic Growth in the Galapagos: An Island Economy-wide Analysis*. Davis, CA, USA, Giannini Foundation of Agricultural Economics, Department of Agricultural and Resource Economics, University of California, Davis.
- Taylor, J. E., M. Stewart, et al. (2006). Estimating the Importance of the Tourism and Fisheries Sectors in the Galapagos Economy, Conservation International.
- Zapata, C. E. 2007. Evaluación de la eficiencia técnica-operativa del Sistema de Inspección y Cuarentena para Galápagos (SICGAL). Fundación Charles Darwin. Galapagos.