



LIFE AS COMMERCE: Bioprospecting in Costa Rica



The full case study can be found at:
www.globalforestcoalition.org

Summary

Bioprospecting is a form of commodification of natural resources which is intended to create economic benefits while at the same time assisting the conservation of resources. The concept was developed in the 1980s, notably by US Professors Eisner and Janzen, who proposed a system through which countries that were genetically rich but economically underdeveloped could capitalise on their natural wealth by offering companies from rich countries access to their genetic resources. These companies would then use their technology to develop marketable products, and secure intellectual property rights to their 'inventions' through the use of patents.

Costa Rica is a world leader in bioprospecting, and widely seen as a country dedicated to conservation. Yet a coalition of Costa Rican environmental organizations, academics, indigenous peoples and peasants, members of the Network for Coordination on Biodiversity, question whether bioprospecting has in fact brought the country the benefits that were promised. They are concerned that it assists the appropriation of genetic assets as well as local, traditional knowledge.

Furthermore, bioprospecting is having a negative impact on community governance in Costa Rica. As the case study finds, the private appropriation of traditional knowledge or plants via intellectual property mechanisms is extremely complex, making any sort of informed community engagement and decision-making very difficult, especially for women, who often have less access to education and lower levels of literacy.

In addition, the fact that resource 'ownership' is a concept alien to Indigenous cultures has also created great confusion: how can - and indeed why should - something that has been part of a People's culture, which they have always shared amongst themselves and with others, be appropriated by outsiders? For the Ngobe Bugle people, biodiversity is an essential element in everyday life. From it, villagers get medicines, food, materials to develop their crafts, their legends and much of their history. Their traditional knowledge has been shared with everyone in the community and with some outside of it. Today, however, because of the threat that their knowledge is being appropriated by others outside their village, the very act of sharing within the community and externally is being eroded.



Traditional womens dresses of the Ngobe Bugle Indigenous People. Photo: Marco Chia.

Conflicts have also flared up in some Indigenous villages because some people within the community have chosen to sell medicinal plants or share their knowledge in exchange for financial gain, when this is frowned upon by the rest of the community. It is important to bear in mind that these conflicts are driven by people's need to generate income – and that there are non-indigenous people who are aware of and ready to exploit this situation to acquire the knowledge they seek.

Much traditional knowledge is shared by various Indigenous Peoples and anyone who carries out a transaction with group can instigate a conflict with the other Indigenous Peoples. These

internal decision-making difficulties can be even more pronounced amongst Costa Rican peasants and fishing communities who while not indigenous, share many of the values of the Indigenous People. Bioprospecting can also have a particularly negative impact on women, who are closely engaged in using and maintaining and exchanging knowledge about biodiversity as it relates to food.

The National Institute for Biodiversity (INBio)

Costa Rica's National Institute for Biodiversity (INBio), has become a

model in the field of 'biodiversity management'.

Whilst the name suggests that INBio is a public institution, it is in fact a private entity, although it has very close links to government. Initially created in 1989 to oversee the creation of an inventory of biodiversity, INBio grew in importance by taking over the databases of the National Museum and other important institutions. It obtained further funds and in-kind support via 'debt for nature' deals, tax exemptions and donated vehicles; and won international awards, which greatly enhanced its reputation. In 1991 it signed a contract with the pharmaceutical company Merck, the first of a number of deals with private companies worldwide

Now INBio runs projects with companies, universities and even governments, nationally and internationally, and receives funding from the Inter-American Development Bank, a variety of private foundations, international environmental NGOs and bilateral assistance agencies. It describes its activities as: "*A programme of bioprospecting that uses modern scientific and technological approaches to search for new products derived from wild Costa Rican organisms that are of interest to chemical, pharmaceutical, agricultural and biotechnology industries.*"

INBio has good connections with government ministers, legislators, university authorities and various other high-ranking officials in the ruling class. Present at its General Assembly are former government ministers, influential lawyers and bankers, and key figures such as Pedro Leon, director of the government's 'Peace with Nature' plan. The close relationship with successive governments has benefited both INBio and the Government, and done much to enhance Costa Rica's reputation as a world leader in conservation.

Expropriating Costa Rica's resources

However, INBio's activities do have both social and environmental consequences, whether or not they are intended.

