

Governing Biodiversity

Access to Genetic Resources and Approaches to
Obtaining Benefits from their Use: the Case of the
Philippines

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In collaboration with the
South East Asia Regional Initiatives for Community Empowerment
(SEARICE)

GERMAN DEVELOPMENT INSTITUTE

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Preface

*“Take nothing but pictures,
Leave nothing but footprints,
Keep nothing but memories.”*

The quotation above is used by Philippine civil society groups as a slogan to combat “biopiracy”. The research team of the German Development Institute (GDI), which carried out the present study, was confronted with quite a few conflicting views on questions related to the slogan: Who owns genetic resources? Who should benefit from their use? What conditions should users of genetic resources have to meet if they are to take such resources out of the country? What should the government do to protect the interests of local and indigenous communities? How might international agreements governing biodiversity best be formulated?

Following seven months of intensive work, including a field study in the Philippines from mid-February to the end of April 2002, the research team came up with the present study. We have to admit that we took more than pictures: in 75 interviews, Philippine stakeholders shared their knowledge with us which we used to write the report. We do not know whether we left more than footprints: at least we tried to give our partners in the Philippines a feedback when we presented and discussed the study’s results in Manila. And we are sure that we will keep a lot of memories of this research undertaking in a very hospitable country.

We would like to thank all our interview partners in Germany and the Philippines for their willingness to contribute to the study. We are grateful to the GTZ – particularly to Andreas Drews – for supporting the project through a lot of advice. We learned from the start that in the Philippines nicknames are more important than the original ideas of parents. Therefore, we thank Tina of the Palawan NGO Network Inc. (PNNI) as well as Paul, Rachel and Jojo of SEARICE/Bohol for organizing our studies “on the ground” in Palawan and Bohol. Josie and Teng from the Protected Areas and Wildlife Bureau (PAWB) supported us by providing unbureaucratic help with a variety of official documents. Special thanks go to our collaborator in the Philippines, the South East Asia Regional Initiatives for Community Empowerment (SEARICE). We thank Angie, Julius, Agnes and – particularly – Lorie for their logistic and organizational support. Ping, Neth and Lorel shared with us their profound knowledge of Philippine reality and the international regulation of genetic resources. They forced us to take into account the viewpoints of the South, particularly of small farmers and local communities, and to forget our “obsession” with monetary benefits. Thanks to these fruitful discussions, the present study is the result of an intense North-South collaboration. However, the authors alone are responsible for all the contents and shortcomings of the study.

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Abbreviations

ABS	Access and Benefit-Sharing
ARA	Academic Research Agreement
ASEAN	Association of South East Asian Nations
BFAR	Bureau of Fisheries and Aquatic Resources
BPI	Bureau of Plant Industry
CBD	Convention on Biological Diversity
CBDC	Community Biodiversity Development and Conservation
CRA	Commercial Research Agreement
CRRF	Coral Reef Research Foundation
DA	Department of Agriculture
DAO	Department Administrative Order
DENR	Department of Environment and Natural Resources
DFA	Department of Foreign Affairs
DOH	Department of Health
DOST	Department of Science and Technology
DUSN	Distinct, Uniform, Stable, and New
EO	Executive Order
FAO	United Nations Food and Agriculture Organization
FPIC	Free and Prior Informed Consent
IACBGR	Inter Agency Committee on Biological and Genetic Resources
INBio	Costa Rican National Biodiversity Institute
IPRA	Indigenous Peoples' Rights Act
IRRI	International Rice Research Institute
ITPGR	International Treaty on Plant Genetic Resources
MASIPAG	Magsasaka at Sayantipiko Para sa Ikauunlad ng Agham Pang-agrikultura
MSI	Marine Science Institute
NGO	Non-Governmental Organization
NIRPROMP	National Integrated Research Program on Philippine Medical Plants
OAU	Organization of African Unity
PAWB	Protected Areas and Wildlife Bureau
PCARRD	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development
PCHRD	Philippine Council for Health Research and Development

PGRFA	Plant Genetic Resources for Food and Agriculture
PHP	Philippine Peso
PhilRice	Philippine Rice Research Institute
PIC	Prior Informed Consent
PITAHC	Philippine Institute of Traditional and Alternative Health Care
PNM	Philippine National Museum
PO	Peoples' Organization
PVP	Plant Variety Protection
RA	Republic Act
R&D	Research and Development
SEARICE	South East Asia Regional Institute for Community Education
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UN	United Nations
UNEP	United Nations Environmental Program
UP	University of the Philippines
UPOV	International Union for the Protection of New Varieties of Plants
WTO	World Trade Organization

Executive Summary

People have long relied on the diversity of biological resources. Animals and food crops like rice or corn serve as the nutritional basis for humankind; an estimated 75 % of the world's population relies on traditional, largely plant-based treatment for its primary health care. For the development of modern drugs, the pharmaceutical industry extensively uses compounds derived from biological diversity. All these applications imply management of genetic resources. So why is there a renewed public interest in the discussion on governing biodiversity in developing countries?

Technological developments and changed legal frameworks can go some way towards explaining this phenomenon. With the advent of modern biotechnology, the genetic diversity of plants and animals has become more valuable for commercial purposes. Consequently, access to genes is of strategic importance. While genetic resources are mainly located in countries of the South, the financial, human and technological resources needed to convert them into products are predominantly based in the North. During the "Earth Summit" in 1992, more than 150 countries agreed on a new international legal framework to govern biodiversity: the **Convention on Biological Diversity** (CBD). The CBD departs from the former notion of biodiversity as a "common heritage of mankind" and assigns nation states sovereign rights over their genetic resources. Countries can now regulate access in bilateral treaties with interested users of genetic material. The hope is that the new concept will lead to an appreciation of biodiversity and facilitate a "grand bargain", with genetic resources from the South being traded for money, technology and knowledge from the North. The bargain, it was hoped, would provide incentives to conserve biodiversity, to use it sustainably, and to ensure a fair and equitable sharing of benefits.

Besides the Convention on Biological Diversity, another international convention is important for the global governance of biodiversity: the **International Treaty on Plant Genetic Resources**

(ITPGR). In November 2001, the member states of the United Nations Food and Agriculture Organization (FAO) decided to vote for an alternative benefit-sharing arrangement for plant genetic resources for food and agriculture. Due to the differences between these basically man-made resources and the "wild" resources covered by the CBD, and with a view to improving food security for humankind, the parties agreed on a system of multilateral benefit-sharing combined with free access for 35 of the world's most important food crops. The International Treaty will establish a multilateral trust fund to share the benefits of modern plant breeding.

Thus there are two alternative concepts for **Access and Benefit-Sharing** (ABS) currently envisaged by the global governance of genetic resources: bilateral ABS for biodiversity and multilateral ABS for agrobiodiversity. But how are these concepts being translated into the reality of developing countries? The present study explores both approaches, focusing on the case of the Philippines. The results show that there is a large gap between high-sounding concepts at the global level and the reality of their national implementation. Conflicts between different political interests, bureaucratic deficiencies, and a lack of human and financial resources are responsible for this gap. Moreover, industrialized countries have been overly hesitant to force stakeholders in the North interested in gaining access to genetic resources (business and science) to play according to the global rules, thus leaving developing countries alone with the task of implementing and monitoring these rules.

The Philippines is a good case to study the problems and achievements of implementing ABS. For bilateral ABS, the Philippines is the first country world-wide to convert the CBD into national law and action. However, as yet very few of these regulations have given rise to visible benefits. Most stakeholders in the country are disillusioned and are discussing reform options. Nevertheless, the study shows that at the same time implementation has entailed positive development-related effects that go beyond the simple concept of exchanging resources for money. For multilateral

ABS, the Philippines has played an active part in the international negotiations. However, knowledge about the treaty is very limited in the country, and stakeholders have only recently begun to consider possible consequences of the ITPGR and options to benefit from it. The main beneficiaries of the treaty should be farmers. Nevertheless, many stakeholders doubt that the International Treaty will have the power to actually influence policy in any meaningful way. The recent debate over the plant variety protection Act is taken as an example to show that the question of whether or not the pro-farmer provisions of the ITPGR are in fact implemented is indeed a question of political will.

Ten years after the “Earth Summit” in Rio provided a big push for the global governance of natural resources, it is important to move from policy formulation to national implementation. Access and benefit-sharing have played an important part in the international discussions, since this is a topical case for the combination of environmental and development-related goals (“sustainable development”). The present study serves different ends: it presents a detailed picture of the experience the Philippines has made in implementing ABS and highlights the bottlenecks that the country has encountered. Moreover, the study shows that, aside from the political will in the countries concerned, support of the international community is necessary to make global governance work.

Global Governance of Genetic Resources

The term biodiversity refers to the diversity of ecosystems, species, and genes. Access to and use of biodiversity is shaped by the current international legal framework. The Convention on Biological Diversity and the International Treaty on Plant Genetic Resources share similar objectives but use different mechanisms to regulate access to genetic resources. Both aim at the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from its use. Moreover, both introduce access and benefit-sharing as a concept

that frames the exchange of genetic resources between providers and users and regulates the sharing of benefits arising from their commercial use. But while the CBD opts for a bilateral system, the ITPGR provides for a multilateral one.

Under the **bilateral approach**, two parties exchange genetic resources for a share of the benefits arising from their use and agree bilaterally on the terms of exchange. The CBD encompasses all genetic resources apart from the 35 food crops that now fall under the ITPGR. Its focus lies on “wild” resources which are not deliberately improved by humans. The Convention gives member states the right to define the conditions for access to genetic resources, while at the same time governments are required to facilitate access to these resources. The Convention encourages national governments to establish measures aimed at sharing in a fair and equitable way the results of research and development and the benefits arising from commercial and other utilizations of genetic resources.

Negotiations on access and benefit-sharing have to be based on mutually agreed terms, resembling the idea of a bilateral treaty between equal partners. In order to achieve this aim, the prior informed consent (PIC) of the providing party is required before any deal may be concluded. The Convention explicitly acknowledges the contributions of local and indigenous communities in the conservation of biodiversity. Hence member states are encouraged to include such communities in benefit-sharing provisions as well as in the PIC negotiations themselves.

Under the **multilateral approach**, access to plant genetic resources for food and agriculture (PGRFA) is granted freely, without tracking the individual accession. The ITPGR thus exempts PGRFA, which are basically man-made, from the regulatory scope of the CBD. A separate system has been conceived on account of the different characteristics of PGRFA, which have been freely exchanged over the last centuries. Hence the Treaty places priority on open access to PGRFA to keep access costs low for all interested parties.

In this way, the ITPGR seeks to foster further breeding and to contribute to global food security.

When benefits materialize from the commercialization of the resources, a predetermined share of the benefits is to be redistributed through a global trust fund. Commercial users of PGRFA who protect their product by means of intellectual property rights that restrict further research and breeding (e.g. a patent) have to pay a mandatory share into the trust fund. These financial means will then be allocated to conservation projects and programs. At the same time, the ITPGR strengthens the position of farmers vis-à-vis governments and breeders by codifying Farmers' Rights for the first time in an international treaty. Farmers' Rights include (1) the right to exchange, reuse and sell seeds, (2) the right to participate in policy issues surrounding PGRFA at the national level, (3) the protection of traditional knowledge, and (4) the right to share the benefits arising from PGRFA use.

Bilateral ABS in the Philippines

The Philippines is considered a pioneering country in the national regulation of biodiversity prospecting (shortly: bioprospecting). Philippine scientists had pushed forward the idea of bioprospecting legislation as a means of ending the alleged "exploitation" of the country's genetic wealth by foreigners. In 1996, legislation was complete, and stakeholders started out implementing it with great enthusiasm. At the same time, international bioprospectors sternly criticized the Philippine legislation as overambitious. The present study shows that there is indeed room for facilitating access to genetic resources in the Philippines by improving implementation of the ABS legislation already in place. However, it is clear that one obstacle to realizing the "grand bargain" of the CBC is a lack of interest on the part of bioprospectors in fostering the Convention's aims. The Philippines is therefore caught in a dilemma: if the country retains its comparatively strict bioprospecting legislation, users will go to other countries where no regulations are in place.

If it lowers its standards, it will run the risk of foregoing its benefit options.

Presidential **Executive Order 247** (EO 247) of 1995 and **Department Administrative Order 96-20** (DAO 96-20) of 1996 establish the legal framework for bioprospecting and regulate access to biological resources in the Philippines. Three basic elements of the regulations are important in the present context: a scheme of mandatory research agreements, the establishment of an application procedure including a multistakeholder body, and the requirement to seek prior informed consent from local communities. **Mandatory research agreements** are concluded between collectors and the government of the Philippines. The agreements set out detailed conditions for access and minimum terms on the provision of information, samples, technological cooperation and the benefits to be shared. There are two types of research agreement: academic research agreements are entered into with academic institutions for the purpose of research only, while commercial research agreements are concluded with private parties, corporations or foreign entities.

As outlined in the regulations, the **application procedure** involves a number of different steps. First, the applicant has to submit a research proposal to the newly created Inter-Agency Committee for Biological and Genetic Resources (IACBGR). This multistakeholder body has been set up to coordinate the processing of applications for bioprospection, to ensure transparency and to enable the participation of all stakeholders in reaching mutually agreed terms. After an initial screening, the applicant is required to submit a PIC certificate (see next paragraph). If the IACBGR recommends approval, the application is submitted finally to the responsible secretary for signing.

Prior Informed Consent from Local and Indigenous Communities plays a key role in the application process for ABS agreements in the Philippines. Before any kind of bioprospecting can begin, the applicant must obtain the consent by fully disclosing to the local community the intent and scope of the planned activities. The PIC

procedure includes two elements: the collector is required to notify and inform the public about his planned activities (public notification). A sector consultation is then held to discuss the activity at the community level. In the affirmative case, the applicant receives a PIC certificate from the local official authority after a period of 60 days has elapsed.

As of April 2002, 15 commercial and 20 academic research agreements had been applied for. The IACBGR requested a research agreement for 19 applications. Only six have been approved by the IACBGR. It has taken between one and a half and four years for the applications to successfully run through the overall process required by EO 247. Four applications have been withdrawn. It is unclear whether the remaining applications are still pending, since proponents have not responded to requests for further documents, in some cases for years.

The small number of agreements and the lengthy access determination process are reasons for concern. The present study analyzes three points in more detail that could be instrumental in increasing the number of research agreements and enlarging development-related impacts for the Philippines: streamlining the application procedure, making prior informed consent of local and indigenous communities work, and ensuring a fair and equitable sharing of benefits. There are some points in which reforms could improve the present situation. The proposals aim at maintaining the spirit of the ABS legislation while making it easier for bioprospectors to follow the rules.

Streamlining the Application Procedure

The application procedure aims at ensuring a high level of transparency and participation. At the same time, though, it increases entry barriers for potential applicants. Our interviews revealed that on the one hand most stakeholders in the country still think that the regulations are good in principle. On the other hand, most of them agree that they are not working well, that the application

process takes too much time and is too complicated.

A closer look at the reasons behind the problems in implementing EO 247 shows that there are bottlenecks at all stages of the application procedure. It can hardly be claimed that the requirements as such are too onerous for international and national bioprospectors. Nevertheless, the Philippines should make it as easy as possible for applicants to comply with the regulations, without abandoning the objectives of EO 247. To achieve this, the following measures should be considered: first, it would be important to use innovative instruments to raise the level of information among possible applicants. Second, a focal point should be established to decrease transaction costs for applicants. Third, institutional reforms should be used to facilitate decision-making and speed up the application process. The best option would be to create an independent public agency with decision power that is advised by a multistakeholder body. Fourth, the agencies involved must be furnished with the funds they need to efficiently perform their tasks.

Making Prior Informed Consent Work

Involvement of local and/or indigenous communities in decision-making concerning access to genetic resources can be seen as supporting two major development objectives: participation and empowerment. The PIC process is regarded by some stakeholders, mainly NGOs, as the main instrument suited to reaching these goals, but the present study found few indications of any adequate participation and empowerment of community members. On the other hand, scientists in particular mention the transaction costs involved in obtaining PIC as an additional obstacle in the way of their research on genetic resources. In particular, bioprospectors from the North criticize the Philippine PIC provisions as being too complicated to follow. Philippine legislation should therefore seek to strike a balance between facilitating PIC for researchers and fostering participation and empowerment of communities.

The following measures could be used to support both objectives simultaneously: First, awareness-raising on bioprospection and legal advisory services could help enable local communities to exert their rights. Second, customary practices of how to conduct PIC in specific indigenous communities should be documented with an eye to increasing transparency for the applicant. Third, applicants should be supported by community workers, who could bridge the cultural gap between researchers and the local population. Fourth, appropriate monitoring of PIC consultations would ensure that all participants act in accordance with the rules.

Ensuring a Fair and Equitable Sharing of Benefits

Surprisingly, our interviews revealed that most stakeholders in the Philippines have no specific expectations on benefits from ABS agreements. Although interviewees frequently mentioned prevention of “exploitation of the country’s genetic resources by foreigners” as an important reason for implementing EO 247, expectations on what constitutes fair and equitable sharing of benefits do not seem to be clear.

The ideas that were mentioned cannot be categorized as exaggerated expectations. No applications have been refused because of a lack of benefits for the government or the community. By experience, negotiations for prior informed consent and for benefit-sharing are largely kept separate by actors. Under the current approach, PIC is given without any clear-cut arrangements on the distribution of future benefits for the community. The government should make sure that the local population’s preferences on expected benefits are determined.

Most benefits realized thus far have accrued to Philippine scientists, even though few such benefits result directly from the country’s bioprospecting legislation. As far as future benefits are concerned, the Philippine government has not yet elaborated a policy on the distribution of long-term benefits (royalties), once these have materialized. It is still unclear what share is to go to local communities and who will decide on

local communities and who will decide on distribution. This opens the door for corruption and capture of benefits by influential groups in the capital region. Thus, as a matter of principle, benefits should be distributed on the basis of a standardized key. Only a small percentage should go directly to the community where collection has taken place. The majority of royalties should go into an independent trust fund for local and indigenous communities or for protected areas. A third share should be used to finance the institutions responsible for bioprospecting.

The Philippines could benefit more from the use of its biodiversity if it complemented a bioprospecting legislation by means of additional efforts aimed at transforming genetic resources into valuable products. A coherent strategy involving focused and higher spending for research and development, targeted government programs, joint ventures, and innovative private initiatives will be necessary to pro-actively use the country’s genetic wealth and keep a larger share of value added in the country.

Prospects for Multilateral ABS in the Philippines

The International Treaty creates new options for member states to benefit from a multilateral system of access and benefit-sharing. Of course, the treaty is too recent to permit any analysis of experience, as in the case of bilateral ABS. Instead, the present study explores the prospects for the implementation of the ITPGR in the Philippines as an example of multilateral benefit-sharing for genetic resources.

Our interviews revealed that most potential stakeholders are not aware of being stakeholders in the ITPGR. Nonetheless, some key stakeholders came up with elaborate assessments of how the Philippines could benefit from the International Treaty. First, free access to PGRFA is highly valued by both the general public and private breeders. Second, non-monetary benefits are perceived by some stakeholders as an important part of the ITPGR, although no clear suggestions were ad-

vanced on approaches to putting the weak provisions of the Treaty into practice. Third, monetary benefits are welcomed, but only a limited number of stakeholders already regard themselves as potential recipients. Fourth, the promotion of Farmers' Rights through international codification has not really been recognized by most stakeholders. All in all, most stakeholders – in particular the more critical NGOs – doubt that the wording of the ITPGR will be strong enough to alter the existing national constellation of power, which ultimately decides upon the implementation of laws. Moreover, NGOs expect tendencies in national intellectual property rights legislation to provide more and more protection of genetic resources as the most important restriction to access, and criticize the International Treaty for remaining silent on this trend.

A good case for analysis of the extent to which provisions of the ITPGR have been placed under national jurisdiction is the controversial debate over the recently passed **plant variety protection (PVP) Act**. Legislators in the Philippines were under heavy pressure from the national and international breeding industry to introduce a PVP bill. At the same time, NGOs and small farmers' organizations opposed the passage of the bill, citing its allegedly detrimental effects on agrobiodiversity and small farmers. The final Act shows some signs of a political compromise between the different stakeholders but maintains its focus on plant variety protection rather than on an encompassing law for PVP, Farmers' Rights and the conservation of agrobiodiversity. While some parts of the Act support elements of the ITPGR, others have not been implemented in the spirit of the ITPGR.

Farmers' Rights have been guaranteed to the extent that the Farmers' Right to exchange, re-use and sell to small farmers is in accordance with the ITPGR. Moreover, a Community Gene Trust Fund has been established that aims at the protection of traditional knowledge as well as benefit-sharing. However, it remains to be seen whether the newly created PVP board will actually implement these rights or in fact restrict them. As regards the ITPGR's conservation objective, the

net effect is not yet clear: on the one hand, PVP will increase the use of uniform commercial varieties, thus reducing agrobiodiversity. On the other hand, the Community Gene Trust Fund is to be used to support measures geared to conserving PGRFA. Finally, the Act requires the prior informed consent of communities before any resources may be accessed, a provision which is clearly in conflict with the ITPGR. PIC for access to plant genetic resources for food and agriculture hinders the "easy and expeditious access" called for in the ITPGR.

Reflections and Recommendations

The findings of the study presented in Chapters four and five focus on the reality of bilateral access and the potential for multilateral access and benefit-sharing in the Philippines, on obtained achievements, identified constraints, as well as on policy options suitable to overcoming them. The following synthesis derives from the findings: first, a confrontation of the relative strengths and weaknesses of bilateral and multilateral ABS, second, lessons learned from the Philippine experience for the international debate on ABS, especially in the context of the CBD.

It would be premature to **compare the bilateral with the multilateral approach**. While some experience has already been made with bilateral ABS, the multilateral approach is still in the conceptual stage. Moreover, the two approaches do not constitute alternative options for policymakers in developing countries. Biodiversity falls under bilateral ABS, whereas agrobiodiversity is to be accessed and shared under a multilateral system. Nevertheless, from a theoretical point of view it makes sense to use the findings of the present study to analyze comparative strengths and weaknesses of both approaches and the conditions needed for them to live up to expectations. The analysis reveals that the – by comparison – less regulatory nature of the multilateral approach leads to relatively lower costs for the implementing country and lower transaction costs for users of genetic resources. While the bilateral approach creates restrictions before research starts, the

multilateral approach steps only in after successful research has been completed, when intellectual property rights are acquired for the results. The multilateral approach therefore places few restraints on research and innovation, while the bilateral approach entails adverse effects. Both approaches have the potential to contribute to local empowerment and development. Nevertheless, it is obvious that the intended positive outcomes can only be reached if additional educational measures accompany activities related to ABS.

Since the CBD was adopted, the international community has been seeking to refine the interpretation of its provisions and the means for its implementation. One central document intended to help governments to implement the CBD in national ABS legislation is the **Bonn Guidelines on Access and Benefit-Sharing**, adopted in April 2002 at the Sixth Conference of the Parties to the CBD in The Hague. Lessons learned from the Philippine experience cast light on several points of the guidelines: a visible focal point and competent national authorities are imperative for any efficient ABS legislation. Stakeholder participation is important but requires a stringent institutional setup, extra funding and capacity-building if it is to work smoothly. Clear-cut government policies governing PIC and the distribution of possible benefits are needed.

Recommendations for International Cooperation

The present study is about the attempt of a developing country to implement international conventions with a view to benefiting from the use of its genetic resources. The international community has an interest in supporting developing countries in the implementation of global rules. Humankind as a whole will benefit if the exchange of the wealth of genetic resources leads to new medicines or plant varieties. But industrialized countries cannot leave developing countries alone with the task of paying for the conservation of resources that are valuable to the world as a whole. Biological diversity and agrobiodiversity are

typical global public goods whose conservation and sustainable use require global governance. First of all, this means developing global policies, as has been done with the adoption of the CBD and the ITPGR. In a second step, it is necessary to move from policy definition to policy implementation. We have pointed out that the implementation of globally defined policies continues to be deficient and in need of reform. The international community can contribute on three different levels to the reforms needed to make global governance work. It would not cost much in terms of public-sector spending to trigger potentially high future benefits.

German bilateral development cooperation should contribute to the implementation of CBD and ITPGR by providing technical assistance for capacity-building as well as by facilitating public-private partnership projects that serve as show-cases demonstrating how bioprospectors can follow the rules, and seek, by fostering scientific cooperation, to induce transfers of know-how and technology. **International Organizations** can contribute to the implementation of the CBD and the ITPGR by facilitating communication among implementing countries through conferences and regional initiatives and by setting a deadline for the implementation of ABS regulations in accordance with the Bonn Guidelines. Both bi- and multilateral initiatives should aim at fostering collective learning processes necessary to understand the dynamics of global governance.

User countries should undertake efforts to adapt procedures and regulations related to access and benefit-sharing in a way supportive to the implementation of the CBD. Patent law should establish a requirement for patent applicants to document source materials and prove compliance with source country laws, and especially with ABS legislation. Funding agencies should induce researchers from developed countries to include ABS-related activities such as PIC in their research applications and guarantee separate funding for these activities. Moreover, funding institutions should foster technology transfer to developing-country institutions by requiring researchers from the North to provide as much capacity-

building and knowledge-sharing as possible. Environment ministries should promote awareness-raising campaigns in developed countries among potential users of genetic material, both academic and private, concerning their roles and responsibilities when they access genetic material in foreign countries.

1 Introduction

1.1 Objective and Background of the Study

The issue of biological diversity and its “value” first came to the public attention a number of years ago. There are people who speculate about the billions of dollars that developing countries may earn by selling the great variety of genetic resources situated in their territories. Skeptics, on the other hand, argue that the options for turning genetic resources into financial flows are rather limited. These divergent positions underline the fact that biodiversity cannot and should not be assessed in solely economic terms but should instead be approached holistically. As opposed to attempts to assign a specific value to biodiversity, there is consensus on another point: that biological diversity is of great use to humankind:

“Biological diversity provides the goods and services that make life on earth possible and satisfy the needs of human societies. The variability it represents constitutes a global life insurance policy.”¹

People have long relied on the diversity of biological resources. Animals and food crops like rice or corn serve as the nutritional basis for humankind; an estimated 75 % of the world’s population relies upon traditional, largely plant-based treatment for its primary health care.² The pharmaceutical industry extensively uses compounds derived from biological diversity in the development of modern drugs. These applications all imply the management of genetic resources. So why is it that there is renewed public interest in the discussion on biodiversity in developing countries?

Technological developments and changed legal frameworks can largely explain this phenomenon. With the advent of modern biotechnology, the genetic diversity of plants and animals can be

used more systematically as a storehouse for developing a wide range of products. Improved crops or new perfumes can nowadays be based on ever more sophisticated technologies and scientific monitoring. Pharmaceuticals, botanical medicines, food crops, horticulture, crop protection products and cosmetics are the most important industries that use genetic resources as an input in the development of their end products. Biotechnology is regarded as one of the core technologies of the 21st century, and, consequently, access to genes is of strategic importance.

However, genetic material is only one input factor necessary to develop these products and create market value. It has to be combined with high-skill human resources, modern technology and the financial resources needed for risky research and development (R&D) efforts. These inputs are distributed asymmetrically around the world. While genetic resources are mainly harbored in countries of the South, financial, human and technological resources are predominantly based in the North. At the same time, their development is proceeding in opposite directions. Biological diversity is being depleted at an ever faster pace, endangering species and microorganisms, while the stock of technological know-how is growing. Given this situation and trend, more than 150 countries have agreed on a new international legal framework: the Convention on Biological Diversity (CBD), which came into effect after the “Earth Summit” in 1992, gave nation states sovereign rights over their genetic resources. Nation states can now regulate access in bilateral treaties with interested users of genetic material. The agreement thus departed from the former notion of biodiversity as a “common heritage of mankind.” The hope is that the new concept will lead to an appreciation of biodiversity and facilitate a “grand bargain”, with genetic resources from the South being traded for money, technology and knowledge from the North. The bargain, it was hoped, would provide incentives to conserve biodiversity, to use it sustainably, and to ensure a fair and equitable sharing of benefits, thus creating a win-win-win situation.

1 CBD (2001), p. 9.

2 See ten Kate / Laird (2000a), p. 1.

A result of this kind is not easy to achieve, since it requires differing interests and positions to be reconciled. Companies in the North (the “users”) have to be willing to follow the new rules and to share benefits. This is, at first glance, at loggerheads with their commercial interests. Moreover, if companies have to grant access to their technology and know-how, this will frequently touch upon their intellectual property rights, a sensitive issue for knowledge-intensive branches like the biotechnology industry. Within developing countries (the “providers”), distributional conflicts may arise between stakeholders. Besides, stakeholders differ in the rights they hold to grant access to resources. While the nation state has the sovereign right to regulate access, private property concerns have to be dealt with separately. Local and indigenous communities, whose traditional rights are explicitly mentioned in the CBD, are to have a say in the process which leads to an access agreement. In such situations, access and the resulting benefit-sharing are relatively complicated, and numerous problems have to be overcome to reach an agreement between all the parties involved.

Ten years after the Rio Summit many expectations have been disappointed. The “grand bargain” has not materialized. The literature provides ample explanations for this outcome. However, few in-depth empirical case studies focus on developing countries.³ We attempt to narrow this gap by analyzing the experiences of the Philippines. The Philippines was the first country to implement the Convention into national law and still figures as one of the most prominent examples in the literature. At the same time, it is a typical case for the above-mentioned disappointment since few access contracts have been concluded and hardly any benefits (in a narrow sense) have been generated. This study explores the reasons for this result and offers proposals to improve the present situation.

