



Global Trade and Biodiversity in Conflict

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Biodiversity for Sale

Dismantling the hype about benefit sharing

One of the three central pillars of the Convention on Biological Diversity (CBD) “*is the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.*” The signing of the Convention was seen as a great victory for the South. In a world in which industrialised countries had long been plundering the biodiversity and traditional knowledge of communities in the South, the Convention was seen as a beacon to bring forth equity and justice. Five years after its enactment, has the flow of benefits been re-channelled towards the South? Where does benefit sharing stand in terms of farmers and indigenous peoples? The answer is that there is very little to show in new and substantial benefits being accrued by the South in general, or by local communities and indigenous peoples in particular. Rather, what seems to be happening is that the original intention of the CBD, which talks about benefit sharing in a broad and integrated sense, is increasingly being hijacked by an exclusively commercial approach.

This briefing questions whether the world’s primary custodians of biodiversity, local communities and indigenous people, are getting a fair deal. It looks at the implications of the move towards ‘biotrade’ and discusses the validity of intellectual property rights as benefit sharing tools, or as tools to protect indigenous knowledge. It ends with some proposals to bring the benefit sharing discussion back to the basics, taking into account the intrinsic value of biodiversity for local livelihoods and the multiple benefits generated from its use at that level:

Empowerment and control:

It is the accumulated knowledge and practices of local communities that have protected and enhanced biodiversity over generations. For

many communities, their main concern in relation to the management of biodiversity is the steady erosion of their control over local resources and knowledge. Their needs and interests, rather than those of the bioprospectors, should be the starting point in any discussions on benefit sharing. Supporting biodiversity-based livelihood strategies should be a prerequisite for any benefit sharing initiative.

Not by trade alone:

Everyone will suffer if biodiversity, and the local knowledge that goes with it, is turned into merely another commodity inequitably traded between the poor and the rich. It is of highest importance that the discussion on benefit sharing takes into account the intrinsic value of biodiversity for local livelihoods and the multiple benefits generated from its use at the local level.

Community rights, not privatisation:

Strong community rights that recognise the collective nature of local innovation, promote its development and application, and shield biodiversity and indigenous knowledge from privatisation, must be developed and implemented. This is of the utmost importance because private ownership violates the very nature of community rights and, in the case of genetic resources, limits access to collective heritage to only a few. Only when collective rights are recognised, will indigenous peoples, local communities and developing countries stand to gain anything from discussions on the fair and equitable sharing of benefits.

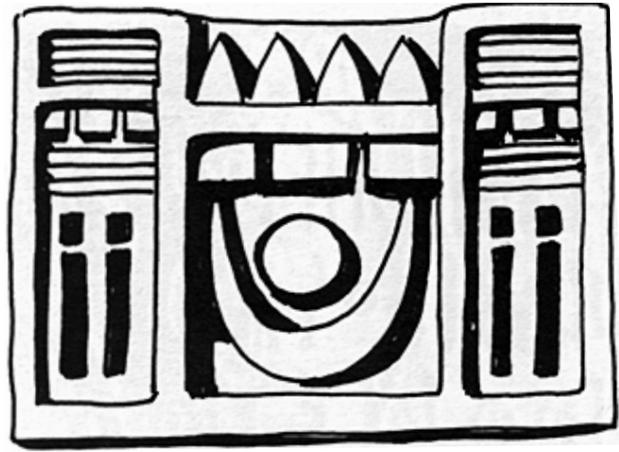


1. Introduction

When the United Nations Convention on Biological Diversity (CBD) entered legal force in late 1994, national sovereignty replaced the old “Common Heritage of Mankind” view of biodiversity. Overnight, animals, plants, micro-organisms and possibly even human genes were turned into a resource for governments to regulate and watch over. It was argued that one of the main advantages of this shift was that it would enable Southern countries, where most of the world’s biodiversity is found, to benefit more from these resources. One of the three central pillars of the Convention relates to benefit sharing: its very first article stipulates that the CBD will ensure “*the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.*” The signing of the Convention was seen as a great victory for the South. In a world in which industrialised countries had long been plundering the biodiversity and traditional knowledge of communities in the South, the Convention was seen as a beacon to bring forth equity and justice.

Five years on, has the flow of benefits been re-channelled towards the South? Where does benefit sharing stand in terms of farmers and indigenous peoples? The answer is that despite all the talk there is very little to show in new and substantial benefits being accrued by the South in general, or by local communities and indigenous peoples in particular. Rather, what seems to be happening is that the original intention of the CBD, which talks about benefit sharing in a broad and integrated sense, is increasingly being hijacked by an exclusively commercial approach. Selling biodiversity and related knowledge has become the main focus. Hardly a week goes by without the latest ‘ABS’ (Access & Benefit Sharing) meeting being held. A growing army of ‘honest brokers’ and professional ABS lawyers are eagerly offering their services to mediate between corporations and communities. The result of this ABS hype is that the CBD is now in danger of being turned into little more than a charter for trade in biodiversity.¹

The rhetoric around biotrade and benefit sharing is intense and complicated; but this briefing looks at it in simple and sober terms. It begins with an analysis of the current discussion on benefit sharing, and where it is leading. It then looks at what the move towards ‘biotrade’ really means, and analyses a



few cases in this respect. It discusses the initiatives to promote intellectual property rights as benefit sharing tools, or as tools to protect indigenous knowledge. It ends with some proposals to bring the benefit sharing discussion back to where it belongs, taking into account the intrinsic value of biodiversity for local livelihoods and the multiple benefits generated from its use at that level.

2. Tunnel vision around benefit sharing

It is very easy to get overwhelmed by the literature on benefit sharing. Since the Rio Earth Summit in 1992, an enormous amount has been written on the subject. The CBD Secretariat alone has published over 500 pages of benefit sharing studies. At the same time, the rhetoric around benefit sharing has become highly abstract and difficult to understand. But despite the amount of paper, the scope of the benefit sharing debate is actually very narrow. Almost without exception, benefit sharing examples focus on bilateral and contractual agreements, generally between some company or institute from an industrialised country interested in a resource or knowledge, and some country or community from the South that can provide it. Benefit sharing is defined from the perspective of the bioprospector: how much money is paid, and whether other non-monetary benefits flow to the provider (see box opposite). This is an extremely limited and commercial interpretation of the benefits arising from genetic resources. It totally ignores the benefits that local communities themselves derive from biodiversity for their livelihoods, their health, and their food security. It ignores the benefits from the results of public research on biodiversity made available to society as a whole. By cutting out what a recent Swedish Governmental study calls ‘user

Royalty Nonsense: 50% of What?

Most benefit sharing agreements are obsessed with royalties. But often the real meaning of published royalty figures is unclear, sometimes they are even deliberately confusing. Typically, royalty figures shown in benefit sharing case studies quote a percentage of an undefined whole, or refer to a sub-percentage of an unknown fraction of product sales. For example, in 1995 Washington University (St. Louis, Missouri), in partnership with Monsanto and the US government, wished to conclude a patent-based benefit sharing agreement to prospect for plants and traditional knowledge on Aguaruna and Huambisa land in the Peruvian Amazon. In briefings with Aguaruna representatives, Washington told indigenous people that they would receive a 25% royalty. The Aguaruna understood this to mean that they would receive 25% of the profits from Monsanto's patented products based on samples and knowledge from their land. In reality, the 25% royalty represented a quarter share of Washington University's (approximately) 1% of Monsanto's royalties. In other words, the contract said that the Aguaruna would receive only one hundredth of what they thought was their share - 0.25% instead of 25%.

A problem of the past? Unfortunately not. In the 1998 case study for the CBD on the International Cooperative Biodiversity Group (ICBG) program in Africa,² equally ambiguous royalty information is presented. The study obliquely mentions that intellectual property will be managed by Walter Reed, a tropical diseases research outfit of the US army. This is an indirect way of saying that any patents belong to the United States Army. The study then explains that the African members of the ICBG project wanted the US Army to own the patents on African plants and knowledge because "*it is unlikely that multinational pharmaceutical companies would respect [African NGO] IPR.*" Perhaps the assertion is true, but neither does the US Army care about African intellectual property. It is interested in owning tropical disease treatments so that US soldiers do not get sick the next time they land in a tropical country.

