

GALAPAGOS REPORT 2013-2014

HUMAN SYSTEMS

ECOHELIX: WORKING TOWARD A SMARTER, MORE SUSTAINABLE GALAPAGOS

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How to cite this article:

Lansdale D, P Álvarez, MJ Ayala, JC Izurieta and AF Terranova. 2015. EcoHelix: Working toward a smarter, more sustainable Galapagos. Pp. 67-73. In: Galapagos Report 2013-2014. GNPD, GCREG, CDF and GC. Puerto Ayora, Galapagos, Ecuador.

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EcoHelix: Working toward a smarter, more sustainable Galapagos

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Introduction

Sustainability has been one of the major challenges of traditional development paradigms. Historically, the Galapagos tourism industry has been linked to ecological and social impacts associated with overconsumption of resources, environmental contamination, energy consumption, ecosystem disruption, population influx, economic inequality, and alterations of community interactions. These pressures are mounting as a result of a booming tourism industry, which has not yet managed to balance environmental conservation and economic development (Epler, 2007).

In the previous Galapagos Report, Garcia *et al.* (2013) built a case for ecotourism in Galapagos based on three fundamental principles: maximizing the equitable distribution of local benefits; environmental conservation, and shared social and environmental responsibility. This article introduces the EcoHelix, a multi-sector intervention that will engage Galapagos tourists as agents of change, enabling them to rate Galapagos businesses via their smartphones, vote with their feet by choosing more ecological enterprises, and invest their resources based on information posted by businesses on their websites (Porter & Kramer, 2011).

The goal of the EcoHelix intervention is the development of ecopreneurship, the promotion of ecologically responsible ventures, within each local business community, which will produce sustainable results and generate economic as well as ecological benefits and opportunities. The EcoHelix will promote competition between businesses, which will lead to improved quality in products and services, and increased environmental and hospitality awareness in the local population. The EcoHelix is a model that could be replicated in tourism destinations around the world, with benefits for the local community and the environment.

A new paradigm emerging in Galapagos

The Galapagos Islands, famous for their unique biodiversity, were named the first UNESCO World Heritage Site in 1978. In 2007, however, environmental threats posed by invasive species, over-fishing, and unbridled tourism earned the Galapagos a transfer to the UNESCO List of World Heritage Sites in Danger. Although later removed from that list, tourism levels continue to increase with little control (Figure 1).

Galapagos tourism experienced its first dramatic growth in the 1980s (Figure 1), after regular commercial flights from the continent began. Prior to that time, tourists arrived by boat.

Since the 1980s, cruised-based tourism has been the primary mode used by visitors, equaling at times 80% of tourism activity. However, a new paradigm is emerging with profound implications.

In recent years, the source of tourists has shifted, with the largest group now arriving from Ecuador and the rest of Latin America (Figures 2 & 3). This is due in large part to aggressive promotions by LAN Airlines advertising the Galapagos as an affordable destination. In addition to the shift in origin of tourists, most visitors today seek a community-based experience rather than a cruise (Figure 4). Land-based tourism is growing at high rates (as much as 21% between 2012 and 2013), while cruise-based tourism, in part because of limited lodging capacity, has incipient or negative growth rates (Figure 5). The implications for Galapagos are far-reaching and dramatic. As more tourism becomes land-based, the economic benefit to local residents who provide reasonably priced lodging,

food, and services will continue to increase. This increase in economic benefits, however, is juxtaposed against the potential for greater ecological degradation.

The increase in land-based tourism businesses is also creating a serious dilemma for local investment. In 2014, 438 hotels were identified by the Ministry of Tourism (only 111 are legal), representing a capacity for nearly 8000 passengers per night. This represents a 400% growth from the almost 100 hotels registered in early 2010 (Ministry of Tourism, 2015). Preliminary results of a hotel census conducted by the Ministry of Tourism in 2015 reveals that more than 60% of these businesses started in the last five years, a result of growing community-based tourism. However, most lack eco-friendly practices and quality standards, and have occupancy rates as low as 25%.