Beside the Convention on Biological Diversity, another international convention is important for the global governance of biodiversity: the International Treaty on Plant Genetic Resources (ITPGR). In November 2001, the member states of the United Nations Food and Agriculture Organization (FAO) decided in favor of an alternative benefit-sharing arrangement for plant genetic resources for food and agriculture. Due to the different nature of these basically man-made resources as compared with the “wild” resources covered by the CBD, and in order to improve food security for humankind, a system of multilateral benefit-sharing, combined with free access for 35 of the world’s most important food crops, was agreed upon. The International Treaty on Plant Genetic Resources will establish a multilateral trust fund to share the benefits of modern plant breeding. Beneficiaries of this fund are to be mainly farmers who have conserved the great genetic variety of landraces that are an indispensable (intellectual and tangible) input for modern plant varieties. The ITPGR recognizes these past (and ongoing) efforts and is for the first time codifying so-called Farmers’ Rights, which also have to be implemented in national law. Farmers’ Rights can be interpreted as a – weak – counterbalance to the intellectual property rights conferred on commercial plant breeders (plant variety protection or patents).

The Philippines has participated actively in the international negotiations. The present study explores stakeholders’ opinions regarding the multilateral approach and discusses options available to implement the Treaty’s provisions. The debate over the Plant Variety Protection (PVP) Act highlights the links between national agricultural policies and the international commitments stemming from the ITPGR. It is taken as an example of how different objectives might be harmonized.

1.2 Methodological Approach

The present study was prepared by a multidisciplinary team of the German Development Institute from November 2001 to May 2002. In a prepara-

3 The third Conference of the Parties of the Convention on Biological Diversity invited stakeholders to submit case studies, which can be found under www.biodiv.org/programmes/socio-eco/benefit/case-studies.asp.

tory phase from November 2001 to February 2002, the team reviewed literature on bilateral and multilateral access and benefit-sharing and formulated research questions and hypotheses. Data was collected during field research in different places in the Philippines from February to April 2002; these efforts included interviews with various stakeholders, from indigenous and local communities to government officials. In the final, analytical phase, from April to May 2002, the data collected was analyzed and the present report compiled.

The preparatory phase in Germany drew on analysis of the literature on bi- and multilateral access and benefit-sharing (ABS) to lay a theoretical foundation and clarify the international political and legal framework of the subject. Additionally, a small number of interviews were conducted with users of genetic resources and experts to gather background information. The visit of the Philippine collaborator in January helped to identify issues relevant to the Philippines and, subsequently, to move on to the formulation of four research-guiding questions:

- 1) What are the endogenous reasons for the relatively small number of bilateral ABS agreements signed thus far?
- 2) How are the development-related aspects of fair and equitable benefit-sharing, stakeholder participation and empowerment achieved by the Philippines' bilateral ABS legislation?
- 3) What are the options for different stakeholders in the Philippines to benefit from the ITPGR?
- 4) How can a PVP Act promote the objectives of the ITPGR?

The data collection phase in the Philippines comprised eight weeks, during which a total of around 75 interviews were conducted (see Table 1). Initially, interviewees were identified with the support of the Philippine collaborator, whose good knowledge of the stakeholders provided a broad basis to start out from. During the inter-

views, additional interview partners were identified by snowball sampling. A questionnaire operationalizing the research questions was used as a guideline for semi-structured interviews with experts from government institutions, non-governmental organizations (NGOs) and the scientific community. To avoid a metropolitan bias, three regions (Bohol, Palawan, Nueva Ecija) were visited to interview local government officials and non-governmental actors. In two of the regions, group interviews were conducted at the local level with farmers and members of an indigenous community. A workshop on the ITPGR, held in collaboration with the collaborator, turned out to be of great value in collecting new data on stakeholder opinions and, at the same time, triangulating the existing data.

Type of Interview Partners	on bilateral ABS / biodiversity	on multi-lateral ABS / agrobiodiversity
National Government	5	5
Local Government	6	2
Parastatal Institutions	4	2
Indigenous Communities	4	-
Farmers	-	5
NGOs and POs	11	3
Scientific Institutions	14	8
Industry	5	1
Total	49	26

The analytical phase began during the team's stay in the Philippines, preparing a final presentation of the study's results for an audience including many interview partners and other stakeholders in Manila. Data analysis at this point was geared to generating policy recommendations for the reform of bilateral ABS and optimizing the chances to benefit from the ITPGR at the national level. The presentation as such was embedded in an all-day workshop with two working groups on bilateral and on multilateral ABS; this presented a good

framework for in-depth discussion and validation of the study's findings.

After returning to Germany, further analytical steps were undertaken to go beyond the Philippine context and to address three questions concerned with international policy:

- 1) What are the comparative advantages of the bilateral and the multilateral approaches to access and benefit-sharing?
- 2) What are the lessons learned from the Philippine experience for the international debate on access and benefit-sharing?
- 3) How can the international community contribute to the implementation of the CBD and the ITPGR in source countries of genetic resources, in this way assisting in the realization of a successful global governance of biodiversity?

1.3 Structure of the Study

The study breaks down into three parts. Part I surveys the international debate on the subject. In Chapter two, we briefly introduce the global governance of biodiversity. Chapter three focuses on access to genetic resources and benefit-sharing. This chapter prepares for the analysis of the Philippine example by distinguishing between the bilateral and multilateral approaches as well as by analyzing the international policy discussion on the subject.

Part II presents the case of the Philippines. Chapter four looks into the Philippine experience with the bilateral ABS approach, while Chapter five inquires into the intentions to implement the provisions of the multilateral approach.

Part III is directed primarily to the international reader and offers reflections on and lessons learned from the Philippine case. First, the bilateral and the multilateral approaches are confronted in order to draw some conclusions for a conceptual debate about relative merits and short-

comings. Second, the Philippine experience with a bilateral ABS approach is compared with recent discussions at the international level regarding best practices in ABS legislation. Third, proposals are offered on possible approaches to shaping German and international development policy. Ten years after the introduction of ABS at the "Earth Summit" in Rio is, we think, the right moment to assess what has been achieved and what challenges still lie ahead.

PART I: THE INTERNATIONAL DEBATE

2 Global Governance of Genetic Resources: The Evolution of Rights and Responsibilities

Biological diversity is vital for humanity in medicine, agriculture and other fields, but it is in danger as more and more genetic resources continue to be depleted. Since a large part of these resources are situated in the southern hemisphere, but commercialized and used in the North, questions about ownership and access have arisen. Confronted with the ongoing degradation of

2.1 Biodiversity: Status and Commercial Use

The definition of biodiversity, or biological diversity (see Box 1), is political rather than purely biological in character. The term was coined in 1986 by the biologist Edward O. Wilson to draw attention to the continuing loss of ecosystems, species, and genes. Earlier attempts to mobilize forces were geared to specific species or geographical regions. Only a coherent strategy, it is now thought, encompassing the broadest possible definition of biodiversity, has any chance to actually come to grips with the observed problem of degradation.

Box 1: Definition of Biodiversity

Biodiversity refers to the totality of **ecosystems, species, and genes** in a specific area. **Ecosystem diversity** refers to the number and distribution of ecosystems in a given geographical area. The World Resources Institute (2001) defines ecosystems as “*the organisms of a particular habitat, such as a pond or forest, together with the physical environment in which they live; a dynamic complex of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit*”.^a Ecosystems can have different levels of aggregation and are defined with respect to specific scientific or policy problems. Therefore, a coral reef, a part of a sea or the entire sea can all be examples of an ecosystem. Within a specific ecosystem, a number of species^b coexist. **Species diversity** refers to the number of different species within a specific geographical region, commonly measured in terms of the number of species in this region. One example would be the number of plant, animal and microbial species in the Black Forest. **Genetic diversity** is measured with respect to one or more populations.^c It encompasses genetic variation within a single population as well as different populations of a species. The greater the genetic diversity within a species, the higher its ability to adapt to changes in the environment. The variation of genes within a particular tree species in the Black Forest is an example of genetic diversity. Ecosystem, species and genetic diversity can be seen as parts of a pyramid with ecosystem diversity at the top: an ecosystem contains several thousands species, and each of these species contains several thousand genes. When an ecosystem collapses, several thousand of its species and millions of genes will therefore be destroyed in the process. However, some species have key roles for an ecosystem: if one of such species becomes extinct, the function of the entire ecosystem may seriously impaired.

a World Resources Institute (2001).

b The term species refers to a group of organisms which can interbreed freely.

c The term population refers to a group of individuals with common ancestry whose members are more likely to mate within the group than with members of other groups.

biodiversity and unclear property issues, the international community adopted, in 1992, the Convention on Biological Diversity and, nearly ten years later, the International Treaty on Plant Genetic Resources for Food and Agriculture. The first section of this chapter provides background information on biodiversity; Section two discusses the governance of genetic resources from a theoretical perspective; while Section three presents the relevant international treaties.

It is difficult to measure biodiversity and, consequently, the magnitude of its loss.⁴ Most efforts concentrate on species diversity, this factor being the easiest one to measure. In 1995, the United Nations Environment Programme (UNEP) published its “Global Biodiversity Assessment” report.⁵ According to its estimates, the total num-

4 For a recent effort, see UNEP / CBD (2001).

5 See UNEP (1995).

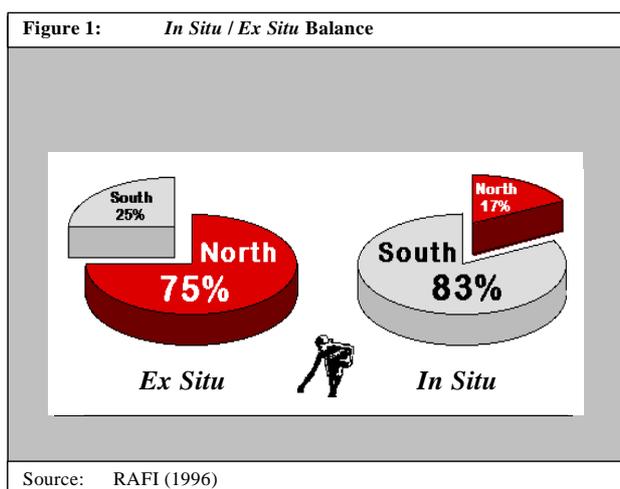
ber of species lies in the range of 13 to 14 million. However, a mere 1.75 million, or 13 percent, have been described scientifically to date.

Even if the concrete magnitude remains unclear, it is generally agreed that species are becoming extinct at the fastest rate ever.⁶ For example, a number of flowering plants are disappearing at a rate of 50 to 100 times the natural rate of extinction. It is estimated that between 10 and 15 percent of the known species of plants are threatened.⁷ In both hemispheres ecosystems are eroding.⁸ Ecosystem diversity is reduced as forests or coral reefs disappear, to mention only two examples. Annually, nearly 1 percent of tropical forests face extinction, while dry tropical forests are being depleted at an even higher rate.⁹ Of a total of 232,000 square miles of coral reefs, 60 percent are threatened and 10 percent are already extinct.¹⁰

While there has always been a natural rate of extinction of species, industrialization has accelerated this rate to ever-higher levels. The needs for food, land, housing and industrial products for growing populations and the resulting intensification of economic activity have been the main causes for the degradation of biological diversity. While the increase in production is primarily attributed to industrialized countries, developing countries contribute in other ways to the degradation process. One of them is the slash-and-burn system in agriculture. Moreover, forest fires, often triggered by negligence, extinguish vast areas. Additionally, economic activities like mining lead to further degradation. Chemical pollution is a problem in both developing and industrialized countries, while the latter group is responsible for the largest share thanks to their longer history of industrial production.

Biodiversity Distribution and the Use of Genetic Resources

Species and genetic resources may be located either *in situ* (natural environment) or *ex situ* (man-made collections). With an estimated 83 percent of all material, *in situ* material can be found predominantly in the South (see Figure 1). The South's abundance of *in situ* material is not matched by an equally large share of *ex situ* genetic resources. The latter can be in the form of seed banks, zoos, botanical gardens, or microbe, bacteria, and fungi collections. Nowadays, industrialized countries harbor roughly three-quarters of all *ex situ* genetic resources. However, it should be noted that the richness of *ex situ* collections in the North stems not from cataloguing its own resources but rather from past bioprospecting¹¹ in the southern hemisphere.¹²



In the last quarter of the 20th century, genetic resources have come to the center of attention as biotechnological innovations made it possible to create new products from these resources, especially in the biotechnological, pharmaceutical, and agricultural industries. A large industry survey estimates that the current global annual sales of

6 See World Resources Institute (2001).

7 See Glowka (1998).

8 See The Crucible Group II (2000), p. 8.

9 See UNEP (1995).

10 See World Resources Institute (2001).

11 Bioprospecting refers to the search for genetic and biochemical resources with potential economic value. See Belgian Clearing House Mechanism (2002).

12 See RAFI (1996).

Industrial Sector	Market size - low estimate (in bn US\$)	Market size - high estimate (in bn US\$)
Pharmaceuticals	75	150
Botanical medicines	20	40
Agricultural produce ^a	300+	450+
Horticultural products	16	19
Crop protection products	0.6	3
Biotechnologies other than healthcare and agriculture	60	120
Personal care and cosmetics	2.8	2.8
Sum	500	800
a The particularities of the supply chain for agricultural products make precise estimates impossible. While figures are available for seeds sold by seed companies to farmers, variables for the transformation of seeds into agricultural products at the farm level remain unclear.		
Source: Ten Kate / Laird (2000a), p. 2.		

products derived from genetic resources lies in the range of US \$ 500 bn to US \$ 800 bn (see Table 2).

Some scientists consider 40 percent of global economic activity as based on genetic resources or processes. Although many products are based on or contain elements of genetic resources, other input factors like technology or human capital play a more important role. Beside genetic material, these are necessary to create the final product. With ever more sophisticated technology, R&D costs for, say, an anti-cancer drug, account for a large part of total development costs. Furthermore, marketing costs have to be added if the drug is to be launched successfully in a highly competitive market. Hence the share that genetic material contributes to the final product is only a fraction of the aforementioned sales figures. Consequently, identifying the real value of the genetic material used remains a controversial issue. Nevertheless, the above-mentioned figures at least give an impression of the varying significance of genetic resources for different industries. The most prominent sectors are agriculture and pharmaceuticals, especially since innovations in biotechnology have revolutionized the fields of applications for genetic resources. However, it should be noted that future growth rates may differ substantially from sector to sector. As an example, botanical medicine is expected to expand at a rate of 10 – 20 percent annually, while the pharmaceutical industry may grow at around 6

percent per annum.¹³ In contrast to relatively steady industry growth rates, the interest in genetic resources for new product development is of a more cyclical nature.

Role of Intellectual Property Rights Concerning Genetic Resources

With R&D budgets experiencing constant increases due to ever more expensive state-of-the-art technologies, the need to protect new products from imitation has become an imperative for many knowledge-intensive industries. In addition, the low reproduction costs for some products, for example drugs and seeds, put further pressure on producers to seek protection. The industry claims that if products are copied, the costs incurred for R&D cannot be recouped and less research will be done in the future. The damage done will be borne by both producers and consumers. Producers will see markets and profits shrinking, while consumers will have fewer new products available to them. For these reasons, multinational companies have vigorously called for effective legal protection of their intellectual property rights, a demand met by the World Trade Organization' (WTO) agreement on Trade-Related Aspects of Intellec-

¹³ See ten Kate / Laird (2000a), p. 9.

Box 2: Biological Resources, Genetic Resources and Plant Genetic Resources for Food and Agriculture

Like the case of biodiversity, the terms biological and genetic resources have only recently become known to a wider public. Since resources are defined as any means that are used for the production of goods and services, talk of resources usually indicates that one is looking at a material or a human capability from an economic perspective. Oil, coal, gas or certain human skills and knowledge are resources because they are valuable for use in economic activities. With the advent of the Convention on Biological Diversity and the economic prospects of the biotechnology industry, it has become common to regard species and genes as resources as well. Hence categories once considered as strictly biological are today also used as economic categories. In the present study, we use the terms biological resources and genetic resources in accordance with the definition found in the Convention on Biological Diversity.

Biological resources "include genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity" (CBD, Art. 2). This definition is obviously relatively broad. All plants, animals and micro-organisms that are used by humans for food production, medicine, construction and recreational, aesthetic or religious reasons – to name just the most important ones – are covered by this definition.

Genetic resources "means genetic material of actual or potential value" (CBD, Art. 2). Genetic resources are therefore a subcategory of biological resources. In the present study, the functional and informational values of genes – e.g. the value of a gene that holds the information for a certain substance of medical value - are of more interest than the sheer material value of organisms, such as cubic meters of wood or tons of grain. Thus we usually analyze processes related to genetic rather than to biological resources. Eventually, the manner in which it is used determines whether the substance or organism is a biological or a genetic resource: if for example a certain herb is used for making medicinal tea, it is clearly a biological resource. If, however, the genetic composition of the same herb is analyzed in modern biotechnology laboratories in order to find an interesting gene for medical applications, we speak of a genetic resource.

In Chapter five, we zero in on a subcategory of genetic resources: **Plant Genetic Resources for Food and Agriculture (PGRFA)** refers to *any material of plant origin of actual or potential value* (ITPGR, Art. 2). PGRFA therefore comprise the material growing in farmers' fields and its wild and weed-like relatives (*in situ*) as well as material stored in genebanks (*ex situ*). These show certain peculiarities: PGRFA comprise varieties which were created through deliberate human breeding and selecting activities and are thus not pure natural resources. PGRFA have also been exchanged globally for centuries, and this makes it complicated to define their country of origin. PGRFA are the indispensable raw material for further crop improvement, which is needed to feed a growing world population.^a

a The treaty text of the CBD can be accessed online under www.biodiv.org/convention/articles.asap. The text of the ITPGR can be accessed online under www.fao.org/ag/cgrfa/news.htm

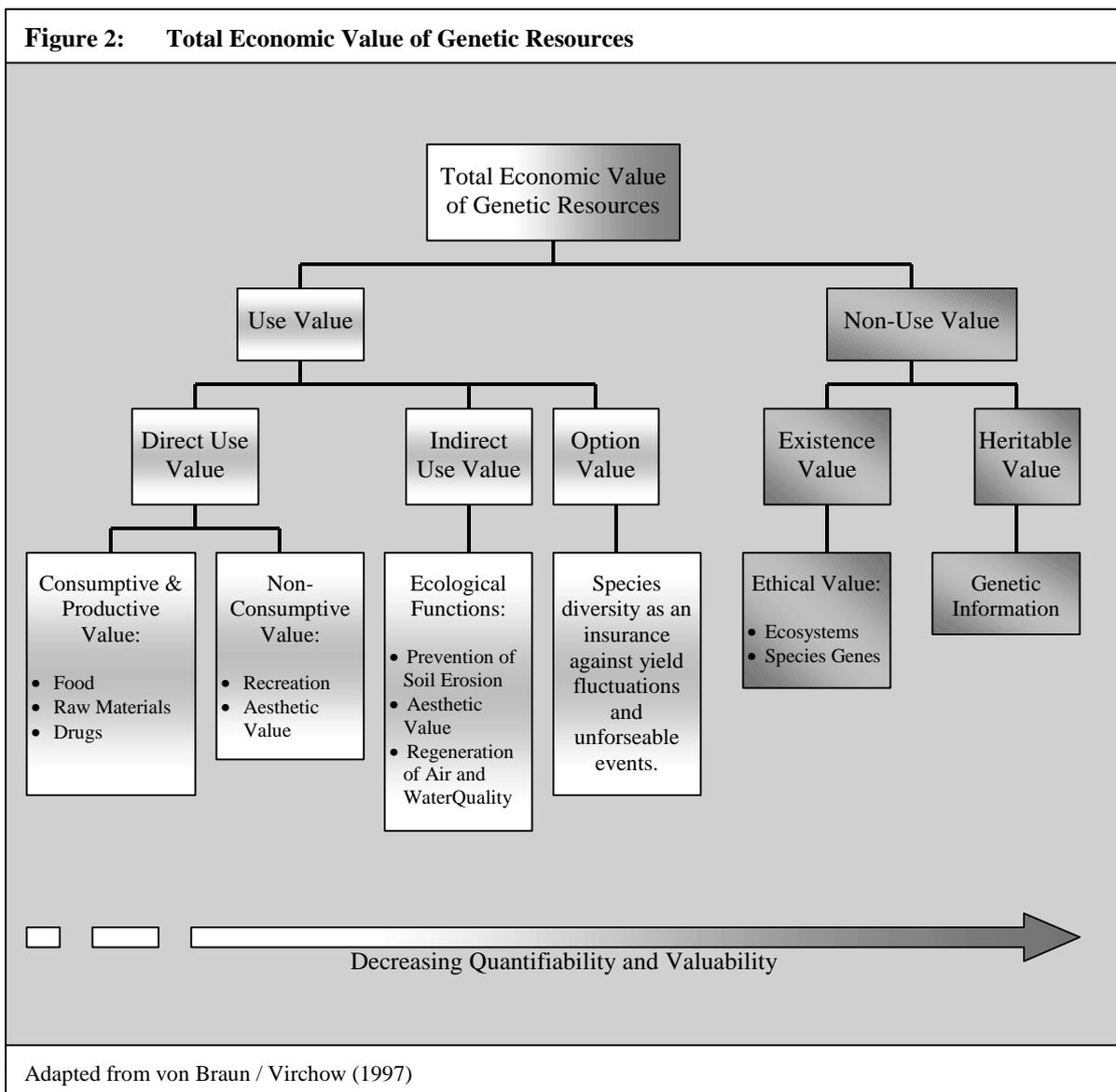
tual Property Rights. On the other hand, many developing countries are reluctant to accept intellectual property protection on products containing genetic resources from their respective countries. They feel expropriated by Northern companies. Moreover, most non-governmental organizations (NGOs) are very critical towards intellectual property rights on biological resources. Among the reasons put forward are ethical concerns and the claim that big multinational companies are using intellectual property rights to shore up their monopolistic power. These opposing views make the issue of intellectual property rights one of the most controversial in the global governance of biodiversity.

2.2 Economic Background: Valuing Genetic Resources and Assigning Property Rights

As has become apparent, genetic resources are widely used and obviously have an economic and social value. The present section introduces a concept of economic valuation of genetic resources and points out some of the difficulties involved in such an approach. The section goes on to argue that the assignment of property rights is important for a sustainable use of genetic resources. However, economics cannot provide a clear-cut prescription on how to formulate an optimal system of property rights.

Why is it a useful exercise to use an economic approach to value genetic resources? The main reason lies in the fact that the conservation of biodiversity is costly. For this reason, humankind has to balance the costs and benefits of conservation efforts to come up with a rational decision. Various estimation techniques have been developed to measure the value of genetic resources. The one described below disaggregates overall value into different subvalues. The benefits of genetic resources can be estimated using the total economic value (see Figure 2), which is composed of use values and non-use values.¹⁴ The direct use

value of genetic diversity is a static value. It consists of the consumptive value of genetic resources for the actual production of goods such as food and raw materials (for example wood) and the non-consumptive value of, say, recreational functions. For these types of values, economics offers manageable estimation techniques. Indirect use value and option value are also static values, yet they are far more complex to estimate, since the marginal benefit of a particular genetic resource to the overall functioning of the ecosystem is very difficult to estimate.



14 See Virchow (1999a), p. 65.

Estimating the non-use value of genetic resources, which comprises their existence and heritable value, is even more complicated. Estimation in this case is a dynamic task which is hobbled by incomplete information about the future: the existence value is the intrinsic value of life and as such is subject to changing ethical assessments. The heritable value is the value of the known and unknown genetic information for future utilization. In order to estimate the heritable value, assumptions have to be made on future technologies using presently known and unknown genetic information as well as on future environmental and market conditions in which genetic information could be of value. This is highly speculative. Since the heritable value of genetic resources constitutes a large share of their total economic value, any attempt at an economic estimation of the latter is severely handicapped.

The quantifiability of the value of genetic resources decreases from left to right, as can be seen in Figure 2. Hence, the different values of genetic resources are known only roughly. Comparing these with costs will at least lead to the recommendation that some conservation efforts are necessary in order to respect the ethical value and the insurance value of biodiversity – even if we cannot measure them. Beyond that, market-based techniques should be employed to tentatively capture the use values of biodiversity.

For a market to function, benefits and costs should accrue to those people who are responsible for their creation, and property rights should be specified in an adequate way. Neither condition is met with regard to genetic resources. Many benefits spill over to humankind as a whole or to people in the North who can afford the drugs made on the basis of genetic resources. At the same time, local and indigenous communities frequently bear the costs of conserving biodiversity. To value the **external benefits** of biodiversity, compensation schemes or other instruments

are needed, some of which were introduced at the “Earth Summit” in Rio.¹⁵

One option may be seen in an assignment of private **property rights** to induce a market-based solution. Before adoption of the CBD, biodiversity was treated as a “common heritage of mankind”, but it now falls under national sovereignty (as will be explained in more detail in the next section). The previous situation was characterized as an example of the *tragedy of the commons*: everyone had the right to use these resources, while no one had an incentive to conserve them, because the benefits of conservation could not be appropriated individually. The marginal costs of conserving the resource therefore exceeded the marginal benefits of conservation for virtually all possible conservers. The new legal situation may be characterized as a step toward “privatizing” genetic resources. There are two different prevalent views on this strategy: a market-optimistic and a market-skeptical view.¹⁶

The market-optimistic view holds that the new assignment of property rights and the creation of markets will automatically lead to an internalization of formerly external conservation benefits. Consequently, it is assumed that providers will conserve genetic resources effectively and ensure an optimal long-term supply of them. Hence, this commodification of genetic resources is expected to reach two goals simultaneously: enhanced conservation and elevated incomes for the conservers. The rationale behind this view is the assumption that people who live in biodiversity-rich areas will realize the value of this biodiversity and start to protect it as soon as they understand that they will receive adequate compensation for these efforts. In this view, the main task to be solved by policy-makers is the creation of functioning markets.

A more skeptical view holds that conservation of genetic resources is a task too complex and com-

15 See Barbier (2000) for a comparative account of different internalization schemes.

16 See Barrett / Lybbert (2000), p. 295.

prehensive to be achieved solely by the market mechanism. This view assumes that the demanders' willingness-to-pay for genetic resources is not large enough to have a significant impact on conservation activities. In the majority of cases the expected flow of benefits will, in this view, by no means change the land-use patterns of the people who live in areas threatened by biodiversity loss. The skeptics further argue that any market for genetic resources will only be able to reap a fraction of their actual value because it can capture only their use values, but not their non-use values.¹⁷

To conclude: in a situation where it is not possible to quantify the value of genetic resources, economics is unable to give a clear-cut recommendation on how best to assign property rights. A constellation with unregulated access and without compensation has led in the past to the *tragedy of the commons*. A new assignment of property rights has to be aware that complete privatization will not be able to induce a market solution that does justice to the total value of biodiversity. In addition, a political assignment of property rights runs the risk of seeking to satisfy as many interests as possible. This would lead to bundles of rights distributed among many stakeholders who can block each other from using the resource. A situation of this sort has been called the *tragedy of the anticommons*;¹⁸ it represents the mirror case of the *tragedy of the commons*. The following section will show how political decision-makers have assigned rights and responsibilities in the global conventions governing genetic resources.

2.3 International Conventions

The access to and use of biodiversity is shaped by the current international legal framework. The Convention on Biological Diversity and the International Treaty on Plant Genetic Resources share similar objectives but pursue different

mechanisms to regulate access to genetic resources. A third important international treaty, the Agreement on Trade-Related Aspects of Intellectual Property Rights, differs in terms of scope and objectives and influences the way genetic resources are traded in market relationships rather indirectly.

2.3.1 The Convention on Biological Diversity (CBD)

The origins of the Convention on Biological Diversity can be traced back to the growing awareness of the deterioration of biological diversity, as expressed by Western international experts. Under the lead of the United Nations Environment Programme, intergovernmental negotiations for a convention on biodiversity protection were conducted between February 1991 and May 1992. Due to their importance for industrialized countries, the latter were primarily concerned with the conservation of biodiversity. Originally, the North's position was to stick to the notion of biodiversity as a common heritage of mankind; but this encountered opposition from the South. The North had to give in, and biodiversity was placed under national sovereignty. Access to it was no longer free but subject to national regulation. Eventually, the CBD was signed by over 150 states at the United Nations Conference on Environment and Development on 5 June 1992 in Rio de Janeiro.

The CBD is a framework convention: it focuses on policies and objectives rather than on concrete action.¹⁹ It leaves national policy-makers space for a flexible implementation of the provisions.²⁰ In this spirit, no specific targets have been set and provisions are to be freely chosen by national governments. Article 1 of the Convention states the overall objectives, which are conservation of biological diversity, sustainable use of its components, and a fair and equitable sharing of benefits.

17 See von Braun / Virchow (1997), p. 10.

18 See Heller (1998), p. 624.

19 See ten Kate / Laird (2000b), p. 242.

20 See Glowka (1994), p. 1.

It is noteworthy that the CBD is a landmark treaty in the environmental field, since it is the first agreement that applies an integrated, i.e. non-sectoral, approach to biodiversity conservation. Moreover, it goes beyond conservation itself and addresses questions of access and use of genetic resources, benefit-sharing and technology transfer. The idea is simple: providers of valuable genetic material are encouraged to make agreements with users in which the latter are granted access to these resources in exchange for present or future benefits. In encouraging these agreements, the CBD aims to facilitate access to genetic resources while guaranteeing a fair and equitable sharing of benefits arising from the use of these resources.

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The Convention marks a turning point in the notion of biodiversity passing from the status of a “common heritage of mankind” to that of a “common concern”. It is called a common concern because the ongoing deterioration of biodiversity can only be stopped by a global effort and not by single nation states. For nation states, special rights and responsibilities for the resources on national territories are laid down.

The Convention entails a number of **responsibilities** for the purpose of biodiversity conservation. The formulation of national strategies and policies is encouraged in order to integrate conservation and sustainable use into existing sectoral programs (Art. 6). Special emphasis is put on *in situ* conservation (Art. 8), and to a lesser extent on *ex situ* conservation measures (Art. 9). Other measures include training and research (Art 12) and public education and awareness-raising (Art. 13). Article 14 addresses the use of techniques, for example impact assessment, to ensure that resources are used sustainably .

