

## CONSERVATION FOR DEVELOPMENT PROJECTS IN ECUADOR

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### Abstract:

As Ecuador is one of the most biodiverse countries in the world, it is especially challenging, but important, to balance development with conservation. In the development of the first large-scale underground gold mine and deep-water port in the country, Cardno Latin America has supported different biodiversity conservation initiatives including monitoring, rescuing and relocating flora and fauna species and habitat restoration.

Aligned with corporate sustainability policies, as well as the Ecuadorian legislation, and environmental license and management plan obligations, Cardno and client companies have worked with various experts, biologists, veterinarians, and specialized local institutions on collaborative efforts to mitigate and minimize the environmental impact in the project areas' biodiversity.

The result of these combined efforts has not only helped to preserve the Ecuadorean biodiversity, but has also contributed to scientific and technical knowledge, led to discoveries of new species, and has helped build the local capacity of Ecuadoreans to participate in conservation strategies for large-scale development projects.

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### Introduction

Ecuador, like most emerging markets and developing countries, is characterized by loose legal codes and governmental organization, insufficient technical and financial capacity, and many needs. Though Ecuador is classified as an Upper Middle Income country, and has become more modernized in recent years, it is still exploring and discovering its potential in different kinds of capital: human, manufactured, natural, and others (The World Bank, 2019). Because of this, there are many firsts happening in the country, ranging from new scientific discoveries to the strategic development of new infrastructure and economic sectors. To name a few, these include: the first underground large scale mine in the Zamora Chinchipe, in the Tropical Andes in the southern Amazon, and the first deep water port in the Guayas province (DP World Posorja, 2018; El Universo, 2019)

While there is great debate about whether this development, and ensuing impacts and transformation are positive or negative, there are two infallible truths about Ecuador—and these apply to all developing countries—it needs protection and it needs investment.

### Investing in Developing Countries

Operating in a developing country inevitably requires financial capital, but it also needs the intangible investment of time, patience, capacity building, reflection, adaptation, knowledge creation and sharing. In a place where there is potential and opportunity, the “firsts” come with many unknowns at every level: consultants, local experts, law- and policymakers, regulators, company and project staff, and the general population. The unknown also breeds fear and that, compounded with the negative historic legacy of many industries in most developing countries, contributes to reactive opposition, polarization and the perpetuation of misinformation. Then, there are other cumulative social and environmental impacts that are, most often, external to any one particular project or company. These can include corruption, political instability, illicit activities (such as crime, drugs trafficking, etc.), as well as uncontrolled deforestation, habitat and cultural losses, and pollution caused by daily, unregulated anthropogenic activities that include agriculture, waste and waste-water disposal, construction and urban growth.

This setting does not often attract high-quality investment, corporate or otherwise. Neither does it foster learning or respect, nor can it bring mutual gain. Yet, in this challenging context presented in nearly every developing country in some form, there are efforts of those that seek to further sustainable development, projects and operations, and thus, the country's protection.

### The Need for Sustainable Development

Sustainable development has several definitions, but a part of the United Nation's 2030 Agenda vision sum it up well:

“We envisage a world in which every country enjoys sustained, inclusive and sustainable economic growth and decent work for all. A world in which consumption and production patterns and use of all natural resources – from air to land, from rivers, lakes and aquifers to oceans and seas – are sustainable. One in which democracy, good governance and the rule of law, as well as an enabling environment at the national and international levels, are essential for sustainable development, including sustained and inclusive economic growth, social development, environmental protection and the eradication of poverty and hunger. One in which development and the application of technology are climate-sensitive, respect biodiversity and are resilient. One in which humanity lives in harmony with nature and in which wildlife and other living species are protected” (United Nations, 2015, p. 4).

As one of today's most pressing global needs, environmental protection is high on the global agenda, and a component of nearly all of the 17 Sustainable Development Goals (SDGs) (United Nations, 2015). These ambitious, people-centered goals are interconnected, and seek to simultaneously address social and environmental needs, such as health, education, employment opportunities, inclusive economic growth, gender equality, the implementation of key social services, alongside climate change, the sustainable use of natural resources, and ecosystem and biodiversity protection. In a microcosm, a sustainable development project must align itself to this framework and implement its own SDGs, adapted to the social and environmental reality of its industry or initiative in its given location.

### Beyond Compliance

In Ecuador, the need for sustainable development is great, but the country's laws, processes and regulations do not have the necessary elements to support it. Companies that merely seek compliance will not achieve sustainable development, without the voluntarily implementation of international standards or policies.

The more successful projects, in terms of gaining and maintaining the corresponding environmental licenses and Social License to Operate, establish a holistic model oriented towards sustainability, and go beyond what is legally required. These companies begin with strong social and environmental baseline information, which helps them understand the reality of their project's location, considering seasonal differences in both human and wildlife populations. They work with consultants and engage with stakeholders to fill the gaps in their knowledge, gaining local and/or specialized perspectives, skills and expertise. Depending on the project, companies set long-term plans implemented gradually—over years, if necessary—resulting in better analyses, methodologies, monitoring mechanisms, and effective strategies that cause companies to become community participants, and a true local and/or regional investor.

