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**Bio-diversity and Benefit-sharing:
Experience of the Republic of South Africa**

Draft Discussion Paper

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Introduction

The 1990's have seen increased awareness and demand for sharing benefits arising from use of bio –genetic resources. This, to a large extent, can be credited to the Convention on Biological Diversity (CBD) which has the following objectives :

- Conservation of biodiversity
- Sustainable use of its components
- Fair and equitable sharing of benefits arising out of utilisation of genetic resources.

Biodiversity, has for many centuries, been a provider of an array of benefits to humankind. It is a source of food, fuel, medicine for many people and is the basis of industries such as agriculture, pharmaceutical and biotechnology. Except for a few cases such as China's prohibition on silkworms in the last century or South Africa's protection of the ostrich based industries, biodiversity has been largely a freely accessible resource. It has been argued that the distribution of benefits arising from biodiversity have been skewed, with countries owning the resource receiving very little rewards or benefits derived from the resource.

The South African example as in the Box 1 is illustrative of both the economic value of bio -genetic resources as well as imbalances in distribution of benefits arising.

Box 1. A South African example illustrating economic benefits of bio – genetic resources & skewed distribution of benefits arising.

South Africa is the third most biologically diverse country in the world. Much of the biodiversity is endemic to the country. The Cape Floristic Plant Kingdom (fynbos) for example is endemic to South Africa and is the basis of a lucrative horticulture industry.

To a large extent South Africa has not benefited from the commercial development of its bio –genetic resource.

For example, the *Freesia* plants generate about US\$50 million per year. Revenue generated from sales of *Pelargonium* species in the Netherlands, Germany and Belgium approximate US\$ 6 billion annually. Of the 7,000 succulent plant species endemic to southern Africa, 5000 are already being sold elsewhere in the world.

Source : Wynberg & Laird, 1997

The CBD objectives are all important but the objective on fair and equitable sharing of benefits arising from use of genetic resources, is considered strategic for countries and provides an incentive for conservation of biodiversity. Countries can now invoke Article 8j which states that equitable sharing of benefits arising from the utilisation of indigenous and local knowledge, innovations and practices, should be encouraged ; as well as Article 15 on access to genetic resources

which provides for countries to require prior informed consent (PIC) on their genetic resources.

2. Benefit – sharing : A conceptual analysis and discussion.

The concept, benefit – sharing, for some, conjures up visions of local community, owners of indigenous knowledge or poor countries being empowered and enriched through *partnerships* with industry or institutions from richer countries. The concept of partnership, in turn, conjures up visions of equity and altruistic relationships between those involved. In practice, however, as the later sections will illustrate, this ideal is afar and instead economic power (for example financial resource, human and technological capacity) is still influential in determining the distribution of benefits arising from biodiversity. Despite the gap between the ideal and the practice, it is clear that the concept is a move away from intellectual property rights (IPRs) which grants exclusive rights, and do not require the holder to share benefits.

Perhaps, it is also important to first sketch where we are in terms of development of the concept that is benefit sharing. The CBD establishes an international framework which enables establishment of mechanisms for benefit sharing. It does not however, establish the mechanism itself, and does not elaborate on how benefits should be shared.

Since the CBD came into force, much has been written on how benefit –sharing should ideally work and on specific contractual agreements countries have entered into. The most cited example of these agreements is, the arrangement between Costa Rica's National Biodiversity Institute (INBio) and the United States pharmaceutical company Merck. Under the agreement, INBio provides Merck with chemical extracts from wild plants, insects and microorganisms collected from Costa Rica's protected areas. In return, Merck provides a research budget of about a US\$1 million and royalties on resulting commercial products. The contractual agreement between the Government of Cameroon and the United States National Cancer Institute (NCI) provides yet another example of a model on benefit sharing arrangement. Under this agreement, the Government of Cameroon undertook to provide the NCI with plant samples from a specific forest (Korup), and payments received on plant samples are to be used for community development projects.

The examples provided above highlight the following points :

- (1) Benefit sharing is linked to access to genetic resources and such arrangements tend to be negotiated in the context of seeking access to other countries genetic resources.
- (2) Mutually agreed upon terms is the first step to establishment of benefit sharing arrangements (e.g. contractual agreement)
- (3) The nature and content of the contractual agreement varies from country to country.