As far as **rights** are concerned, Articles 15, 16 and 19 assign authority in regulating access to biological resources to nation states and contain provisions to guarantee a fair and equitable shar-

ing of the benefits.²¹ Article 8 (j) addresses the rights of indigenous and local communities. The article calls on signatories to respect and preserve their “*knowledge, innovations, and practices [...] relevant for the conservation and sustainable use of biological diversity*” and to promote their wider application if the knowledge holders agree. Benefits arising out of the dissemination of this knowledge are to be equitably shared. Article 8 (j) aims at the integration of local and indigenous communities in the Convention’s objectives. They are to participate as both providers of knowledge and as conservers of biodiversity. Importantly, their consent has to be sought before indigenous knowledge can be disseminated and used.

The **scope** of the Convention extends to all genetic resources, with two exemptions. First, Article 15.3 excludes genetic resources held in *ex situ* collections before 1993, the year in which the Convention came into effect. Second, plant genetic resources for food and agriculture included in the ITPGR list fall outside the scope of the CBD.

Impacts for Developing Countries

The Convention allows owners of genetic resources to sell them to interested users by means of access and benefit-sharing agreements. This could open up new sources of income for local communities or other entities in developing countries. With respect to the high potential value of genetic resources, a redistribution of wealth from North to South could take place. The South could expect different forms of benefits in the short, medium or long term. Next to the possibility of reaping benefits the Convention places providers under an obligation to protect biodiversity.

21 See Chapter three for details.

2.3.2 The International Treaty on Plant Genetic Resources (ITPGR)

Some time after the adoption of the CBD, the third Conference of the Parties²² recognized the competence of the UN's Food and Agriculture Organization (FAO) for plant genetic resources for food and agriculture (PGRFA) and called for harmonization of the CBD with the International Undertaking, a legally non-binding instrument adopted in 1983 and dealing with PGRFA (FAO Resolution 8/83). From 1994 to 2001 the Undertaking was revised, leading to the adoption of the ITPGR on 3 November 2001 by 118 signatory countries at the FAO. It will enter into force when 40 signatory countries have ratified it.

The rationale behind a separate regulatory system for PGRFA lies in their distinct features and problems. These include the following: (1) PGRFA are essential for achieving and sustaining world food security, because they are the indispensable raw material for crop improvement through traditional or modern breeding; (2) PGRFA are a common concern of all countries, because all countries depend in some measure on PGRFA that have originated elsewhere; (3) past, present and future PGRFA conservation by farmers in all regions of the world is the justification for Farmers' Rights (see Box 3); (4) all countries would benefit from a multilateral system of access to PGRFA, because every country uses more resources from the system than it contributes; (5) the innovation process for products based on PGRFA is quite different than that for products based on other genetic resources: Modern plant varieties are always the result of a long chain of incremental innovations, because they are based on varieties that have been developed by farmers and breeders throughout centuries. This raises different questions in relation to the ownership of PGRFA. While in the case of genetic resources a "wild" resource is transformed into a new product, in the case of PGRFA a resource which is partly

natural, partly man-made is incrementally changed.

The **objectives** of the ITPGR are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising from their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security (Art. 1.1). Unlike the CBD, the ITPGR envisages a multilateral system of access and benefit-sharing to achieve these goals. The Multilateral System guarantees free access to plant genetic resources for food and agriculture covered by the system (Part IV of the agreement). It currently contains a list of 35 species of food crops and forages, covering the overall germplasm of these species in public *ex situ* collections as well as *in situ* in farmers' fields and wilderness. In exchange for the free availability of this material, the system provides for payments by resource users into a trust fund which will be used to support the goals of the ITPGR, particularly the goal of conserving PGRFA *in situ* and *ex situ* (Art. 18).²³ Article 9 of the Treaty addresses Farmers' Rights (see Box 3) and puts them into responsibility of national governments.

Impacts for Developing Countries

Developing countries have, like all signatory states, access to the genetic material on the list. Unlike the CBD, here the cutting line passes between stakeholders for species on the list and those off the list, and not between providers and users. Species off the list remain under the scope of the CBD. For species on the list, the multilateral system guarantees free access to all signatory states. This means that no additional costs and time-consuming negotiations are needed, as in the case of ABS agreements of the CBD. However, if a developing country has a particular diversity of a certain species on the list, guaranteeing free access to all can also mean income lost to this

22 The Conference of the Parties is the governing body of the CBD. At its regularly meetings, decisions are taken with respect to the Convention's implementation.

23 For details, see Chapter three.

Box 3: Farmers' Rights

For over twenty years, Farmers' Rights have been intensively discussed at the international level as an instrument to provide developing-country farmers with compensation for their past, present and future efforts to conserve and develop plant genetic resources.^a The discussion arose from a perceived inequality in the distribution of the benefits of PGRFA use: the seed companies of many industrialized countries were at liberty to freely use the traditional varieties of developing country farmers in the development of new varieties without having to pay for the right to use these traditional varieties as a fundamental input in the breeding process. In addition, seed companies were now able to protect their inventions by intellectual property rights, in this way restricting farmers' free access to and exchange of seeds. Thus, Farmers' Rights basically started out as a counter-concept to intellectual property rights.

However, during the years of discussion, Farmers' Rights have become an umbrella concept for all kinds of demands on behalf of developing-country farmers. Equity considerations and the call for compensation have always been the central element of Farmers' Rights. Yet today compensation is not to flow in a general manner but is instead to be used in a functional way, namely to induce farmers to continue to practice their valuable conservation activities. Other elements discussed under Farmers' Rights and seen as ways to advance them are the protection of traditional knowledge, the participation and the empowerment of farmers and the protection of farmers' traditional practices of replanting, exchanging and selling seeds at the local level. Many new plant variety protection laws of developing countries pose a constraint to these traditional practices because they introduce intellectual property protection on commercial seeds. Since Farmers' Rights cover matters of an extremely wide scope, critics have noted that the support for Farmers' Rights has been 'a mile wide and an inch deep.'

However, with the conclusion of the ITPGR, Farmers' Rights are now for the first time included in a legally binding treaty under international law. Yet the definition of Farmers' Rights in the ITPGR remains relatively vague. It is acknowledged that traditional farmers, and especially those in developing countries, merit compensation for their century-long contribution to the conservation and development of plant genetic resources. Responsibility for this compensation is, however, put in the hands of national governments. These are expected to "take measures to promote and protect Farmers' Rights." Three of these measures are prescribed in detail by the ITPGR: (1) "the protection of traditional knowledge relevant to PGRFA"; (2) "the right to equitably participate in sharing benefits arising from the utilization of PGRFA"; and (3) "the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA." Besides, reference is made to the legitimacy of traditional farmers' practices of replanting, exchanging and selling seeds (ITPGR, Art. 9).

It is apparent that Farmers' Rights must be regarded less as legal rights in the strict sense than as a political concept. Thus they can rather be advanced and promoted than protected. Although the ITPGR could be a milestone in the promotion of Farmers' Rights, many advocates are disappointed by the weak wording of the ITPGR text on Farmers' Rights. According to Article 9, national governments have the duty to realize Farmers' Rights "in accordance with their needs, ..., as appropriate, and subject to its national legislation, ..." which appears to make their implementation very much contingent upon the political will of the respective government. Nevertheless, recognition of Farmers' Rights in an international treaty gives political advocates a new lever to press for their implementation.

a For one of the few comprehensive discussions of the topic in the literature, see Correa (2000).

country, because it can no longer sell this diversity via bilateral contracts. The future dynamics of the list – it is envisioned to gradually include more and more species in the multilateral system – will therefore be of special interest for developing countries. Countries of origin of a potentially valuable species may be tempted to prevent its inclusion in the list. Brazil, for example, has until today successfully lobbied to keep rubber and soybeans off the list, because it has a large diversity in these two species and expects commercial gains from a bilateral marketing of this germplasm. In contrast, non-origin countries will always attempt to add more species to the list, in order to ensure their free access to it.

2.3.3 The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)²⁴

The TRIPS agreement was one of the main results of the Uruguay Round of trade negotiations, which ended in 1994 with the establishment of the World Trade Organization (WTO). All WTO member countries are obliged to provide comprehensive protection of intellectual property rights. This extends to all products and processes from all fields of technology, including innovations based on biological resources. Since intellectual prop-

24 The TRIPS agreement is available at www.wto.org/english/docs_e/legal_e/29-tpm.pdf.

erty rights constitute an important part of agreements on access to genetic resources and subsequent benefit-sharing, the provisions of the TRIPS agreement will be presented in outline.

The overarching objectives of the TRIPS agreement are laid down in Article 7 and can be summarized as follows: promotion of technological innovation and dissemination of technology to the benefit of producers and users of technological knowledge.²⁵ The line of argumentation is that the TRIPS agreement imposes minimum standards for intellectual property rights for all signatory states and that this protection should permit owners of intellectual property to prevent copying and thus to reap the full benefits of the sale of their commodities or services. As a consequence of this situation of legal security, trade in protected goods and services could increase. Also, investments in research for innovations should be more lucrative and therefore grow in volume. In this way, users as well as providers could become beneficiaries of the agreement.

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The TRIPS agreement establishes minimum universal standards concerning patents, copyrights, industrial designs, geographical indications, integrated circuits and undisclosed information. All WTO member countries are obliged to adjust their legislation to meet the TRIPS requirements.²⁶ Article 27 of TRIPS regulates the general patentability of products and processes. In principle, all products and processes from all fields of technology have to be patented if “*they are new, involve an inventive step and are capable of industrial application*” (Art. 27.1).

Article 27.3 (b) directly addresses the patentability of biological resources and states that members may exclude “*plants and animals other than micro-organisms, and essentially biological*

processes for the production of plants or animals other than non-biological and microbiological processes”. With respect to new plant varieties, however, all member states are required to subscribe to a protection by patents, an effective *sui generis* system or a combination of both. The agreement contains no details on the design of an effective *sui generis* system and leaves leeway for individual member states to develop tailor-made systems.

However, many industrialized countries favor a system which already exists for the protection of plant varieties: the International Union for the Protection of New Varieties of Plants (UPOV).²⁷ In 1961, UPOV was created by various European Governments on the initiative of modern plant breeders in order to establish common standards of plant variety protection laws. States can join UPOV if they enact a plant variety protection law in accordance with the requirements. A breeder can gain protection for a plant variety if the plant variety is distinct from existing varieties, uniform, stable, and new (the DUSN-criterion).²⁸ The UPOV Conventions have been revised repeatedly and continually reinforced with stronger protection rights for plant breeders. Currently, 48 states are members of UPOV, 21 of which are developing countries. Plant breeders rights are similar to patents but less restrictive. Like patents, they grant the inventor exclusive rights to sell the product. However, plant breeders remain free to use a protected variety for research and development purposes.

Links between the TRIPS Agreement and the CBD/ITPGR

Intellectual property rights have an impact on the implementation of the two international agreements governing genetic resources. This is stated explicitly in Article 16.5 of the CBD: “*Member states shall cooperate in this regard subject to*

25 See Walker (2001), p. 9.

26 For a comprehensive assessment of the TRIPS-agreement, see for example Liebig (2001) or Maskus (2000).

27 Union Internationale pour la Protection des Obtentions Végétales.

28 See Walker (2001), pp. 29-30.

national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.” Following adoption of the two international treaties, a controversial debate arose with regard to the relation between intellectual property rights and the Convention on Biological Diversity. In the ongoing debate, two opposite positions can be identified: those which favor patents as a means to protect biodiversity, and those which oppose that idea.²⁹

Those in favor of patents argue that companies that have the possibility to protect their innovations based on genetic resources will be more willing to invest in research on natural products. Moreover, companies will be more inclined to engage in technology transfer within ABS agreements if the shared technology is effectively protected from use by third parties. Therefore, patents are seen as promoting the sustainable use, conservation and equal sharing of benefits. Opponents of patents claim that intellectual property rights have perverse effects on biodiversity protection, since the monopolistic situation they create is intrinsically unfair. Moreover, such rights enable companies in the North to appropriate resources and knowledge from countries and communities in the South, thus circumventing benefit-sharing commitments.

Although the two distinct views on patents are highly controversial, there is no direct legal conflict between the TRIPS agreement and the CBD/ITPGR. The relationship between TRIPS and the two other agreements can, instead, be described as different perspectives on one topic. CBD and ITPGR stress the access and benefit-sharing aspects of genetic resources, while the relevant part of the TRIPS agreement puts special emphasis on protection of innovations based on genetic resources. This may, however, mean a conflictual relationship in practice whenever the

interests of the different right-holders cannot be easily reconciled.³⁰

3 Access to Genetic Resources and Benefit-Sharing: Conceptual and Empirical Background

Both CBD and ITPGR introduce access and benefit-sharing as a concept that frames the exchange of genetic resources between providers and users and regulates the sharing of benefits arising from their commercial use. To facilitate a deeper understanding of the issues discussed concerning access and benefit-sharing (ABS), the present chapter presents two concepts of ABS, identifies the main stakeholders and provides a typology of the benefits at stake.

3.1 Concepts of Access and Benefit-Sharing

There are two distinguishable approaches to access and benefit-sharing: bilateral and multilateral ABS. Each approach is associated with one of the international regulatory frameworks discussed in the previous chapter. While the Convention on Biological Diversity represents a framework for bilateral ABS agreements, the International Treaty stands for a multilateral system of ABS in the area of agrobiodiversity.

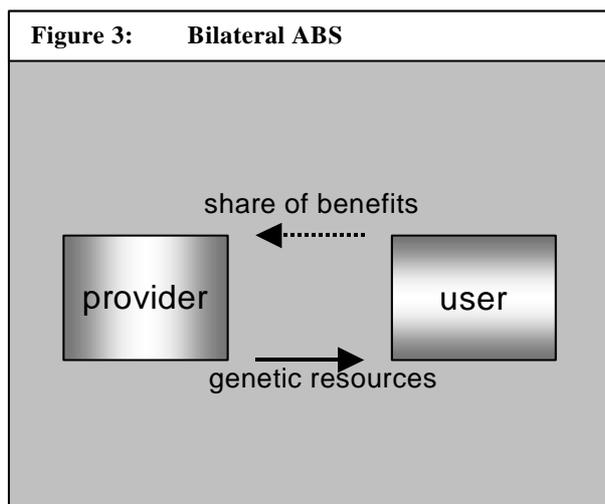
3.1.1 Conceptual Comparison of the Bilateral and Multilateral Approaches

Under the bilateral approach (see Figure 3), two parties exchange genetic resources for a share of the benefits arising from their use. Bilateral ABS resembles private contracts insofar as it implies an agreement between the providing and the receiv-

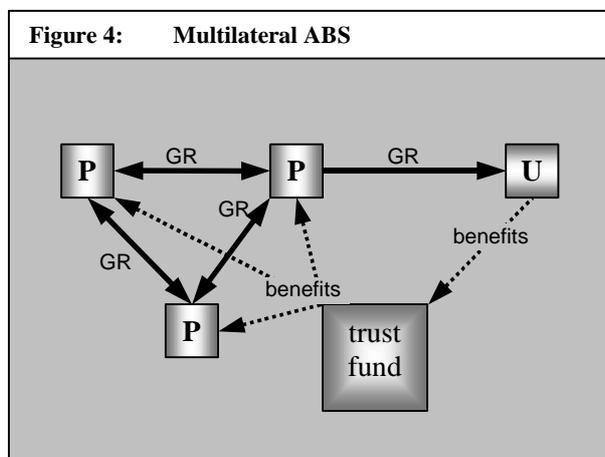
²⁹ See Dutfield (2000), p. 41.

³⁰ The relation between intellectual property rights and the CBD has been intensely discussed in different fora and in the literature. See Downes (1999) for a survey.

ing party (user) of genetic resources which sets out the terms of the exchange. The main advantage of the bilateral approach is commonly seen in its flexibility for the participants. One disadvantage lies in relatively high transaction costs for the user, since she or he has to negotiate ABS in every new case.



In the multilateral approach (see Figure 4), providers (P) of genetic resources exchange genetic resources (GR) among each other within the system. All participating parties both provide resources to and receive resources from the multilateral system in which all resources are pooled. The participants agree on a common set of rules which also regulates the transfer of resources to a user (U) outside the multilateral system. When benefits arise from the use or commercialization



of the resources transferred to a user, a predetermined share of the benefits is redistributed to the providers through a trust fund. The trust fund collects the benefits and is open to providers' applications to finance a defined range of projects. One distributive consequence is that all participants of the multilateral system have equal access to generated benefits, independent of individual contributions. The multilateral approach therefore comes into conflict with economic considerations when one provider possesses a large share of the total diversity of one species. Such providers could consider optimizing benefits by excluding that resource from the multilateral system, seeking bilateral agreements with users instead. In general, the prominent advantage of the multilateral approach is seen in the relatively low transaction costs it involves for each participant. For all transactions, the terms of exchange are commonly agreed upon and thus do not require any negotiations. Disadvantages can be seen in a lack of flexibility concerning the terms of exchange and in a certain propensity of the system to develop bureaucratic characteristics, which would again increase transaction costs.

3.1.2 The Bilateral Approach: Biodiversity

The Convention on Biological Diversity lays down a range of provisions for national legislation to regulate access to biological resources and to ensure a fair and equitable sharing of benefits resulting from their commercial use. The issue of ABS can be found in Article 15 of the Convention. Beside addressing general means of access legislation, Article 15 requires ABS agreements to be negotiated under mutually agreed terms and to follow the principle of prior informed consent. The aim of fair and equitable sharing is also included in Article 15.

As regards the general means of access legislation, "the authority to determine access to genetic resources rests with the national governments and is subject to national legislation" (Article 15.1). On the other hand, all member states "shall endeavour to create conditions to facilitate access to

genetic resources..." (Article 15.2). The signatory states' right to develop legislation determining access to genetic resources is thus combined with the duty to facilitate users' access to them. In more concrete terms, this means that access should be generally possible, clearly administered and non-restrictive, as well as free of excessive costs.³¹ The CBD does not cover access to biological resources collected before the Convention came into force (Article 15.3). Owners of *ex situ* collections of genetic resources, for example botanical gardens or pharmaceutical companies, may therefore continue to use their collections without being subject to the CBD.³²

Article 15.4 sets out a requirement to negotiate access to genetic resources on **mutually agreed terms**. Typical terms include legal acquisition, permitted use of genetic resources, restrictions on supply and benefit-sharing.³³ Legal acquisition emphasizes that the resources have to be of legal origin and be transferred in accordance with the relevant access legislation of the country of origin. Permitted use of genetic resources means that the intended use of the resources in question is defined in the ABS agreement. Restrictions on supply apply to the recipient's right to supply the resources to third parties. All of the terms of an ABS agreement affect the recipient's options to pass resources or their derivatives on to third parties. Thus it is important for intermediary institutions such as genebanks, universities or companies to ensure that terms agreed upon in the original acquisition of genetic resources are taken into account when these resources are supplied to other parties. A precondition for the negotiation of mutually agreed terms is the existence of an institution in the provider country which is both competent and legally authorized to negotiate (so-called *focal points* or *competent national authorities*). The CBD contains no provisions on the composition of the parties to such negotiations.³⁴

Consequently, it is an open question whether governments are legitimized to negotiate without consulting or involving local groups and communities.³⁵

Prior informed consent (PIC) is established as a principle in Article 15.5 of the CBD; this means that the receiving party to an ABS agreement must inform the providing party beforehand about the intended use of the resources in question. Providers then approve or reject access, based on the information given, which must be truthful and adequate to understand all implications.³⁶ Although this is not explicitly set out in the Convention, it is commonly understood that PIC is to be regulated by the government of the providing country. Many countries, though, have not yet taken steps to define administrative responsibilities for genetic resources. As a consequence, scattered competences among government organs obstruct compliance with the PIC provisions and make it difficult for interested institutions or companies to identify the agent whose consent is needed. When national access legislation has been adopted pursuant to the CBD, for example in the Philippines, but also in the member states of the Andean Pact Common Regime, consent may have to be sought from additional stakeholders such as local and indigenous communities. While such access laws effectively grant rights governing the control of access of genetic resources to local individuals, organizations and communities, some problems have been reported in operationalizing PIC. Collectors, who are often unacquainted with local languages and customs, are required to identify whose consent is needed at the local level and who is to negotiate on their behalf, a potentially difficult and costly undertaking. Finally, there is potential for tension between the PIC requirement to provide information on the intended uses of extracted resources and the corpo-

31 See Brand / Görg (2001), p. 25.

32 See Glowka (1998), p. 3.

33 See ten Kate / Laird (2000a), p. 22.

34 See Seiler / Dutfield (2001), p. 12.

35 See Brand / Görg (2001), p. 26.

36 While PIC is not defined in the Convention, several commentators have identified its contents as presented here. See ten Kate / Laird (2000a) pp. 27-29, Glowka (1994) and Posey / Dutfield (1996).

Box 4: The Appearance of a New Variety of Pirates: the “Biopirates”

Researchers and entrepreneurs in the North have been collecting biological materials in tropical countries since colonial times. But only recently have non-governmental organizations reacted to the increasing scope of intellectual property protection for genetic resources, coining the term “biopiracy”. Since then biopiracy has figured as one of the most controversial issues on the agenda of ABS discussions. There are at least three different views as to what is meant by biopiracy.^a First, from a legal perspective, it is said to be the appropriation of biological resources without the prior informed consent of the local people and/or of the competent authority of a specific region for access and benefit-sharing, under mutually agreed terms. Second, a critical view conceives biopiracy primarily as a moral question. According to this view, every plant breeder or biotech engineer implicitly relies on the accumulated success of generations of farmers and indigenous communities. Claiming exclusive monopoly rights to modified plants is therefore regarded as immoral. This argument mainly relates to agricultural – or improved – biodiversity. Third, industry denies that there is a problem which might be termed biopiracy. According to this view, knowledge and material in the public domain may be used freely, while intellectual property protection should only be possible for real and actual inventions. In this view, if the term biopiracy were to be used at all, then it should refer to the unauthorized copying of plants or biotechnological innovations protected by intellectual property rights.

Industry usually disagrees with NGOs when it is charged with biopiracy. On the one hand, this has to do with the opposing views described above. On the other hand, even if one takes the legalistic viewpoint, it is difficult to assess whether a specific case should be called biopiracy or not. The basmati rice patent of the US company RiceTec, issued in 1997, is a well-known example of such a dispute.^b RiceTec claims that it has invented a new variety of basmati rice using germplasm that was freely available for breeding. NGOs and numerous farmers’ organizations from the developing world were outraged because they saw RiceTec as having appropriated the knowledge of South Asian farmers and the famous basmati name. By now, the Indian government has challenged the patent claims and has already succeeded in having most of the claims revoked. There are many other examples of alleged biopiracy. The heated discussion surrounding the subject has led to high public awareness in developed and developing countries alike and has served as catalyst in making the general public aware of the issue of ABS and intellectual property rights.

a See Crucible Group II (2000), p. 111.

b See Crucible Group II (2000), p. 112.

rate interest in keeping commercialization plans a trade secret.³⁷

The CBD’s focus on **benefit-sharing**, laid down as one of its three objectives in Article 1, attempts to address two main issues. First, it aims to ensure that benefits derived from biological resource exploitation translate into sustainable use and conservation of genetic resources, and not to their destruction. Second, it aims to enable local users and legal owners of genetic resources to gain a share of the benefits resulting from their commercialization.³⁸ The obligation to share benefits arises in three contexts. First, when access to genetic resources is sought, the CBD requires contracting parties to define the modes and extent of benefit-sharing as part of the mutually agreed terms described above. Article 15.7 states in this regard that national governments shall establish measures “*with the aim of sharing in a fair and*

equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources...” It is noteworthy that the word “aim” is used instead of the stronger “requirement”, leaving abundant space for interpretation concerning the extent to which CBD provisions have to be realized in national legislation. Second, when access to knowledge, innovations and practices of indigenous and local communities is sought, Article 8(j) calls on contracting parties to “*encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.*” Here again, the term “encourage” allows room for interpretation.³⁹ Third, Articles 16 and 19 encourage countries of the North to share technology and in particular the results and benefits of biotechnologies based on resources provided by developing countries.

Article 15 of the Convention has probably been the most controversially discussed element in the

37 See Brand / Görg (2001), p. 26.

38 See Columbia University (1999), p. 74.

39 See ten Kate / Laird (2000a), p. 15, Glowka (1994).

field of bilateral ABS, both during the negotiation of the CBD and since its adoption. With its implications for national law-making, economic development, the rights of local and indigenous communities and companies' transaction costs, it has triggered hopes for rapid monetary returns (the "grand bargain") as well as fears concerning

nize that all relevant stakeholders should be involved in access determination, but add that the question of which stakeholders need to be involved can only be answered on a case-by-case basis. Local and indigenous communities are explicitly noted as stakeholders who need to be involved in consultations as well as in PIC proce-

Box 5: Implementation of the CBD on a National Scale

Since the CBD entered into force, there have been a large number of planning and legislative activities at the regional, national and subnational level dealing with access to genetic resources. In the meantime, authorities have implemented laws and other policy measures in ways of their own. According to Glowka, existing and draft access legislation can be broken down into five groups.^a

- 1) **Environmental framework laws**; such laws are of an enabling nature. National authorities are obliged to develop measures designed to regulate the export of germplasm, benefit-sharing, and access fees.
- 2) **Framework sustainable development, nature conservation or biodiversity laws**; such laws tend to be more detailed and show a specific intent to comprehensively implement the CBD.
- 3) **Dedicated or stand-alone national laws or decrees on access to genetic resources**; constitute the most comprehensive pieces of access legislation.
- 4) **Modification of existing laws to better reflect access to genetic resources and benefit-sharing issues**
- 5) **Regional law creating a common regime of access to genetic resources**; a minimum set of rules to be implemented by each member state to strengthen the bargaining position of the members.

It is estimated that today some 50 countries are drafting and implementing laws and policies aimed at fair business partnerships.^b However, there are only a few comprehensive national ABS regulations in existence. The three best known examples are: (1) Costa Rica's Biodiversity Law 7788 (1998) envisages a framework law approach. (2) In the Philippines, Executive Order 247 (1995) and Administrative Order 96-20 (1996) represent the only finalized example of a stand-alone law. (3) Thus far, Decision 391 of the Andean Pact (1996) is the only regional approach; it includes five member states of the Andean Commission (Bolivia, Colombia, Ecuador, Peru and Venezuela).

a See Glowka (1998), p. 23.

b See ten Kate / Laird (2000a), p. 4.

obstacles to access.

In view of the fact that implementation of the provisions of Article 15 has been slow, member states of the CBD have responded by adopting the **Bonn Guidelines** for access and benefit-sharing.⁴⁰ The guidelines are of a voluntary nature and are meant to assist countries in developing their national access legislation and procedures for benefit-sharing.⁴¹ Among other issues, the guidelines deal with PIC, mutually agreed terms and guidelines for the roles, responsibilities and participation of stakeholders. The guidelines recog-

dures that are in accordance with traditional practices. While most participants were quoted as supporting the contents of the guidelines, criticism was voiced on the voluntary status of the guidelines and their lack of elaboration compared with laws already adopted in some countries.⁴²

3.1.3 The Multilateral Approach: Agrobiodiversity

The International Treaty on Plant Genetic Resources for Food and Agriculture is devoted to the objectives of "*conservation and sustainable use of plant genetic resources for food and agriculture*

40 The guidelines were formulated by an *Ad Hoc* Open-Ended Working Group on ABS of the CBD and adopted at the Sixth Conference of the Parties in April 2002. The Decision VI/24 is available at www.biodiv.org/decisions.

41 See IISD (2001).

42 See Shon (2001).

and the fair and equitable sharing of the benefits arising out of their use [...] for sustainable agriculture and food security" (Article 1). While the CBD encourages market mechanisms via bilateral ABS agreements aimed at conserving biological diversity, the multilateral approach represented by the ITPGR pursues a very different path.

Rather than relying on a bilateral "grand bargain", the ITPGR subscribes to the belief that no functioning markets can be created for the most important PGRFA. Such markets would either be monopolized or distorted by players who possess larger shares of PGRFA, and this would consequently mean high transaction costs for users. The International Treaty hence puts priority on open access to PGRFA as a means of keeping access costs low for all interested parties. In this way, the ITPGR seeks to foster further breeding and research and to contribute to global food security.

The ITPGR requires the multilateral sharing of benefits through four mechanisms (ITPGR Article 13.2): (1) exchange of information, (2) access to and transfer of technology, (3) capacity-building, and (4) sharing of monetary and other benefits of commercialization. The central instrument of the ITPGR is the establishment of a global multilateral system of access, exchange and benefit-sharing for PGRFA. This means that PGRFA are effectively exempt from the regulations established under the CBD. Most importantly, PGRFA will not be exchanged through bilateral contracts but are to be accessed "*expeditiously, without the need to track individual accessions and free of charge*" (ITPGR Article 12.3(b)) by any member country of the ITPGR.

The rationale of the multilateral system is that – due to the high global interdependency of PGRFA – every member country will gain access to more resources than it contributes itself, making each country a net beneficiary. However, the ITPGR goes beyond the pure exchange of PGRFA. The ITPGR also aims at the global conservation of biodiversity by supporting the implementation of

the Leipzig Global Plan of Action.⁴³ To this end, a global trust fund for *in situ* and *ex situ* conservation is to be established and governed by the FAO (Article 18). The fund's financial means are to be allocated to conservation projects and programs in line with the Global Plan of Action. Contributions to the fund are envisioned to come from two sources:

- Developed countries are expected to provide a core contribution (ITPGR Article 18.4).
- Recipients who commercialize a product on the basis of PGRFA from the multilateral system must pay into the fund an equitable share of the benefits arising from that product if the product is protected by intellectual property rights in a form that restricts its availability for further research and breeding (e.g. patent). The level, form and manner of this mandatory payment is to be determined at the first meeting of the ITPGR Governing Body yet to be created.