Under the preposterous pretence that Africans have enlisted the US Army to fight for them against the international pharmaceutical industry, the study reports royalty figures. It says that the US Army would give 20% of "*all royalties and other considerations*" to the inventors, 50% of "*all royalty income and other considerations*"³ to a US NGO working on bioprospecting in Nigeria and Cameroon, and 30% of "*all royalty income and other considerations*" to the Army institute's own tropical disease research programme.

50% for conservation might sound generous. But, 50% of what? It is not 50% of profits from inventions, or 50% of sales of any drugs, it is simply 50%, less costs, of the few percentage points of royalty the US Army might theoretically get from an interested pharmaceutical company. But, by the author's own admission, the likelihood of such interest is low because the project targets tropical diseases that multinational pharmaceutical companies aren't interested in because they are not profitable. This is a telling admission: despite many pages elaborating the details of benefit sharing arrangements, the authors admit that they will probably never be realised.



values', and only looking at the marketable exchange values, the benefit sharing discussion totally circumvents thorny issues such as the balancing of benefits between the North and the South, between the formal and informal sector, and between the private and public domain.⁴ These are the very issues that should be central to any benefit sharing discussion, but at the moment they are largely absent.

Limiting the interpretation of benefit sharing to commercial terms has many serious implications:

2.1 Fair and Equitable?

By focussing almost exclusively on commercial bilateral contractual agreements, the vast majority of uses of genetic resources for which benefits should be shared remain outside the picture. The world community continues to benefit enormously from food and medicine developed by indigenous peoples and local communities, and very little of this contribution can be traced back to individual groups. Also, bilateral and contractual benefit sharing excludes a large group of stakeholders, namely all countries and communities which could provide the



same genetic resources or knowledge to the bioprospector. This situation encourages a 'race to the bottom' approach on the part of the bioprospector, who will make a deal with the party offering the lowest terms and excluding all others.

2.2 Commercial myopia

Regarding biodiversity as merely a marketable commodity ignores and potentially undermines the crucial role that it plays in sustaining local livelihood systems. Biodiversity continues to be the central cornerstone on which billions of people directly depend for their day to day livelihoods. Prioritising the selling of biodiversity to a foreign buyer over and above its sustainable use at the local level can potentially lead to disaster in the same way as the indiscriminate pushing of cash-crop economies into traditional societies has often directly contributed to food insecurity, undermined local health systems and exacerbated genetic erosion. Making the exploitation of biodiversity dependent on the waves of the boom-and-bust cycles of internationally-traded commodities carries huge risks for communities and biodiversity.

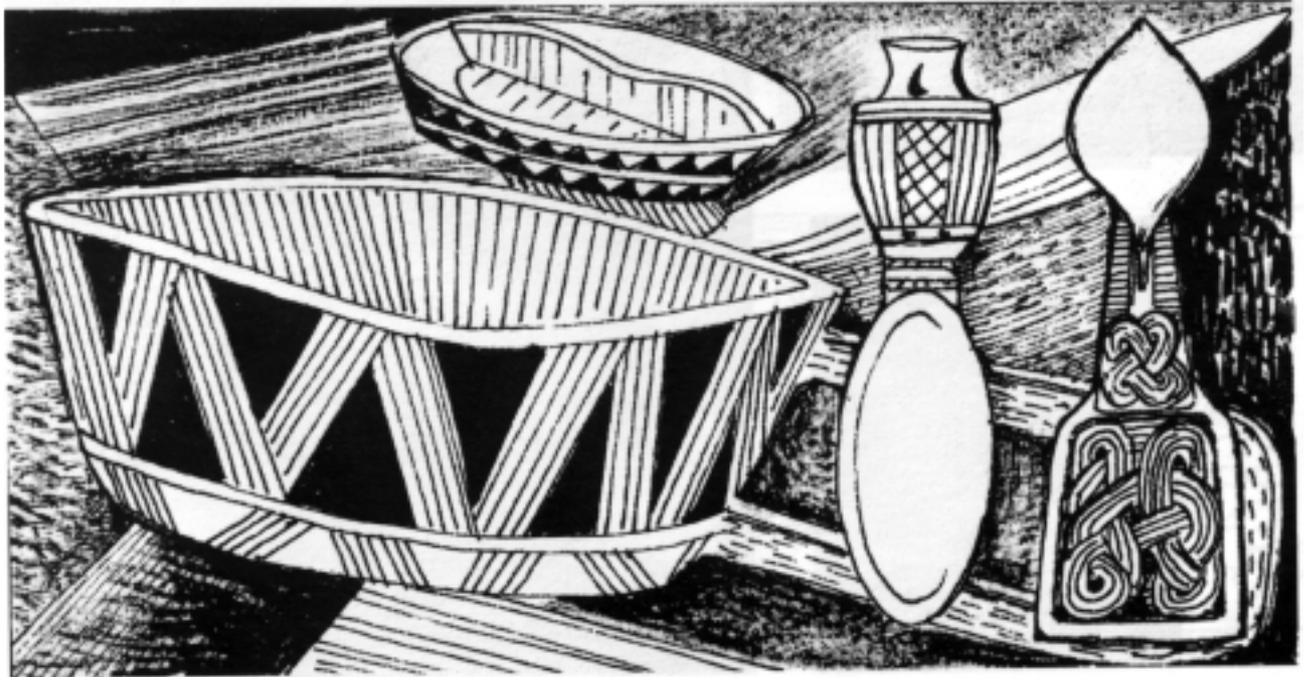
2.3 Expert bias

The logic of benefit sharing through bilateral contracts is generating a new breed of specialists and institutions that do not necessarily serve the aims of conservation and sustainable use of biodiversity. Crucial public sector research focussed on locally-adapted food and health systems is being elbowed out in favour of contractual deals that funnel resources away from local concerns. The picture is one of an increasingly closed ABS circuit that discusses, publishes and meets internationally, but has precious little to show in supporting sustainable biodiversity-based local livelihood systems. The interests of local communities and indigenous peoples are being talked about by the 'experts', but the actors themselves are largely absent from the debate.

2.4 Culture clash

Introducing the culture of exclusive deals based on potential royalties and other benefits can easily create mistrust and confusion within and between communities, and undermine traditional exchanges and benefit sharing systems. A representative of PRATEC, a Peruvian NGO working with Andean peasants, puts it this way: "We can undermine [cultural values] by changing the practice of 'making friends' into 'signing contracts' so dear and fair to well-meaning Westerners."⁵ At the same time cases have been documented where disputes



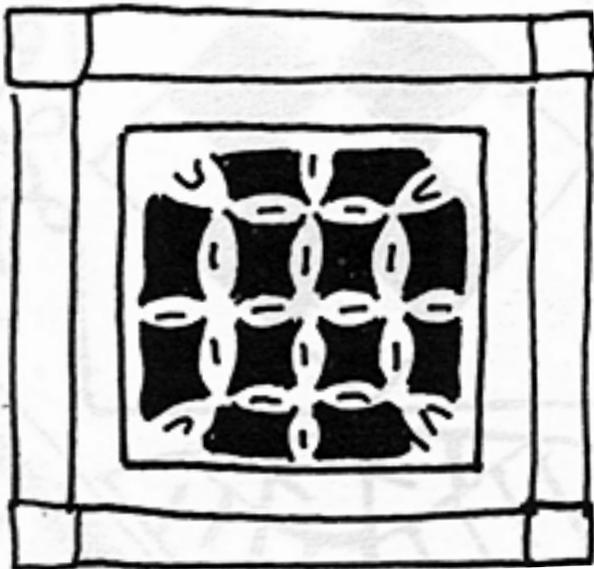


Benefit Sharing as a Profession

A relatively small number of highly motivated persons have made benefit sharing and access to genetic resources their primary professional vocation. They are prolific writers, but their work is increasingly characterised by a specialised and alienating language that restricts participation. This “professionalisation” of benefit sharing is having negative consequences on the quality and clarity of published information, and the credibility of the benefit-sharing debate.