Ecopreneurship: Defining the balance between economic development and conservation

Ecopreneurship or sustainable entrepreneurship is defined as “the continuing commitment by businesses to behave ethically and contribute to economic development while improving the quality of life of the workforce, their

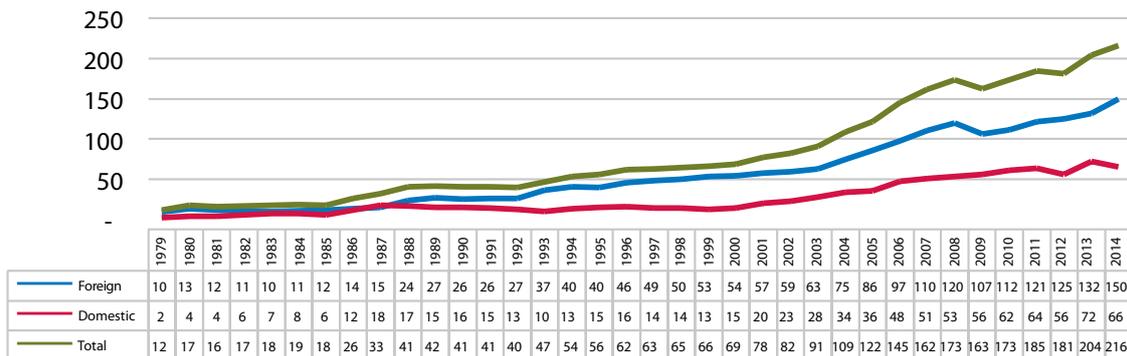


Figure 1. Statistics of visitors (foreign, national, total) to Galapagos, 1979-2014, in thousands. Source: Transit Control Card – Galapagos National Park, Ministerio de Turismo, 2014

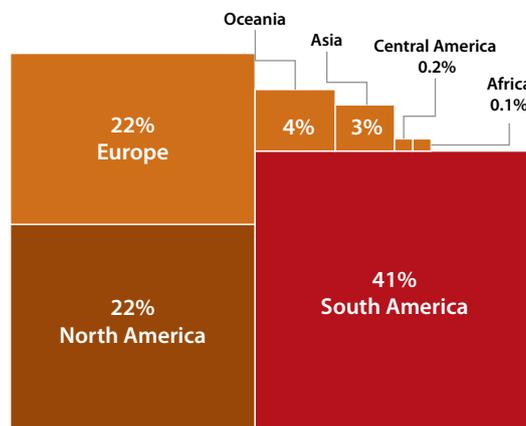


Figure 2. Origin of travelers to Galapagos by region, 2013. Source: Galapagos Tourism Observatory

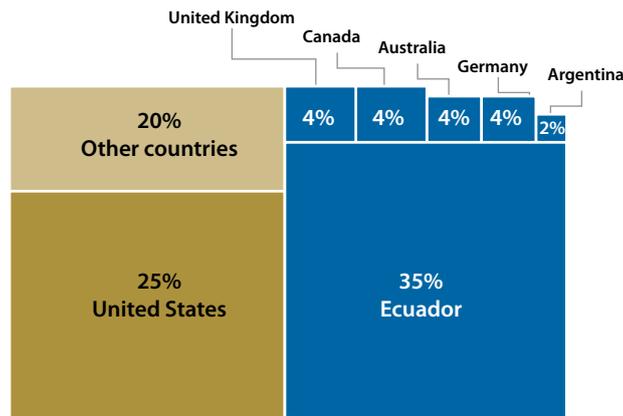


Figure 3. Origin of travelers to Galapagos by country, 2013. Source: Galapagos Tourism Observatory