Recipients who commercialize a product on the basis of PGRFA from the multilateral system but keep the product available without restriction to others for further research and breeding are exempt from the benefit-sharing requirement, though they are nevertheless encouraged to make such payments (ITPGR Article 13.2 (d) (ii)). This would be the case when a breeding company chooses to protect a new variety not by patent but by means of a Plant Breeders' Right. Usually, the reason why a new plant variety can be protected only by such rights is that the conventional breeding process is not considered as involving an inventive step, one essential criterion for a patent application. But new genetically engineered plants generally involve an inventive step and therefore qualify for patent protection. Financial flows to

43 The FAO Global Plan of Action was adopted in 1996 in Leipzig by representatives of 150 nations in order to devise and coordinate a global *in situ* and *ex situ* conservation strategy for Plant Genetic Resources for Food and Agriculture. The strategy is aimed at coordinating global and national conservation efforts. Its implementation is regarded as a major contribution to the realization of the CBD in the field of food and agriculture.

the fund from private sources will therefore only materialize if companies are granted patents on their products.

3.2 Stakeholders Involved in Access and Benefit-Sharing

Stakeholders can be subdivided into direct and indirect stakeholders.⁴⁴ Direct stakeholders will either benefit from or be harmed by the terms and conditions of a specific case of biological resource exploitation. The providers and users of genetic resources are most likely to be direct stakeholders, and they will in general be parties to formal ABS agreements. Indirect stakeholders include those who have a general interest in the outcome of access agreements but are not immediately affected by the negotiation or implementation of a specific agreement. On the largest scale, all of humanity may have a stake in the preservation of biodiversity in general, even though it would be affected only negligibly by the extraction of a particular sample.⁴⁵ NGOs represent the interests of various groups of indirect or, in case of self-help organizations, direct stakeholders. In what follows, the focus is on direct stakeholders.

Authors writing on the subject have stressed the necessity to identify and involve all direct stakeholders in a specific case of biological resource exploitation to ensure the process proceeds effectively. Otherwise, stakeholders who feel neglected in access negotiations may prevent access to resources under their control if their rights and interests have not been respected. This appears especially, but not exclusively, relevant for local and indigenous communities.

Stakeholders in bilateral as well as multilateral access and benefit-sharing can be divided into seven groups: (1) national governments, (2) local government units, (3) indigenous communities, (4) farmers, (5) NGOs and peoples' organizations (POs), (6) scientists and scientific institutions, and (7) industry.⁴⁶ Each category may include individuals, community groups, organizations, or institutions from developing and developed countries who will be directly affected by an instance of access to genetic resources and the benefits arising from their subsequent commercialization.

- 1) **Nation states** are accorded sovereignty over biological resources on their territories by the CBD. They are defined as stakeholders to bilateral ABS because of their responsibility to create and enforce national ABS legislation under the CBD. In national ABS legislation, competences must be specified for government bodies in dealing with access applications, negotiation of mutually agreed terms, and PIC. In some cases of bilateral ABS, specific provisions are made for government bodies to receive monetary benefits arising from the commercialization of accessed genetic resources. As contracting parties to the ITPGR, governments are required to implement the multilateral system and to pursue steps to make the Treaty fully operational. However, in contrast to the CBD, governments do not have to enact separate legislation to comply with the ITPGR. Under both CBD and ITPGR, governments are assumed to be benevolently interested in maximizing the flow of benefits to their countries.
- 2) **Local government units** are involved by some national access legislation to give PIC under the CBD. Local mayors and city councils represent communities, including farmers, from whose lands genetic resources are extracted. Representative local government units are assumed to be interested in reaping a maximum of benefits for their communities. Furthermore, regional and local level line

44 See Columbia University (1999), p. 68.

45 As far as the pharmaceutical industry is concerned, all persons suffering from a specific disease may be considered indirect stakeholders; in the case of agricultural plant varieties, those who suffer from hunger may be defined as indirect stakeholders. In both cases, the details of particular ABS-agreements would be beyond the broad interest of the indirect stakeholders.

46 See Columbia University (1999), p. 69.

agencies of national government institutions in fields such as environment or agriculture may be assigned responsibilities under national ABS legislation or in *in situ* conservation strategies. Their assumed interest is to avoid additional responsibilities without being given additional funding and to maximize the benefits for their region.

- 3) **Indigenous communities** are usually represented by a council or organization that negotiates on their behalf when access to traditional knowledge or resources on indigenous land is sought. Although the CBD prescribes to seek PIC only from the government of the country of origin, involvement of indigenous communities is required by some national access laws. Indigenous communities are assumed to have an interest in reaping both monetary and non-monetary benefits. Besides, indigenous communities are assumed to attach more holistic values to genetic resources and to be interested in gaining respect and legal security for their traditional lifestyles, land and knowledge.
 - 4) **Traditional farmers** are stakeholders of the ITPGR in the sense that they provide *in situ* conservation of agrobiodiversity. We can assume that most traditional farmers are not aware of the role the ITPGR assigns to them. However, farmers in developing countries are the principal recipients of the benefits of the trust fund, which are meant to be used for *in situ* conservation measures.
 - 5) **NGOs and POs**, as representatives of citizens' interests, figure as stakeholders either in the role of third parties to bilateral ABS agreements or as parties external to such agreements, seeking to influence their outcome. As farmers' organizations, NGOs represent stakeholders' interests in the multilateral system; as scientist-farmer networks, NGOs conduct *in situ* conservation projects. Interests of NGOs and POs have to be seen not only in terms of the content of their work, for example maximizing community participation, but also in terms of their organizational
- interests as moral entrepreneurs who seek to preserve legitimacy.
- 6) **Scientists and scientific institutions** of developing and of developed countries are stakeholders in both bilateral and multilateral ABS. Under the CBD, national scientific institutions in the providing country are regularly involved in the collection or processing of genetic resources. In many cases, they are a direct party to a bilateral agreement and collect for a contracting scientific institution or company from a developed country. As members of the multilateral system, public agricultural research institutions such as members of the Consultative Group on International Agricultural Research facilitate access to their *ex situ* collections and fix material transfer agreements with commercial users of supplied PGRFA. Scientific institutions in general are assumed to have a strong interest in preserving free access to genetic resources for research (especially in developed countries) as well as in receiving technologies, either through bilateral ABS agreements or from the multilateral system (especially in developing countries).
 - 7) **Industry** is the main commercial user of genetic resources. Research and development units of private companies are also subsumed under this group. While most companies emphasize the importance of screening technologies to find lead substances and acquire samples, a few companies have applied an ethnopharmacological approach, drawing explicitly on indigenous knowledge. Studies conducted thus far on industries' opinions on the CBD note that companies are concerned about a lack of clarity concerning access rules as well as about high transaction costs. On the other hand, companies see access legislation as a potentially reliable legal environment for their operations⁴⁷. The industry perspective will be presented in more detail in Section 3.4.

⁴⁷ See ten Kate / Laird (2000a), pp. 296-297.

3.3 Typology of Possible Benefits

A broad range of benefits may arise from the commercialization of genetic resources, and a large number of different approaches to benefit-sharing have emerged in practice. As a consequence, the benefits accruing under benefit-sharing agreements are equally diverse. What follows focuses on benefits for the source country. Benefits for commercial users of genetic resources arising from the marketing of products accessed through bilateral ABS agreements will therefore not be outlined here. Also, the majority of benefits presented are discussed in the context of bilateral ABS. Since the ITPGR is still very recent, little has been written about expected benefits.

cial effects which were not explicitly intended by the Convention. We will discuss these beneficial side-effects at the end of this section and concentrate for now on benefits in a narrow sense.

Most frequently, benefits are categorized according to whether they take on monetary or non-monetary forms.⁴⁸ Monetary benefits are cash payments, while non-monetary benefits may be regarded as payments in kind. Most non-monetary benefits have a monetary value that can be quantified, such as training costs, costs for laboratory equipment or profits forgone, for example when local populations are granted free access to developed medicines. It has to be recognized, though, that the monetary value of some non-monetary

Box 6: The Costa Rican National Biodiversity Institute (INBio): The First Example of Institutionalized Benefit-Sharing

Strengthening and reviving the value of biological diversity was the motto when, in 1989, INBio was established by the Costa Rican Ministry of Environment and Energy. INBio aims at conserving biodiversity within the country, developing inventories of the country's biodiversity and using biological resources in a sustainable manner. To date, the institution comprises 28 research stations and offices in major conservation areas of Costa Rica and employs over 165 people.^a

INBio attained fame in 1991 when it entered into the first benefit-sharing agreement between a drug company (Merck) and a biodiversity-rich country, and has since then figured in the literature as a template for ABS agreements. In the meantime, the initial contract has been renewed and agreements with other companies have been signed.^b

Different types of benefits have already been realized. INBio emphasizes scientific and institutional capacity-building as part of a long-term strategy. The institute obtained an upfront-payment of US\$ 1m from Merck to establish a laboratory of its own. Merck delivered laboratory equipment and Diversa contributed another US\$ 30,000 for the laboratory. Aside from that, INBio profits from training, joint research and technology transfer.^c All partners pay sample fees, thus contributing to the operating costs. However, no royalties have been paid thus far because bioprospecting has not yet led to the successful development of a drug.

Should other countries imitate INBio's example? It would be premature to assess the results of the case, since it builds on long-term expectations regarding the value of genetic resources. If resources turn out to have a large commercial value, this will mean royalties, and INBio will be in a good position to actively use and market the resources. If, on the other hand, commercial success fails to materialize, INBio will not be able to operate in a financially sustainable manner and would need large government subsidies to fund its work.^d

a See ten Kate / Laird (2000a), p. 253.

b INBio signed agreements with Bristol-Myers Squibb (1993), the Swiss-US-Company Givaudane Roure (1994), Diversa Corporation (1995) and the Italian INDENA on the development of new phytochemicals and phytomedicine (1996). See ten Kate / Laird (2000a), pp. 253-254.

c See Columbia University (1999), pp.21-23 and ten Kate / Laird (2000a), pp. 256-257.

d Barbier (2000), pp. 89-91 shares this pessimistic outlook and argues that social costs of biodiversity conservation are much higher than private revenues arising from bioprospecting contracts. Note, however, that this is not an argument against the activities of INBio in general, which may be worthwhile from a social point of view.

When using the term benefits, we are referring to those transfers that can be agreed upon in ABS agreements. It has to be considered, though, that the process of implementing the CBD in national access legislation as well as subsequent negotiations of ABS agreements, may give rise to benefi-

benefits is more difficult to assess, for example when local contributors are acknowledged in publications.

48 See Columbia University (1999), p. 74.

However, with regard to relevance for stakeholders in providing countries, a temporal distinction between short-, medium- and long-term benefits seems most appropriate. Short-term benefits comprise those payments and in-kind transfers which immediately accompany access to genetic resources. The medium term comprises the phase between the extraction of resources and the final commercialization that creates actual profits for the

user. The long term refers to the point in time when successful product development has been achieved and profits arise from commercialization. Table 3 presents an overview of types of benefits in order of time and notes whether benefits are predominantly monetary or non-monetary.

Given the time lag between the collection of genetic resources and the commercialization of a

	benefit type	monetary	non-monetary
Short term	access to <i>ex situ</i> facilities and databases		X
	advance payments	X	
	bioprospecting fees ("up front fees")	X	
	payments per sample ("sample fees")	X	
	share in research budget and/or equipment for laboratories	X	
	fees to trust funds for conservation & sustainable use of biodiversity	X	
	mutual agreement on salaries and preferential terms	X	
Medium term	acknowledgement in publications		X
	technology transfer under most preferential terms		X
	research collaboration (if possible in provider country)		X
	scientific capacity-building		X
	administrative capacity-building		X
	return of modified material		X
	maintenance of and contribution to <i>ex situ</i> collections		X
	participation in product development		X
	contributions to local economy		X
	research directed at local priority needs		X
	protection of local applications of IPR		X
	joint ventures	X	
	research funding	X	
	payments accompanying valorization ("milestone fees")	X	
Long term	free access of population to developed products		X
	access to research results and exchange of experience		X
	joint ownership of patents & other IPR		X
	participation in value added	X	
	share in royalties	X	

Source: Adapted from the Bonn Guidelines and Columbia University (1999), p. 75

subsequently developed product – normally 5 to 20 years for pharmaceutical products – most types of benefit-sharing take the form of advance contributions. Types of benefits that can be realized in the short term mainly take the form of small-scale monetary transfers. Hence the expectations in some provider countries of rapid and large monetary returns for their biodiversity are not likely to be met. In the medium term, though, providing countries stand to gain from non-monetary benefits such as the transfer of know-how and technology. Only in the long run, as benefits eventually arise from the commercialization of genetic resources, are stakeholders in the providing countries apt to receive monetary returns such as a share in royalties.

The majority of benefits realized so far through bilateral ABS agreements are reported to be non-monetary.⁴⁹ Where benefit-sharing focuses on non-monetary issues such as capacity-building and the provision of equipment for legal and scientific institutions in the providing countries, the result is enhanced options for further bioprospection and consequently for additional potential commercialization. Types of benefit-sharing which aim at enhancing local infrastructure are an investment in the countries' ability to provide genetic resources in a form that meets users' demands. On the other hand, reservations have been expressed concerning the sustainability of infrastructure enhancement based on benefit-sharing. According to this view, scientific infrastructure is build up to match the needs of the receiving party. An eventual withdrawal of the receiving party may signal to other potentially interested parties that results of bioprospection are no longer expected to yield options for commercialization. Provider countries could then be left with an oversized infrastructure, but no demand for genetic resources.

Another important issue in benefit-sharing is who in the providing country is actually to receive benefits. Table 4 presents the same typology for benefits as Table 3, but notes recipient stake-

holders for each type of benefit. The overview shows scientists and scientific institutions in providing countries to be recipients of the broadest range of types of benefits. This can be interpreted in relation to the investment character of monetary or non-monetary transfers to this group of stakeholders, as noted above. Apparently, user interest in enhancing collecting and processing capacities in providing countries has led to a larger number of benefit types geared to local scientists.

In discussing the development-related consequences of benefit-sharing, it should not be forgotten that the implementation process of the CBD as such entails a potential for beneficial impacts on development. Access to resources as emphasized in the Bonn Guidelines requires a consultation process involving different stakeholders: local and indigenous communities, scientists, governments, and industry. This is intended to place marginalized groups such as local and indigenous communities in a position in which they are respected as negotiation partners and find a chance to be heard, provided their government does not take impeding measures. Moreover, governments are encouraged in the course of the implementation of the CBD to introduce laws clarifying property rights for local and indigenous communities. Hence implementation of the CBD may have two accompanying effects: it makes of otherwise marginalized stakeholders partners that are heard in consultations, and it encourages the introduction of land rights. The ability to negotiate on one's own behalf and the possession of rights are preconditions not only for sustainable development but also for multi-stakeholder approaches. The implementation process thus may bring about unintended but beneficial side-effects by functioning as a vehicle for empowerment and may in this way contribute to sustainable development.

49 See Brand / Görg (2001), p. 28.

type of benefit	nation states	local / indigenous communities	industry	NGOs	scientists
access to <i>ex situ</i> facilities and databases					X
advance payments	X	X			
bioprospecting fees (“up-front fees”)	X	X			
payments per sample (“sample fees”)	X	X			
share in research budget and/or equipment for laboratories					X
fees to trust funds for conservation & sustainable use of biodiversity				X	X
mutual agreement on salaries and preferential terms		X			
acknowledgement in publications					X
technology transfer under most preferential terms					X
research collaboration (if possible in provider country)			X		X
scientific capacity-building					X
administrative capacity-building	X				
return of modified material					X
maintenance of and contribution to <i>ex situ</i> collections					X
participation in product development		X	X		X
contributions to local economy		X			
research directed at local priority needs		X			X
protection of local applications of IPR		X			
joint ventures		X	X		X
research funding					X
payments accompanying valorization (“milestone fees”)	X	X			X
free access of population in case of product development (e.g. medicines)		X			
access to research results and exchange of experiences			X		X
joint ownership of patents & other IPR		X	X		X
participation in value adding		X	X		
share in royalties	X	X			

Source: Adapted from the Bonn Guidelines and Columbia University (1999), p. 75

3.4 Reasons for the Limited Success of Bilateral ABS Agreements: The Industry Perspective

It is difficult to assess whether the new international regulations on access and benefit-sharing under the CBD have changed the amount of benefits flowing to developing countries. Even before the Convention, benefit-sharing was an accepted part of academic or commercial practice. However, the CBD and – in the future – the ITPGR are set to institutionalize these voluntary types of cooperation. But thus far few successful bilateral ABS agreements have been concluded. This section, based on the literature and our own interviews, takes a look at the obstacles seen by industry and the latter's strategies for dealing with them. The main points brought forward by industry are: a lack of clarity and legal security, excessive bureaucracy involving high transaction costs, and unrealistic expectations on benefit-sharing by governments and provider institutions. Given this critical perception, industry is responding by developing substitution strategies: avoiding countries with ABS legislation in place, decreasing *in situ* collection activities, and employing intermediary institutions from developing countries.⁵⁰

Industry's most common concern is a perceived **lack of clarity** in many countries. Companies hold the CBD responsible for obligations that most developing countries are not able to adequately fulfill. They find it hard to identify the relevant and competent access authority and the necessary requirements. In this way countries make it difficult even for well-intentioned companies to follow their policies. This concern is critical in that most companies – theoretically – regard the legal security the CBD could bring as one of its major advantages. Large companies in particular would prefer to follow clear-cut rules in order to avoid any accusations of biopiracy.

In countries that have implemented national ABS legislation, business complains that **excessive bureaucracy causes considerable transaction**

costs. The existing procedures are seen as too complicated, too lengthy and non-transparent. Tedious negotiations with government agencies, travel and communication expenses, staff time and long delays until applications are completed tend to make bioprospecting uncompetitive in these countries, from the viewpoint of the users (see Box 7 for industry perceptions of the Philippine ABS regulation).

Commercial users accuse governments and provider institutions of **expecting the value of genetic resources to be unrealistically high.** Economists are debating the possible development of research on genetic resources, and many argue that the potential to obtain monetary benefits from them is rather limited.⁵¹ As a representative from Bayer mentioned, research on natural substances is today only a marginal part of their medical research portfolio. Nowadays, fewer natural substances are needed than before, and new technologies even make it possible to successfully reanalyze existing company collections. This does not mean that natural genetic resources are not relevant, but their share in the value of a newly developed pharmaceutical product may not be in line with provider estimates. If this argument holds, developing countries will have to downgrade their expectations on benefits, and their prospects to enter into profitable ABS agreements will be limited, even in the long run.⁵²

The present legal and policy climate could result in decreased demand for *in situ* genetic resources and less benefit-sharing than has been expected by policy-makers. Companies **adapt their strategies** to the new situation mainly in three ways. The major substitution strategy is to simply circumvent countries with stringent access regimes.⁵³ This is easy to do, since most countries of the

50 See ten Kate / Laird (2000a), pp. 297-303.

51 See for example Barbier (2000), pp. 89-91, and Columbia University (1999), p. 87.

52 See ten Kate / Laird (2000a), p. 297 and ten Kate / Laird (2000b), p. 251.

53 See ten Kate / Laird (2000a), p. 301.

Box 7: Bioprospectors' Perspectives on the Philippine Access Legislation

Excerpt from a letter by Manheim, Fox, Bennet and Turner on behalf of Bristol-Myers Squibb, to the Hon. Timothy Wirth, Undersecretary for Global Affairs, Department of State, USA, 3 November 1995:^a

"A recent Executive Order from the Philippines implementing these provisions of the Convention creates a severe impediment to any natural products research by Bristol-Myers Squibb and its collaborators in that country... Indeed it must be emphasized to the Convention parties that Bristol-Myers Squibb will not pursue natural products research in those countries that impose requirements similar to those contained in the Philippine Executive Order... [G]overnment initiatives that place onerous restrictions on those seeking access to genetic resources or do not afford appropriate protection to intellectual property rights will result in fewer efforts to survey natural sources for pharmaceuticals and that will ultimately work to the detriment of environmental protection... Among other things, one requirement of such an agreement is that, for endemic species, 'the technology must be made available to a designated Philippine institution and can be used commercially and locally without paying a royalty to a Collector or Principal...' Although the Philippine EO goes on to provide that other arrangements may be negotiated 'where appropriate and applicable', this requirement amounts to nothing more than a compulsory licensing scheme. Moreover, while somewhat ambiguous, the provision would appear to allow the designated Philippine Institution to use the technology commercially both within and outside of the country. This scheme is flatly inconsistent with the Agreement on Trade-Related Aspects of IPR (TRIPS) negotiated in the Uruguay Round of the GATT ... [Consultations] to the best of our knowledge, ... did not include pharmaceutical firms such as Bristol-Myers Squibb, whose natural products research efforts will be seriously undermined by the Philippines EO and other similar initiatives."

Gordon Cragg, the National Cancer Institute (NCI) in the USA:^b

"My reading of the situation is that the requirements (no matter how well intentioned) are so onerous (PIC from local municipalities, town meetings, advertising intentions in local media, etc.) that it is almost impossible for a foreign organization to initiate/perform collaborative research. ... Another problem is that there does not seem to be a single government agency to deal with, which makes trying to get permits/agreements a very complex, if not impossible, process.

a ten Kate/Laird (2000a), p. 301.

b Personal communication, 5 April 2002.

world have not implemented any regulation yet.⁵⁴ In any case, it is virtually impossible for most developing countries to effectively control the (illegal) export of genetic resources, since surveillance costs would be prohibitively high. Second, business is consolidating its activities in natural products research. Collecting programs are being downscaled and concentrated on fewer countries, companies rely increasingly on *ex situ* collections that do not fall under the provisions of the CBD, or they refine their technologies with an eye to getting along without *in situ* collections. "*Companies and research groups are turning to other methods such as combinatorial chemistry/biochemistry and the extraction of microbial DNA from environmental samples (e.g. soil samples which can be collected without going to exotic foreign countries)*", as Gordon Cragg of the

National Cancer Institute noted as one alternative. Third, it has become more common to engage intermediaries as brokers to either evade legislation or to comply with regulations with the support of a local collaborator. This strategy could, as a side-effect, lead to capacity-building in developing countries.

In conclusion, the economic value of genetic resources depends not only on science and technology but also on law and policy. Companies basically have four options to deal with ABS regulations: ignore them, work around them, work with them, or seek to shape their further development and implementation. The two last options seem to be the most recommendable from the point of view of all stakeholders, but thus far they have been the ones used least.⁵⁵

54 Moreover, many European countries still have some simple options for bioprospecting in the tropics because of the French and British overseas territories that fall under the jurisdiction of the European Union.

55 See ten Kate / Laird (2000a), p. 300.

PART II: THE CASE OF THE PHILIPPINES

4 The Practice of Bilateral Access and Benefit-Sharing in the Philippines

The Philippines was the first country worldwide to issue a comprehensive set of regulations on biodiversity prospecting. It therefore provides a pioneering example of how to translate the CBD principles on access and benefit-sharing into national law and action. Philippine scientists had pushed for the idea of bioprospecting legislation and were supported by some politicians and NGOs. In 1996, legislation was complete and stakeholders started out implementing it with great enthusiasm. Nevertheless, visible results of the regulations are still rare. Some problems arose, criticism was raised from different stakeholders' points of view, and options for reform are being discussed. This chapter provides background information about the Philippine ABS legislation, analyzes the reasons for the limited number of ABS agreements, assesses the development-related impacts of the past agreements and presents some policy options to improve the present situation.

4.1 Background Information

This section provides some introductory information about the state of biodiversity as well as the legal setting and stakeholders of ABS in the Philippines. Finally, it presents a short overview of pending and concluded ABS agreements.

4.1.1 The State of Biodiversity: Rich, but in Danger

The Philippines holds a very high rate of biodiversity, though the latter is experiencing an alarming rate of decline. Over 40,000 wildlife species are found here in a great number of different ecosys-

tems such as forests, coral reefs and mangroves.⁵⁶ The country's forests are among the world's most diverse. Recently, the World Rainforest Movement reported about 14,500 plant species in the country, of which 8,000 species are flowering and roughly 6,500 species are non-flowering plants.⁵⁷ This means that the Philippines harbors around 5 % of the world's known flora. It is assumed that 192 species of wildlife are endangered on the archipelago.⁵⁸

Moreover, it is the great number of endemic⁵⁹ species that makes the country's biodiversity so valuable to humankind and users of biological resources. There are approximately 3,500 endemic species of flowering plants, about 111 endemic species have been found among lower plant forms.⁶⁰ All together, an estimated 30 – 40 % of Philippine flora is endemic.⁶¹ For the future, it can be expected that the – still largely undiscovered – Philippine marine resources will provide a great reservoir for scientific and commercial applications.

The disappearance of ecosystems in the Philippines is a major cause for the biological meltdown during the past decades, which is unparalleled in Southeast Asia and perhaps in the world.⁶² Limited political efforts in environmental protection, an economic system that fails to place value on the environment, lack of knowledge and a fast-growing population have accelerated forest degradation, which poses a grave threat to this global natural heritage.⁶³ For this reason, Conservation International, an NGO, has declared the Philippines the most urgent biodiversity conservation

56 See Wood (no year), p. 2.

57 See World Rainforest Movement (2001).

58 See Wood (no year), p. 2.

59 Endemic means that these species exist only in one region worldwide, in this case exclusively in the Philippines.

60 See La Viña / Caleda / Baylon (1997), p. V.

61 See World Rainforest Movement (2001).

62 See La Viña / Caleda / Baylon (1997), p. V.

63 See Barber / La Viña (1997), pp. 118-119.

priority on the planet.⁶⁴ At present, only 18 % of the original forest cover is left and 180,000 ha of forest are destroyed every year. Moreover, only 27 % of the original mangrove forests remain. The main direct causes of forest loss in the Philippines are over-logging, migration, and conversion of forest lands to agricultural lands. In the mangrove ecosystems extraction of fuel and construction materials and development of fish ponds have led to environmental degradation and thus biodiversity loss.⁶⁵ Even though lack of data on species and scientific uncertainty about extinction rates makes it difficult to prove exactly how many species are already lost or threatened by extinction, the magnitude of the problem in the Philippines cannot be ignored.

4.1.2 Institutional and Legal Setting

The Philippine legislation on bioprospection is one of the first of its kind worldwide. It is therefore pathbreaking as an example of how to translate the ABS provisions of the Convention on Biodiversity into national law. This section briefly introduces the Philippine legal setting on bioprospection and other laws influencing this setting, before later sections concentrate on experiences with its implementation.

Presidential Executive Order 247 on Bioprospection and Rules of Implementation

Presidential Executive Order 247 (EO 247) of 1995 and Department Administrative Order 96-20 (DAO 96-20) in 1996 established the legal framework for bioprospecting and regulation of access to biological resources in the Philippines. EO 247⁶⁶ was enacted in May 1995. It "... covers

prospecting of all biological and genetic resources in the public domain, including natural growths on private lands, which foreign and local individuals, entities, organizations whether government or private – intend to utilize."⁶⁷ In its first section, EO 247 recognizes the clear framework for property rights to biological resources put forward in the Philippine constitution: the Philippine State owns all forests, wildlife, flora and fauna, and other natural resources (Section 2, Article XII). While EO 247 sets the legal framework, in June 1996 it was complemented by the DAO 96-20, which lays down the administrative rules on implementing EO 247.⁶⁸

The regulations include four basic elements: setup of an Inter-Agency Committee for Biological and Genetic Resources, a scheme of mandatory research agreements, a regulation on achieving prior informed consent from local communities, and requirements on conforming with environmental protection.⁶⁹

An **Inter-Agency Committee for Biological and Genetic Resources (IACBGR)**, located within the Department of Environment and Natural Resources and supported by its Technical Secretariat, was set up to coordinate the processing of applications for bioprospection and discuss improvements to the existing rules on bioprospection. A multi-stakeholder approach was chosen to do justice to all stakeholders and their differing interests and to ensure participation of all partners by reaching mutually agreed terms.

Mandatory research agreements are concluded between collectors and the government of the Philippines, while the IACBGR acts as the authority responsible for the negotiation process. The agreements contain minimum terms on the provision of information and samples, technological

64 See Chanco (1998), p. 1.

65 See Wood (no year), p. 1.

66 The explicit designation of the Order is "*Prescribing Guidelines and Establishing a Regulatory Framework for the Prospecting of Biological and Genetic Resources, Their By-Products and Derivatives, for Scientific and*

Commercial Purposes and For Other Purposes." The full text of EO 247 is available at www.psdn.org/chmbio.

67 La Viña / Caleda / Baylon (1997), p. iii.

68 The full text of DAO 96-20 is available at www.psdn.org/chmbio.

69 See La Viña / Caleda / Baylon (1997), p. vii.

cooperation and benefit-sharing. There are two types of research agreements: academic research agreements (ARA) are concluded with universities, academic institutions, government agencies for the purpose of research only, while commercial research agreements (CRA) are concluded with private parties, corporations or foreign entities. Requirements for CRA are slightly more stringent and contain more benefit-sharing provisions, since commercialization of research results is seen as their intent.

Prior Informed Consent from local and indigenous communities plays a key role in the application process for ABS agreements in the Philippines. Before any kind of prospecting begins, the applicant must obtain the consent by fully disclosing to the local community the intent and scope of planned activities. It depends on the location and legal status of the area, whose PIC must be sought. Usually, the local signatory is the head of the Local Government Unit responsible for collections on communal land, the Council of Elders or a recognized head of an indigenous community responsible for ancestral domains, the Protected Area Management Board for protected areas, or a private land owner.

Requirements to conform with environmental protection are formulated by the IACBGR and must be met by the applicant. EO 247 stipulates that all prospecting activities and their results must not directly or indirectly harm biodiversity, ecological balances or the inhabitants of the area where collection takes place. Whether or not these requirements are met is examined by environmental impact assessment, which is mandatory for both types of research agreements. In practice, the Technical Secretariat determines if the assessment actually needs to be conducted. Especially in ARAs, it is frequently not demanded.

Philippine Laws Affecting the Regulations on Bioprospection

The use of biological resources is also affected by a number of other laws, in particular the Indigenous Peoples' Rights Act (IPRA), the National

Integrated Protected Area System Act, the Traditional and Alternative Healthcare Act, the National Museum Act and the Wildlife Act (RA 9147). The regulations are usually corresponding, but in a few cases other laws can change the legal force or interpretation of EO 247. This especially holds true for the Wildlife Act, which will lead to a significant reform of Philippine bioprospecting legislation. In the context of the present study, only IPRA and the Wildlife Act have a major impact on Philippine bioprospecting legislation and will be presented briefly.