First and foremost, there is a crisis of transparency that is preventing a fully informed discussion. Many, perhaps most, authors on benefit sharing are themselves participants in bioprospecting agreements - as plant collectors, inventors, brokers or funders. After negotiating a benefit sharing agreement, bioprospectors often turn to promoting their approach through writing and advocacy. Of course there is nothing wrong *per se* with bioprospectors writing about their experiences; but there is a devil in the details. No corporate bioprospecting agreements - anywhere in the world - are currently public. In all cases, most of the important aspects remain secret. The authors pick and choose which details they want to make public, and which they would like to hide. Thus, the truth is revealed on a subjective, selective basis skewed in favour of advocates of an IPR and commercially-oriented vision of benefit sharing. As a result, policymakers are continually asked to make decisions on the basis of incomplete information.

ABS authors are all in essence saying “*trust us.*” They promote their approach to benefit sharing, but do not release full details of the contractual arrangements they develop for public scrutiny. In fact, many bioprospectors actively resist public scrutiny. For example, the World Foundation for Environment and Development (WFED) is currently fighting NGOs in US federal court to prevent disclosure of a contact it developed to bioprospect in Yellowstone. Meanwhile the US National Institutes of Health (funder of many bioprospecting cases) has been extraordinarily slow to respond to US Freedom of Information Act (FOIA) requests, and claims exemptions in FOIA allow it to prevent the public from seeing large amounts of information about its bioprospecting projects.



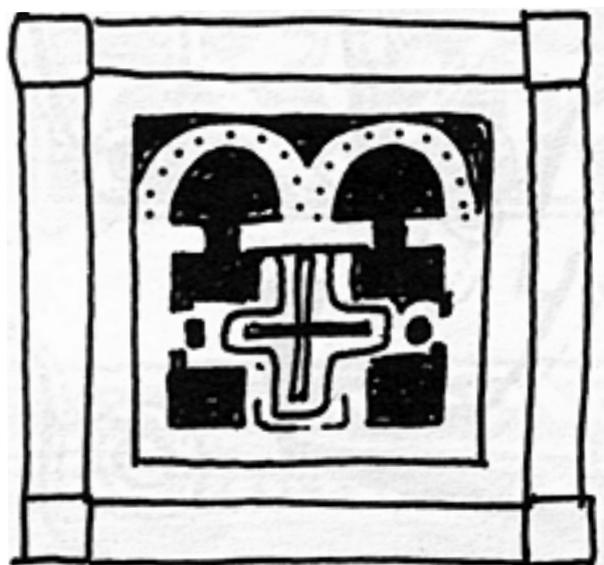
have arisen regarding the acceptability of sharing knowledge that was considered sacred by some members of the community. This is exactly what happened to the Kani tribe of Kerala over a fruit known as Arogyappacha. In this case the deal “contributed to animosities within an already divided tribe, and the problem of how to share benefits with those who oppose the programme remains largely unsolved.”⁶

It is important to be clear that the question is not whether and to what extent a specific agreement or contract can be beneficial to a local community or group of indigenous people. In specific cases the signing of a biodiversity agreement can be a valid strategy for local communities, indigenous peoples, or governments to obtain benefits or to protect local innovation. There certainly are cases where consent has been obtained, agreements have been made, and certain benefits have flowed to the local level. The issue here is that commercial bilateral biodiversity transactions are being pushed as *the* model for benefit sharing.

This is very clear if one looks at the recommendations coming out of CBD meetings. In October 1999, a CBD Panel of Experts got together in Costa Rica to discuss benefit sharing in detail. The fact that the setting was Costa Rica is not insignificant. INBio (Instituto Nacional de Biodiversidad, a national NGO) elevated the discussion on benefit sharing to international levels many years ago, when it signed a bilateral agreement with the US pharmaceutical giant Merck, giving the multinational the right to exploit the country’s rich

biodiversity. Not surprisingly, the expert group concluded that, “*Contractual agreements are the main mechanism*” to deliver benefits from biodiversity.⁷ It acknowledged the need to temper transparency with confidentiality and to accommodate industry’s demands for intellectual property rights, in order to keep companies interested.⁸ Accordingly, the perceived needs for capacity building at local governments and community levels were translated into the development of inventories, contract negotiation skills⁹ and legal drafting skills. Some recipe for the “*fair and equitable*” sharing of benefits!

Benefit-sharing proponents seem to be reinforcing the problem as they search for its solution. It was the increasing control of genetic resources by a few industrial conglomerates in the North that gave rise to the benefit sharing debate in the first place. It was the perceived inequity of commercial actors in rich countries making money on the back of local communities in poor countries that led to the call for the “*fair and equitable*” sharing of benefits. Is the solution to turn the farms and forests of the South into a biological marketplace, or is the challenge to promote the sharing of the benefits through improving the public and community use of that diversity? Experience to date with biotrade initiatives does not inspire confidence in the former approach.



3. The Green Gold rush

One of the great potential benefits for the South in bioprospecting agreements is lucrative export markets for plants and plant products. Biodiversity, often termed Green Gold, promises to provide new income opportunities for Southern countries and local communities. The government of Brazil's website, for example, announces "*new opportunities for investments in extractive industries of the Amazon rainforest*," and offers potential investors several products to start developing¹⁰. Many scientists in under-funded research institutions in the South eagerly look to contracts with research outfits in the North, expecting to obtain the much needed cash, computers, training and other benefits in return for handing over rights to their country's biodiversity. Local communities are led to believe that they could be sitting on an indigenous knowledge goldmine.

Unfortunately, those who pin their hopes on the green gold rush are, in the vast majority of cases, likely to be in for a disappointment:

3.1 Against the odds

Very few discoveries resulting from bioprospecting agreements are actually translating into profitable products, meaning that benefit sharing provisions have almost never been seriously implemented. In addition, Northern rules of the game regarding ownership (intellectual property rights) make it very easy for companies to ignore the contribution of indigenous knowledge to their products. For example, they can gain free access to the South's genetic resources through accessing publicly available *ex-situ* collections, or they can make small chemical twists to the compounds so that they can be considered distinct from the originals, thus enabling them to claim ownership over them.

Grappling with the Harpago Trade ³²

Harpago (*Harpagohytum procumbens*), a medicinal plant from Namibia, South Africa and Botswana, is growing in popularity in Northern markets. Also known as Devil's Claw or Grapple, it is sold to treat a number of ailments, including arthritis. US consumers pay about US \$10 per diluted one ounce bottle of plant extract or, at retail prices, the equivalent of more than \$700 per kilo of *harpago* extract.

Most *harpago* on the international market comes from Namibia, where collectors are paid between US \$0.16 and \$0.66 per kilo of dried plant material. *Harpago* leaves Namibia at between US \$2.30 and \$3.28 per kilo. According to Cyril Lombard, who works with the Sustainably Harvested Devil's Claw Project (which aims to improve the terms of the trade for collectors), in most cases collector and export prices tend to the lower side of the range. The precise economics of the *harpago* extract-making business are obscure, but the objective is to obtain extracts containing standardised levels of harpagosides, the "*active ingredient*" in the plant. Dried plant material typically contains 1-2% harpagosides. Commercial plant extracts, like that produced by Italy's botanical medicine giant Indena, contain 1.5% harpagosides, indicating a flat ratio of active ingredient between raw material and commercial extract.