### Project Implementation in Ecuador

Operating in Ecuador is as unique as its landscapes. As an equatorial tropical country, Ecuador only has dry and rainy seasons; yet, the species present in each season vary by more than 70 percent, of which only 30 percent are boreal and austral migrant species. Several species, particularly reptiles and amphibians, hibernate or hide, awaiting to emerge during the reproductive rainy season or when their food source is available. Ecuador, with an elevation range between zero to 6,380 m.a.s.l.—with the highest point on earth being registered on Mount Chimborazo— also has species that migrate between altitudinal zones, making for extremely complex and rich ecosystems. The Amazon and even more so, the Tropical Andes, starting at an elevation of approximately 1200 m.a.s.l., is a recognized biodiversity “hotspot” where endemic species reside in highly-specialized habitats found in the nooks and crevices of this small country extending approximately 283,560 km<sup>2</sup> (Critical Ecosystem Partnership Fund (CEPF), 2019).

Table 1 Biodiversity in Ecuador

Taxonomic Group (Class)	Number of Species in Ecuador	Number of Species Endemic to Ecuador	Percent of Endemic Species in Ecuador	Number of Species in the World	Percent of Species in the World (Registered in Ecuador)	World Ranking by Biodiversity Richness	World Ranking by Extension (Number of Species per Area)
Mammals	432	41	9%	6,399	7%	9	ND
Birds	1,690	39	2%	10,451	16%	4	ND
Reptiles	477	117	25%	10,793	4%	7	1
Amphibians	609	264	43%	8,004	8%	4	1
Fish	1,716	36	2%	34,200	5%	ND	ND
Vascular Plants	18,198	4489	25%	304,419	6%	ND	ND

Sources: (AmphibiaWeb, 2019; Barriga, 2012; Brito, Camacho, Romero, & Vallejo, 2018; Froese & Pauly, 2019; Freile & Poveda, 2019; American Society of Mammalogists, 2019; Neill, 2012; Ron, Merino-Viteri, & Ortiz, 2019; The Plant List, 2013; Tirira, 2017) (Torres-Carvajal, Pazmiño-Otamendi, & Salazar-Valenzuela, 2018; Uetz, 2018)

It is worth mentioning that Ecuador also has great cultural and archaeological wealth. There are more than 13 indigenous nationalities and groups, many with their own languages (Ministerio Coordinador de Desarrollo Social, n.d.). There are also numerous archaeological sites and undiscovered vestiges, including those associated with the Andean Road System (Qhapac Ñan) (Executive Summary: Qhapac Ñan, Andean Road System, 2013).

With this as precedent, alongside the previously mentioned challenges of developing countries, it is of utmost importance to understand the context and adapt projects and related socio-environmental programs accordingly, promoting the country's sustainable development.

## Biodiversity Conservation Programs

As a socioenvironmental consultancy, Cardno Latin America focuses primarily in developing Environmental and Social Impact Assessments (EslA), developing and implementing the corresponding Environmental Management Plans (EMP), and the myriad of accompanying activities and programs that arise as a large-scale project unfolds. In Ecuador, the biodiversity conservation programs are a key element in promoting sustainability, especially for projects related to extractive industries like petroleum and mining, and/or that require industrial construction, due to the extremely high biodiversity rates.

In the construction phases of Ecuador's first underground gold mine and first deep-water port, the impacts are significant. Large areas are disturbed to make way for infrastructure; yet the corresponding companies are responsible and implement biodiversity conservation initiatives that go beyond what the Ecuadorean legislation requires.

Cardno Latin America has participated in these projects as the expert consultant on biodiversity. As such, our work in the underground mine began in 2008, during its exploration phases, where permanent biotic and environmental monitoring campaigns have allowed for the gathering of years of important data. This data, has allowed for the proper identification and classification of species, establishing their vulnerability and conservation status in this specific area, and resulting in processes that target high-conservation value species and habitats.

A Wildlife Valuation and Relocation Center has been created for the rescue and relocation program. Here, veterinarians and biologists examine, record and mark the most vulnerable species. Upon completing this process, the species are relocated to a 3,000-hectares area designated for conservation, away from the project's construction activities. Through this program, more than 20,000 plant and animal individuals have been rescued and relocated, and a native plant nursery has been developed and are used in the rehabilitation of areas that are no longer needed.

Cardno Latin America continually assesses forest, water and, overall habitat quality through bioindicator species monitoring campaigns. The presence of these bioindicator species, such as the Andean Bear, demonstrate that the undisturbed project sites are in good condition, and the continuous biotic monitoring allows the company responsible to notice changes, address issues quickly and adapt management or operations when needed.

To offset the impact caused by the construction of the deep-water port, Cardno Latin America is currently helping the company reclaim mud banks, foresting the areas with mangrove species, and essentially creating a brand new habitat in coastal areas that were previously barren. In collaboration with the Calisur Foundation, Cardno Latin America oversees the implementation of forestation activities in more than 60 hectares of mud banks. This includes the development and maintenance of a mangrove nursery, the training of local people to carry out the plantings, and monitoring activities in the newly formed habitat. The mangrove forestation site already refuges wildlife and benefits the local communities with crab and shell resources and many ecosystem services, including carbon sequestration, water filtration and coastal protection.

## Conclusion

These projects are the result of corporate investment in responsible and sustainable development, prioritizing biodiversity protection, which is especially important in Ecuador. The projects have contributed to the development of new methodologies that promote biodiversity conservation, adapted to the Ecuadorean context, which have advanced scientific and technical knowledge and led to discoveries of new species. Lastly, the projects have addressed other SDGs indirectly by helping build the local capacity of Ecuadoreans to participate in conservation strategies for large-scale development projects, provided labor opportunities, and fosters partnerships with local universities, NGOs, communities and other actors in their implementation.

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