The **Indigenous Peoples' Rights Act** was enacted in 1997 to recognize, protect and promote the rights of indigenous cultural communities and indigenous peoples. It is regarded as one of the strongest national laws to protect indigenous rights.⁷⁰ It creates a National Commission on Indigenous Peoples and emphasizes indigenous land rights. The definition of the term ancestral domain includes property rights on lands, inland waters, coastal areas, and also includes the natural resources therein in the land rights of indigenous peoples. Free and prior informed consent, i.e. the consensus of all members of the Indigenous Cultural Communities or Indigenous Peoples (ICCs/IPs), is the precondition of all outsider activities in an ancestral domain. According to Section 34 of the law, "*ICCs/IPs are entitled to the recognition of the full ownership and control and protection of their cultural and intellectual rights.*"⁷¹ And: "*Access to biological and genetic resources and to indigenous knowledge related to the conservation, utilization and enhancement of these resources, shall be allowed within ancestral domains of the ICCs/IPs only with a free and prior informed consent of such communities, obtained in accordance with customary laws of the concerned community*" (Section 35).⁷²

EO 247 and IPRA both allow access to biological and genetic resources within ancestral domains in

70 See Barber / Glowka / La Viña (2002), p. 384.

71 See Congress of the Philippines (1997), p. 13.

72 See Congress of the Philippines (1997), p. 13.

accordance with the customary law of an indigenous community. But the procedure of achieving PIC as set out in EO 247 is not the same as the procedure for reaching free and prior informed consent (FPIC) under IPRA (see Box 13). Since IPRA supercedes EO 247, FPIC should be the *modus operandi* followed in ancestral domains.⁷³ There have been some attempts to conduct FPIC for bioprospecting activities, but thus far no experience has been made with FPIC for applications that fall under the scope of EO 247.⁷⁴

The **Wildlife Act**⁷⁵ was signed into law in 2001. Its main objective is the protection of the environment and biological and genetic resources in the Philippines. One of the important improvements emphasized is the renewal of policies regarding sanctions for violations against wildlife, which had not been amended since the 1940s. The Wildlife Act defines bioprospection as the collection of material for commercial use only. For academic research, a free-of-charge permit is provided for by Section 15 to allow access to biological and genetic resources. Section 4 states that the DENR and DA will share all responsibilities for the Philippine flora and fauna, leaving terrestrial wildlife with the DENR and assigning aquatic wildlife to the DA. Only one exception is defined in this section, placing the Palawan environment fully in the hands of the Palawan Council for Sustainable Development. Moreover, monitoring of activities involving the use of natural resources is an aspect expressly emphasized by the Act.

Speculation about the influence of the Wildlife Act on the regulation of bioprospection is mani-

fold. This will only end after the Implementing Rules and Regulations of the Wildlife Act clarify the precise consequences. The new Act is seen by the DENR as a chance to improve the regulation of ABS for biological and genetic resources by including the experiences made with the EO 247 in the new guidelines. The DENR proposes regulating commercial research under the Wildlife Act, while academic research on genetic resources, no longer defined as bioprospection, will still fall under EO 247. SEARICE, while not wholly opposed to reforms of the present regulation, insists on maintaining the basic ideas of EO 247 in the Wildlife Act. It is not clear yet what role will be given to the IACBGR, since it is not mentioned in the new law and exclusive authority is assigned to DENR and DA. Under the Wildlife Act, bioprospection in the province of Palawan will probably be regulated at a decentralized level and no longer fall under national law. The Wildlife Act will provide sanctions for violations of the regulations on bioprospection.

4.1.3 Philippine Stakeholders in Bilateral ABS

Stakeholders to bilateral ABS agreements in the Philippines are the state, represented by its competent agencies, local and indigenous communities, scientific institutions, non-governmental organizations of different political alignments, and companies. Foreign enterprises and scientific institutions are classified as another group with common features. One key finding of the study on stakeholders' characteristics is that that opinions on the ABS legislation appeared to be very heterogeneous within stakeholder groups. This section introduces the different groups of stakeholders, relating the international findings presented in Chapter three to the Philippine case.

Under the CBD, the **nation state** is assigned with the responsibility of regulating access to biological resources on its territory. In the Philippines, regulation is acted on mainly by two ministries: first, the Department of Environmental and Natural Resources, including the Protected Areas and Wildlife Bureau (PAWB), responsible for terres-

73 See Chapter I, Sec. 4 and Chapter III, Sec. 14, 15 in Congress of the Philippines (2001).

74 For example, the Apu Agbibilin Community Inc. in Bukidnon, Mindanao has developed its own local prior informed consent procedure, taking IPRA as the legal basis for exertion of rights to resources. The local PIC process is continuously implemented for ongoing bioprospecting activities. For more information, see SEARICE (2001c).

75 Congress of the Philippines (2001).

trial resources, which acts as a focal point for the administration of bioprospecting activities. PAWB hosts the Inter-Agency Committee on Biological and Genetic Resources (IACBGR), the regulatory body most central for bioprospection under EO 247. Second, the Department of Agriculture, whose the Bureau for Fisheries and Aquatic Resources (BFAR) is responsible for marine bioprospection.

The concept of inter-agency committees like the IACBGR, whose idea is to bring concerned agencies and stakeholders from different parts of society together, has frequently been described as a legacy of post-Marcos times. After years of autocracy, the governments following Marcos felt that more participation of society was called for and that problems could best be tackled by having different agencies work jointly on them. For environmental politics, the Philippine Council for Sustainable Development, set up in the wake of the Rio-Summit, has acted as an important stakeholder in fostering the inter-agency approach to regulating bioprospection. Since then, overlapping spheres of responsibility and divergent agency approaches have led to a certain degree of skepticism among stakeholders, who question the usefulness of Inter-Agency Committees in general and of IACBGR in particular.

Local communities, given a mandate to decide over their local resources, come into the picture when bioprospection takes place on communal lands, which is always the case if the site of collection is not privately owned land, part of an environmentally protected area or an indigenous ancestral domain. The CBD calls for prior informed consent from source communities, which is seen as a key condition in the Philippines and has been implemented under EO 247 as part of the access determination procedure. The political organization of the Philippines on the local level includes barangays (of approximately 500 households), represented by a barangay captain, and municipalities, comprising several barangays and represented by a mayor. One of these community representatives is defined on a case-by-case basis to sign PIC certificates. The active involvement of the local community in the PIC negotiations thus

depends largely on the commitment of local political elites and awareness-raising by NGOs.

The Philippines is home to about 4.5m indigenous Filipinos, belonging to more than 70 ethnolinguistic groups.⁷⁶ The most frequently quoted characteristic of **indigenous peoples' communities** is their diversity in terms of cultural lifestyles, customary laws and living conditions, but also in terms of their attitudes towards the utility of the natural resources on their lands. Some communities have developed management plans compatible with economic uses. Others have preferred a more holistic approach, assigning cosmological relevance to their natural environment and therefore rejecting most interventions on it. What many indigenous communities have in common is a historically grown, skeptical attitude towards the potential good that commercial ventures in their territories can do for them. Bioprospection is put into a context of activities such as logging, mining and dam-building which in the past have curtailed indigenous rights and led to the exploitation of indigenous communities. Another aspect contributing to a negative outlook, at least for the more radical of the indigenous communities and their organizations, is that the laws seen as relevant by them for bioprospection in ancestral domains are rejected as a whole.⁷⁷ While activities such as mining or logging have to be seen as having a much more significant impact on the life of indigenous communities,⁷⁸ bioprospection encounters, for the reasons mentioned, many reservations and is treated as another external intervention.

76 See Singh (1996), p. 231; additional information at www.nca.gov.ph.

77 Namely, the Indigenous Peoples Rights Act (IPRA) and, arguing that ancestral lands have been declared protected areas, the National Integrated Protected Areas System Act (NIPAS) are seen as such laws. The EO 247 is hardly recognized among these indigenous groups. See Cordillera Peoples Alliance / DINTEG (1998).

78 Typically, among the applications for permitting activities in ancestral domains piling up at the NCIP during the time of a moratorium 2001/2002, not a single one was concerned with bioprospecting.

Internationally renowned for its strong and vigorous civil society, the Philippines has a large number of **non-governmental organizations** (NGOs), some of which have played an important role in the implementation of ABS regulations. In some cases NGOs are appointed by the government to advocate national interests in the country or even in international debates. Attitudes towards bioprospection range from comprehensive rejection of it as biopiracy and/or capitalist exploitation to qualified approval as long as the rules are adhered to. The NGOs that generally disapprove of bioprospection mostly take a “no patents on life!” position which consequently leads them to regard ABS agreements as a “pact with the devil” on account of their inherent tolerance towards exclusive intellectual property rights. NGOs participating actively in the implementation process and in the IACBGR have taken a more differentiated stance, encouraging bioprospection that follows the rules laid down in EO 247 and that is respectful to communities’ rights. Those NGOs have gained a position of power and a reputation as “centers of competence” which make them important actors in the enforcement of ABS legislation.

Members of the Philippine **scientific community** once set the consultations on EO 247 going and have promoted the involvement of other stakeholder groups in the negotiation process.⁷⁹ A group of natural chemists announced its will to end the “exploitation” of the country’s natural resources by foreigners and aimed at fostering technology transfer to the Philippines. Scientists from universities or public research institutions are central actors in the country’s research and development activities. From the very beginning, however, opinions among the scientific community were split over bioprospecting legislation. While some actively applied for academic and commercial research agreements, others remained skeptical or even hostile. Both the only two CRAs and the only ARA that have been signed so far involve the University of the Philippines in Diliman, Quezon City, which has also been a driving

force in the implementation of EO 247. Other scientific institutions have thus far avoided signing ARAs for bioprospection by using alternative sources to substitute for genetic materials from the wilderness.⁸⁰ Still others state that they are refraining from all activities that would require new materials to be collected, the aim being to avoid accusations of biopiracy.⁸¹ The Philippine National Museum, a publicly funded institute with the job to do taxonomy, has taken yet another approach, altogether disputing that its academic operations fall under EO 247. In short, scientific institutions have reacted to the new ABS legislation with variations of affirmation, exit and voice.

The **industrial sector** in the Philippines, one potential commercial user of genetic resources, has not shown any major interest in ABS legislation so far. Only one CRA has been applied for by a Philippine company, which was approved by the IACBGR in 2002 (see 4.1.4). Reasons for the relatively small-scale response can be seen in the low level of relevance that research and development has for national companies. An exception, the Pharmaceuticals and Healthcare Association of the Philippines, bringing together about 80 multinational and national companies, has participated, as a representative of industry, in the consultations on EO 247. The association echoes to a large extent the concerns of multinational companies.

Foreign scientific institutions and companies are accorded equal treatment under current ABS legislation. All research agreements which involve non-Philippine parties are generally classified as commercial, and this obliges them to follow stricter rules. This makes it more difficult to undertake scientific research in the Philippines for purely academic reasons. Since the perceptions of

79 See Swiderska / Daño / Dubois (2001), pp. 10, 17.

80 A scholar of Ateneo University told us that his institute has been acquiring materials from the university’s backyard and from properties of student parents in the provinces.

81 Among those are Siliman University and IRRI (which is not a Philippine institution but falls under EO 247 for their collections in the Philippines).

international stakeholders are important for the results of the Philippine ABS legislation, they have already been described in more detail in Section 3.4.

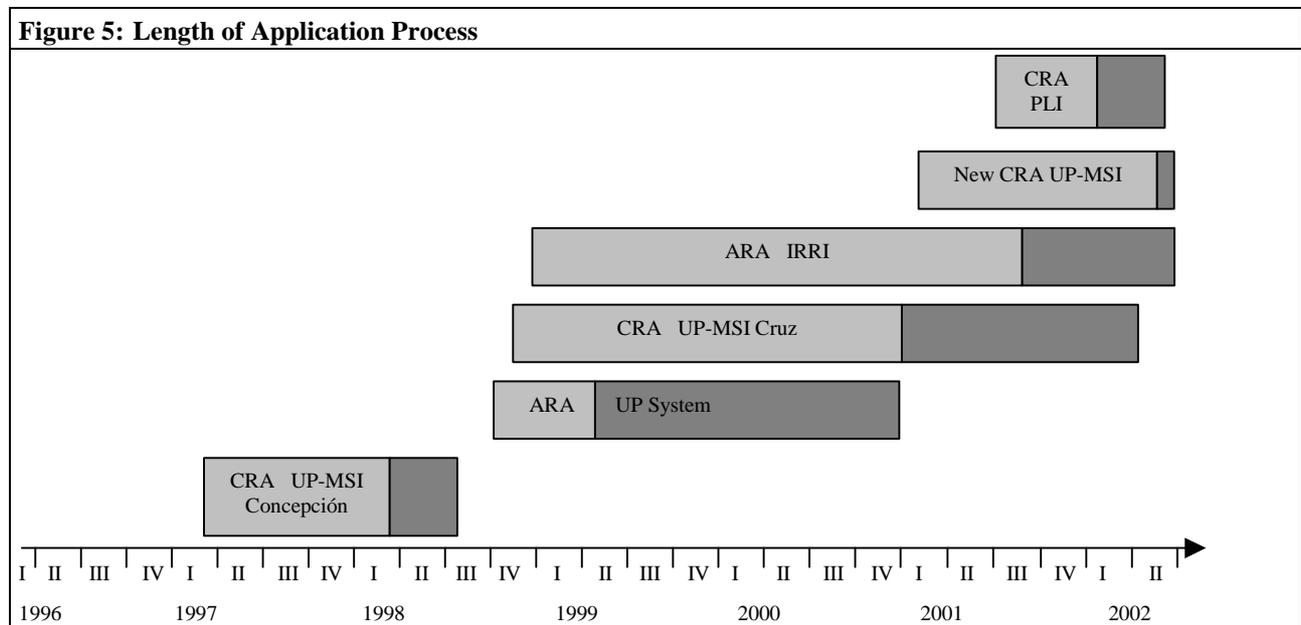
4.1.4 Record of Past Research Applications

The number of research agreements concluded is smaller than had been expected by the initiators of EO 247. As of April 2002, 15 CRAs and 20 ARAs had been applied for to the IACBGR’s Technical Secretariat. Of these, for 19 applications the IACBGR demanded research agreements, one was passed on to the Palawan Council for Sustainable Development, while the others were referred to the PAWB for issuance of a free permit.⁸²

A closer look at the applications⁸³ that fall under the scope of EO 247 shows that only six have been approved by the IACBGR. Five have been explicitly withdrawn by the applicants, with the applicants complaining about the regulations. Most prominently, two collaborations with the US

National Cancer Institute have ended, and the researchers have chosen to collect specimens in another Asian country, avoiding Philippine bio-prospecting legislation. For a large number of applications, however, it is not clear if they are still pending or have been withdrawn, since applicants have – for years – not responded to the PAWB’s requests for further documents.

The length of the application process for those agreements that have been approved can be seen in Figure 5. The light part of the bar shows the time from application to approval by the IACBGR and the dark part shows the time taken by the responsible departments to finally sign the agreements. It is obvious that the application procedure takes a long time, in some cases more than three years. Two of these agreements, the commercial research agreements of the University of the Philippines’ Marine Science Institute (“UP-MSI Concepción” and “UP-MSI Cruz”), can be regarded as model agreements and will be presented as a case study in more detail in boxes in the following sections.



82 See PAWB (2001) and PAWB (1996-2002).

83 Table A-I in the Annex provides detailed information about the applications.

4.2 Reasons for the Small Number of ABS Agreements Concluded

The present section will ask three questions in order to find possible reasons for the low number of research agreements concluded in the Philippines. First, is the application procedure too complicated and too lengthy? Second, is the process of prior informed consent (PIC) too costly and too time-consuming? And, third, are benefit

cal concerns are the lack of clarity concerning access rules and the transaction costs involved.⁸⁴

The main finding of the following section is that the access procedure established by EO 247 can be regarded as a good approach in theory, though it nevertheless has some bottlenecks that might explain the low number of RAs. The main problems identified are the low information level of applicants, the long processing time of the agencies involved, deficiencies in the work of the

Box 8: IACBGR and Technical Secretariat

Under the law, the IACBGR is composed of one representative from each of the following institutions: the Department of Environment and Natural Resources, the Department of Science and Technology, the Department of Agriculture, the Department of Health, the Department of Foreign Affairs, the Philippine National Museum, non-governmental organizations, and Peoples' Organizations. Two representatives belong to the Philippine scientific community.

Its most important tasks encompass the processing of applications for academic as well as commercial research agreements, assessment and possible recommendation of approval to the government agency concerned. Furthermore, it is expected to ensure that the conditions of the research agreements are observed by the competent bodies. Funding for the IACBGR is to come from contributions of the appropriate and concerned government departments.

Annexed to the IACBGR, EO 247 provides for a Technical Secretariat. It is composed of staff from the Protected Areas and Wildlife Bureau (PAWB) and designated personnel from other IACBGR-member institutions. The chair is held by the director of PAWB. Its main tasks include information and preparation of IACBGR meetings as well as the preparation of minutes of the meetings, initial screening of proposals, initial review and evaluation of applications, dissemination of information to applicants and the leadership of the Inter-Agency Commission's Monitoring Team.

claims exaggerated? The two latter points, the PIC process and benefit expectations, were not found to be responsible for the relatively low number of agreements, while the practice of the application procedure involves various bottlenecks that make the legal access procedure complicated and lengthy. All in all, however, the small number of ABS agreements cannot be explained by problems of implementation in the Philippines alone. Obviously, users are not too inclined to follow the comparatively strict rules in the Philippines as long as they have alternatives.

4.2.1 Complicated Access Procedure?

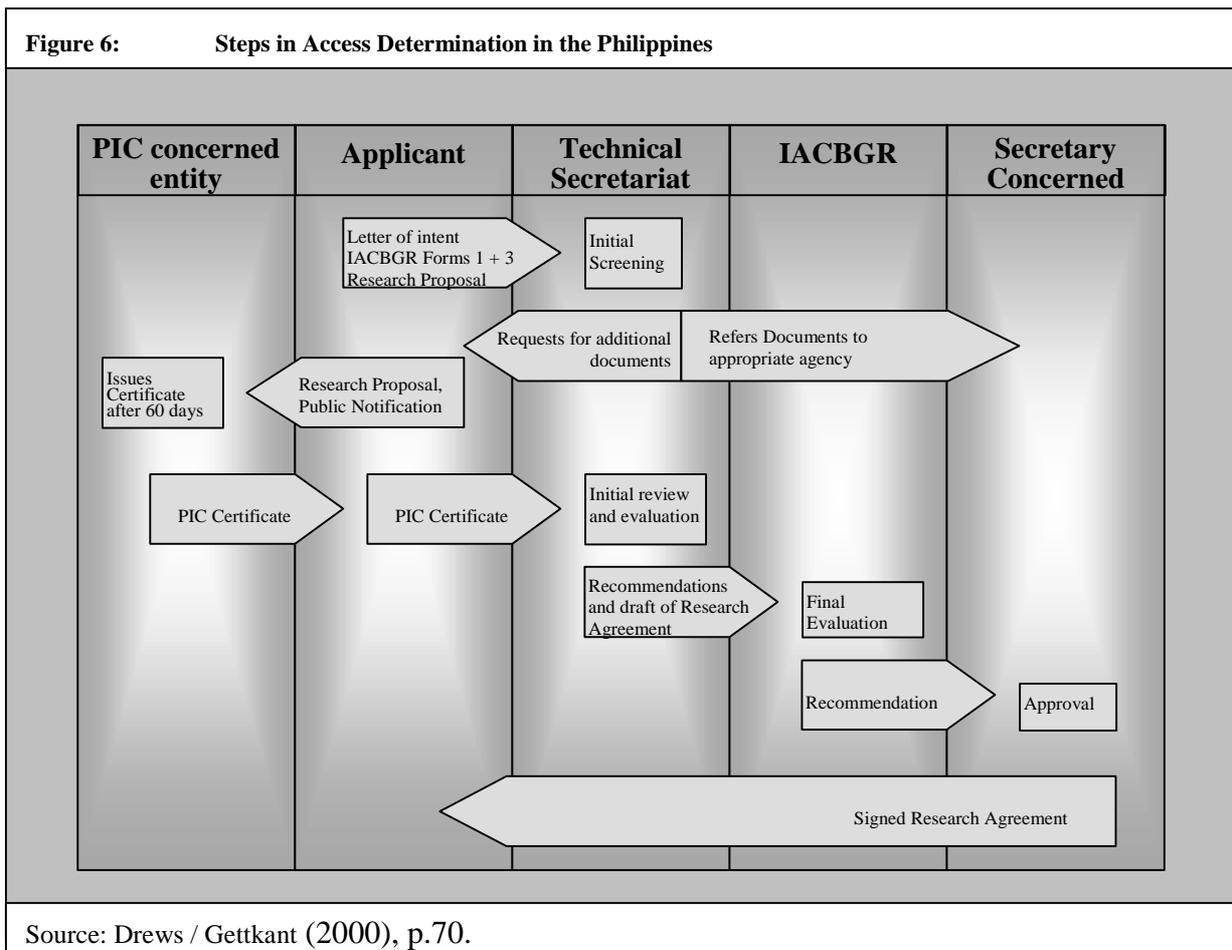
Initially, Philippine access legislation was praised internationally for its efforts to implement the Convention's objectives on access and benefit-sharing. There has always been, of course, criticism from industry, which frequently complains about source countries' access regulations. Typi-

cal multistakeholder bodies, and the time it takes for Secretaries to sign.

The Application Procedure in Theory

The application procedure has been designed to ensure transparency, participation of relevant stakeholders and an equitable sharing of benefits, thus mirroring the ideas behind the CBD. In order to apply for a research agreement under EO 247, it is necessary to go through a number of different steps (see Figure 6). First, the applicant has to submit the application form and three copies of the research proposal to the IACBGR, the central body under ABS legislation. Second, the Technical Secretariat of the IACBGR performs an initial screening. At this stage, the Secretariat decides whether or not an application falls under the scope

⁸⁴ See ten Kate / Laird (2000a), p. 297 and Section 3.4.



of EO 247. In the latter case, the application is handed over to the competent government agency. In the affirmative case, the applicant has to submit further documents, including a PIC certificate, to the IACBGR.⁸⁵ These documents are then passed on to the Technical Secretariat, which conducts an initial review of the complete application and submits its evaluation to the IACBGR. The IACBGR discusses the application and concludes with a final recommendation of approval or rejection, which is handed on to the Secretary concerned. It is the Secretary who has to approve and sign the research agreement. Finally, the Technical Secretariat provides copies of the signed agreement to the relevant parties and is supposed to maintain the files on the research agreement.

The Continuum of the Application Procedure in Practice

A statement made by a great number of stakeholders boils down to the following point: “*In the Philippines, we are great in making sound laws – but the implementation lags behind.*” Most of the stakeholders interviewed agreed that the regulation is not working well, that the application process takes too much time and is too complicated. However, these opinions have not always been evidenced by factual information. This leads to a situation where many stakeholders tend to blame others for the deficiencies in the procedure. For analytical reasons, the following section separates the different stages and players in the entire application process. It goes on to critically analyze the roles of the applicant, the agencies concerned, the IACBGR and its Technical Secretariat, and the signing Secretary. All stages bear a share of the responsibility for the observed deficits in the application procedure.

⁸⁵ As for its special importance among the access provisions, the PIC procedure will be dealt with separately in Section 4.2.2.

a) The Applicant

In the ideal case, the applicant would be a) fully aware of the requirements he / she has to meet, b) able to meet these requirements right at the beginning of the application procedure, and c) willing to follow the procedure. In practice, however, missing information, inadequate institutional capabilities and a lack of will on the part of the applicants appear to prevent more applicants from going through with the EO 247 procedure, thus reducing the possible number of research agreements. It is safe to assume that some institutions are not adequately equipped to shoulder the additional burdens imposed by EO 247. On the other hand, for many possible applicants the lacking will to follow the procedure appears to be more important.

Government agencies noted that many applications are incomplete, with either documents missing (e.g. code of conduct for ARAs) or their content not satisfactory. Even in cases of applicants who are supposed to be well informed and well staffed (like the International Rice Research Institute (IRRI) or the University of the Philippines), documents were missing or arrived late, as a PAWB representative told. Thus, the documents required were, it seems, a problem for many applicants. The spectrum of opinions from scientists was diverse, with some considering the requirements acceptable, noting that scientists are used to write research proposals anyway, while others see the provisions as an additional burden. Especially for foreign institutions, the requirements may be seen as manageable.

Frequently, applicants shun the effort needed and drop their applications, as Neth Daño from SEARICE noted. The large number of applications that are considered as “pending” seems to validate this proposition. Aside from this, there may also be cases where researchers consider the application procedure too complicated and refrain from going through with it in the first place. One can argue that applicants may not be fully aware of EO 247 and its implications. However, the PAWB did launch a variety of information campaigns two years after the regulation was adopted.

Apart from workshops that were held in a number of provinces, PAWB also sent letters to 123 academic institutions, explaining the regulation and its provisions concerning the application procedure.⁸⁶ Moreover, different types of information material are available at the PAWB. It therefore appears that Philippine scientists were actually informed about the regulation, though they may not have assigned much importance to it.

b) The Work and Role of the Agencies Concerned

The application procedure established through EO 247 delegates applications to the competent agencies⁸⁷ in order to have them reviewed and evaluated by specialized staff. This decentralized process assigns these agencies more responsibility, but allows to have handled every application by specialists on the field. However, a number of persons interviewed remarked that some agencies were relatively slow in processing applications. The main reasons mentioned in the interviews were: no additional financial or personnel resources for the agencies concerned, bureaucratic inefficiencies, and lack of political commitment.

For example, a representative from the Philippine National Museum complained about an application that the Museum made in cooperation with the Coral Reef Research Foundation and the National Cancer Institute (USA). According to the representative, the application was “stuck” in the Bureau of Fisheries and Aquatic Resources (BFAR) for more than a year – an accusation that has been disputed by BFAR. A similar conflict arose with regard to a CRA application of Siliman University in cooperation with the University of California San Diego.⁸⁸ Others charge PAWB of being too slow in responding to applicants.

86 See PAWB (1996-2002), January 26th 1998.

87 One or several of the following Departments: Environment and Natural Resources through PAWB, Agriculture through BFAR, Science and Technology through PCARRD, Health through PITAHC.

88 See PAWB (1996-2002), June 9th, 1998.

These complaints have to be seen in the light of the fact that the agencies are not provided sufficient funding for their additional tasks. Obviously, the heads of the agencies concerned do not attach enough political importance to the implementation of EO 247. Taken together, this leads to a situation where the agencies do not perform well as facilitators of research agreements.

c) The Work and Role of the IACBGR and its Technical Secretariat

Most persons interviewed agree that the multistakeholder approach pursued by the Inter-Agency Committee on Biological and Genetic Resources is a very positive part of EO 247. It is intended to ensure participatory and transparent decision-making on ABS agreements. Nevertheless, the body and its Technical Secretariat have been criticized by many stakeholders. The most common criticisms are irregular meetings, low attendance rates, lack of commitment by IACBGR members, the composition of the body, and slow decision-making procedures.

Figure 7 shows the IACBGR **meetings** since 1996 and the number of participants attending them.⁸⁹ It can easily be observed that during the first two years of its existence the IACBGR met quite regularly, although a quorum was not always achieved.⁹⁰ After August 1998, the “two lost years” of the IACBGR began, as some interviewees termed the period. Work resumed in 2001, but it has become even more difficult to achieve a quorum. A similar picture evolves for the frequency of meetings of the Technical Secretariat.

89 The data has been kindly provided by PAWB. The authors' examination of the minutes of the IACBGR meetings, however, reveals lower attendance rates, on average one participant less. It is not easy to distinguish between participants with voting power and guests. Thus the figures should be treated as maximum numbers.

90 In theory, six attendants are needed to achieve a quorum. However, some meetings took place even without a quorum, and decisions were later referred to absent members via mail to give them the opportunity to object within a certain period of time.

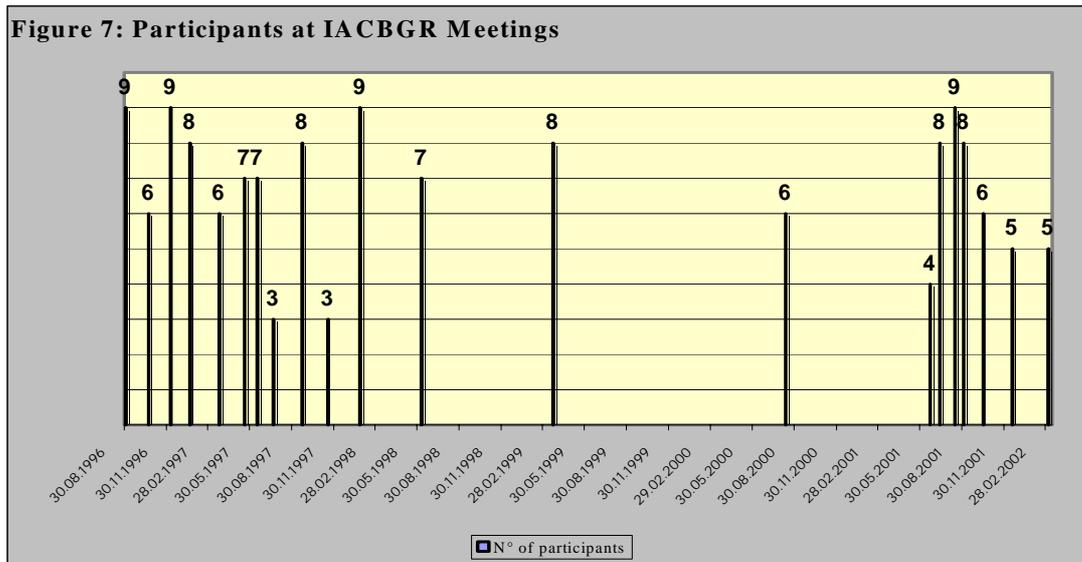
Here, the required quorum has only been reached once since 2000. The schedule of both bodies can be traced back to the presidential elections and the changes among higher-level government employees. These have a substantial impact on the frequency of meetings and therefore also on the speed at which applications are processed.