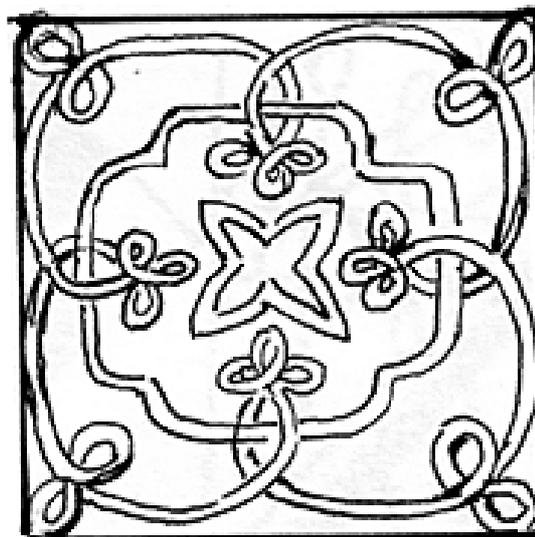
Based on these figures, more than 99% of the value of *harpago* trade is captured by European and US companies. Of the approximately 1% that accrues to Namibia, only about 0.06% typically goes to the farming families that collect the plant. The African families struggling to make a living in the *harpago* business hope that over time they will get a fairer deal. Says Lombard, "*What the present suppliers of this raw material want is so basic, yet so difficult to achieve. They want decent prices, they want to be kept in the supply chain in the longer term even if the resource [can be] eventually sourced from cultivated supplies, and they want to gradually do more and more value-adding in-country.*" Meanwhile, herbal medicine companies are busily patenting methods to make extracts and pharmaceuticals from *harpago*, thereby making sure that these aspirations will not be realised. Recent IPR claims on *harpago* include Choongwae Pharmaceutical of South Korea (US 5929038), Finzeberg Nachfolger GMBH (WO9744051), and Willmar Schwabe, Germany - part owner of Natures Way company (WO9734565).

3.2 Cash and carry

Communities interested in entering into bioprospecting agreements are often not in a strong bargaining position. Many plants of therapeutic interest grow, or could grow, in a number of different countries or districts, meaning that companies can take advantage of the lack of awareness of the commercial value of potential products amongst some communities and get bargain basement prices. In addition, companies will always prefer to grow medicinal plants on plantations or develop synthetic methods to make the active ingredient. In the case of botanical medicines, according to one study, *“The industry wide trend is to move big selling species into cultivation as quickly as possible.”*¹¹

3.3 Patents, not plants

When companies find a product they want to market, they almost always seek to protect it with a patent, in order to gain a monopoly on commercialising it. In order to patent a product, it must be considered to be novel (ie a discovery) and to involve an inventive step. Many commercial products based on indigenous knowledge do not fulfil these requirements because they are not new to the communities that supplied the knowledge about them and companies often simply extract the chemical of interest, but companies and patent offices often conveniently ignore this. When these discoveries are patented, complete or effective ownership is vested in the bioprospecting company, not the source country. Communities derive a great deal of financial and, more often, non-financial use value from biodiversity. But for companies, it is the patent that is of value, not the plant. The value of Southern biodiversity lies, for them, in the creation



of intellectual property (ie gene and compound patents). Once the intellectual property is established, economic logic dictates that commercial supplies of a product will be drawn from the cheapest and easiest route possible.

Thus, the ‘Green Gold’ promise is based on extremely shaky assumptions. It is not necessary to look very far back in history to see the wrecks left behind by the obsolescence or replacement of hot natural products from the South that fed the North’s industries. Booms and busts in such products have been the norm, rather than the exception. The rubber booms, for example, in the Belgian Congo and Western Amazon, were cut short by production from plantations in Asia and, later, petrochemicals and other synthetic products.

4. Busts without the boom

Of all the industries that rely on genetic resources and indigenous knowledge, the pharmaceutical industry has had the most experience in developing access and benefit sharing agreements. These companies tend to understand the implications of the CBD and some have worked quite hard to implement its provisions. But their strictly commercial approach to benefit sharing has had little positive impact at the local level, and often seems to create more problems than it solves:



4.1 Shaman: big ideas and small realities

Since the mid-1990s, Shaman Pharmaceuticals /Shaman Botanicals' interest in *sangre de drago* (Croton sp) has attracted a great deal of attention. Shaman's only marketed product comes from this rainforest shrub/tree, on which the company has obtained several patents. Within its own self-imposed terms, Shaman is serious about benefit sharing and is upset at the considerable criticism it has received. But many indigenous people and NGOs feel that the indignity of the company's patents and commercialisation of indigenous knowledge far outweigh the benefits being offered.

Failure to get regulatory approval as fast as it hoped for its pharmaceutical product meant that the California-based firm came very close to filing for bankruptcy in mid-1999. It was able to raise US \$10 million in new capital to keep the company afloat for a little longer, but it is unlikely to be able to attract further venture capital. Under pressure to generate revenue, Shaman has reinvented itself as a phytomedicine company and begun to sell its *sangre de drago*-derived medicine as a "dietary supplement" from its internet website. The company has contracted with a group of Peruvian indigenous people to supply it with *sangre de drago* latex, made propositions in Ecuador, and requested NGOs in at least one other Andean country to assist it in locating indigenous

The Sweet Smell of Success?³³

A domesticated cultivar native to the Pacific, *kava* (*Piper methysticum*) is among the most popular medicinal plants sold in the North. Viewed by the herbal industry as a great success, *kava* is a mild intoxicant sold to relieve stress. *Kava* was unknown in the US at the beginning of the decade; but is now sold in a dizzying array of forms, from ground root in capsules, to tablets, liquid extracts, powders and teas. Depending on the specific product, Americans pay between US \$253 and \$2,486 per kilo of active ingredient (generally plant extracts with concentrations of kavalactones). By comparison, the market price per kilo of *kava* root in Apia, Samoa is US \$5.95 - \$6.62. Although *kava* prices are at or near an all-time high across the Pacific and the *kava* trade is hyped as a model for benefit sharing, *kava* farmers typically only receive between 0.25% and 2.5% of the proceeds from the booming *kava* sales in Northern markets.

Samoa, Vanuatu, and Fiji currently enjoy a major advantage in commercial *kava* cultivation. *Kava*'s cultural importance there led determined farmers to continue to cultivate the plant, even when Christian missionaries attempted to repress its cultivation. Because of this, local farmers have maintained the skill and knowledge required to successfully farm the plant and have nurtured 118 cultivars. But the export boom appears set to crash within a few years. Herbal companies like Pure

World Botanicals (US) and others are looking at *kava* cultivation in the US state of Hawaii, the French colony of New Caledonia, Queensland in northern Australia, and even Mexico. *Kava* from Hawaii is beginning to come onto the market in significant quantity and as countries with far greater acreage to sow than the small Pacific Islands come on line with *kava* harvests, the premium currently enjoyed by a few states seems certain to disappear.

There are other problems arising from the sudden increase in demand for *kava* exports. In some communities there are concerns about the commercial trade of a crop with strong traditional ties. As one NGO worker points out, "*Kava has already been hijacked - in traditional custom, you do not harvest the kava for money.*" Increased demand from export markets has also doubled the price of *kava* locally, making it less available for local people. Some predict that this will make alcohol an attractive alternative.³⁴

Patent claims on processing, preparation, and use of *kava* have been sought by the herbals industry. These include French companies LOreal (EP 0672046) and Sederma S.A. (WO 9925369), Germany's Willmar Schwabe (DE 4028945), and Japan's Lion Corp (JP 1007464) and Shiseido (JP 09067238).

peoples who might be willing to enter into agreements with it. Meanwhile, another phytomedicine company Rainforest Phytoceuticals is actively promoting the cultivation of *sangre de drago* as a crop and convincing peasant farmers to take it up.¹²

Despite Shaman's minimal sales, Amazonian peoples have been harvesting and planting *sangre de drago* with the hope that sooner, rather than later, the world will beat a path to their door for this new miracle drug. Given the low demand, Shamans' needs could likely be served by only a few communities, maybe even just a few individuals. But, according to the company's benefit sharing plan, this tiny market is to be divided between Peru and other countries where the plant is used, including Bolivia, Ecuador, Colombia, and maybe even as far north as Mexico. It looks likely that the boom will never happen. If the market does not take off and Shaman goes under, it is the indigenous peoples that harvest the plant and the farmers that cultivate it who will feel the impact most sharply since their livelihoods have become dependent on the plant.