- (4) The nature of benefits is dependent on the intended beneficiaries (e.g. local communities, national research institution or government conservation agency)
- (5) Benefits from contractual agreements do take several forms (e.g. up front payments, royalties, skills enhancement or scientific know how)

Some important elements of such agreement, have been suggested and these include the need to ensure that :

- (1) benefit sharing arrangement provide an incentive for conservation of biodiversity. For example benefits should accrue directly and tangibly to those who invest in conservation of biodiversity (e.g. local communities, conservation agencies)
- (2) those who contribute intellectually to the conservation and knowledge on biodiversity are rewarded. Again, indigenous knowledge and scientifically generated knowledge need equal acknowledgement and reward.
- (3) such arrangement foster and do not impede technological exchange and innovation.

3. National Experience : South Africa

South Africa's past political history led to the country being excluded from much of the relating international discussion and debates which culminated to the Rio Conference on Environment and Development. Nevertheless, upon its re – acceptance to the international community, the country signed and ratified many of the Rio Conventions and has been an active participant hence.

3.1. Policy and Legislative Regime on Biodiversity Benefit Sharing

South Africa ratified the CBD in November 1995. Following that, the Department of Environmental Affairs and Tourism (DEAT) which is responsible for management of biodiversity issues, embarked on a policy development process. The policy development process followed a consultative route involving a range of stakeholders. This process culminated into a White Paper stating the official government policy on conservation and sustainable use of biodiversity.

The White Paper, which was published in 1997, embraces the objectives of the CBD. It has six goals and several policy objectives on conservation of biodiversity, use of biological resources that ensures minimal impact on it, and on access to genetic and benefit sharing.

The White Paper on conservation and sustainable use of biodiversity has as one of its goals being :

“ to ensure that benefits derived from use and development of South Africa’s genetic resources serve national interests.”

Objectives relating, seek to control access and biodiversity but also ensure that sectors such as food and agriculture and forestry continue to have access to the country’s genetic material.

The policy also make a statement to the effect that benefit sharing arrangements in South Africa need to take into consideration the following:

1. The need to strengthen the conservation of biodiversity in South Africa.
2. The need to promote the reconstruction and development of South Africa, and to stimulate economic development in the most disadvantaged parts of the country and sections of the population.
3. The rights of local communities, farmers, and others holding traditional knowledge to benefit from co –ownership of research data, patents and products derived from their knowledge.
4. The need to adopt a multi –faceted approach to benefit sharing , whereby a range of short term and long term financial and non –monetary benefits are gleaned
5. The need to strengthen South Africa’s science and technology capacity.

A legal framework on access to genetic resources which is still in the planning stages, is expected to elaborate and give guidance on benefit sharing arrangements in South Africa.

3.2. Some practical examples on benefit sharing arrangements in South Africa

Despite the legal vacuum with respect to access to genetic resources and benefit sharing, some institutions in South Africa have entered into contractual agreements with overseas institutions and companies. To a large extent development of such arrangement, have taken guidance from the existing policy framework, and consultative processes some have sought to follow. The three examples provided below, are the most cited in South Africa.

3.2.1. The Agreement between the National Botanical Institute (NBI) and US based Ball Horticulture Company (Ball).

This agreement which has recently been signed between NBI and Ball, is a five year agreement and is known to be first of its kind in the horticulture industry.

The NBI is public institution with a mandate to “promote the utilisation and conservation of, and knowledge and services in with southern Africa flora”. The institution manages several botanical gardens and a herbaria throughout the country.

According to the agreement, NBI will use its in house expertise and provide ball with select plants from its living collections and from the wild. The NBI will do an initial evaluation of the plant material, propagation of seeds and cuttings for supply to Ball. Ball will provide NBI with a grant for locally based research and development activities, and for technology training at its facilities. Ball will pay a royalty on all products containing genetic material supplied to them in terms of the agreement.

As regards to plants collected from the wild, the NBI will is to obtain prior informed consent of landowners on whose land they collect. The NBI in turn has undertook, to put the profit made from royalties in a trust fund aimed at capacity building in local indigenous plant horticultural industry.

