

# IK Notes

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## Health: Indigenous Knowledge, Equitable Benefits

by Katy Moran

Since the Convention on Biological Diversity (CBD) was introduced in Rio (June 1992), we have learned much from describing the new relationships that the CBD catalyzed. Biodiversity-rich countries, indigenous cultures with their knowledge of the use of bioresources as medicines and companies that seek to discover new therapeutics through medicinal plants and traditional knowledge now share common interests. The value of plants for medicines is more widely recognized and the "intellectual property rights" (IPR) connected with their use have been debated worldwide. Indeed, IPR have become a metaphor to describe indigenous ownership of traditional knowledge also, generating options for contractual mechanisms to ensure benefits return to source cultures and countries (Mays, et al., 1997). But, as time passes, the extinction rate of species and cultures continues to accelerate and human health further deteriorates from diseases for which no cures yet exist. How can we apply CBD lessons and more quickly move on to methods to implement it? Can countries facilitate access and encourage research and investment by companies, which, in turn, provide countries and cultures with a fair bargain from products that are commercialized? Have any case studies emerged that demonstrate this, and what questions still need answers?

### Plants as medicines

The IPR debate illuminates the vitality of biodiversity for human health. From ancient to modern times, plants have been the cornerstone of pharmacy. Species from tropical countries are valuable for the richness of their biological and chemical diversity, due, in part, to climatic conditions. In temperate climates, winter kills many plant

predators, and temperate plants flourish in the spring before predator populations increase. But since tropical species have minimal seasonal respite from predators, many have evolved chemical protection from countless predators. The plant chemicals that have evolved to increase plant resistance against bacteria and other infectious organisms of tropical plants may also provide protection and be therapeutically useful for human health. Today, one-fourth of our drugs are based on, or derived from, plants. In lesser developed countries, eighty percent of the population depend on plants for their primary health care.

### Countries

Most biodiversity-rich countries are located in the tropics of the South, but technology-rich countries, with resources to sustainably develop biodiversity, are primarily in the temperate North. Before the CBD codified the sovereignty of nations over their biodiversity, it was considered "the common heritage of mankind." Free access to biotic resources was available to all, with minimal legalized procedures to return benefits from commer-

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cialized products to source countries. The CBD now attempts to balance how all interest groups involved can gain from the sustainable use of biodiversity and its components. Northern countries can access the biodiversity of Southern countries by sharing technology and benefits that arise from its commercial use. It is the responsibility of each CBD Contracting Party, 169 nations to date, to devise a national biodiversity policy to document how this will work in their country, including a legal framework to implement it. India's state-funded Council of Scientific and Industrial Research, for example, has recently embarked on a patent program to protect its accumulated knowledge of herbal medicines.

### Companies

Since the CBD was introduced, a pharmaceutical product from tropical countries using traditional knowledge has yet to be commercialized. Economic profits have yet to be realized. Drug development generally requires expensive and time consuming studies to secure government regulatory approval before any drug may be marketed. In the US, a product typically takes from 10-15 years to materialize, after an investment of over \$300 million by the company and investors who take the financial risk to develop, test and market a new drug. For a new company, infrastructure such as buildings, equipment and research scientists' salaries must be paid be-

fore any product generates any revenues. To raise this huge amount of money to fund drug research and development (R & D), companies depend on venture capital, stock offerings, partnerships and the like — investments by outsiders into a company's high-risk, but high-gain ventures. Investors range from individuals to organizations and their investments are secured by patents. Patents provide intellectual property protection for the invention of the company, enabling investors to regain the funds they risked for R & D, if and when a product is commercialized. It is unlikely that any company or any investor will risk capital to discover or develop a drug unless their investment is protected from competing companies by a patent.

### Cultures

Seventy-four percent of the main 121 plant derived drugs have the same, or similar, use by native cultures. Rather than randomly collecting and screening plants, it is a more efficient strategy for some companies to use indigenous knowledge as a lead to pinpoint promising plants for new medicines. But few strategies directly address how indigenous knowledge can be accessed and equitable benefits can be distributed in a culturally sensitive manner that sustains the social systems that nurtured it. The difference between a market economy, based on individual ownership, and a communal economy, which typically shares its biological and cultural resources internally, means the culture group as a whole must benefit. Even fewer indigenous groups have been included in national discussions on these issues, or on interpretation and implementation of the CBD in their countries.

### A case study: Nigeria

In practice, a case study of how countries, companies and cultures can cooperate is that of Shaman Pharmaceuticals, Inc. in Nigeria. According to physician, Tom Carlson, Senior Director of Ethnobiomedical Field Research at Shaman, "In this West African country, rich in both biological and cultural diversity, indigenous medicinal systems thrive along with Western medical facilities. In 1995, the Nigerian government officially integrated traditional healers into the state-run national health service as health care providers and today, two-thirds of the health care practitioners are traditional healers of one sort or another" (Carlson et al., 1997).