According to the research conducted by the authors, **attendance** was high among the representatives from the DENR (PAWB)⁹¹, NGO (SEARICE), Science (UP Diliman, A. Guevarra), and DOH (PITAHC). Representatives missing a considerable number of meetings include those of the PNM, DA (BFAR), DOST, DFA and the second science representative. The representative of the Peoples' Organization was virtually never present.

Regularly participating stakeholders voiced some frustration about the work of the IACBGR. They attend the meetings because they feel a strong commitment, which may be due to the fact that most of them belonged to the group of scientists and NGOs who initiated EO 247 in 1995. When asked for the reasons for the absenteeism of many members, most mentioned the **lack of will**, explaining that all members have regular jobs and the IACBGR comes “on top” of that. Next to the time constraint, a lot depends on the chairman, who is expected to motivate the members. While this was the case for the first two years, since 1998 the chairmen have usually attached less importance to the IACBGR. There have been cases where the chairman called a meeting, but failed attend himself, or called it off too late. Another issue brought up by many interview partners: the body lacks funds. Although EO 247 calls for financial contributions from all agencies involved, in practice PAWB is the only one that adheres to this provision.⁹² For this reason, the IACBGR lacks institutional capacity and is unable

91 As a rule, the Undersecretary of DENR holds the chair of the Body. He was, however, frequently represented by the Director of the PAWB.

92 See PAWB (2001).



to provide compensation for travel expenses or attendance allowances for its members.

As to the **composition** of the IACBGR, a certain level of disagreement can be observed. Some voices, among them PAWB and science, have suggested including fewer politicians and more people from the “action level”. While, it is noted, the chairman needs to belong to a higher political level to have the necessary authority, members should be technical people. However, other interview partners expressed doubts as to whether current members are technical enough. Indeed, commitment seems to be more important than the actual position held by a member. Representatives from science outside the capital region called for the inclusion of more scientists, because scientists could be expected to be more objective in their decision-making. However, the two IACBGR members from science, both from the capital region, have seldom taken their seats at the meetings. Moreover, different stakeholders noted that the IACBGR has sometimes been a forum for rivalries among the participating agencies.

While most interview partners agree that the IACBGR has not lived up to expectations, it is more difficult to assess whether it has actually **slowed down** the process. Many interview partners who do not belong to the IACBGR and

observe the whole procedure from outside seem to blame the IACBGR for the long application procedure. However, the minutes of IACBGR meetings do not prove that applications have been slowed by additional burdens put forward by IACBGR members. Indeed, successful applications were for the most part delayed in the processing agencies or – after IACBGR approval – with the signing Secretary. Those that were not successful in most cases did not even reach the IACBGR. However, what seems to be clear is that the “two lost years” slowed down the process of then pending applications. Moreover, applicants mentioned the quorum problem in decisive meetings for their applications, a factor which leaves them unsure about the progress of their applications.⁹³

d) The Role of the Signing Secretary

The signing of approved research proposals by one or more Secretaries takes substantial time. When the IACBGR finally approves an applica-

⁹³ This happened, for example, during the meeting of the IACBGR in March 2002, when the renewal of the UP-MSI CRA was to have been finally approved by the IACBGR.

tion, it would be everything but normal to allow the applicant to start out soon with bioprospecting activities. However, the duration between approval of a research agreement and its final signing is substantial and can amount to more than a year, especially when more than one Secretary has to sign, as two examples of academic research agreements show: the agreement of the University of the Philippines, which was approved by the IACBGR in 1999, and took more than two years to be signed by the respective agencies; the International Rice Research Institute (IRRI) applied in 1998 and saw the agreement approved by the IACBGR in 2001. However, this involved signatures by four different Secretaries, and the proce-

tional questions on a research agreement which has already been approved and signed by other Secretaries, and thus refers it to his/her legal office for further study.

4.2.2 Difficult Prior Informed Consent Procedure?

For the initiators of the Philippine bioprospecting legislation, involving the community in the procedure to grant access to genetic resources figured high on the agenda. Toni La Viña, former Undersecretary of the DENR, called PIC “the heart and

Box 9: Case Study (I): The Application Procedure

There are two commercial research agreements (CRAs) that can be regarded as model ABS agreements. Both CRAs have been concluded between the University of the Philippines' Marine Science Institute (UP-MSI), the Department of Agriculture and the University of Utah. The first agreement (“CRA 1998”) was signed in 1998 and regulates the collection of marine sponges and ascidians for research on anti-cancer medication. The second agreement (“CRA 2002”) was signed in 2002 and allows the collection and/or purchase of marine *conus* (cone snails) for research on compounds that affect nerve and muscle tissue, including potential pain relievers. Table A-II in the Annex presents basic information about both agreements. These CRAs will be used as case studies to illustrate the general analysis. The application procedure, the prior informed consent process, the benefit-sharing provisions, and unintended side-effects will be presented below in four boxes.

CRA 1998 was applied for in January 1998, approved relatively quickly and finally signed by all secretaries in June 1998. Mrs. Gisela Concepción of UP-MSI noted that both the motivation of the Department of Agriculture to get a first research agreement signed and the support provided by Toni la Viña^a helped UP-MSI to get through the application process at a relatively speedy pace. Since the agreement ended in 2001, the research group applied for a renewal of the CRA in February 2001. It was approved by the IACBGR in March 2002 and is expected to be signed soon.

The application for CRA 2002, on the other hand, took almost four years before it was finally signed in 2002. It was submitted to the IACBGR in September 1998, which coincides with the “two lost years” of EO 247. An interim permit allowed UP-MSI to continue its research and cooperation with the University of Utah while waiting for the signing of the agreement. Rules had to be followed, and especially PIC had to be conducted for collection and purchases under the interim permit, as demanded in the agreement itself. UP-MSI sees the main reasons for the application taking so long in ongoing political changes and bureaucracy, caused by changing personnel in government agencies and irregular IACBGR meetings. The procedure itself is not seen as the major problem, but the slowness within the IACBGR and government agencies in making decisions and signing papers. The Philippine agencies took two years to come up with a draft CRA which was approved by the IACBGR and BFAR. On the other hand, sending papers back and forth between Utah and UP-MSI was also seen as a burden. It took one and a half years for the University of Utah to sign the draft CRA which it received from BFAR in July 2000, since administrative changes in Utah had made a reexamination of the CRA necessary.

The distribution of tasks between the principal collector (University of Utah) and the co-collector (UP-MSI) means that the responsibility for dealing with Philippine government agencies and handling applications is mainly left to the Philippine co-collector. This is a great relief for the foreign partner, which should not be underestimated in its significance because it takes a lot of the co-collector's time and effort to follow these administrative rules. The long delays in the application process, as in the case of CRA 2002, are regarded as a great inconvenience by the research institutions and as a burden on the relationship between the cooperating partners.

a Toni la Viña is one of the initiators of EO 247 and served as DENR undersecretary from 1996-1998.

dures had not been completed by April of 2002. Dr. Padolina from IRRI, a former DOST Secretary, claimed that bureaucratic practice and attitudes in the Philippines were responsible for delays. Often, the Secretary concerned has addi-

soul” of ABS legislation, a position still held by most Philippine NGOs.⁹⁴ On the other hand, PIC

94 See SEARICE (2001a).

is often regarded by applicants as making access more difficult. Scientists in particular mention the transaction costs involved in achieving PIC as an additional burden for their research. Nevertheless, none of our interviewees explicitly mentioned the PIC provision as the reason for not applying for a research agreement.

Internationally, business and science appear to be especially uncomfortable with the idea of obtaining PIC for every collection activity. The main reasons why bioprospecting activities are thought to be virtually impossible in the Philippines, concern PIC.⁹⁵ Indeed, Philippine legislation goes further in terms of community involvement in the access procedure than in most other countries. Is this provision in fact an obstacle to ABS agreements in the Philippines? Our interviews rather revealed that most users would be able to follow the PIC provisions if they were really willing to do so.

PIC Provisions in EO 247

The CBD stipulates that bioprospectors have to obtain PIC of the source country unless otherwise specified by the contracting parties. The Philippines implemented the provision in such a way as to require Prior Informed Consent by the local communities before the national level can approve an ABS agreement. Especially NGOs and Peoples' Organizations place great emphasis on ensuring participation of the local stakeholders. Before bioprospecting can begin, the applicant must obtain consent by fully disclosing the intent and scope of planned activities. The language and the process of PIC needs to be understandable to the local community.

The PIC procedure includes two elements: public notification and sector consultation. For public notification, various media such as newspapers, radio or television are used to inform the public. Sector consultation means a public hearing at

community level. The meeting must be announced at least one week in advance. It has to be adapted to local customary laws and traditional practices. If the community accepts the bioprospecting activity, the applicant can obtain the Prior Informed Consent Certificate from the local official authority, after a period of 60 days has elapsed. Later, the applicant is required to submit to the IACBGR the PIC Certificate and proof that the procedures for obtaining PIC have been complied with.

Assessment of the Practice

In general, scientists have not found it particularly difficult to obtain the consent of the community involved. Thus far only one PIC application has been rejected in the Philippines. Mr. Noel Saguil, a UP-MSI researcher, states that according to his experience approval or disapproval depends to a large extent on the ability to build a trust-based relationship with the community in question. However, many scientists perceive PIC as a duty with transaction costs for time and money. Moreover, business has expressed concerns regarding their trade secrets.

Scientists have to allocate more **time** for consultations with communities than they would in a situation where they only needed to apply for a permit at the national level. Three main points were mentioned in our interviews: first, collectors have to prepare information material that is suitable and understandable for communities. Second, it takes time to organize and hold the sector consultation in the community. Third, the process between the consultation and the issuance of the PIC certificate can take some time: from the mandatory 60 days (which is already considered to be too long by many scientists) to several months if administrative changes at the local level lead to unexpected delays (see Box 10). On the other hand, most scientists noted that even in the past it was common to consult the communities involved. It is therefore difficult to measure how much additional time a mandatory PIC procedure means for to the applicant.

95 See Box 7 for the viewpoint of the National Cancer Institute.

Scientists argue that PIC is **costly**. Collectors have to refund all costs for organizing the sector consultation, including catering costs, translators for local dialects, and copying costs for documents. Moreover, collectors addressing their interest to an indigenous peoples' community have to comply with customary traditions such as inviting the community to a generous meal. All these factors enlarge the budget needed to conduct PIC properly. However, Aliño, one of the few researchers with PIC experience, cites expenditures, for eight PIC procedures, of approximately PhP 50,000⁹⁶ (approx. US\$ 1,000) of a budget of PhP 8 million for the overall research project.⁹⁷ Hence, in this case, PIC accounted for only 0.625% of the overall research budget, which may be regarded as negligible.

Apparently, the stakeholders who have already conducted PIC, perceive it as less burdensome than stakeholders who have yet to go through the procedure. There appears to be a certain misconception among some stakeholders about the real burdens involved in PIC. This misconception may pose a real disincentive to apply for a research agreement, in particular for foreign applicants. In reality, however, consultations are (and have been in the past) tasked to the local collaborator in the Philippines, who has a comparative advantage in conducting PIC. Seen this way, the international applicant would simply have to pay the (modest) costs of the PIC undertaken by a Philippine collaborator.

A different argument is put forward by the Phar-

Box 10: Case Study (II): The Handling of Prior Informed Consent

In the case of CRA 1998, researchers needed the prior informed consent of different communities in several regions. The most recent PIC was conducted in October 2000 in Coron. There, a hearing had to be held with the Palawan Council for Sustainable Development (PalCSD) first, because of a specific Palawan law which gives the Council the full responsibility for all environmental activities in the region. Only after their permission had been given did the actual PIC meeting with the town council of Coron take place. The town consultation was attended by members of the Coron town council, a PalCSD representative, the local DENR officer, the barangay captains of the three communities closest to collection sites and an indigenous peoples' organization. The UP-MSI project, procedures and purpose of the research were explained in detail and discussed with the local representatives. The value of the research to humankind was explained in order to underline the usefulness of the project, but no long-term benefits were discussed. At the end of their stay in Coron, UP-MSI invited all participants of the meetings to their boat to allow them a closer look at the research. The PIC certificate was signed after the 60 day period required by EO 247.

For two reasons, the research group of UP-MSI found it somewhat difficult to conduct PIC in Coron: first, the members of PalCSD and the indigenous community of the Tagbanua are very restrictive on any projects that want to make use of their natural resources. But once the research's value to mankind and to environmental conservation had been explained, resistance to the proposal was able to be overcome. Second, UP-MSI encountered difficulties in defining the communities involved, since these are located at a distance of 15 km and more from the collection site. This is a common problem with most marine bioprospecting activities.

For CRA 2002 and the interim permit preceding it, public consultations were conducted in four different localities. The PIC procedure as set out in the implementation guidelines of EO 247 was strictly followed by the UP-MSI staff. In Mabini, Bantangas, the mayor received the notification letter, including the research proposal, information flyers, and public notification on October 2, 1998. The barangay captains, representatives of the town mayor, government officials and SEARICE attended the public consultation held on October 28, 1998. About half of the 20 participants were fishermen. However, a new mayor took office on January 1, 1999, and the PIC certificate was signed in March 1999, far beyond the 60-day period. In Punta Engano/Cebu, preliminary talks started in June 2001, followed by a public hearing, but again a new mayor took office and as of April 2002 he has not yet signed the PIC.

Obtaining consent of the community to purchase cone shells during public consultations was not a problem for UP-MSI, but having the PIC signed by the mayor caused delays due to changes of political leadership. PIC certificates for CRA 2002 were quickly obtained thanks to a long partnership between UP-MSI and the communities, which began even before the implementation of EO 247. Moreover, sales of the *conus* to UP-MSI yielded an immediate benefit through income generation to the local community and facilitated an agreement. At the same time, community involvement reduced collection costs for UP-MSI, since it was easier to purchase *conus* from fishermen than to collect the *conus* itself.

96 Figure includes working hours.

97 See Searice (2001a).

maceutical and Healthcare Association of the Philippines. In their opinion, PIC could represent **a danger to their business interests**. Actually, EO 247⁹⁸ requires full disclosure of research goals at the local community level. In a statement on the matter, the association explains that “*confidentiality will be seriously impaired if the principal/collector is required to submit a research proposal to the local community and discuss proposed activities in a public hearing.*”⁹⁹ At the same time, they assure that they would agree to the PIC provisions if confidentiality were protected. SEARICE, PAWB and other stakeholders claim that neither EO 247 nor the implementing rules require applicants to reveal trade secrets. It remains open whether the pharmaceutical industry really fears being forced to reveal trade secrets or whether there are tactical reasons for its rejection of PIC.

4.2.3 Exaggerated Expectations on Benefit-Sharing?

The business side states that unrealistically high expectations of anticipated monetary and non-monetary benefits on the part of source countries sometimes make it difficult to arrive at ABS agreements. Our interviews have shown, however, that stakeholders neither at the national nor at the community level have specific expectations concerning benefits which might prove to be a burden for any research agreement.

National Level

Surprisingly, our interviews revealed that most stakeholders in the Philippines do not have specific expectations on benefits from ABS agreements. Although one reason frequently mentioned as important for implementing EO 247 is to prevent “exploiting of the country’s genetic re-

sources by foreigners”, expectations about a fair and equitable sharing of benefits do not seem to be clear. At the same time, the expectations that were mentioned cannot be considered exaggerated.

Past experience supports this finding. In the two commercial research agreements concluded by UP-MSI (see Box 11), no large benefits are agreed upon on the Philippine side. There are hardly any short-term benefits envisaged that could be a burden for an applicant. Interestingly, in one IACBGR meeting two NGO representatives called for inclusion of short-term monetary benefits in the 1998 CRA.¹⁰⁰ However, after the applicant (UP-MSI) explained that it would take much longer than three years until there might be a chance for the research to generate monetary benefits, the proposal was dropped and the CRA approved without any additional benefit-sharing provisions.

As far as long-term monetary benefits are concerned, it is interesting to note that the only share of royalties that is fixed is that one which will go to the government (5% of net revenue). It was left open to negotiation, however, what percentage the company would have to pay to the collectors in case of successful commercialization. This provision leaves space for the negotiators and can be interpreted as a flexible approach by Philippine authorities.

Community Level

At the community level, no applications have been refused due to low benefits offered to the community. Experience shows that local communities have only moderate expectations as regards benefits.

NGOs consider non-monetary benefits more appropriate and valuable to communities than monetary benefits; whereas local communities expressed their desire for compensation in the

98 See 7.1.1 / 7.2.1.b, Annex B, Department Administrative Order No. 96-20.

99 See PHAP (no year), p. 1.

100 See PAWB (1996-2002), June 9th, 1998.

form of both monetary and non-monetary benefits. Non-monetary benefits may comprise recognition and acknowledgement of the source of specimen, assistance in the conduct of resource assessment, equipment and training, among others.¹⁰¹ In terms of monetary benefits, short-term payments such as fees for a local guide and entrance fees or fees-per-sample are favored. Apart from an expected share of royalties, no further long-term benefits have been considered so far.

By experience, negotiations on prior informed consent and benefit-sharing are largely kept separate by actors. In the current approach, PIC is granted without any clear-cut arrangements on the distribution of future benefits for the community. In particular, scientific collectors tend to separate negotiations concerning access and benefit-sharing. Since scientists have no clear prospects of revenues, they are reluctant to create expectations.

But even if expectations about benefits are modest at the moment and do not constitute a burden on ABS agreements, this need not remain the case in the future. Some NGOs and local communities noted that it is important to see positive examples of benefit-sharing in the near future to sustain a positive attitude on the part of local and indigenous communities. They reason that locals may in the longer run develop an attitude of protectionism towards their biological resources, since they are not convinced that there will be any fair and equitable benefit-sharing. This attitude may be fostered by “biopiracy“. Fair and equitable benefit-sharing with local communities may in this sense be in the self-interest of applicants, i.e. to secure future possibilities of bioprospecting activities based on the good will of local communities.

4.3 Developmental Aspects of the ABS-Agreements

This section aims to evaluate the ABS agreements concluded thus far with regard to the attainment of

fair and equitable benefit-sharing as defined in the CBD and the attainment of community involvement in decisions affecting the use of their resources.

4.3.1 Fair and Equitable Benefit-Sharing – Sharing Hopes for Things to Come

The present study asks how countries may create benefits using their genetic resources by regulating access to their resources. As has been shown, few access agreements have been concluded since EO 247 came into effect. The analysis in the present section includes three steps: first, the section describes the benefits realized so far and shows that they mostly accrue to Philippine scientists.¹⁰² Second, it explores the mechanisms for a future fair and equitable sharing of benefits, noting that the foundations have been properly laid, although there is still no policy on benefit-sharing with communities. Third, it is argued that few additional benefits have been generated thus far, compared with a situation without access legislation. This may change, however, in the future if long-term benefits materialize. The analysis in this section is based primarily on the three commercial research agreements concluded so far.

Benefit-sharing is defined in DAO 96-20, section 2 e) as “*the sharing of bioprospecting activity and benefits arising from the utilization or commercialization of the biological or genetic resources fairly and equitably with the indigenous cultural community, local community [...] and the national government by the Principal/Collector.*”¹⁰³ As spelled out in section 2 n), equitable sharing refers

101 See PNNI (2001), p.16 and authors' data.

102 The term “benefits“ in this section is limited to monetary or in-kind benefits. In a broader sense, benefits can include issues like participation or community empowerment. These issues are dealt with in the following section (4.4.2).

103 La Viña / Caleda / Baylon (1997), Annex B, Definition of Terms, p.32.

to “*the benefit-sharing mutually agreed upon by the parties to the Research Agreement.*”¹⁰⁴

Another case is the cooperation between Pascual Lab. and a British pharmaceutical company.

Box 11: Case Study (III): The Handling of Benefit-Sharing

The equitable sharing of benefits between principal collector, co-collector, the Philippine government and local communities is very similarly defined in both CRAs. It includes provisions on direct assistance, technology transfer, co-ownership of intellectual property, community education and profit-sharing. Until now, only UP-MSI has received any substantial benefits. Long term benefits have not yet materialized.

Benefits for UP-MSI arise in the short term through direct assistance for equipment, scholarships and salaries. In CRA 2002, this support is set at US \$ 73,000 for the period of the agreement. However, it is stressed by the interviewees from UP-MSI that funding for their projects is not a result of the research agreements under EO 247 but has been provided continually since the beginning of the research cooperation with Utah in the 1970s. In the long term, all licensing fees, milestone payments and royalties will be shared equally between principal collector and co-collector. If a third party obtains intellectual property rights, commercializes a discovery or technology derived from the material, an extra agreement between principal collector/co-collector and the third party has to define the concrete sharing of royalties and other monetary benefits or technology.

The Philippine government receives only negligible benefits in the short term. A yearly bioprospection fee of PhP 10,000 (US\$ 200) has to be paid to the IACBGR. Also, the co-collector has to provide the IACBGR technical expertise to develop a monitoring scheme for marine bioprospection. In the medium term, benefits will focus on capacity-building. An education module on resource conservation and environmental protection geared to communities will be developed by the co-collector. At least one government representative will be trained in taxonomy of marine resources through a short-term internship or observation program. In the long run, technology transfer and profit-sharing come into the picture. The government will have access to all product discoveries deriving from the Philippine materials. For endemic species, the technologies used to make the discoveries have to be made freely available to the Philippine government. In case of a successful commercialization deriving from the collected materials, the Department of Agriculture will get a 5 % share of the net revenue. The Philippines have to be recognized as the country of origin in all documents and publications referring to the materials and improvements on them.

Benefits for local communities focus on education and training in the short term and material benefits in the long term. The co-collector has to conduct an information campaign on conservation, protection and the value of coastal resources for the community after collecting in its area. In the long term, benefits for local communities are to be financed from the 5 % of royalties given to the Philippine government. The exact share and use of these benefits remain to be defined. All research results have to be made available and explained to the community. Also, the local community at which the material was extracted from has to be acknowledged in any document or publication. Besides, in case of commercialization training in natural products chemistry or some other field of scholarship has to be provided by the co-collector to at least one person from the local community.

Sources: University of Utah / UP MSI / DA (1998, 2002) and authors' interviews.

Realized Benefit-Sharing

The sharing of benefits needs to be looked at on two levels: the international level between the Philippines and users from industrialized countries and the national level between involved stakeholders in the Philippines. Concerning the international level, the cooperation that accounts for the largest share of benefits transferred so far is the UP-MSI – University of Utah ABS agreements, as shown in Box 11.

Unlike the CRAs of UP-MSI, this agreement covers a business partnership of a joint-venture type. Pascual produces a herbal extract and markets it as a cough medicine in the Philippines; it is won from plant material grown by contract farmers (“Lagundi”). The medicinal properties of Lagundi are based on traditional knowledge of Philippine healers discovered more than 20 years ago. Since then, the development of an extracting technology was funded and later patented by Philippine state agencies (PCHRD and NIRPROMP), which issued a non-exclusive license to Pascual to commercialize Lagundi. In this way, Pascual makes use of biological resources and traditional knowledge from the Philippines and generates new value. Apart from the company itself, contract farmers who grow La-

104 La Viña / Caleda / Baylon (1997), Annex B, Definition of Terms, p.33.

gundi benefit from this arrangement. In the future, Pascual will deliver Lagundi under the CRA to the British company that is currently developing a standardized herbal medicine from it for international commercialization. Nearly all benefits that are intended to be transferred under this CRA depend on the successful development of a product by the British side.

As regards distribution at the national level, Table 5 shows that most benefits realized go to scientific institutions, which ensues from the prominence of UP-MSI in ABS-agreements so far. For source communities, immediate material benefits have accrued in the form of wages for services (guiding, translating, assisting in collection, farming Lagundi and collecting *conus*). Modest benefits have accrued in a non-monetary form in the case of UP-MSI, where environmental knowledge about a site was created as a by-product of the collection and later shared with local communities. Environmental training of local communities as agreed upon in the relevant ABS agreements has not been conducted yet. The government has been the recipient of additional benefits in terms of having staff members participate in collection activities as interns. The country as a whole may benefit from an expansion of the *ex-situ* database of the Philippine National Museum, which receives a copy of the samples collected by UP-MSI.

Mechanisms for Benefit-Sharing in the Future

All four approved commercial ABS agreements contain provisions that lay down rules for the sharing of benefits in the event of a commercialization of developments stemming from Philippine materials. Although the agreements provide a satisfactory degree of clarity on how benefits are to be shared between the foreign entity, the co-collector and the Philippine government, there is no policy on the distribution of possible benefits to source communities. The following paragraphs shed some light on the potential monetary and non-monetary benefits.

Monetary Benefits: The UP-MSI commercial research agreements of 1998 and 2002 as well as the renewal of the 1998 agreement define the MSI and the University of Utah as the main partners in benefit-sharing. Between them, the net revenue is evenly divided, after a share of 5 % has been deducted for the Department of Agriculture (DA, see Box 11). The most important question yet to be solved concerns the use of the 5 % share due to the DA. Stakeholders who have provided materials (source communities, indigenous peoples, Integrated Protected Areas or private persons) may receive a share of benefits “*as declared by the DA*”.¹⁰⁵ It was a common understanding among the interview partners that the DA has assumed the responsibility to ensure a fair and equitable benefit-sharing involving compensation for source communities. At present, though, DA lacks any comprehensive policy for an adequate benefit-sharing mechanism for this 5%. Draft Implementing Rules and Regulations prepared by a group of consultants, including among other things points of departures for such a benefit-sharing mechanism, were discussed in the IACBGR during several meetings in 2001, but have been put on hold. In the present situation, arising benefits would be likely to flow into the DA budget without contributing specifically to the advancement of source communities or environmental goals. The providers of the genetic material are hardly able to take an informed decision about granting access and will not adapt their behavior regarding the environment.

In the ABS agreement between Pascual Laboratories and the British pharmaceutical company, monetary benefit-sharing is envisaged on two levels. First, as exporter of herbal extracts Pascual will receive a regular price for the goods delivered. Second, in case a product is successfully developed and patented, Pascual will receive a

105 Section 4.3 of Attachment “3” of both UP-MSI CRAs. This is consistent with Section 5 (e) of EO 247 („Minimum Terms of the Commercial Research Agreement and Academic Research Agreement“).

	Type of benefit	nation states	local / indigenous communities	industry	scientific institutions
realized benefits	access to <i>ex situ</i> facilities and databases				X
	share in research budget and/or equipment for laboratories				X
	salaries for guides and collection helpers		X		
	payments per sample (“sample fees” e.g. for conus)		X		
	environmental information about local area		X		
	bioprospecting fees (“up-front fees”)	X			
	research collaboration				X
	scientific capacity-building				X
	contribution to <i>ex-situ</i> collections	X			X
future benefits	maintenance of and contribution to <i>ex situ</i> collections				X
	technology transfer under most preferential terms				X
	scientific capacity-building				X
	access to research results and exchange of experience				X
	participation in product development			X	X
	research collaboration (if possible in provider country)			X	X
	acknowledgement in publications		X		X
	research funding				X
	contributions to local economy		X		
	administrative capacity-building	X			
	participation in value added		X	X	
	share in royalties	X	X		X
	free access of source country in case of product development	X			

3.5 % share of royalties and a free license to produce and sell the product in the Philippines.¹⁰⁶

10 % of Pascual’s share will go to two Philippine government institutions, NIRPROMP and PCHRD, which had initially contributed to the development of the original herbal medicine.

¹⁰⁶ This is consistent with Section 5 (1) of EO 247, („Minimum Terms of the Commercial Research Agreement and Academic Research Agreement“). Also, the Philippine government will be co-owner of any patent on standardized Lagundi, having done initial basic research on the plant.

Non-monetary benefits: training and technology transfer are the two most important non-monetary benefits that may materialize in the future. EO 247 aims, in Section 1, at the “*development of*

local capability in science and technology to achieve technological self-reliance in selected areas". The agreements concluded so far include technology transfer elements, but they are unlikely to achieve this goal.

Technology and skills are transferred to UP-MSI through various channels that form part of the academic cooperation. Pascual and government staff will be trained at the British company in the production of the standardized herbal medicine. This provision aims at technology transfer and

salaries or sample payments. Academic cooperation has been in place in a similar form for 30 years now. Salaries would have to be paid by any bioprospector regardless of ABS legislation. At the same time, the ABS legislation has led some interested bioprospectors to end their activities. For example, this affected Siliman University and the Philippine National Museum that had been cooperating with US universities under grants of the National Cancer Institute. Both Philippine institutions complain that they receive fewer benefits today than before EO 247 because the US

Box 12: Case Study (IV): An Unexpected but Beneficial Side-Effect

While researching possible benefits, interviews with researchers of UP-MSI revealed unexpected side-effects of the newly established communication between scientists and locals. The PIC meetings *"slowly opened our eyes and exposed us to poor rural communities. We never met the locals in Manila. PIC brought us closer and we saw how depressed they are"* (Mrs. Lourdes Cruz). From these experiences arose the idea to develop a model for a technology-based "rural livelihood incubator" now being tried with an indigenous tribe called the Aetas, in Bataan. Volunteers from UP-MSI have carried out different projects: a small library is being set up, a dormitory for high school students is being repaired, scholarships for distance education are being solicited. *"We believe the educational component is extremely necessary to develop the people's capacity to understand issues and to maximize their ability to take advantage of possible benefits from scientific and technological progress"* (Lourdes Cruz). The "livelihood incubator" is regarded by UP-MSI as a possible vehicle for providing benefits to local communities which might later be replicated in other regions. It is hoped that these partnerships will be able to build trust between scientists and local communities for future bioprospecting activities.

shows one major limitation to it at the same time. While the Philippine side may acquire knowledge about the production process in this way, the application of this knowledge depends on the availability of advanced technology.

Are Additional Benefits Generated?