To date, INBio has signed nearly thirty commercial agreements, but these effectively hand Costa Rica's genetic resources to private companies, with little by way of return. A communiqué emanating from the Convention on Biological Diversity (CBD) in 2002, for example, cited the relationship between INBio and Diversa, then a US-based industrial biotechnology company (now merged and focusing on biofuels), as an example of access and benefit sharing, saying:



*Traditional handcrafts made of plants from the forest.
Photo: Marco Chia.*

“Under the terms of the agreement, Inbio collects specimens using their own techniques and ones provided by Diversa as well. InBio guarantees that this technology will not be used to collect and process specimens for other companies. The entire DNA sequence that InBio isolates for Diversa will become the property of Diversa. All material isolated from these sites remain under the ownership of Costa Rica. Diversa pay the wages and other extras of at least one InBio staff member. It also pays profits to Inbio in the event that Diversa license a product to a customer from samples obtained from InBio. InBio receives access to technology, equipment and the creation of capacity ...”

The benefits to Diversa are clear. But the benefits accruing to INBio are uncertain, especially in relation to benefits that might or might not be generated if products are developed in the future. There is no mention, for example, of any related control mechanisms.

Unfortunately, no other public information is available. Before the communiqué was issued, COECOceiba had requested information about ongoing negotiations between INBio and Diversa and a copy of the contract from the then minister of Environment and Energy, Mr Carlos Manuel Rodriguez. In response, Mr Rodriguez revealed that Diversa had patented methods or applications related to two gene sequences: Cottonase (an enzyme used in the industrial manufacture of cotton) and Green F-P (a fluorescent protein to be used in medical research). He stated that *“the contract signed between Diversa and INBio is considered confidential information and must therefore be protected.”*

The route from Costa Rican natural resource to patented commercial product was also clearly illustrated, in March 2008, in an article in *La Nacion*, which said: *“ the National Institute for Biodiversity, [specialists] are working on*

the search for new antibiotics. This group is responsible for testing about 2,000 fungi and bacteria from the INBio collection.... [Promising strains] will be forwarded to the National Centre for Biotechnology in Spain, where more tests will be conducted using bacteria that require laboratories having a greater level of security. There, more complex information will be obtained and subsequently a new antibiotic could be patented through the study of biodiversity obtained in Costa Rica."

Secretive deals

A contract with Merck signed in 1991 first thrust INBio into the role of doing business in biodiversity at an international level. Yet even though it concerned national assets, details of the contract were not made public: both the substance of the contract and the nature of negotiations were kept secret. It is known, however, that the Minister for the Environment was never present at these negotiations, despite his responsibility to ensure protection of Costa Rica's natural resources.

A researcher managed to unearth details, however, and in a 2002 article revealed that Merck had paid an advance of one million dollars to INBio after signing the contract, followed by a payment of US\$100,000 to the Ministry

of Environment and Energy for the protected area system. Merck also paid US\$135,000 for scientific equipment, payment for chemical extracts of insects, plants and micro-organisms. INBio would receive royalties if the extracts gathered were used in commercial products. A second two-year contract, with similar terms, was signed in 1994 and a third in 1997. However, in 1999, Merck ended its contract with INBio to focus on the analysis of samples.

For Merck, the contract offered huge benefits: exclusive access to the samples collected; low labour costs (the parataxonomists – locally recruited field researchers – were paid for by Costa Rica); and incalculable reputational benefits. The one million US dollars Merck paid to Costa Rica was a small sum for a company with annual profits exceeding \$8 billion. Even if no sample were ever brought to market, the PR benefits that Merck gained from the deal are still priceless.

For Costa Rica, the economic benefits were few, and royalties were not guaranteed. INBio itself benefitted from some technology transfer; but the size of the royalties it would receive if Merck develops a commercial product are uncertain: they are likely to be less than 5 per cent however. Given the limited number of samples that lead to a

marketable product, up-front payments have been identified as being the most important benefit from Costa Rica's point of view.

Whilst the Merck contract has received the most attention, INBio has signed similar deals with institutions such as the British Technology Group and Kew Gardens, Bristol Myers Squibb and Cornell University.