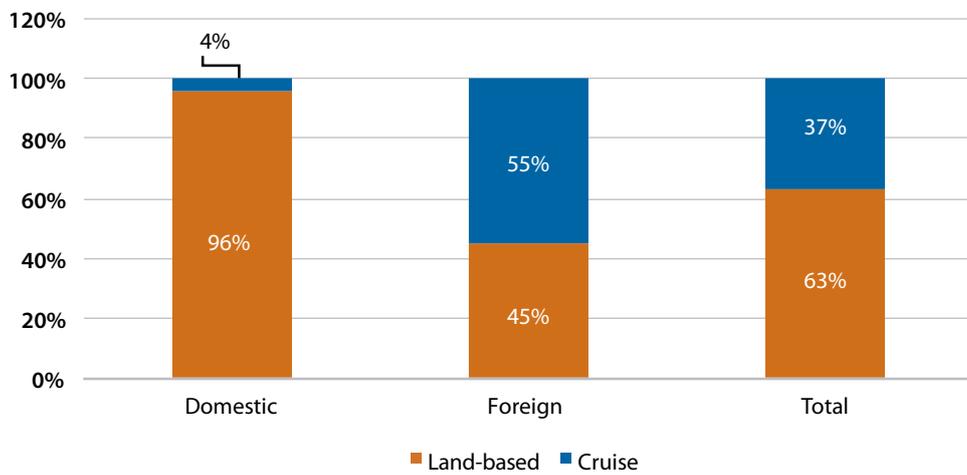


Figure 4. Percentage of tourists (domestic, foreign, total) arriving for land-based tourism versus a cruise in 2013. Source: Transit Control Card – Galapagos National Park, Ministerio de Turismo, 2014

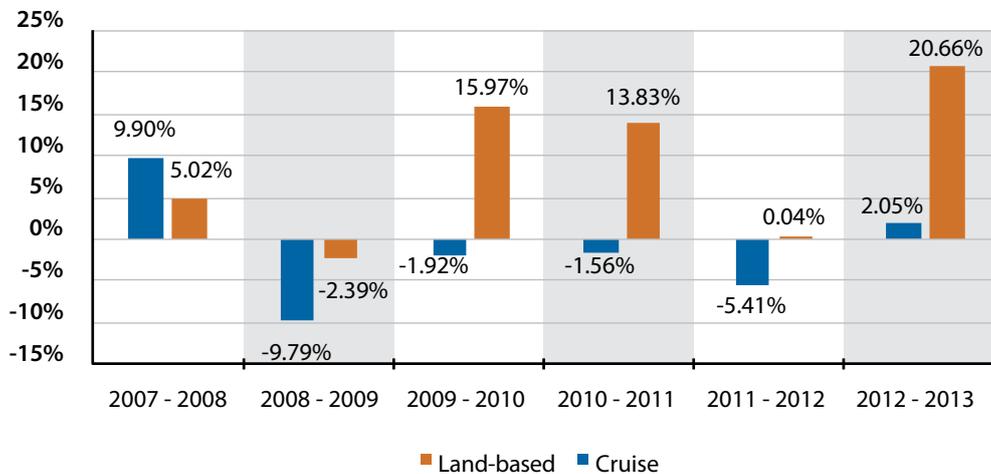


Figure 5. Yearly growth rate for land-based and cruise-based tourism in Galapagos (2007 to 2013). Source: Transit Control Card – Galapagos National Park, Ministerio de Turismo, 2014

families, the local and global community, as well as future generations” (Crals & Vereeck, 2005). It is an innovative business and societal movement that bridges the gap between profit, people, and planet (Allen & Malin, 2008). Factors including environmental awareness, demand for sustainable products and services, finite resources, business risk management, and economic efficiency have propelled the rise of the ecopreneur and the creation of sustainable business models (Dyllick & Hockerts, 2002). Not only is green business effective for large corporations, but small and medium enterprises can also harness the benefits of creating profitable, sustainable businesses to reduce poverty in resource-dependent economies. As Allen & Malin (2008) highlight, green entrepreneurship can “allow the problems of poverty and natural resource dependency to be more thoroughly and intelligently approached,” and “can be a driving force for a new economic start for modern economies.” Examples of effective ecopreneurship have been developed over recent decades in Costa Rica, where tourists can enjoy facilities that recycle, compost, and offer locally grown coffee or tea on the premises (Di Minin *et al.*, 2013).