In the cases at hand, all relevant benefits realized so far would have accrued without any specific ABS legislation in place. Additional benefits are expected in the future, when developments derived under ABS agreements reach the commercialization stage. Apart from that, there are even some cases where cooperation ventures have ended up leading to fewer benefits than before. Bioprospectors unwilling to share benefits under an institutionalized scheme have not adhered to the EO 247 process.

The benefits realized thus far go primarily to UP-MSI in the form of training and technology transfer as well as to local communities in the form of

side opted to divert their activities to other countries.

It is debatable whether the Philippine ABS legislation should be blamed for this outcome. As long as international bioprospectors are able to find easy alternatives, they can circumvent ABS-provisions. The country in question would need advantages like endemic resources, an efficient administration or highly skilled cooperation partners to effectively counter the internationally perceived "disadvantage" of having ABS legislation in place.

For future benefits, it can be argued that the ABS legislation has been a suitable framework to ensure that the Philippine state receives a certain percentage of possible commercialization gains. This provision is clearly additional compared to the situation before.

4.3.2 Community Involvement: Steps towards Participation and Empowerment

While fair and equitable benefit-sharing shows potential to improve peoples' livelihoods as well as conservation measures in developing countries, the involvement of local or indigenous communities in decision-making on access to genetic resources can be seen as supporting two other major development concerns: participation and empowerment¹⁰⁷. It is mainly the procedure of Prior Informed Consent that will give local communities the chance to participate in the negotiations on ABS and empower them to decide over the use of their genetic resources. Therefore, this section concentrates on the question, in how far the existing PIC structures foster these two objectives.

As yet there is no wide experience available on how the PIC procedure performs in practice. The most detailed data is available on the two CRAs of UP-MSI, introduced in Box 10, above. Despite all efforts by UP-MSI to follow the procedure, participation during the sector consultations was low. Moreover, few of the people interviewed in Coron and Panglao were able to recall the meetings and their agendas. Thus it can be concluded that participation and empowerment have not been achieved to a high degree in these communities. Nevertheless, EO 247 may have led to a growing discussion of rights for local and indigenous communities related to biodiversity which could encourage empowerment in the long run.

Quite a number of PIC consultations are characterized by poor attendance on the part of commu-

nity members. Frequently only town officials and other representatives from the town proper have been present. The low participation of locals in the consultation meetings is not caused by a poor regulation for the PIC procedure, but by missing preconditions needed to ensure the effectiveness of such a procedure. The UP-MSI staff advertised its projects through local media, information flyers and preliminary meetings with local officials. The sector consultations were announced through public notification at least one week in advance. All information was given in the lingua franca and in local dialects. Thus no reason can be seen why community members should not have been informed about the planned activities. But the lack of knowledge about the value of biodiversity appears to be at the bottom of the lack of interest among locals in negotiating bioprospecting activities.

On the other hand, in communities where awareness-raising on the issues of EO 247 has taken place, the interest in protecting the local biodiversity and negotiating its use seems to be high. The Palawan NGO Network Inc. has conducted awareness-raising activities in several communities in the municipality of Puerto Princesa. During an interview in one of those communities, it became obvious that community members there had not only learned about the meaning of bioprospection and the value of biodiversity but had begun to actively observe and check the legality of collecting activities within their territory. They saw a major empowerment in learning about their rights to stop illegal collectors as well as about the entities to which they must refer to when illegal activities are to be disclosed.

One issue not precisely set out in the PIC regulations is consideration of customary laws when indigenous communities are involved. The law only states that such customs have to be acknowledged, but leaves open the way in which this is to be done. Collection in Coron took place within the ancestral domain of the Tagbanua ethnic group. No special measures were undertaken to comply with customary law there, but evidently the local representatives did not claim that right, either. In discussions on the topic, a generous meal is often

107 The term participation, as used in this study, is understood as „...a process through which stakeholders influence and share control over development initiatives and the decision and resources which affect them.“ Katsumoto (2002). The term empowerment describes measures aimed at strengthening social and political participation. It can mean giving disadvantaged groups the power to participate or that groups themselves obtain such power. See Nortis Foundation for Sustainable Development (2002).

seen as the best way to comply with customs. But this seems to leave important issues like traditional ways of consensus-building open. Instead of fostering participation it could easily contribute supporting bribery, especially if processes are not monitored.

Little awareness exists among the stakeholders of ABS about the fact that when indigenous groups are involved, the PIC regulation under EO 247 is repealed by the free and prior informed consent (FPIC) regulation under the Indigenous Peoples'

achieving informed consent, the new FPIC regulation, signed by the National Committee for Indigenous Peoples in March 2002, is presented in Box 13.¹⁰⁸

The multistakeholder approach of the IACBGR, including NGOs and Peoples' Organizations in the committee, appears to foster participation and empowerment of local communities at the national level by giving them a voice in decision-making on regulations. But at present little can be said about the impact such organizations may

Box 13: The Specific PIC of Ancestral Domains: Free and Prior Informed Consent

The new guidelines on free and prior informed consent (FPIC) are assumed to assure the information and consent of indigenous communities for any policies, development programs, projects and plans affecting their needs and concerns within their own territory. These activities include bioprospection as well as mining or dam construction. The regulation is more complicated than the PIC procedure under EO 247 and places more emphasis on comprehensive participation of the indigenous community affected.

Before the FPIC-process as such begins, a field-based investigation is required to define whether and to what extent ancestral lands are affected by the planned activities. If the involvement of ancestral territories is certified, the applicant has to submit a "project operation action plan" to the regional director of the National Committee for Indigenous Peoples and must seek FPIC from the indigenous community involved.

The FPIC process is carried out by officials of the National Committee, while the applicant himself only attends the consultative meeting and pays all expenses for FPIC. This begins with a public notification to the council of elders/leaders concerned. Then a survey is conducted in the community about the recognized leaders to secure genuine representation for the community in the negotiations. At a preliminary consultative meeting the applicant can present and explain his project proposal and the project operation action plan with all its costs and benefits for the community. Opponents to the proposal must be given equal time to present their counter-arguments. Within a period of 15 days after the preliminary meeting the leaders must have completed their consultations on the proposal involving the community members, using their own traditional consensus-building processes. During that time neither the applicant nor any other participant in the preliminary meeting – except officials of the National Committee – is allowed to remain in the community. After another 15 days have elapsed, a community assembly of all community members, represented by household heads, is conducted. The decision is made known, and voting by hand is used to determine the number of voters for or against the proposal. The terms and conditions for approval of the proposal, including benefits to be derived by the host community, must be translated into a Memorandum of Agreement to be signed by both parties and the National Committee for Indigenous Peoples. The Memorandum is signed at the same time the FPIC certificate is issued. The whole process of FPIC should take at least 45 days, though it may in fact take much longer.

The overall process of achieving consent appears to constitute a burden unrealistically high for any bioprospector, but it does include some interesting ideas for conducting prior informed consent in a free and participatory way. Conducting a survey on community leaders is a potential way of assuring the truly accepted representatives. Presentation of proposals and opposition to it at one meeting can permit discussions that render the pros and contras of a project more transparent to the community. Consensus-building behind closed doors is an example of how it is possible to minimize outside interventions in community decisions in order to ensure that the consent given is truly free. Voting in the community assembly promotes the participation of the community as a whole. Integration of FPIC consultation and Memorandum of Agreement provides the community with a clear definition of the sharing of benefits. Monitoring of the FPIC process by the regional National Committee of Indigenous Peoples gives the community more control over the due conduct of the procedure and eases the applicant's workload. The reverse of some of these provisions is, of course, the additional time and expense involved. Since the guidelines have not been practiced yet, future experiences will have to show whether they are really workable.

Rights Act (IPRA). IPRA defines its own FPIC procedure for all kinds of natural resource uses within the ancestral domains of indigenous peoples, including bioprospection. Its relevance in practice is still unclear. An alternative approach to

have on IACBGR decisions, because the indigenous representative does not attend the IACBGR

¹⁰⁸ National Commission on Indigenous Peoples (2002).

meetings. The problem seems not to lie in the IACBGR itself, but in a lack of interest on the part of the representative chosen.

4.4 Policy Options

As a pioneering country for ABS legislation, the Philippines has had to pay a price. Neither the regulation nor its implementation are perfect, and both have led to discontent among certain stakeholders inside and outside the country. It will not be possible to find a regulation on which every-

could use to assist countries like the Philippines to implement a successful ABS regime will be presented in Chapter six, below.

4.4.1 The Application Procedure

It is in everybody's interest to make the application process more efficient and less time-consuming, while preserving the achievements of EO 247. Entry barriers for applicants should be lowered, responsibilities clarified and the bureaucratic procedure streamlined.

Proposal	Expected Consequence
Provide more information to potential applicants	Lower entry barrier for applicant
Establish a focal point for applicants	Lower transaction costs for applicants
Facilitate decision-making by means of institutional reforms	Faster application process
Install a tracking system to monitor the stage of application	Increased transparency of government procedures
Provide sufficient funding for the agencies involved	Efficient and speedy application process
Go ahead with awareness-raising on bioprospection and legal advisory services	Communities enabled to exert their rights
Document customary practices regarding bioprospection	Increased transparency for applicants
Support applicants during the PIC process	Lower entry barrier and transaction costs for applicants
Ensure adequate monitoring at the local level	All participants follow the rules
Determine preferences of the local population regarding benefits	Equitable and efficient distribution of benefits according to the wishes of the local community
Develop a distribution scheme for long-term benefits	Equitable and efficient distribution of benefits
Increase spending for research and development	A larger share of the value added to genetic resources remains in the country

body agrees, since there are many different interests involved. However, the preceding analysis has shown that there are unnecessary bottlenecks which should be removed in order to pave the way for more benefits for the country from the use of genetic resources. This section offers some policy options for the Philippines (Table 6 puts them in a nutshell). Measures the international community

Provide more information to potential applicants: many applicants are still not sufficiently aware of the documents to furnish. A renewed attempt to inform a broad range of potential applicants among Philippine and foreign academe and industry will increase information levels and lower entry barriers to actually file an application. It is important to use different information chan-

nels in order to reach a large number of potential applicants. For the Philippines, workshops, letters, and info packages on the application process could be sent to universities, research institutes and companies interested in using genetic resources. Furthermore, the regional extension offices of the relevant government agencies should receive sufficient training and information material. This would enable them to better inform local applicants and disseminate information to a larger group of stakeholders. For foreign research institutes and companies, information on the application procedure should be made available via the Internet.

Establish a focal point for applicants: at present, potential applicants – especially foreigners – are unable to perceive one given agency as a focal point responsible for dealing with all their concerns. Although most Philippine applicants were aware that PAWB plays the role of a central agency, in many cases they still had to go to other agencies, because applications had become stuck there. The installation of a focal point¹⁰⁹ would provide applicants with a “one-stop-shop option” where they can get all the information they need concerning the application, submit it, and check on the stage of processing. This would greatly reduce time, efforts and entry barriers for the applicant.

Facilitate decision-taking by means of institutional reforms: there are overlapping responsibilities involved in taking an informed decision about an ABS-application, since too many actors are involved. While an applicant must first deal with the bureaucracy in the appropriate agencies, the IACBGR is the effective advisory body, and the Secretaries of the agencies have the final power of decision. The most radical solution to facilitating decision-taking would be the creation of a new independent government office reporting directly to the office of the President. This new

office would be staffed by professionals, should be advised by a multistakeholder body like the IACBGR to ensure transparency and participation, and would have decision power. If the current framework is retained, at least the power to make decisions should be concentrated at the focal point, at a technical rather than a political level.¹¹⁰ The IACBGR should be maintained as an advisory body, but its work should be professionalized. To this end, only technical people with commitment should be included, the body should be funded to compensate its members, and the voting system should be adapted to the present high rates of absenteeism.¹¹¹

Install a tracking system to determine the stage of application: applicants need secure information on which to base their planning. Until now the applicants have been left alone to guess how long their application may take. A tracking system, possibly available via the Internet, could provide applicants with information on a) missing documents, b) by which agency and since when their application has been proceeded, and c) what stages it still has to pass through. As a consequence, applicants could improve their further research planning, and this would create an incentive for stepped-up processing, making the procedure more transparent.

Provide sufficient funding for the agencies involved: in the literature on public finance there is a golden rule: “no new tasks without funding”. This rule has been violated in the Philippines, where public officials have been tasked with additional duties and new bodies have been created without ensuring that the necessary funds are available. As far as the financing of these tasks is concerned, we can distinguish between short, medium, and long-term options. In the short-term,

109 There might even be two focal points, since responsibility for resources is split between PAWB and BFAR, depending on whether the resources are terrestrial or aquatic. However, for each type of resource, there should then be only one focal point to deal with.

110 This would prevent the long delays caused by the different Secretaries who in practice do not sign an agreement simultaneously but one after another.

111 A pragmatic and innovative approach has been adopted when attendance has failed to reach the necessary number for a quorum. In these cases, members are asked to vote by phone or by text messaging. This practice has, however, not yet been institutionalized.

bioprospection and application fees should be increased. Since these are relatively low¹¹², there is considerable room for price increases. Price discrimination between ARA and CRA as well as between domestic and foreign applications is conceivable, but it must be sound. In the medium-term, the national budget should provide more funds for the processing of applications. Since more funds could foster more research agreements, this may be regarded as an investment in the future. More agreements will ultimately result in a higher volume of benefit-generating research. As an alternative to the national treasury, the Global Environment Facility could increase its support to countries like the Philippines in their implementation of the CBD. Finally, in the long-term some of the benefits created by research agreements should go to the processing agencies to strengthen their financial independence. This would work especially well if an independent agency for bioprospecting were founded, because transparency and public control over resources could be maximized in this way.

4.4.2 Prior Informed Consent and Benefit-Sharing

Preferably, transaction costs for prior informed consent should be as low as possible, since they represent additional costs to the collector. Nevertheless, PIC has been conceptualized as an important means to guarantee community participation and empowerment. Thus the two objectives may come into conflict with one another.

Go ahead with awareness-raising on bioprospection and legal advisory services: empowerment of local and indigenous communities will not be achieved by simply conducting PIC meetings. Locals need more knowledge about their rights, about the value of biodiversity and about the national institutions that protect their interests. This information is necessary to enable

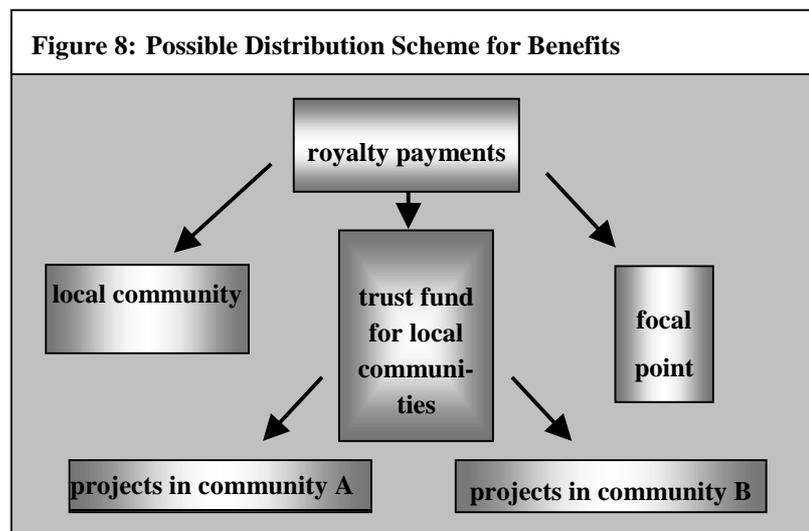
locals to exercise their rights in the PIC process. Hence awareness-raising campaigns should be carried out by NGOs, government extension workers or by the field offices of the National Council of Indigenous Peoples. With greater awareness about bioprospection, local people are more likely to better monitor their territories and to prevent illegal bioprospection. In addition, in cases of conflict legal advisory services should be provided to locals.

Document customary practices regarding bioprospection: thus far, the free and prior informed consent of indigenous communities has not been enforced, and only in some cases have customary laws been observed. In order to comply with the required customary practices, it is recommendable that these be documented as a means of facilitating a proper preparation of the FPIC process. Furthermore, this would give applicants a more transparent picture of the requirements involved.

Support applicants during the PIC process: the overall PIC process can be relatively demanding, especially the first time. Scientists often feel overburdened by the procedure. In addition, cultural differences may impede communication and negotiations between collectors and communities. Applicants could be relieved of tasks they are not prepared for with the help of community workers, e.g. from universities or NGOs. The focal point could provide a network of facilitators and bring them into contact with applicants. For Philippine academic researchers, this service should be funded by the government, others should be able to cover the costs themselves. These facilitators should also help out during discussions about benefit-sharing in order to prevent misunderstandings, exaggerated expectations or any exploitation of the community.

Ensure adequate monitoring at the local level: communities should be able to take their decisions about PIC independently. In order to reduce the potential for particularist interests to influence the PIC process, an authorized person should witness the PIC certification. This could be an IACBGR

112 Fees total PhP 1,025 for Philippine nationals and PhP 2,025 for foreign applicants (around US \$ 20 / US \$ 40).



and/or an NGO member. The person selected should be trusted by the community.

Determine preferences of the local population regarding benefits: short-term benefits for locals should be negotiated during the PIC process. This is the point in time when locals have a chance to express their preferences, which should be documented. However, if the applicant cannot offer any short-term benefits, a redistribution mechanism like a community trust fund would be a solution that could bring short-term community interests into harmony with the long-term horizon of most research projects (see below). Long-term benefits can only be determined at the time when they occur, since preferences may change in the course of time. The entity responsible for the distribution of long-term benefits should then identify the needs of the community concerned. Academic researchers should seek different options for community compensation. At the minimum, scientists should give local communities feedback on their findings. In this way they would show respect to the communities which gave them their trust in providing consent for their research.¹¹³

Develop a distribution scheme for long-term benefits: thus far, the Philippine government has no elaborated policy on how to distribute long-

term benefits once they occur. It is unclear which share will go to local communities and who will decide on their distribution. This opens the door for corruption and capture of benefits by influential groups in the capital region. Thus, as a matter of principle, benefits should be distributed on the basis of a standardized key (see Figure 8).¹¹⁴

- Only a small share of benefits should go to the specific local community where the collection took place. This prevents conflicts between communities with similar resources while at the same time maintaining a direct relationship between communities and collectors.
- The majority of royalties should go into a fund for local and indigenous communities or for protected areas, depending on the “category” of the collection itself. The fund should be administered by an independent body in a transparent manner. A fund would offer the advantage of delivering short-term benefits to

¹¹³ Different forms of “giving back” can be found in the interesting article of Shanley / Laird (2002).

¹¹⁴ The proposed distribution key may be considered when formulating the implementing rules and regulations for shaping the Wildlife Management Fund. See Chapter VI, Section 29 of the Wildlife Act: „There is hereby established a Wildlife Management Fund to be administered by the Department as a special account in the National Treasury. It shall finance rehabilitation or restoration of habitats affected by acts committed in violation of this Act and support scientific research, enforcement and monitoring activities, as well as enhancement of capability of relevant agencies.“

communities from the royalties of different collection activities, thus leading to an inter-communal and intertemporal redistribution of benefits. This should lead to a more efficient and equitable distribution of benefits.¹¹⁵

- A share should be used to finance the institutions tasked with bioprospecting. This could be the new agency mentioned above or the focal point or the IACBGR. The share is important to guarantee long-term financial sustainability of bioprospecting management and to stimulate the respective agencies to work efficiently.

4.4.3 Pro-Active Approaches to Create Benefits from Genetic Resources

From the point of view of development, it is desirable that a country like the Philippines creates as much value as possible out of its genetic resources. Exports of resources – even under an ABS agreement – should be accompanied by a mid-term strategy to build internal capacities to develop products from these resources, thus leaving a larger share of the value added in the country. Domestic research and development needs to be supported to this end. Thus far, however, the Philippines has not managed to come up with a coherent strategy. Three examples of proactive approaches have been found in the course of the present study; they will be presented here to illustrate the chances and the pitfalls of such attempts.

The **Philippine Institute of Traditional and Alternative Health Care** (PITAHC) used to be a program of the Department of Health; it became an independent government agency in 1992. Its objective is to promote scientifically validated traditional health care products. This can be seen in the light of the governments' efforts to strengthen specific industries: the herbal medicine

industry is one of ten selected industries that enjoy special government attention. Aside from other tasks, PITAHC is engaged in manufacturing herbal medicines. Currently, PITAHC is concentrating its activities on ten Philippine herbs, two of which – Lagundi and Ascof – have already been commercialized in a dosable form. Pascual, the biggest Philippine drug company, is successfully marketing Lagundi as a nutritional supplement under a non-exclusive license from PITAHC (see above). Here, PITAHC has helped to increase the value-added in the country. The recently concluded ABS agreement with a British pharmaceutical company to market Lagundi on a world-wide scale indicates its potential. However, the case also highlights the limits of the Philippine commitment. Without a joint venture, Pascual would be unable to use state-of-the-art technology, which would simply be too expensive. In fact, this underlines the necessity to foster research and development activities by means of tax incentives and other measures aimed at decreasing technological dependence in the medium term.

Another innovative step was taken by the founders of **GeneSeas**, a Manila-based biotech company. In the late 1990s, some researchers from UP-MSI and the University of Utah founded a private company to facilitate and support access to Philippine genetic resources for domestic and foreign biotech companies and commercial users. GeneSeas offers advice on bioprospecting regulation and collection regarding aquatic resources as well as services on processing of material. In other words, GeneSeas allows potential bioprospectors to outsource several research stages. GeneSeas has acquired its knowledge on the Philippine regulations through its own experience with research proposals. The founders guarantee that they are willing to follow the existing bioprospecting regulations in possible future contracts. Their aim is to actively use this knowledge as a comparative advantage vis-à-vis foreign bioprospectors. The business model of GeneSeas seems to be an innovative way to benefit from specific knowledge through the provision of

115 Examples and principles for the design of trust funds for bioprospecting can be found in Guerin-McManus / Nnadozie / Laird (2002).

unique services.¹¹⁶ However, thus far GeneSeas remains a concept rather than a working company, and its future remains open.

The Philippine regulations on bioprospection aim at **technology transfer**. Foreign bioprospectors are encouraged to share both the actual research and the results with the Philippine collaborator. As a “minimum provision”, all bioprospectors have to deposit copies of collected specimens at the Philippine National Museum. This guarantees that the collected material is at least available for taxonomy. The objective of the regulation is laudable and is backed by numerous international agreements, among them the CBD and the TRIPS agreement, which aim to increase technology transfer to developing countries. Experience, however, has shown, not only in the Philippines, that a real sharing of knowledge is more the exception than the rule. Smaller developing countries with a limited technological base have little leverage to force companies or research institutions from industrialized countries to transfer technology, since this decision will be based on a profit-maximizing calculation. Hence the only workable strategy is to build up human capital and technology through public incentives geared to attracting foreign companies with specific comparative advantages (like in the case of GeneSeas). Only through such an integrated approach will it be possible to foster technology transfer via ABS agreements.

5 Prospects for Multilateral Access and Benefit-Sharing in the Philippines

Contrary to the assessment of bilateral access and benefit-sharing presented in Chapter four, no practical experience has yet been made with multilateral ABS. The present chapter therefore discusses the prospects for the implementation of the International Treaty on Plant Genetic Re-

sources (ITPGR) in the Philippines as an example of multilateral benefit-sharing of genetic resources. Since the principles of multilateral benefit-sharing differ fundamentally from those of bilateral benefit-sharing, this is also the case with the options to benefit from this treaty. As the present chapter shows, however, stakeholders in the Philippines are not yet wholly aware of the possible benefits of the International Treaty. Nevertheless, some key elements of the ITPGR, such as Farmers’ Rights, conservation and benefit-sharing at the national level, have been taken up in the drafting process of the Plant Variety Protection Act. Therefore, the relationship between this Act and the concepts and goals of the ITPGR is analyzed here. The chapter concludes with policy recommendations relating to the implementation of the ITPGR and the Plant Variety Protection Act in the Philippines.

5.1 Background Information

Access and benefit-sharing as regulated by the ITPGR and the Plant Variety Protection Act – both on the verge of implementation – are likely to have a significant impact on farmers and agricultural biodiversity alike. The following section therefore depicts the particular setup of the Philippines, focusing on the influence of these regulations: the current state of plant genetic resources for food and agriculture (PGRFA) in the Philippines, the relevant stakeholders and the institutional setting.

5.1.1 The State of Agricultural Biodiversity

The Philippines is comparatively rich in plant genetic resources for food and agriculture.¹¹⁷ PGRFA are defined as the genetic material of food and agricultural plants of actual or potential

116 For more information on GeneSeas, see www.compass.com.ph/~giselapc/webpage.html.

117 See Department of Agriculture of the Philippines (1995), p. 23.

value.¹¹⁸ They comprise plants for human and animal food consumption such as rice and maize as well as plants for technical and medical uses such as cotton and rubber. PGRFA are also a key to further productivity increases in agriculture, half of which are commonly attributed to genetic improvement.¹¹⁹

PGRFA can be classified by location in *in situ* and *ex situ* PGRFA. *In situ* PGRFA refers to material grown in farmers' fields and its wild and weed-like relatives, whereas the material stored in genebanks is termed *ex situ* PGRFA. PGRFA comprise (1) traditional varieties such as heterogeneous varieties that were developed and selected by farmers in the past and the origin of which cannot be traced, (2) farmers' varieties such as varieties bred by a single farmer or a farming community which can be identified as the breeders, and (3) commercial varieties resulting from the breeding efforts of the public and commercial breeding sector.

Ex situ and *in situ* conservation methods are complementary strategies. If properly managed, genebanks are the most secure and cost-effective method of PGRFA conservation.¹²⁰ Besides, they provide easy and quick access to PGRFA for researchers and breeders. However, this conservation method is static and halts evolutionary processes. These evolutionary processes lead to the further diversification and ongoing environmental adaptation of varieties and thus provide a dynamic base for PGRFA. Many breeders believe this dynamic base of PGRFA to be the indispensable resource for sustained productivity increases. Therefore, *in situ* conservation – though more complicated and more costly – is increasingly viewed as a necessary complementary conservation strategy by breeders and conservers.¹²¹

As far as the state of *ex situ* PGRFA in the Philippines is concerned, the national germplasm collection comprises more than 400 different species in 45898 accessions.¹²² Of these, 32446 accessions of 396 species are stored in the National Plant Genetic Resources Laboratory. The remaining accessions are kept in 14 smaller genebanks. The Laboratory collection covers wild relatives of cereals, fibers, forage and pasture crops, fruit trees, legumes, nut trees, oil crops, plantation crops, root crops, small fruits and vegetables. 75 % of the accessions are of domestic origin. The Philippine Rice Research Institute (PhilRice) has the national mandate for the conservation of rice. It holds 3123 accessions of 7 species of rice.¹²³ The Philippines also hosts the International Rice Research Institute, which holds the world's largest *ex situ* collection of rice, embracing over 90000 accessions of cultivated and wild rice species, which have been collected in more than 100 different countries.¹²⁴

As for the state of *in situ* PGRFA, there is no reliable data on how much diversity actually exists and how much diversity has already been lost, because no comprehensive survey has ever been conducted.¹²⁵ In the case of rice, the Philippines' most important and diverse crop, it is estimated that more than 3500 varieties existed prior to the green revolution in the 1960s.¹²⁶ It is also estimated that high-yielding varieties have displaced more than 300 traditional rice varieties.¹²⁷ Even though no comprehensive study of *in situ* agricultural biodiversity has ever been con-

122 An accession is the planting material of a variety stored in a conservation facility. It represents the smallest storable unit of a crop variety. For cereals, an accession consists of approximately 500 to 1000 seeds, which are dried and usually conserved cold or frozen.

123 See Department of Agriculture of the Philippines (1995), pp. 73-76.

124 See IRRI (1998).

125 See Department of Agriculture of the Philippines (1995), p. 28.

126 See SEARICE (2001b).

127 See Wood et al. (2000).

118 See FAO (1997), p. 24.

119 See Koo / Wright (1999), p. 5.

120 See Virchow (1999b).

121 See Virchow (1999a), p. 42.

ducted in the Philippines, it appears that the diversity of rice varieties *in situ* is still enormous: A conservation and breeding project in Mindanao led by SEARICE identified 298 different rice landraces on only 1/25th of Mindanao's land area, while IRRI's genebank contains only 135 rice landraces from Mindanao in total.

5.1.2 Philippine Stakeholders in Agriculture and Agricultural Biodiversity

The ITPGR and the Plant Variety Protection (PVP) Act will affect various actors differently and set a new stage for their activities. **The Department of Agriculture (DA)** is the central political actor in relation to the ITPGR and the PVP Act. The Philippines is a member of the FAO and voted in favor of the ITPGR at the 31st FAO Conference in November 2001. As soon as the Philippines ratifies the International Treaty, the DA will be responsible for conceptualizing the implementation of Farmers' Rights at the national level. Some elements have been integrated in the PVP Act, which the DA has to implement. Furthermore, the DA has to establish the rules for facilitated access to PGRFA, taking into account its benefit-sharing provisions.¹²⁸ The DA is also responsible for the implementation of a national PGRFA conservation strategy in accordance with the Leipzig Global Plan of Action. This involves coordinated *in situ* and *ex situ* approaches, which can be financially supported by the future ITPGR fund for multilateral benefit-sharing.