Professor Maurice Iwu—a scientist and Director of the Bioresources Development and Conservation Programme (BDPC), a Nigerian NGO—explains, "the BDPC was organized in 1991 as a focal point for collaborative research relationships that build technical skills in Nigeria so bioresources are a viable vehicle for sustainable development. Improved skills generate pharmaceutical leads that target therapeutic categories for tropical diseases suffered in Nigeria such as malaria, leishmaniasis, and trypanosomiasis (Iwu, 1996)."

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### *Shaman Pharmaceuticals, Inc.*

Shaman Pharmaceuticals, Inc. entered this setting in 1990 and, through the BDCP, established a research relationship with Nigerian scientific institutions, village communities, and traditional healers and their organizations. The small California-based company began operations focusing on the discovery and development of novel pharmaceuticals from plants with a history of native use. Lisa Conte, President and founder of the company describes it, "As implied by its name, Shaman uses the science of ethnobotany, as well as isolation and natural products chemistry, medicine and pharmacology to create a more efficient drug discovery process. At the time of its incorporation as a for-profit corporation, Shaman also founded the Healing Forest Conservancy, a non-profit foundation established specifically to develop and implement a process to return benefits to Shaman's collaborating countries and cultures after a product is commercialized." Although the young company has not yet marketed a product, the use of ethnobotanical leads brought potential products to clinical trials within a record time frame (King, et al., 1996).

### *Immediate and medium-term benefits distributed in Nigeria*

Iwu and another Nigerian scientist, Cosmos Obialor, proposed initial discussions with healers and traditional leaders to talk about a collaborative relationship with Shaman well before the CBD was introduced in Rio in 1992. "We visited communities where we had worked for several years already," said Iwu, "including the villages where Obialor and I were born. Typically, each community, or village state, is autonomous with its own chief and government. Their community decision-making process includes the village chief, his advisors, traditional healers and the elders," Iwu added. After lengthy discussions, the groups felt that Shaman shared a common purpose with them consistent with their cultural values concerning human health. Out of these and other early discussions, the prior informed consent and compensation policies of the company were formulated. Prior informed consent discussions covered topics such as the intentions and goals of the project; how and where the plants would be analyzed; their potential for commercialization and benefit-sharing.

"Since then, four ethnobotanical field expeditions have been conducted," said Steven King, Senior Vice-president for Ethnobotany and Conservation at Shaman. "By choice of Nigerian collaborators, benefits have taken the form of workshops and training programs on public health, botany, conservation and ethnobotany; support for a medicinal plant reserve; supplies for village schools; botanical collection supplies for a herbarium; laboratory equipment for scientific research on plants that treat parasitic diseases prevalent in West Africa and support for Nigerian scientists to apply modern analytical techniques. Fulfilling company policy, immediate and medium term benefits, such as those above, totaling

over US\$200,000 (two hundred thousand dollars) have been distributed through programs to the various stakeholders in the collaboration as the expeditions occur."

Iwu added, "The company reports laboratory results back to participating communities regularly. General literature is published on medicinal plants from Nigeria, supplying public recognition of the benefits of traditional knowledge from Nigeria to society and human health. "

### *Long-term benefits*

After a product is commercialized, Shaman will donate a percentage of profits back to Nigeria and all other company collaborators through the Healing Forest Conservancy (the Conservancy) for as long as Shaman has a profit. The Conservancy will distribute these benefits, equally, to all the countries and cultures that are Shaman collaborators, regardless of where the plant sample or traditional knowledge that was commercialized originated. In a financially unpredictable industry such as this, spreading the benefits and risks among all Shaman collaborators increases opportunities for compensation (Moran, 1997).

Shaman and the Conservancy follow the CBD principle that when local custodians of biodiversity benefit from the sustainable use of their medicinal plants by others, conservation opportunities are increased. To resist pressure from other economic interests that may have adverse impacts on biodiversity, benefits to conserve it must be available at the local level. However, the absence of applicable models leaves this precept largely untested. To test the feasibility of using trust agreements as a vehicle for benefit sharing, the Conservancy donated \$40,000 (forty thousand dollars) to a trust fund in Nigeria for a pilot project.