The EcoHelix: A multifaceted proposal to address a complex challenge

The EcoHelix is an innovative intervention introduced to Galapagos by the Beyond Chacay Foundation; it aligns and mobilizes stakeholders from the private, public, civic, and academic sectors in the pursuit of entrepreneurial and sustainable solutions to complex challenges related to development and conservation. In Galapagos, the EcoHelix is designed to engage tourists and local stakeholders in promoting and strengthening sustainable tourism businesses. The components of the EcoHelix include:

- A rating system that enables tourists to evaluate Galapagos businesses based on criteria such as quality of product or service, cleanliness, green practices, etc., providing useful information for other tourists as well as valuable feedback to business owners;
- A voluntary certification process that helps ventures document their business model, profitability, and financial and technical needs, and to share this information with interested visitors, some of whom could be potential investors, volunteers, or technical consultants, based on the Lean Startup Model (Blank, 2013);
- A web-based platform (www.ecohelix.com/galapagos) and an accompanying smartphone application that enable visitors to access information about Galapagos businesses, rate them, and access information about services, products, business opportunities, and technical assistance needs in each community.

The EcoHelix will:

- Provide online marketing, publicity, and reservation mechanisms that will help Galapagos businesses tap into national and international tourist markets;
- Help connect tourists interested in investing their time, knowledge, and wealth in local ventures seeking to become more sustainable;
- Help Galapagos businesses improve their services to attract more tourists and sell their services at a higher price, while minimizing environmental impact.

Perhaps the greatest challenge of the EcoHelix model is providing information on the level of ecological responsibility of businesses. Originally, the model proposed inviting tourists to rate businesses based on four criteria: energy and water conservation, waste management, and the use of local products. Given that ratings would be highly subjective, a new approach is being explored: asking the municipalities and ElecGalapagos, the electrical company, to provide data about monthly energy consumption of each business, then calculating its ecological responsibility based on a ratio of energy consumption per number of clients. The co-creation of value for both tourists as clients and local business owners as providers is extremely promising, with both acting as stewards of the Galapagos by investing in its improvement (Porter & Kramer, 2011; Prahalad & Ramaswami, 2002).

An additional dimension of the EcoHelix, in collaboration with Fundación Fuente de Vida, is the invitation to tourists and local businesses to plant and adopt a tree, as an investment in the conservation of the islands. Groasis Technology, already a proven intervention on Santa Cruz, makes it possible to plant trees in extremely challenging settings like the Galapagos, where water is extremely scarce (Hoff, 2013). The tourist will plant and adopt a native tree, such as *Scalesia*, and the business will agree to monitor its growth, sharing information through the EcoHelix platform. This bilateral commitment creates both a short- and long-term relationship promoting conservation based on collaboration of tourists and local entrepreneurs. Smartphones will make it possible to record the planting and monitoring of the trees by uploading information to the platform.

The EcoHelix pilot

Puerto Baquerizo Moreno, the capital of the Galapagos Archipelago, was selected as the site for an initial test of the EcoHelix. In August 2013, 55 high schools students worked closely with 12 university student government leaders to gather data from a variety of businesses, including basic information (name, contact, address, RUC – the Ecuadorian business ID number, hours of operation,



Figure 6. Screenshot of www.ecohelix.com/galapagos.

etc.); GPS location; and a photo and brief history of the business. Using a train-the-trainer approach to build a corps of future project leaders, based on Bandura's Self Efficacy theory and its four pillars of mastery, modeling, social persuasion, and adaptation (Bandura, 1997), the university students were trained to coach the high school students who then worked directly with business owners (in many cases parents, family members, and neighbors of the students) to help them understand the benefits and opportunities associated with the EcoHelix and to collect data for the master website. A total of 148 businesses participated, more than 80% of the total. The Ministry of Tourism is also mapping every registered and unregistered hotel and guesthouse (a total of 128); this information will be incorporated into the platform.

Additional data were collected from business owners during the summer of 2014 on the three other populated islands: Santa Cruz, Isabela, and Floreana. As on San Cristóbal, high school students were trained by a cohort of university student leaders to collect data and to promote the benefits associated with sustainable business practices (see <http://www.ecohelix.tumblr.com>). Municipalities, nonprofits, government agencies, and school leaders are currently being invited to collaborate in an expansion of the EcoHelix throughout Galapagos. On Santa Cruz, the City Planning Department complemented data collection by providing access to its own database. Mayors on each island, along with city council members, are enthusiastic about the initiative, and have offered support by proposing collaboration through a part-time webmaster to update the information monthly.