4.2 Korups unrealised anticancer drug

Another example of a boom that never happened is the market for the *Ancistrocladus korupensis* vine, which is found in the Korup forest of Cameroon and in neighbouring areas of Nigeria. *A. korupensis* is the source of the michellamine and korupensamine drugs isolated and patented by the US National Cancer Institute (NCI). *A. korupensis* compounds, ways of using them, ways of synthesising them, and ways of

creating closely-related chemicals have now been the subject of at least 11 US patents granted since 1995 and owned by the US government, Boston College, the University of Minnesota, and Aphios Corporation (US).

While the compounds, especially michellamine B, have shown promise for treating AIDS, their toxicity in animals was so high that NCI abandoned the research program. Michellamine B-related patents are now being offered for sale on the US National Institutes of Health website, with and without obligations to Cameroon, depending on the particular patent. This is a pretty anticlimactic outcome for all parties concerned, but it has hit particularly hard in Cameroon, where there had been significant activity in the mid-1990s in preparation for an anticipated market. NCI supported the efforts in Cameroon while, at the same time, it pursued ways to make synthetic michellamine. NCI put what it describes as "considerable" effort into developing sustainable *A. korupensis* farming in Cameroon: developing agro-

forestry schemes, plantation agriculture, and gearing up small farmers. An unknown number of farmers in the 100 villages of the region made some commitment to *A. korupensis* farming. It now appears that their efforts have been futile and precious little thought was given to how such an outcome would affect the farmers incomes and livelihoods.



4.3 *Jaborandi*: fostering dependence

Yet another example of dubious benefits for local communities is the case of *Jaborandi* (*Pilocarpus jaborandi*), a medium-sized shrub from Northern Brazil. The leaves of the *Jaborandi* shrub have been known by indigenous communities for its medicinal properties for many centuries. The alkaloid pilocarpine was identified as the active component as far back as 1875, and it is now used in ophthalmology, as well as to treat xerostomia (dry mouth). In the local languages of indigenous peoples in Northern Brazil, *Jaborandi* means “*what causes salivation, or produces saliva.*” Extracting pilocarpine from the leaves of *Jaborandi* continues to be cheaper than synthesising it, and for more than 20 years *Jaborandi* has been collected by an estimated 25,000 indigenous peoples in Northeast Brazil. The German company E Merck and Co works, through a local subsidiary, with the local communities in the collection, but has also



developed a cultivated form and owns large plantations in the state of Maranhao.

People visiting one of the major centres of *Jaborandi* collecting report that the communities involved have “*become totally dependent on commercial plant extraction to the detriment of other aspects of the local economy and the general social welfare and psychological well-being of their community.*” Benefits promised to the community - steady income, roads, schools, clinics - never materialised. However, if E Merck and Co decided to move all production to its plantations, or started to synthesise the product more economically, the indigenous peoples would lose their only source of income.¹³

Prostahelp: Who is Being Helped?

The subject of a benefit sharing case study submitted to the CBD,³⁵ *pygeum* (*Prunus africana*) is an African medicinal plant (generally produced in Cameroon). It is in such high demand in Europe and North America (with annual sales of \$150 million) that the tree has been harvested to the point that is now listed by CITES (The Convention on International Trade in Endangered Species) as a “*vulnerable species that requires monitoring*”. It is sold to treat several illnesses, particularly enlargement of the prostate gland. In the US, a one ounce bottle of diluted *pygeum* extract sells for more than US \$14, the equivalent of \$991 per kg of pure plant extract. One US company, Prostahelp, has patented a *pygeum*-containing medicine called “*Urinozinc*” (US 5543146), which purportedly helps prevent baldness in addition to prostate problems.

According to the study, Cameroonian *pygeum* bark collectors are paid US \$0.17 - \$0.35 per kg of bark. On average, 205 kg of bark is required to produce 1 kg of *pygeum* extract. This means that 96.5% of the income from the *pygeum* trade is captured by foreign companies and not by Cameroonian farmers. Under the improved terms for collectors being promoted by NGOs and the government in Cameroon, a few Cameroonian collectors (only about 60 persons in all) have a slightly better deal that permits them to capture about a 5%-6% share.

While on the surface the *pygeum* trade appears to offer slightly better terms than most herbal medicines, a quick look at the practicalities suggests otherwise. In order to earn a modest US \$10, the vast majority of Cameroonian *pygeum* collectors must (manually, of course) remove almost 60 kilos of bark from trees. Under the “*improved plan*” described in the study, to earn the same \$10, collectors have to strip a mere 28.5 kilos of bark from *pygeum* trees. Because of overharvesting concerns, there are limits to the number of kilos a collector can harvest per day, as well as limits on the number of kilos the company, Plantecam (France), will accept at the higher pay rate. They mean that collectors in the small experimental program are limited to only about five and half days work each per month. Which leads to question of whether the cost of overharvesting is being borne at the proper level.



These examples from the pharmaceutical sector do not inspire confidence in the ability of the bilateral, contractual benefit sharing model to provide terms which are anything approaching “*fair and equitable*”. But what about other sectors of industry? Perhaps the booming herbals industry, with its eco-friendly image and its links with indigenous peoples and their knowledge can offer some more credible examples of benefit sharing?

5. Herbals - new hope for benefit sharing?

Many Southern countries have had well-established herbal (or botanical) medicine industries for centuries. But since the early 1990s, the international market for herbal medicines has boomed - growing by 10-20% each year. Herbals are by definition plant medicines, and many of them come from the South, including some of the industry’s best sellers. Moreover, the herbals industry is almost entirely dependent on traditional knowledge for the markets built around herbal medicines. Not only is traditional knowledge used to identify and prepare herbal medicines, but the cultural links herbal medicines have to indigenous peoples are actively used by industry to market their goods to upscale, educated Northern consumers who want to buy a bit of the rainforest with their purchase. Given these factors, the herbals industry should logically be a leader in implementing the benefit sharing provisions of the CBD.

Until recently, the North’s herbal medicines industry operated in a different fashion from the formal pharmaceutical sector. The herbals industry essentially claimed that while big pharmaceutical companies ignored traditional knowledge and depended heavily on synthesis and patents, herbals were a friendlier, greener alternative bringing

consumers natural (presumably safer) medicines imbued with ancient wisdom and respect for native peoples. The reality is rather more blurry. The formal pharmaceutical sector has always had a significant level of dependence on natural products and traditional knowledge, while the herbals industry has never been patent-free. But one important distinction remains: formal pharmaceuticals continue to go through the full regulatory process to be sold as prescription drugs, while herbals are generally sold, especially in the US, as “*nutritional supplements*.”

During the 1990s, two forces combined to permanently change the conventional lines between the herbal and formal pharmaceutical sectors. First, as Northern governments have taken to granting more and more biodiversity patents, many herbal medicine makers have become aggressive claimants of intellectual property on medicinal plants. The second major change was a dramatic increase in sales that attracted the pharmaceutical and food processing industries, forever ending the days of small companies dominating the herbal market. In 1996, the global market for corporate herbal medications (i.e. excluding non-company markets like traditional healers) was US \$14 billion¹⁴, and US demand is estimated to be growing at 15-18% per year.¹⁵



6. Marketing and sharing the benefits of “Ancient Wisdom”

All diversified herbal medicine companies have an open dependency on indigenous knowledge. A large and boisterous group of these exploit their links to indigenous knowledge to the utmost, playing up their links to “shamans”, “healers”, “ancient wisdom”, and “rainforest cures.” They attempt to imbue their companies with a biodiversity-friendly image, wrapping themselves in Northern mythology about indigenous peoples. At the same time, the indigenous knowledge being marketed is carefully cleaned up and subjected to so-called scientific studies to accommodate Northern consumers associations of medicine with PhDs and sterilised laboratories. These companies freely appropriate the knowledge and culture of indigenous people and market it however they wish, often in a vulgar and distorted way that is at dramatic odds with many indigenous peoples values. While the most offensive culture vultures among herbal companies are not representative of the whole industry, the quieter marketing of many other companies does not absolve them of the same basic problem.¹⁶

Table 1 (page 14) analyses benefit sharing in the botanicals trade. While it and the more detailed studies outlined in boxes focus on prices, they should not be understood as simply making the case for better economic terms of trade for farmers and indigenous people. Instead, they show the systematic failure of a fast-growing sector of biobusiness to provide substantial benefits for conservation and sustainable use. Despite its image, the herbals industry does not take benefit sharing any more seriously than the pharmaceutical industry. In addition, for a remarkable number of plants, the “eco-friendly” herbals industry is actually contributing to biodiversity loss rather than supporting it (see box on the *pygeum* trade). These examples (some of which are official CBD case studies) do not engender confidence in the manner in which indigenous knowledge of biodiversity - so important to the drafters of the CBD - is being treated

by commercial interests. One study which analysed all the benefit sharing cases submitted to the CBD, concludes that “*the terms of ABS agreements are skewed in favour of the economically powerful*” and that “*the current interpretations of fair and equitable ABS may only further ‘traditional’ core-periphery relationships in the international political economy*”²⁴ In other words: unless some dramatic changes are made, we are back to the old South-North commodity relationship with all its attendant inequities.