In developing the agreement, the NBI followed a consultative process which generated a lot of debate on the issue of access to genetic resources. Associated criticism related to the Chapter on Intellectual Property Rights and the benefit sharing provisions.

3.2.2. Agreement between the Council for Scientific and Industrial Research (CSIR) and Phytopharm / Pfizer

The CSIR division for Food Science and Technologies (Foodtek) launched a bioprospecting program in 1998. The CSIR is the largest public research and technology organisation in South Africa and indeed in Africa.

As part of its bioprospecting programme, its first project is on development of an appetite suppressant (P57) which is derived from a species of *Hoodia* plant, a succulent plant indigenous to southern Africa. The CSIR signed a licensing agreement with Phytopharm plc, for further development and commercialisation of the product. Pfizer a pharmaceutical giant, has been granted an exclusive global license by Phytopharm to further commercialise the product.

The *Hoodia* species which is the basis of the appetite suppressant, has a history of use by the San people as a thirst quencher. It is claimed by some that the properties of an appetite suppressant in the plant were discovered through this use. The CSIR has been doing research on the species since the 1970's and have not linked the discovery of the appetite suppressant properties to the use by the San people.

According to the deal, Phytopharm will receive up to US\$32 million in license fees and milestone payments. The CSIR will receive a “substantial” payments linked to the performance of P57 in clinical trials. Royalties to the CSIR, amounting to about a million of dollars, are expected through licensing the patented technology. In addition Pfizer and Phytopharm have financed a medicinal plant extraction facility at the CSIR for pilot scale manufacturing of P57.

3.2.3. Agreement between Rhodes University, Eastern Cape, South Africa and the National Cancer Institute (NCI), in the United States.

The collaborative effort between Rhodes University and NCI which is structured via a Letter of Collection and a Memorandum of Understanding, is rather unique in that it is one of the few agreement based on coastal and marine micro – organisms and algae. The project aims to investigate these organisms for their potential as anti –cancer agents. Collecting occur mainly in Algoa Bay, Eastern Cape and local scientists are involved. Material extracted will be tested at NCI and some isolation will be done at Rhodes University and possibly some institutions in the US. Extracts are provided to institutions signing Material Transfer Agreements (MTA's) which guarantees collaboration and compensation in the event of commercialisation.

The benefits derived from the arrangement seem to have a less emphasis on commercial gains, with Rhodes University mainly interested in training students, and advancing knowledge about natural products and biodiversity.

4. Conclusion from South African Examples

It is clear from the examples provided that the approach to benefit sharing agreements differ depending on the parties involved.

Although there are policy statement on considerations in benefit sharing arrangement, it is interesting to note that out of the five suggested considerations, in all almost all cases only one is considered in the agreement i.e. strengthening South Africa's science and technology capacity. The element of strengthening conservation efforts, promoting reconstruction and development and economic development are not obvious from the agreements.

Nevertheless, these benefit sharing arrangements will provide lessons for the legislation on access to genetic resources and benefit sharing, that is in planning. The concept that is benefit sharing is obviously intricate, and new and experience can only add value to its practical implementation.

Some material used for this paper

Department of Environmental Affairs and Tourism . 1997. White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity. *Government Gazette. Vol 385 (18163)*, Pretoria, South Africa.

Diversity, Vol. 14, No 1 &2. 1998.

Horak, M. 1999. Bioprospecting Partnerships : chess match or relay race. Abstract

Mugabe, J ; Barber, CV ; Henne, G; Glowka, L & La Vina, A (eds). 1997. Access to Genetic Resources : Strategies for Sharing Benefits. *African Centre for Technology Studies*, Nairobi , Kenya.

National Botanical Insititute. 1999. Unpublished briefing notes on the NBI –Ball access and benefit sharing agreement

Wynberg, R . 1999. Benefit Sharing in South Africa : Fact or Fiction. To be published in *Biodiversity & Traditional Knowledge : Equitable Partnerships in Practice* . Edited by Sarah Laird.

Wolfson, M. 1999. Unpublished summary report on key conclusions of the expert panel on access and benefit sharing.