This year, *Diario Extra* reported that Costa Rica would also extend environmental cooperation to China. *"...In Beijing, the minister of Foreign Trade, Marco Vinicio Ruiz... noted that the Institute for National Biodiversity of Costa Rica discussed the possibility of cooperating with China on environmental protection and biopharmacy. 25% of the world's biodiversity research is done in Costa Rica, and there is a possibility of using such research for Chinese pharmaceutical firms specializing in natural products, stressed the Minister, who was on an official visit to China to strengthen bilateral economic relations."* COECOceiba is still waiting for clarification about this issue.

Whilst the details of these deals have also been kept secret, there are some common features. In particular, partners generally seem to be required to commit to cover costs of research in

the country, to make a contribution equivalent to 10 per cent of their budget to protected wildlife areas of the state, to make monetary compensation in the form of royalties on products that come to be marketed and also to help in technology transfers, the training of Costa Rican scientists and, in many cases, donating the equipment and infrastructure necessary for the development of research.

Lack of promised benefits for Costa Rica

COECOceiba's literature review found that few of the promised benefits for the country have materialised. Funding for the national system of conservation



Chaines: women dresses. Photo: Marco Chia.

areas is important; but a study undertaken up until 2000 by Nagoda and Tverteraas found that cash contributions towards the conservation areas system have decreased every year.

Despite its success and global reputation, INBio itself lacks the resources of the companies it deals with. Its annual operating budget is around US\$6 million. Diversa pays under US\$6,000 a year for the two products developed from the country's resources.

The country does in fact stand to lose a great deal because it has signed away potential patents and other intellectual property mechanisms on genetic assets and traditional knowledge originating in Costa Rica. The lack of transfer of technology to the country also undermines Costa Rica's potential for making commercial use of its own biodiversity in the future, should it choose to do so.

Selling traditional knowledge

One of the most notable and worrying features of bioprospecting in general is that the traditional knowledge of Indigenous People and local communities, who have conserved and

improved native wildlife species (and made their commercial development possible) goes unrecognized, save for the salaries paid to local parataxonomists.

Bioprospecting treats human knowledge as free. Intellectual property rights are licensed to the companies who develop genetic resources into commercial products, implying that research and development activities are more important than the traditional knowledge used to identify potentially useful material.

Damaging communities

Bioprospecting has also proved damaging to Costa Rica's Indigenous people and other local communities. COECCOeiba has documented impacts over the past three years from discussions with Indigenous Peoples from territories of the Ngobe Bugle peoples AND OTHER LOCAL ORGANIZATIONS.

Indigenous peoples' rights over their biodiversity have not been respected. According to the executive director of the National Commission for the Management of Biodiversity (CONAGEBIO, a public body responsible for access requests), no authorization has ever been granted to INBio or any other institution

or person to operate in Indigenous territories. Yet Indigenous people participating in COECOceiba's research have said that, at times, unidentified people have wandered into their communities in search of plants or asking them about traditional medicines.

Biodiversity is an essential element in the Ngobe Bugle peoples' everyday life. Villagers use the native plants and animals for medicines, food, and to develop their crafts. Their history and culture are closely bound to the wildlife around them.

Sharing, too, is fundamental to their way of life. Traditional knowledge has always been shared amongst everyone in the community and some outside of it. Today, however, because of the threat that their knowledge is being appropriated, this culture of sharing is being eroded, causing confusion and conflict, and undermining the way of life that has preserved and improved biodiversity over the centuries.

Conflicts have also flared up in some Indigenous villages because some people within the community have chosen to sell medicinal plants or share their knowledge in exchange for financial gain, when this is frowned upon by the rest of the community. It is important to bear in mind that these conflicts are driven by people's need to

generate income – and that there are non-indigenous people who are aware of and ready to exploit this situation to acquire the knowledge they seek.

Much traditional knowledge is shared by various Indigenous Peoples and anyone who carries out a transaction with group can instigate a conflict with the other Indigenous Peoples. These internal decision-making difficulties can be even more pronounced amongst Costa Rican peasants and fishing communities who while not indigenous, share many of the values of the Indigenous People.

COECOceiba's literature review has not found any documents that stated any benefits to local communities, traditional fishing villages or indigenous peoples; and no community has taken part in any negotiation that could be seen as beneficial for their cultural identity and way of life. It seems that no community has benefited from this new and contrary worldview which values biodiversity only in economic terms.