7. No patents, no benefits?

Perhaps one of the most worrying developments in the discussion around benefit sharing is the promotion of intellectual property rights (IPRs), and patents in particular, as the instrument of choice to assign and share the value of biodiversity and indigenous knowledge. What could be easier than using the same instrument that companies use to generate benefits in order to redirect some of them to the providers of biodiversity?

It is important to remember that the very discussion on “*fair and equitable*” sharing of benefits arose precisely because of the skewed situation in which rich countries and corporations were taking control of biodiversity and the tools to exploit it. Patents were the main legal instruments to do so. The earlier-quoted Swedish government study developed a set of draft criteria for the “*fair and equitable*” sharing of benefits, and concludes that the “*present IPR systems can be questioned on practically every count.*” It continues to say that this should not come as a surprise, as the IPR system was never designed to meet criteria of “*fair and equitable*” sharing of benefits. Still, it concludes that the patenting of life forms “*is now broadly questioned by developing countries from an ethical and socio-economic perspective. It would be advisable for developed countries to acknowledge this fact and return to a renewed consideration of their standpoints from this insufficiently explored angle.*”²⁵

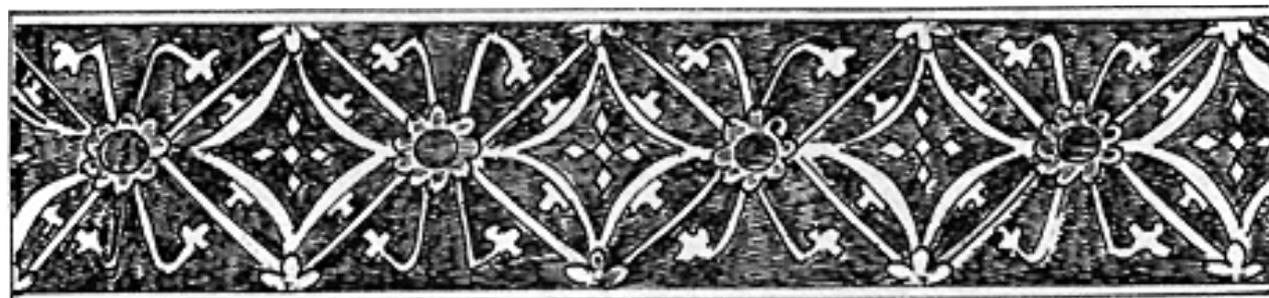




Table 1: Siphoning off the benefits in the herbals sector

PLANT NAME AND USE	REGION OF ORIGIN	US PRICE*	PRICE IN COUNTRY OF ORIGIN**	VALUE EXPORTED
<i>Azadirachta indica</i> Neem ¹⁷ Pesticide	India Southeast Asia Africa	\$524	<u>Ex Factory Price:</u> US \$0.40 per kg for filtered, unrefined oil; up to \$69 for medicinal quality oil (India)	87% - 99 % (Indian oil producer: 0.08% - 13%)
<i>Centella asiatica</i> Gotu Kola, Pennywort Stress, depression	India Asia	\$437	<u>Herbalist Store Price:</u> US \$0.75 - 1.25 (leaves, Los Baños, Philippines)	> 99%(Herbalist, also often a grower: 0.23%)
<i>Harpagophytum procumbens</i> Harpago, Devils Claw Arthritis	Namibia, South Africa Botswana	\$702	<u>Collector Price:</u> \$0.16 - 0.66 (Namibia) <u>Export Price:</u> \$2.30 - \$3.28 (Namibia)	99.21% (collector: 0.06%)
<i>Lingustizom porteri</i> Osha ¹⁸	US - Native American	\$1384	<u>Contract Price for Indigenous Farmers:</u> \$0.44 (dry plant material, Montana, US)	> 99.9% (captured by persons other than collector)
<i>Piper methysticum</i> <i>Kava</i> ¹⁹ Ceremonial beverage	Pacific	\$253 - \$2,486	<u>Local Market Price:</u> \$5.95 - \$6.62 (roots, Apia)	97.5% - 99.75%
<i>Prunus africana</i> Pygeum Urinary tract disorders	Sub-Saharan Africa, esp. Cameroon	\$991	<u>Collector Price:</u> \$0.17-0.35 for bark. ²⁰ (\$35-72 per kg of extract, Cameroon) ²¹ ,	94% - 96.5%
<i>Syzygium jambolanum</i> Jambul Diabetes	South Asia Southeast Asia China	\$641	<u>Farm Price:</u> \$0.125-0.25 (fruit, Philippines) <u>Market Price:</u> \$0.35-0.50 (Los Baños)	> 99.5% (farmer: ≤ 0.05%)
<i>Tabebuia impetiginosa</i> Pau d'Arco ²² Digestive	Central/ South America, esp. Paraguay and Brazil	\$1108	<u>Market Price:</u> \$20 (bark, Asunción - US \$0.20 per 10g)	> 95%
<i>Uncaria tomentosa</i> ²³ Uña de Gato, Cat's Claw Various indications	South America, esp. Peru	\$1164	<u>Collector Price:</u> \$0.24-0.35 (plant material, Peru rainforest) <u>Peruvian Retail Price:</u> \$14.87 - 20.30 (Lima - 20mg bag x 50)	

* per kilogram of active ingredient of sample product for sale in Seattle, July 1999, US\$

** per kilogram of plant material, US \$

But rather than reconsidering IPRs, most benefit sharing approaches move to embrace them. ASSINSEL, the international association of the seed industry proposes a very simple formula: The fact that the industry offers improved crop varieties to farmers is benefit sharing in itself, so access to the building blocks for such varieties (wild species, farmer varieties, etc.) should be free and unrestricted. Acknowledging that patents do present restrictions on access, ASSINSEL suggests that “*compensation should be collected from patent holders, through modalities to be defined.*”²⁶ It proposes that patent holders agree to pay a fee into some international fund, and in exchange are allowed to continue to freely plunder the resources and knowledge of farmers and local communities. For the pharmaceutical and other sectors similar up front payments have been proposed. In all cases, industry's bottom line is: ‘No Patents, No Benefits’²⁷

For many people around the world, industry's proposals miss the point. They offer money or other benefits in exchange for full control over the acquired resources or knowledge. But for those concerned with the sustainable use of biodiversity at the local level, retaining collective control is an absolute necessity. So why don't communities take control themselves, and use the patent system towards their own needs? Why not fight fire with fire? The idea seems compelling, but in reality there is little to win from joining the patent game:

7.1 A problem of patenting life

The patent system was designed for industrial inventions. It comes from a reductionist mindset in which innovation is considered to be composed of discreet components and ideas, each of which can be separately described and owned, and thus patented. As a consequence, it grants individual ownership over those ideas and products resulting from them. It is absurd to try and apply it to the products of biodiversity and the knowledge related to it. Much, if not most innovation at the local and community level is the result from a collective process over many generations which cannot be cut into separate pieces,



and is generally not considered to be owned by any individual or even any community. In many cases, imposing ownership on such processes would undermine the innovation processes themselves. Also, many cultures do not accept that life can or should be owned.