The Fund for Integrated Rural Development and Traditional Medicine (FIRD-TM), an independent trust fund, was established by the BDCP as the financial mechanism for sustainable development of rural areas and to distribute benefits among Nigerian stakeholders. The board is balanced to reflect these interest groups, composed of leaders of traditional healers' associations, senior government officials, representatives of village councils from various ethnic groups and technical experts from scientific institutions. Chairman of the Board of Management of the Fund, His Royal Highness Eze E. Njemanze of Owerri, is a highly respected traditional ruler. The predominance of traditional solidarity systems, such as tribal associations and professional guilds of healers supplies a social structure to ensure community participation. Diverse culture groups in Nigeria will receive funds through traditional healers' organizations and villages consistent with their governing customs. Town associations, village heads and professional guilds of healers are empowered to make decisions regarding projects in their localities. Those funded will follow the criteria of promoting conservation of biodiversity and drug development, as well as the so-

cioeconomic well-being of rural cultures. At the local level, technical skills gained from benefit-sharing help standardize and promote phytomedicines, disseminating and sharing information that benefits traditional healers and the health of the communities they serve.

Inauguration of the FIRD-TM was announced in Abuja, Nigeria, on September 30, 1997, during an international workshop on medicinal plants attended by five Nigerian ministers and several heads of Nigerian government agencies, including the Director General of the Federal Environmental Protection Agency. The Honorable Minister of the Federal Capital Territory of Abuja stated, "...the skills of the traditional medical practitioners who are also the custodians of our native medical culture are now being accorded the right place in society."

The trust fund concept offers the added value of attracting and managing sources of financing from other NGOs, foundations or companies interested in contributing to a stable fund. When the Conservancy donation was announced, the Association of Indigenous Pharmaceutical Manufacturers and the Orange Drug Company of Nigeria pledged additional monies to complement the donation. Next year, the project will be evaluated and used to guide the Conservancy in developing a template trust fund process for use by all Shaman collaborators, other companies and foundations.

### Remaining issues

The case study of Shaman in Nigeria offers an example of how countries, culture groups and companies can cooperate for the benefit of all stakeholders to sustainably develop biodiversity for human health. It is but one of the ways to accomplish the goals of the CBD and each participant should continue to seek, identify and prescribe new techniques and paradigms that are best suited for conditions in each situation. The countries, cultures and companies involved are so diverse that actions can be effective only by addressing them in their unique cultural, economic and environmental contexts. The following issues have yet to be resolved.

- Nigeria offered a strategic alliance for Shaman, with intact institutional capacities, particularly at the village level. These autonomous systems, with their own chiefs and functioning governments, chose to use their traditional knowledge in the outside world to reach goals that they, as a group, decided were important to them. Different indigenous groups hold different beliefs about entrepreneurship and have different visions of what is a market. These differences should never be

an excuse to exclude indigenous groups from the sustainable use of biodiversity, for this is their, and only their, decision to make, and not non-indigenous NGOs, as it is often the case, who claim to represent indigenous views in deciding these matters.

- Article 8 (j) is the CBD section that addresses maintenance and respect for indigenous knowledge. But it offers only weak protection for culture groups and subordinates CBD obligations to national legislation. Legally, it is the Contracting Parties of the CBD, not companies' policies, that hold sovereign authority to decide if and how the sustainable development of biodiversity will be accomplished within their borders. The political climate of States under which indigenous groups live is critical to its success. Since indigenous groups are huge stakeholders in the issues put forth under the CBD, they must be included in their national discussions on interpreting and implementing the CBD. To ensure continuation of their cultural systems, they must fully participate and advocate for themselves and their own interests. If States are to be effective at conserving the worlds' species, their strategies must be built up through participation by the custodians of biodiversity, not imposed from the capital down.

- The affiliation of indigenous peoples with traditional territories sanctions and governs their ecological practices. Legal recognition of territorial rights by governments provides authority for indigenous groups to deny or permit outsiders access to them — the first step in biodiversity conservation through traditional land and resource management. But this priority issue was given only minimal attention at a recent CBD workshop in Madrid attended by both governments and indigenous groups. A lost opportunity, many stated. Others saw the meeting as a first step where progressive prescriptions for biodiversity conservation through territorial rights, such as Act No. 8371, a recent federal statute in the Philippines, could be announced. It remains to be seen in the next forum whether biodiversity conservation through territorial rights will again be subsumed by competing agendas (Burgiel, et al., 1997).

- Accurate information is essential. It is incumbent upon all CBD stakeholders to develop a clear understanding of exactly what IPR are and what they are not. They are not a surrogate legal right for land and human rights and frustrations arise from attempting to use IPR in ways not originally intended. What will succeed is for countries, cultures and companies to share their experiences cooperatively, since no single paradigm will work for all. The conservation and sustainable development of biodiversity require a diversity of approaches.

*This article is a slightly modified version of the article entitled **Moving On : Less Description, More Prescription for Human Health** by Katy Moran, in *Ecoforum*, Journal of the Environment Liaison Center International, Vol. 21, No. 4, January 1998. For more information on this subject, please contact Katy Moran, Executive Director, The Healing Forest Conservancy 3521 S Street, NW — Washington, DC 20007 <MoranHFC@aol.com>*