The website provides basic information for each business, along with the option of rating quality of service (Figure 4). The online platform will emphasize the importance of "voting with your dollar," to encourage tourists to support businesses with better environmental practices. Users will also be able to purchase products and make reservations online, and include their own ranking, comments, or photos while traveling or once back home.

Consider the example of Lucky's, a small but popular restaurant that provides lunches and dinners for local

residents and visitors. Using a SIM card or downloaded application, tourists would locate and choose Lucky's based on ratings provided by previous clients and additional information contained in Lucky's online profile (comparable to the Trip Advisor model). At the end of the meal, the visitors would be invited to rate their experience (quality of food, service, cleanliness, green practices, etc.). The information would become part of Lucky's growing database and profile. This feedback could motivate the owners to make improvements, as would their competitors.

The EcoHelix tourist interface is currently being refined for testing with tourists during the summer of 2015. The Municipality of San Cristóbal, in collaboration with the National Telecommunications Agency, will set up four kiosks (at the new airport, the public dock, in front of the municipality offices, and at the Galapagos National Park Interpretation Center) where tourists can purchase a SIM card, activate the application, and later contribute to the quality of service and healthy competition in the community by rating the establishments they visit.

Conclusions and recommendations

The Galapagos Islands are at a critical crossroads (Durham, 2008; Quiroga, 2015). The EcoHelix offers a powerful, interdisciplinary solution to help ensure a local economy based on environmental sustainability, one of the major challenges in emerging market economies with environmentally fragile destinations. Galapagos provides a valuable test case that could be replicated elsewhere in Ecuador and around the world.

The success of the EcoHelix initiative will be determined by the degree to which key stakeholders from each sector provide their support and collaboration (Carayannis & Campbell, 2012). Each municipality, which will ultimately have the responsibility of maintaining the system for their island, is committed to providing monthly updates. The Ministry of Tourism through the Galapagos Tourism Observatory is planning to integrate survey systems into the platform to develop statistics that will inform public policy.

Student government leaders who participated in data collection during the previous two summers have been extremely enthusiastic, with equally significant results among high school sophomores and juniors. The initiative has been especially well received by educational leaders; principals from the Liceo Naval and Colegio Humboldt (San Cristóbal), Colegio Nacional Galápagos (Santa Cruz), and Colegio Azkúnaga (Isabela) have invited teachers and students to participate through classes and extracurricular activities.

The following recommendations will help ensure that Galapagos benefits fully from the EcoHelix:

1. Ensure that the entity charged with maintaining the website has the capacity for continual updates and maintenance, and will continue to increase the number of businesses participating.
2. Identify a legal entity to make it possible for tourists to invest in selected businesses, based on existing micro-lending and crowdfunding models (KIVA, Kickstarter, etc.); the creation of a local trust fund and collaboration with existing local cooperatives are being considered.
3. Identify and implement ways to work around the weak Internet connection in Galapagos, which limits the effectiveness of web-based tools. One solution is to create an intranet on each island, which would enable tourists to have access to local information. Another is to provide SIM cards where the information needed resides on the device used by the tourist, be it a smartphone or pad. Both options are currently being assessed in consultation with the national telecommunications network and the Governing Council.

4. Invite high school administrators, teachers, and students to play a more active role in the implementation of EcoHelix, and provide follow-up with interested participants in each community.
5. Promote the use of the EcoHelix in improving both intra- and interisland communication, which could provide additional opportunities for governmental institutions and others to post and exchange information ranging from activities to policies to opportunities, to prepare local citizens for the growth of community-based tourism on the islands.
6. Produce a video for all commercial flights to Galapagos, which presents information on the geology, geography and biodiversity of the Archipelago, and highlights its vulnerability in the face of growing tourism. The video should challenge each tourist to become an agent of change during their visit and to continue once their visit ends.

The Galapagos Archipelago is more vulnerable than ever before, given that a majority of visitors are choosing the more affordable, island-hopping tourism, which lacks strict regulations. The EcoHelix seeks to harness and mobilize technology, inviting business owners and tourists to play a more active role in the promotion of a sustainable model that addresses ecological and economic interests. The data have been collected, the platform and the application are being tested, and key stakeholders have been invited to collaborate. The challenge lies in the socialization and adoption of the EcoHelix to create a more sustainable future.

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