7.2 The dollar dominance

The IPR game simply cannot be won by local communities. The costs are monstrous - in the order of \$20,000 for patent preparation, \$1,000 per language translation, and up to \$5,000 for annual maintenance fees. But more importantly, the real cost is in defending and enforcing patents, which could easily run up to a quarter of a million dollars during the lifetime of a patent if the invention is interesting enough to be challenged.²⁸ Even if a community or a country were able to put up such amounts of money, the likelihood that they could win the courtroom battles is slim. Corporations using traditional knowledge rarely acknowledge its use, or they make small changes to the product and claim it as a new invention. Most known biopiracy cases take the latter form. The patent system offers many opportunities to discount the contribution of indigenous knowledge and innovation.



Proposing IPRs - in an adapted form or not - as *the* instrument to defend the needs and interests of local communities and indigenous peoples is a dangerous path to tread. But this is precisely what is on offer. Perhaps the most prominent example in this area is the World Intellectual Property Organisation's (WIPO) programme to develop "*Intellectual Property Rights for New Beneficiaries.*" Launched in 1998, its objectives include "*to identify and explore the intellectual property needs and expectations of new beneficiaries.*" The main problem with the initiative is that it is based on the assumption that the current IPR system can take care of the needs of local communities and indigenous peoples with respect to their innovations. But then, what can one expect from an organisation that has as its central aim "*the promotion of the protection of intellectual property rights throughout the world.*"²⁹ Although WIPO now admits the complexity of the issues and the need for "*addressing basic conceptual problems*" in applying IPRs to indigenous knowledge³⁰, it has come under heavy criticism from indigenous peoples' organisations as attempting to co-opt indigenous knowledge into the global patent and IPR system³¹.

What is clearly needed is an approach that does not take the current IPR framework as the starting point. We need the development of community rights, based on the needs of local communities and indigenous peoples - and developed with them. We need community rights that protect and promote the local management of biodiversity, and shield local innovation from the encroachment of the industrial IPR system. And we need to stop imposing such IPR systems - be it through WTO or otherwise - on areas and societies where they are clearly not appropriate.

8. Back to the basics

It is time to turn the discussion around. The Green Gold rush might make a few people rich - especially those who control the patents and the last part of the production process - but it is not the basis for meeting the CBDs objectives of conservation and sustainable use. Nor is it the recipe for livelihood enhancement at the local level. For any of these objectives to be met, the interests and needs of local communities and indigenous peoples have to be the driving force. The question of whether - and in which way - access and benefit sharing is a priority for these guardians of biodiversity at the local level is not being asked.

8.1 Reality check: empowerment and control

For many communities, the main concern in relation to the management of biodiversity is the steady erosion of their control over local resources and knowledge. The prime reason that many communities have not been able to benefit from their rich biological resources and knowledge is that they have never been recognised as the starting point for sustainable livelihood development and income generation. Rather, industrial agriculture, Northern-style health systems, and export-oriented natural resource extraction have been pushed upon local communities - in the process often destroying local biodiversity and knowledge. The end result has often been disempowerment, and an undermining of local communities' capacity to maintain their own biodiversity-based livelihood strategies.



Thus, the starting point should not be the interests and needs of the bioprospectors, but rather those of the communities. This means turning the current benefit sharing discussions on their head. It is time to stop reacting on a case-by-case basis to the latest proposal from Monsanto or Merck to country or community X, Y or Z. Instead, energy needs to be invested in

defining the rights that local communities have over their biodiversity and knowledge. This cannot be done in just some international governmental fora, but with and by communities themselves.

The type of proposals now being presented to the CBD negotiators for capacity building at the local level (stressing the need for biodiversity inventories, of the development of legal skills and of negotiation capacities) totally miss the point.³⁶ Rather than creating more ABS experts' to bilaterally negotiate with the corporations, what is needed is strong, legally binding, multilaterally agreed and internationally sanctioned 'rules of the game' that protect the communities and condition the moving space of corporations.

8.2 *Benefit sharing: Not by trade alone*

Everyone will suffer if biodiversity, and the local knowledge that goes with it, is turned into merely another commodity inequitably traded between the poor and the rich. The discussion on benefit sharing must take into account the intrinsic value of biodiversity for local livelihoods. In addition to generating income, biodiversity plays a critical role for communities in providing a diverse and nutritious diet, in increasing food security by relying on a wide range of food sources, in providing medicines and building materials, and in enhancing ecological balance and vigour. It also has ritualistic and spiritual importance.

Existing benefit sharing practices at the local level, such as exchanging seed varieties or knowledge about the medicinal properties of plants, must be supported, protected and rewarded. Such practices mesh with the other two objectives of the CBD - conservation and sustainable use - as they help to build robust and productive local biodiversity-based food and health systems. Bottom-up support and capacity building is dearly needed in this area, rather than helping people to write up biodiversity inventories for the benefit of outsiders. As Cyril Lombard, who has long been working with local communities in Namibia and other parts of Africa to develop some locally generated income from biodiversity available at that level, points out: "We have seen considerable amounts of money and other resources put into CBD and related issues. We have networks for research, networks for networks, workshops on indicators, workshops to develop better networks, networks on indicators, land and



*resource use dynamics researched until it is hard to conjure up another research programme, assistance to providers of assistance to those who need assistance, capacity building in research, research into the needs for capacity building, etc. [but] there is no bottom-up practical research and development support to those who wish to utilise their resources and associated knowledge without losing control of and access to them.*³⁷

Benefit sharing schemes are being used to circumvent more basic issues underlying benefit sharing, such as the privatisation of biodiversity, South-North benefit flows, and the relationship between formal and informal innovation systems. These were precisely the issues that lead to the call for a more "fair and equitable" sharing of benefits arising from biodiversity in the first place. Unless they are being brought centrally into the discussion and practice on benefit sharing, the whole exercise will perpetuate the inequities it was meant to address.



Recouping benefits from commercial use of locally available biodiversity is - and should be - part of the benefit sharing discussion. But, while bilateral contracts between bioprospectors and local communities can in specific cases help generate additional income and other benefits for local communities, overall they are not a useful strategy to implement the CBD requirement for benefit sharing. The cases examined in this briefing show that the vast majority of the benefits derived from biodiversity continue to be captured by industrial interests - in most cases way over 95% - rather than by local communities or developing countries. Individual and bilateral contracts between companies and communities or countries are not likely to change this skewed situation much. What is needed are internationally agreed and enforceable measures that regulate the trade in biodiversity, protect the interests of the providers, support the needs of the communities, protect the environment and put limits on the moving space of the corporations.

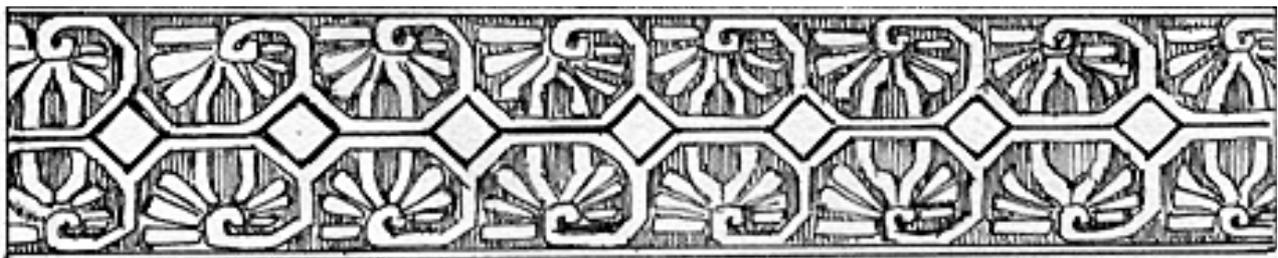
8.3 Community rights, not privatisation

Recent talk about the need to develop *sui generis* (“*unique*”) regimes to protect traditional knowledge should be treated with extreme caution.³⁸ “*Sui generis*” rights are part of the package of obligations that any member of the World Trade Organisation (WTO) must comply with. Any WTO member which does not want to patent plant varieties must provide some form of *sui generis* system over them. But this must be an IPR system and it must be effective for trading purposes. Many communities are clamouring for appropriate rights but not for IPR - and certainly not rights that are effective for TNCs, but for communities themselves. So long as *sui generis* systems to protect traditional knowledge draw on the premises of IPR they are likely to destroy the very

processes that give rise to traditional knowledge. It makes no sense to increase the privatisation of biodiversity, as recent debates about the human genome show. On the contrary, every effort to retract the scope and reach of IPR systems is what is needed. Even if developing countries devise non-IPR rights for communities, these are likely to be ineffective against IPRs so long as patents on life are permitted in the North.