Environmental damage

Proponents of bioprospecting initially argued that bioprospecting has a very low environmental impact. However

ecosystems have been destroyed through this activity and monocultures of certain species have been planted in order to further the bioprospecting process.

Local employment

Proponents of INBio argued that local people would benefit through employment – as INBio hires local people to work as parataxonomists – and describes its workforce as ‘a small army’. Yet researcher Lisa Campbell argues that, *“A lot of language concerning parataxonomists is paternalistic and condescending and, with only thirty parataxonomists employed at the beginning of the nineties, the employment created is fairly minimal.”* This concern is still valid today, although there may be even fewer people employed as bioprospecting with parataxonomists is not so extensive now. However, the case study found no other studies concerning bioprospecting and employment.

A way forward

In Costa Rica, all indigenous people have undertaken a process to define their community rights regarding traditional knowledge, to prevent its

appropriation by non-indigenous people. Mechanisms have been established for decision-making in each territory, which follow traditional ways, and communities know that they have a right to say ‘no’. Mechanisms have also been established to strengthen the coordination among various peoples about other issues which will be reviewed in consultation with all the Indigenous Peoples of each of the existing twenty-four Indigenous territories.

For communities made up of traditional peasants and fishermen, defining their rights is a little more complex. Parties wishing to engage in bioprospecting must negotiate individually with each landowner, rather than collectively. Nevertheless, there is a process underway among peasant communities relative to the theme of biodiversity and strengthening their identity, in order to define their collective rights.

Conclusions

Bioprospecting is a response to a world vision that is currently in vogue: we can only conserve and care for what is understood and has a value, and in order to understand we have created bioprospecting. Only then can we value it.

This approach is promoting a business that creates millions of dollars for a handful of companies, who take advantage of the cultural knowledge of Indigenous and local communities that have carried out the conservation, use and improvement of biodiversity, based

on collective practices that must be shared so they can survive. For these people there are no benefits. Instead, the process is having a negative impact on Indigenous Peoples, creating conflict within and between communities and eroding their culture of sharing.

Citation:

LIFE AS COMMERCE: Bioprospecting in Costa Rica, by COECOCEIBA, October 2008, 12 pages

GFC project coordinators:

*Ronnie Hall and Simone Lovera
Global Forest Coalition, Bruselas 2273
Asunción, Paraguay
e-mail: simone.lovera@globalforestcoalition.org*

Editorial team: *Ronnie Hall, Sarah Finch, Simone Lovera, Yolanda Sikking*

Translation team: *Dan Rubin, Elena Demunno, Paula Derregibus*

Photographer: *Marco Chia, Costa Rican artist (mchhia@gmail.com)*

Photo cover: *cacao seed. Very important for the Ngobe Bugle People*

Disclaimer:

The information contained in this report has been provided by the independent country monitor. As such, the report does not necessarily reflect the opinion or position of GFC or other contributors

October 2008



LIFE AS COMMERCE: Bioprospecting in Costa Rica.

This publication was made possible with the generous support of Swedbio and the Dutch Ministry of Foreign Affairs. The views expressed in this publication do not necessarily reflect the views of our donors.



Don Chico: a traditional healer, Ngobe Bugle Indigenous People. Photo: Marco Chia



**COmunidades
ECOlogistas
La Ceiba**
amigos de la tierra
Costa Rica

COECOCEIBA/ Friends of the Earth-Costa Rica is a non-governmental, not-for-profit organization established in April 1999. Its members are from different social sectors (academic, environmentalist and peasant) and its staff has more than fifteen years of experience in the design and implementation of projects to promote sustainable livelihoods and environmental advocacy and awareness raising campaigns.

COECOCEIBA/ Friends of the Earth-Costa Rica is a member of various national and international networks and the Costa Rican popular movement. It plays an active role in environmental campaigns to protect forests, biodiversity and the urban environment at the local, national, regional and international level.

COECO-Ceiba, Amigos de la Tierra, Costa Rica
apartado postal 12423-1000 San José, Costa Rica
Tel: (506) 223-3925 Fax: (506) 223-3925
e-mail: coecoceiba@gmail.com
www.coecoceiba.org