The CBD membership needs to take a strong stance on IPRs if it is serious about trying to achieve the “*fair and equitable sharing of benefits*”. At a recent meeting to discuss the implementation of Article 8j (on the rights of indigenous and local communities) in Sevilla, Spain, one of the recommendations was for a working group to “*assess existing national and international instruments, particularly IPR instruments, that may have implications on the protection of the knowledge, innovations and practices of indigenous and local communities, with a view to ways of possible harmonisation of these instruments with the objectives of Article 8j.*” Disappointingly, this consensus was instantly undermined when most industrialised countries announced that they could not accept any wording questioning IPRs.

Alternative systems, based on strong community rights that recognise the collective nature of local innovation, promote its development and application, and shield biodiversity and indigenous knowledge from privatisation and other forms of misappropriation, must be developed and implemented. But they must go hand in hand with an outright prohibition of patent on life forms, such as the Africa Group has been arguing for at the WTO. Only then can indigenous peoples, local communities and developing countries stand to gain anything of significance from the “*fair and equitable*” sharing of benefits.



Footnotes:

- ¹ See for example: Gurdial Singh, 'Protecting local community knowledge: what next?', in: GRAIN/Biothai, *Signposts to sui generis rights*, Bangkok, 1997.
- ² Iwu, Maurice and Sarah Laird. The International Cooperative Biodiversity Group Drug Development and Biodiversity Conservation in Africa: Case Study of A benefit sharing Plan. Case study for the Convention on Biological Diversity, February 1998.
- ³ The insertion of the word income in the latter two royalty figures indicates that US Army and researcher expenses will be charged against these figures. So, whereas the inventors would receive an undiluted share of royalties, the bioprospecting NGO, which administers the majority of benefits designated for Africa, will have part of the US Armys costs paid out of its share.
- ⁴ Marie Byström, Peter Einarsson, Gunnel Axelsson Nycander, "‘fair and equitable’": sharing the benefits from use of genetic resources and traditional knowledge'. Swedish Scientific Council on Biological Diversity, Uppsala, September 1999. <http://www.environ.se/www-eng/biodiver/biodiver.htm>
- ⁵ Jorge Ishizawa, PRATEC, quoted in *ibid*, p. 50
- ⁶ Shane Mulligan 'For Whose Benefit? Limits to Sharing in the Bioprospecting "Regime"', *Environmental Politics*, Vol. 8, No. 4, Winter 1999, pp. 35-65. UNEP, 'Report of the Panel of Experts on Access and benefit sharing'
- ⁷ UNEP/CBD/COP/5/8. 2 November 1999, paragraph 53. Available on the Internet from: www.biodiv.org
- ⁸ *Ibid*, para 59.
- ⁹ *Ibid*, para 171
- ¹⁰ See: <http://www.mre.gov.br/ndsg/textos/indama-i.htm>
- ¹¹ Kerry ten Kate and Sarah A. Laird, *The commercial use of biodiversity*, Earthscan, London, 1999, p. 102 ¹² <http://www.amazonmedicines.com/>
- ¹³ This case was taken from Kerry ten Kate and Sarah A. Laird, *op cit*, p. 73
- ¹⁴ *Genetic Engineering News*, 15 April 1997; Kerry ten Kate and Sarah A. Laird, *op cit*, p. 80
- ¹⁵ World Food and Beverage Report, Jan 1998.
- ¹⁶ In the US, at least, this is often do to legal restrictions on types of claims that can be made about dietary supplements, the legal framework under which most herbals are sold.
- ¹⁷ Thanks to Professor Anil Gupta Indian Institute of Management, for information on neem oil production in India.
- ¹⁸ Thanks to several Native Americans who provided information for this section; but who wished to remain anonymous.
- ¹⁹ Thanks to Clark Peteru, PCRC, for information on the kava market in Samoa.
- ²⁰ UNEP/CBD/COP/4/Inf.25, case study submitted by UNEP, p. 35. Available on the Internet from: www.biodiv.org. Conversions from CFR to USD at July 1997 exchange rates.
- ²¹ *Ibid*, p. 29.
- ²² Thanks to Miguel Lovera of Friends of the Earth, Paraguay for information on pau d arco prices in Paraguay.
- ²³ Thanks to Alejandro Argumedo of Indigenous Peoples Biodiversity Network for information on uña de gato prices in Peru.
- ²⁴ Shane Mulligan, *op cit*, pp. 35-65.
- ²⁵ Marie Byström et al. *Op cit*, p. 41
- ²⁶ ASSINSEL, 'Recommendations by the seed industry of developing countries on the revision of the International Undertaking' adopted in Monte Carlo, June 2, 1998
- ²⁷ Quoted in Someshwar Singh, 'Traditional Knowledge under Commercial Blanket, SUNS No. 4545, Geneva, November 5, 1999
- ²⁸ Gaia Foundation, Community Rights: Patents on Life and Benefit Sharing Schemes, "fair and equitable"?'. Unpublished draft. London 1998. See also GRAIN, 'WIPOs Mission Impossible?' in *Seedling*, Vol 15, No. 3, Barcelona, September 1998.
- ²⁹ See GRAIN, *op cit*, for an analysis of this WIPO programme.
- ³⁰ Intellectual Property Organization, Protection Of Traditional Knowledge : A Global Intellectual Property Issue. Paper presented at the *Roundtable On Intellectual Property And Traditional Knowledge*, Geneva, November 1 and 2, 1999.
- ³¹ Martin Kohr, 'Indigenous Peoples criticise WIPO approach', in: *SUNS* No. 4545, Geneva, November 5, 1999
- ³² Thanks to Cyril Lombard, CRIAA SA-DC for information on the *harpago* trade in Namibia.
- ³³ Thanks to Clark Peteru, PCRC, for information on the kava market in Samoa.
- ³⁴ Lebot, V et al, *Kava: The Pacific Elixir: The definitive guide to its ethnobotany, history and chemistry*, Healing Arts Press, Rochester, 1997.
- ³⁵ An unusual - and commendable - deviation from the norm, this United Nations Environment Programme case study (UNEP/CBD/COP/4/Inf.25) provides concrete financial details about benefit sharing, enabling an independent analysis of its effectiveness. Available on the Internet from: www.biodiv.org
- ³⁶ See, for example, UNEP, 'Access to Genetic Resources', UNEP/CBD/COP/5/21. 1 March 2000. See for example paragraphs 14 and 41(11). Available on the Internet from: www.biodiv.org.
- ³⁷ Cyril Lombard, CRIAA, Personal Communication, February 2000.
- ³⁸ See UNEP, Report of the working group on the implementation of Article 8(j), UNEP/CBD/COP/5/5, 12 April 2000. and: UNEP, 'Access to Genetic Resources', UNEP/CBD/COP/5/21. 1 March 2000. Available on the Internet from: www.biodiv.org

Global Trade and Biodiversity in Conflict

Global Trade and Biodiversity in Conflict is a series of exposés produced jointly by the Gaia Foundation and Genetic Resources Action International (GRAIN). The series examines critical points of conflict between the privatisation of biodiversity, which is being driven by corporate interests and the World Trade Organisation, and peoples efforts to empower local communities in biological and cultural diversity management, particularly in developing countries. This briefing relied on excellent research work and initial drafting by Edward Hammond (USA), as well as special inputs from Cyril Lombard (Namibia), Peter Einarsson (Sweden) and Rachel Wynberg (South Africa), to whom we are very grateful. Janet Bell edited the briefing into its final version.

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