The **National Network for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture (National Network)** is the central coordinating institution for *in situ* and *ex situ* conservation activities conducted by the government and by science. It was created in 2001 to give a new impulse to the conservation of agrobiodiversity in the Philippines. It holds the country's national *ex situ* collections of PGRFA. All formerly independent

crop-specific networks have now joined the National Network. The Network has been mandated by the DA to implement the ITPGR in the Philippines. Therefore, it has to guarantee free access to its collections. Moreover, it could apply for support for *in situ* and *ex situ* conservation from the ITPGR trust fund. Institutionally, the National Network is headed by the Bureau of Plant Industry and includes governmental and scientific institutions. NGOs and commercial breeders are not included, although participants stated their intention to do so in the future.¹²⁹

The International Rice Research Institute (IRRI) is one of the world's largest international agricultural research centers and a member of the Consultative Group on International Agricultural Research, and as such it is mainly financed by donors from developed countries. IRRI is a public institution and its mandate crop is rice. High-yielding rice varieties from IRRI triggered the Green Revolution in Asia. IRRI's mission is to provide better rice varieties as a public good. IRRI is also a key player in the conservation of rice genetic resources, since it hosts the world's largest rice genebank. As a consequence of the International Treaty, IRRI has to provide free access to its rice collection for the public. IRRI is currently bringing its Material Transfer Agreements in line with the requirements of the ITPGR. These agreements make it possible for IRRI to track what is being done with its accessions. IRRI also profits from the Multilateral System in that it can continue to freely collect *in situ* PGRFA in the Philippines and in other rice-growing countries as well as to access public *ex situ* collections of ITPGR member countries. IRRI does not conduct *in situ* conservation activities. It could, however, apply for support for *ex situ* conservation activities from the ITPGR trust fund.

¹²⁹ The predecessor of the National Network, the Committee on Genetic Resources for Agriculture, included NGOs. However, founding the Network has rendered this institution meaningless. NGOs therefore interpret the new institution partly as an attempt to lower the influence of critical voices from civil society towards genetically modified organisms, which is one of the most controversial issues in current PGRFA discussions.

¹²⁸ See Article 13 of the ITPGR.

Philippine NGOs like SEARICE and MASIPAG are key players in *in situ* conservation as well as in policy-making regarding PGRFA. They have been shaping the discussion on the formulation of Farmers' Rights and could play an important role in formulating policies for the implementation of Farmers' Rights on the national and local level. NGOs are a central vehicle for the participation of farmers in decision-making processes in relation to PGRFA, as outlined in Article 9 of the ITPGR. Hence if Farmers' Rights are implemented in the Philippines in accordance with the ITPGR, the importance of NGOs as advocates of the farmers' interests will continue to grow. NGOs have also initiated *in situ* conservation and breeding projects, such as participatory plant breeding projects. They can become an important player in the planning and implementation of *in situ* conservation projects financed by the ITPGR trust fund.

The Commercial Breeding Sector is still in an early stage of development in the Philippines. The Seed Industry Development Act of 1992 (RA 7308) and the Plant Variety Protection Act of 2002 (RA 9168) were promoted in order to attract domestic and foreign investment in the breeding sector. The commercial breeding sector benefits from the Multilateral System because it can continue to freely access *ex situ* and *in situ* PGRFA collections covered by the system. Commercial breeders are also allowed to apply for intellectual property protection for transformed material originating from the Multilateral System.¹³⁰ However, if such intellectual property protection restricts other breeders' access to the material, they are required to pay a financial contribution into the ITPGR fund. In the context of the PVP law, the Philippine government is creating a national trust fund, which is financed by the fees and charges that breeders pay in order to obtain protection for their varieties. These contributions resemble a tax for Farmers' Rights.

Traditional Farmers are defined here as small-scale farmers who predominantly use traditional inputs such as traditional seeds and organic fertilizers. They are the actors of *in situ* conservation and development of PGRFA. They are also the main holders of Farmers' Rights. The ITPGR requires signatory governments to take measures to protect the traditional knowledge of traditional farmers, to facilitate for them fair participation in the benefits arising out of PGRFA use and participation in political processes relating to PGRFA. Traditional farmers could profit from new *in situ* conservation projects through increased productivity resulting from integrated *in situ* conservation and participatory plant-breeding projects.

Commercial Farmers are defined here as those farmers who predominantly use external inputs and sell the largest share of their produce on the market. They will in the long run profit from the ITPGR through enhanced commercial varieties, because the ITPGR ensures breeders free long-term access to basic PGRFA inputs. On the other hand, the price for commercial varieties will rise if breeders have to make monetary contributions to the ITPGR fund. The same holds if a national Farmers' Rights fund is established.

5.2 The Philippine Role in an International System of Multilateral ABS – ITPGR

The content of the ITPGR was agreed upon in November 2001. Now, the relevant stakeholders were expected to be in the process of formulating a position or a strategy vis-à-vis the treaty. The interviews revealed, however, that most potential stakeholders were not even aware of being stakeholders in the ITPGR. Nonetheless, some key stakeholders have come up with some elaborate assessments of and strategies to benefit from the treaty.

The International Treaty has generally been welcomed because it keeps PGRFA in the public domain, establishes a system of multilateral benefit-sharing and strengthens Farmers' Rights. Criticism of the ITPGR has been based on the

¹³⁰ The commercial breeders are not allowed to get intellectual property protection for PGRFA "in the form received" from the Multilateral System, since this is not in accordance with the ITPGR (ITPGR, Art. 12.3(d)).

Box 14: The Philippine Role in the Negotiations of the ITPGR

The Philippines played an active role in the negotiations leading up to the treaty. Remarkably, a representative of an NGO (Mr. Rene Salazar, SEARICE) has been mandated as principal negotiator for the Philippines by the Department of Agriculture (DA). The DA, actually the legitimate negotiator, showed little interest in the negotiations and did not have the capacity to pursue a negotiating strategy coherent in thematic or personnel terms.

The Philippines sought to secure internationally enforceable Farmers' Rights and argued for the inclusion of as many species as possible in the crop list of the multilateral system. Many other developing countries, on the other hand, sought to keep certain endemic species off the list, hoping to be able to sell them bilaterally. Therefore, contrary to the common assumption, the dividing lines in the negotiations did not always run between developing and developed countries, but between different developing countries. This led to a certain blockade in the negotiations and prevented the inclusion of many important crops in the crop list and worked counter to the definition of internationally binding Farmers' Rights.

Strikingly, the active role of the Philippines in the negotiations has thus far not translated out into an active discussion of the issue at the national level. Evidently, national policies on PGRFA are quite disconnected from the negotiations in international fora. The weak wording of the International Treaty will hardly alter the internal power relations which ultimately decide upon the concrete formulation of policies in a country like the Philippines.

grounds that it legitimizes patents on PGRFA and makes the creation of monetary benefits dependent on patents. This criticism has mainly been voiced by NGOs, which strictly oppose patents on life and which regard any benefit-sharing that relies on patents as "shaking hands with the devil". Moreover, NGOs criticize the article on Farmers' Rights as being too weak, because implementation is left to the discretion of national governments – a provision that clashes with the position of advocates of small farmers, who regard Farmers' Rights as inherent human rights.

The following sections discuss the expected benefits of the ITPGR for the Philippines in the view of stakeholders, but also with an eye to the criticism expressed towards the treaty. The expected benefits can be grouped into four categories: free access to PGRFA, non-monetary benefits, monetary benefits and the promotion of Farmers' Rights.

5.2.1 Free Access to PGRFA

The multilateral system of access and benefit-sharing ensures free access to 35 food crop species and 29 forage species. The free and expeditious access to these species is to be regulated by standard material transfer agreements. This ensures that users and providers do not have to negotiate the terms and conditions of access and benefit-sharing for each transaction, but agree to accept the benefit-sharing standards established by the ITPGR's governing body.

A large majority of the stakeholders generally welcomes the idea of free access as stipulated in the treaty. However, most interviewees reckon that the crop list of the ITPGR needs to be expanded in the future to include more relevant crops and to prevent bilateral appropriation of benefits. Salazar (see Box 14) called the coverage of the current crop list of the MLS "embarrassing".

Large public breeders and the academic community are the most prominent users of foreign PGRFA in the Philippines (PhilRice, UPLB and IRRI). They see free access to this material as a highly important benefit of the ITPGR. Free access is regarded as indispensable for their work, namely productivity increases in agriculture through improved genetic material. For the National Network, free access is a necessary condition for it in reaching its goal of enlarging and securing the national PGRFA base via different crop networks.

Some breeders fear, however, that the ITPGR will not have the leverage to ensure free access to PGRFA, because even with the treaty in place, national PVP laws will make access ever more complicated. They witnessed that some countries which have large genetic diversity, especially in rice, seem to be reluctant to share these resources internationally. Two reasons are conceivable for this conduct: on the one hand, these countries seem to fear misappropriation of their genetic resources due to intellectual property rights

claimed by other countries. On the other hand, these countries may be eager to sell their resources via bilateral contracts, hoping for greater benefits than under the multilateral system. NGOs regard PVP laws and the increasing patenting of genetic resources as the main threat to a free exchange of seed material. They also doubt that the ITPGR will counter this tendency.

What is important to the seed industry is that the ITPGR has defined the rules by which global exchange and benefit-sharing in relation to PGRFA will be governed. Now that patents have not generally been ruled out, they seem to be willing to make contributions to the fund. Although the private sector currently requests very few materials from the multilateral system, it is assumed that the situation will change in the future.

5.2.2 Non-Monetary Benefits

According to the ITPGR, non-monetary benefits of the multilateral system should comprise (1) exchange of information, (2) access to and transfer of technology, and (3) capacity-building (Article 13.2 (a) – (c)). Member states and breeders are encouraged to share these benefits with the providers of PGRFA.

Stakeholders who participated in the international negotiations perceive non-monetary benefits as an important part of the ITPGR. One of them expressed a preference for these non-monetary benefits over monetary benefits, stating that the National Network should be supported by means of training and the transfer of technology and equipment. Salazar mentioned genebanks and also national PGRFA networks (now joined in the National Network) as potential recipients of non-monetary support. He also critically remarked that the reasons why the ITPGR negotiations were so tedious was that too much attention was paid to monetary benefit-sharing as opposed to the sharing of non-monetary benefits.

A member of a public agricultural research foundation critically remarked that the value of access

to foreign genetic resources is very closely linked to the domestic capacity to process and improve these resource. In her opinion, knowledge, skilled personnel and technical capacities are insufficient in the Philippines. Free access can therefore only live up to its potential if it goes hand in hand with training and the transfer of technology and information: the non-monetary benefits of the ITPGR.

All stakeholders, however, appeared to share a skeptical attitude towards the likelihood that the envisaged non-monetary benefits will ever materialize. These are mainly dependent on the goodwill of private companies or developed countries' governments, and the ITPGR has no enforceable rules to induce transfers.

5.2.3 Monetary Benefits – The International Trust Fund and Potential Recipients

The ITPGR will establish a monetary benefit-sharing mechanism under the multilateral system (Article 13.3 (d)). Monetary benefits are to be used for PGRFA conservation, and “*farmers in developing countries who conserve PGRFA should primarily, directly and indirectly receive the benefits*” (Article 13.3). Thus the treaty designates farmers and organizations who directly support the conservation activities of farmers, as the principal recipients. However, other actors who conserve PGRFA (genebanks, conservation networks) also qualify.

Many stakeholders see the trust fund as a useful tool to promote benefit-sharing and conservation. But NGOs have criticized the multilateral system on the grounds that the generation of monetary benefits is completely contingent upon legitimizing and granting of intellectual property rights to PGRFA. Although all actors who conduct PGRFA conservation are in principle conceivable as recipients of monetary benefits from the fund, only three of the interviewees were aware of these new opportunities, and find themselves eligible:

The **National Network** regards itself as a potential recipient of monetary benefits from the

ITPGR to strengthen its PGRFA *ex situ* and *in situ* conservation and development activities. The National Network regards itself as the principle agency responsible for the implementation of the ITPGR in the Philippines, and therefore as the only due recipient of monetary benefits. The Network's position is that the benefits should flow principally to the Network's focal agency, the Bureau of Plant Industry, which will then redistribute them within the country.

The National Network appears to be well geared for the ITPGR, because it meets many of its goals and demands. Various interviews indicated that the Network has created a general consciousness for the topicality of PGRFA conservation and

given new impetus to related activities. Besides, one of the persons instrumental in conceptualizing the National Network was also temporarily negotiating the ITPGR for the Philippines and is therefore most likely very well aware of what it would take to benefit from the treaty. However, it must be noted critically that NGOs, also important actors of and stakeholders in PGRFA conservation, are not included in the Network. This is especially relevant for the field of PGRFA policies such as Farmers' Rights as well as for *in situ* conservation. The Network should therefore include all relevant stakeholders and should develop policies for the promotion of Farmers' Rights.

Box 15: The CBDC Project in Bohol

The Community Biodiversity Conservation and Development project (CBDC) in Bohol aims at fostering farmers' capabilities to manage plant genetic resources (especially rice), at conserving and broadening the genetic resource base in the communities, and at the general empowerment of farmers. It forms part of an international program carried out jointly by 14 partner organizations.^a SEARICE coordinates and administers the South East Asian part. The project relates in various ways to the ITPGR. It promotes goals of the ITPGR, such as *in situ* conservation of genetic resources and promotion of Farmers' Rights. It therefore qualifies for support from the ITPGR multilateral trust fund. Besides, it could serve as blueprint for similar projects to be financed by the fund.

The project operates in an environment of subsistence farmers. These farmers were predominantly using a single certified IRRI rice variety (IR 66) with modern inputs when the project started out in 1996. The farming systems were therefore scarcely diversified and highly dependent on external inputs. The project seeks to improve the farming systems and living conditions of farmers in three ways: first, the genetic material used by farmers is to be diversified in order to increase farmers' options to find and develop varieties which are better suited to local conditions. Second, the project promotes organic farming methods, thus enabling farmers to live and farm in an ecologically more sound manner and to lessen their dependence on external inputs. Third, the project educates farmers in organizational and agronomic matters, in order to enable them to more independently manage their resources and more effectively participate in local politics. All aspects of the project aim to contribute to the empowerment of the marginalized target group.

Four elements are especially noteworthy in the present context: a cornerstone of the project is the **free exchange of seeds** between project members, non-members, and other CBDC projects in Thailand and Vietnam. Free exchange is regarded as an inherent right of farmers and as indispensable for improving seeds. An important function is served by the **Farmers' Field School**, where SEARICE staff members and scientists from a local college teach a number of subjects, e.g. farm management, organic farming, and breeding techniques. The project distinguishes between **breeders and producers**, who work in tandem to improve the seeds in the community. The breeder group crosses farmers' selections with modern and traditional varieties, or the latter with modern varieties. Once a breeding line is stabilized, the seeds are passed on to the plant variety selection group. This group, to which almost all farmers belong, screens, characterizes, and selects new materials on their fields. After further testing, criteria like yield, pest resistance, and taste are applied to determine whether the seeds are appropriate for inclusion in the **community seed bank**. A bank of this kind is operated in every community, and a central back-up collection is located at the local agricultural college. A community seed bank contains both existing and newly developed varieties. The knowledge related to a specific variety is kept in a seed catalog available to all communities. The catalog facilitates the choice of seeds for production in that it maintains and broadens the knowledge base of farmers. Moreover, it documents local knowledge with an eye to preventing any misappropriation by intellectual property rights.

Interviews revealed that farmers benefit in different ways from the project: the use of genetic material by farmers has undergone significant diversification. Farmers stated that they regard mutually free access to local and external genetic resources as perfectly natural and highly important. The project imparts new knowledge and skills related to PGRFA to farmers. Through the Farmers' Field School and the community seed bank the project expands and protects traditional knowledge. Moreover, farmers have a say in issues surrounding PGRFA. All in all, the project promotes Farmers' Rights as stipulated in the ITPGR and shows how *in situ* conservation can work together with community development.

a For information about the CBDC program, see www.cbdcprogram.org and Manicad (1996).

IRRI argues that it is a legitimate recipient of monetary benefits of the fund because it is the largest *ex situ* conserver of rice and because it has the technical and personnel capacity to conduct effective and efficient conservation activities. IRRI stresses that it is important to have a stable and long-term commitment to conduct PGRFA conservation effectively. IRRI is of the opinion that *in situ* conservation is not an efficient way to ensure PGRFA conservation, except for wild species. Employing farmers systematically as *in situ* conservers is seen as bureaucratic and complicated, because “*farmers primarily farm, they don’t primarily conserve*”. For IRRI, it is important to provide the legal framework needed, to permit natural *in situ* conservation to continue, but the organization notes that any attempt to deliberately support it would be a waste of resources and only create more red tape.

IRRI is certainly in a strong position, having the worldwide largest genebank for rice and proven capabilities for conservation and collection activities. Yet IRRI is neither willing nor able to engage *in situ* conservation, which is clearly required by the ITPGR. More importantly, IRRI has always received considerable funding from developed-country governments and philanthropic foundations. Benefits for IRRI from the ITPGR could be used by donors as an excuse to cut the level of funding, resulting in no or only few additional conservation activities. Besides, IRRI is not a developing-country organization and its work has few direct links to farmers. Yet the ITPGR requires that benefits should flow primarily to developing countries and especially to farmers in developing countries.

SEARICE is conducting two *in situ* conservation and development projects in the Philippines: CBDC in Bohol and CONSERVE in Mindanao. In its view, the fund should support these projects and/or future projects of a similar design. The merit of the projects is seen in realizing *in situ* conservation and development of PGRFA and in promoting elements of Farmers’ Rights (see Box 15). SEARICE has considerable experience with these projects, but other NGOs are active in *in situ* conservation as well and could therefore also seek

support of these activities through the ITPGR trust fund.

5.2.4 National Obligation to Implement Farmers’ Rights: A Benefit from the ITPGR?

The ITPGR incorporates Farmers’ Rights for the first time in a binding treaty under international law. Yet the responsibility for the implementation of Farmers’ Rights is left with national governments. Stakeholders in the Philippines did not regard the Farmers’ Rights provisions in the ITPGR as an important element in shifting power to small farmers. It is questionable, therefore, whether and how the new entitlements accorded to farmers (see Box 3) will actually be implemented.

Almost all interviewees had some idea of Farmers’ Rights, but only few were aware of the definition established by the ITPGR. Perceptions of Farmers’ Rights were very diverse, ranging from the right to seeds to comprehensive socio-economic rights. Most frequently, Farmers’ Rights were understood as the right of farmers to freely decide what to do with seeds, including free access, free exchange and re-use and the right to sell their crops. Rights to land, of freedom of choice, to protection of knowledge, to technology, protection from cheap rice imports and to political participation were also mentioned repeatedly. It was, however, often unclear to which farmers the rights should extend (small farmers, all farmers, tenants, landowners). Various public entities and NGOs also regard their own work as a realization of Farmers’ Rights, according to their own definition.

In any case, the study noted no consciousness among civil society and advocates of small farmers that the ITPGR is a potential lever to pressure the government to promote Farmers’ Rights. The government itself expressed no additional necessity to foster Farmers’ Rights because of the ITPGR. Moreover, various governmental institutions argue that they are already realizing Farmers’ Rights. Yet this is contestable, and the fact

that the ITPGR establishes Farmers' Rights for the first time in an international treaty gives political advocates of Farmers' Rights – such as NGOs – new legitimacy and support. However, given the lack of consciousness on the part of civil society and the weak wording of the provisions in the ITPGR, there is reason to doubt that Farmers' Rights will be implemented in the spirit of the International Treaty.

5.3 Elements of the ITPGR in National Legislation: the Plant Variety Protection Act

Farmers' Rights are currently being discussed

Box 16: Discussions surrounding the General Rationale for a PVP Bill

Enacting PVP bills in developing countries is usually a controversial issue. This also holds true for the Philippines, with its diversity of farmers, NGOs and interest groups of different colors.

We can identify two areas of discussion concerning the introduction of the PVP bill: at the international level, the Philippines is a member of the WTO, which requires all member states to enact PVP legislation (Article 27.3 (b) of the TRIPS Agreement). As a developing country, the Philippines was due to have the legislation in place by 1 Jan. 2000. While NGOs usually blame WTO membership for the need to introduce the unpopular PVP legislation, our interviews have shown that there is also a discussion underway at the national level on its introduction: the government and commercial breeders see the PVP bill as a necessary instrument to attract investments in the breeding sector and to modernize agriculture. Critics from NGOs and small farmers' organizations claim, however, that PVP will restrict the traditional practices of farmers and lead to the erosion of agrobiodiversity due to the increased use of modern and uniform varieties.

While the first version of the PVP bill started off basically as a copy of UPOV 1991, the scope of the bill has been broadened to accommodate elements in favor of small farmers and Farmers' Rights. While some welcome this development, others – most notably the seed industry – prefer a “lean” PVP bill and want to treat other issues (Farmers' Rights, Benefit-Sharing, Biosafety, Indigenous Peoples' Rights) separately. Most NGOs would prefer to have no PVP bill at all and to deal with the above-mentioned issues in a separate law.

most actively in a specific legislative context: the drafting process of the PVP bill. The bill was enacted as Republic Act No. 9168 in June 2002. This section takes a closer look at the PVP Act and examines the extent to which important objectives of the ITPGR have been included in the Act. In theory, a bill designed as a comprehensive law for PVP, Farmers' Rights and the conservation of agrobiodiversity has the potential to reconcile and balance modernization and conservation goals. However, the Philippine Act includes only a limited number of certain elements conducive to the goals of the International Treaty. It focuses on PVP, thus failing to adequately balance the different objectives of the ITPGR.

5.3.1 Discussions over Farmers' Rights and Multilateral Benefit-Sharing in the Drafting Process of the PVP Act

Farmers Rights as stipulated by the ITPGR comprise four elements (1) the right to exchange, re-use and sell seeds, (2) the right to participate in policy-related concerns associated with PGRFA at the national level, (3) the protection of traditional knowledge, and (4) the right to share the benefits arising from PGRFA use. This sections examines the extent to which the PVP Act promotes these elements.

Farmers' Rights to exchange, re-use and sell seeds: A PVP law necessarily limits the free

exchange, re-use and sale of seeds by farmers. However, in the Philippines small farmers are in principle exempt from these restrictions.¹³¹ While

131 Republic Act No. 9168, Sec 43 “*Exceptions to Plant Variety Protection. – The Certificate of Plant Variety Protection shall not extend to [...] (d) The traditional right of small farmers to save, use, exchange, share or sell their farm produce of a variety protected under this Act, except when a sale is for the purpose of reproduction under a commercial marketing agreement. The Board shall determine the condition under which this exception shall apply, taking into account the nature of the plant cultivated, grown or sown. This provision shall also extend to the exchange and sell of seeds among and between said small farmers; Provided that the small farmers may exchange or sell seeds for reproduction or replanting in their own land.*”

the political discussion about PVP and Farmers' Rights is controversial, the interviews found a general consensus among stakeholders indicating that small farmers should be granted these rights. Nevertheless, opinions differ in regard to what is meant by small farmers. Some argue that small farmers should be defined by income. Others think that all marginal and subsistence farmers, upland farmers and indigenous peoples should have these rights. The breeding industry in particular opposes the right of small farmers' to sell their crops to others.

Stakeholders disagree about the possible consequences of the PVP Act. NGOs criticize the Act for interfering with small farmers' natural activities. They are especially critical towards the provision that a PVP board, which is institutionalized by the Act, has the power to determine who actually qualifies for "traditional rights". In the worst case, decisions of this board would reduce the rights of small farmers to mere legislative rhetoric. On the other hand, stakeholders closer to the government argued that the poor capacity of the state to enforce a law like the PVP Act will in any case make it unlikely that these rights of small farmers are affected. It was pointed out that restrictions on the re-use, exchange and sale for small-scale farmers would neither be acceptable nor politically feasible for countries with a large number of small farmers and that these restrictions could only apply for large land holdings.

Farmers' Right to participate in policy issues concerning PGRFA at the national level: The PVP Act creates a National Plant Variety Protection Board for the implementation of the Act (Section 66). The board (8 members) is composed of representatives of government (4), science (2), breeders (1), and a representative of a small farmers' organization. The representative of the small farmers' organization is to be nominated by the Secretary of Agriculture. Due to the limited representation of small farmers' organizations and due to the process of nomination by the Secretary instead of an election among small farmers' organizations, the board can hardly be seen as promoting the participation of small farmers.

Farmers' Right to the protection of traditional knowledge: The PVP Act states that "*The State shall respect, preserve and maintain knowledge, innovations and practice of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote wider application with the approval and involvement of holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices*" (Section 2(g)). Most stakeholders judge the protection of traditional knowledge as very important, but they often lack ideas as to how this could be achieved. One stakeholder argues that this knowledge is automatically protected when the right of farmers to exchange and replant seeds is protected. Public breeders fear that the protection of traditional knowledge could lead to further access restrictions and instead recommend respecting and to promoting it rather than protecting it.

In the process of drafting the PVP bill, two concrete measures for the protection of traditional knowledge were envisaged: first, the requirement of prior informed consent from communities in which requested plant genetic resources are endemic (Section 2(f)), and second, the setup of community registries for traditional varieties (Sections 71 & 72).¹³² As regards PIC, SEARICE argued that it makes no sense in a PVP bill be-

132 Sec. 71 "*Gene Trust Fund – There shall be an independent and separate trust fund established under this Act, to be administered by the Board, for the benefit of bona fide organizations or institutions managing and operating an accredited gene bank. An amount to be determined by the Board but not to exceed twenty percent (20 %) of the fees and charges, shall be used for the purposes of the gene trust fund. The trust fund may also accept donations from national and international institutions and other organizations and individuals interested in genetic conservation.*"

Sec. 72 "*Farming Communities and Bona Fide Farmers' Organizations - Farming communities and bona fide farmers' organizations are encouraged to build an inventory of locally-bred varieties as an option to protect these resources from misappropriation and unfair monopolization.*"

cause it is in conflict with the ITPGR principle of free and expeditious access to PGRFA and that PIC is only relevant for non-agrobiodiversity. One scientist even stated that PIC could actually hinder PGRFA conservation, because the procedure is too bureaucratic and therefore has the potential to obstruct conservation-related PGRFA collections. As regards the registration of farmers' and traditional varieties in community registries, this element has been welcomed by NGOs, since it could serve the protection of traditional knowledge by preventing any misappropriation of resources. However, in the final reading of the bill these provisions were considerably weakened. The focus in the Act is now set less on support for small farmers and their communities. It remains to be seen how the provisions will be implemented in practice.

A further issue under discussion and relating to the protection of traditional knowledge is the protection of farmers' varieties through PVP certificates. Since PVP allows breeders to protect their varieties, the question arises whether farmers who have also been developing useful varieties should not be equally entitled to protection. But even though the PVP Act explicitly acknowledges farmers as breeders (Section 3), farmers' varieties usually do not fulfill the UPOV criteria for protection (DUSN), which are geared to the standards and methods of the modern breeding industry. The most elaborate proposal concerning these issues was advanced by Rene Salazar, who proposed a three-tiered system of protection (see Section 5.4).

Farmers' Right to get a share of the benefits arising from PGRFA use: Section 71 of the PVP Act establishes an independent trust fund to support *bona fide* farmers' organizations or institutions managing and operating an accredited genebank. Farming communities and *bona fide* farmers' organizations (e.g. NGOs) are encouraged to set up inventories of locally bred varieties (Section 72). The Community Gene Trust Fund can be interpreted as a multilateral system of benefit-sharing at the national level: it uses fees and charges of breeders paid for the protection of modern varieties to support the conservation and documentation of traditional PGRFA by farmers.

Those stakeholders who were aware of the fund saw it as a useful tool to contribute to conservation and to give benefits to farmers. Community registries were seen as an instrument to protect traditional varieties from misappropriation and to improve the knowledge, exchange and use of these varieties. One key stakeholder proposed that farmers who register traditional varieties in the community registry should qualify for subsidized government loans and training. SEARICE sees itself as a potential recipient of financial means from the national trust fund which would be channeled to the small farmers it represents, e.g. by setting up more community PGRFA registries.

5.3.2 The Relation of the PVP Act to the ITPGR

Legislators in the Philippines were under heavy pressure from the national and international breeding industry to introduce a PVP bill. At the same time, NGOs and small farmers' organizations opposed the passage of the bill, citing its allegedly detrimental effects on agrobiodiversity and on small farmers. The final Act shows some signs of a political compromise between the different stakeholders but maintains its focus on plant variety protection rather than on an encompassing law for PVP, Farmers' Rights and the conservation of agrobiodiversity. While some parts of the Act support elements of the ITPGR, others have not been implemented in the spirit of the ITPGR.

Farmers' Rights have been guaranteed in that the Farmers' Right to exchange, re-use and sell to small farmers is in accordance with the ITPGR. Moreover, the Community Gene Trust Fund aims at the protection of traditional knowledge and benefit-sharing. However, it remains to be seen whether the PVP board will ensure that these rights are actually implemented or whether it will tend more to restrict them. As regards the conservation objective of the ITPGR, the net effect is not clear yet: on the one hand, PVP will increase the use of uniform commercial varieties, thus reducing agrobiodiversity. On the other hand, the Community Gene Trust Fund is used for measures aimed at conserving PGRFA. Finally, the PIC

provision of the PVP Act is clearly in conflict with the ITPGR. PIC for access to genetic resources hinders the “easy and expeditious access” demanded by the ITPGR.

5.4 Policy Options

Policy Proposals Related to the ITPGR

The following policy proposals are addressed to national stakeholders in agrobiodiversity, who should take up their opportunities to benefit from the ITPGR.¹³³

National options to benefit from the trust fund: few actors are aware of the content and the potential benefits of the ITPGR. Therefore raising awareness for the potential monetary and non-monetary benefits of the ITPGR could be a step toward fostering innovative strategies to benefit and to prevent the “monopolization” of benefits by one actor (National Network). NGOs and the National Network should apply to the trust fund for support of their conservation activities. The National Network has a comparative advantage in *ex situ* conservation. NGOs have a comparative advantage in *in situ* conservation and in working directly with farmers. Therefore, their PGRFA conservation activities are rather complementary than competing.

However, the National Network claims to be the agency responsible for the implementation of the ITPGR in the Philippines, including *in situ* conservation. Since NGOs play a leading role in *in situ* conservation and the promotion of Farmers’ Rights, and since they are important representatives of farmers in policy matters, they should be appropriately represented in the National Network. If other relevant stakeholders such as the seed industry were to be included as well, the National Network could become the relevant

multistakeholder agency for PGRFA policy matters in the Philippines.

Options to benefit from the recognition of Farmers’ Rights in the ITPGR: the ITPGR sets out a definition of Farmers’ Rights and puts the responsibility for their realization in the hands of national governments. Since the ITPGR is a legally binding treaty, it provides advocates of Farmers’ Rights with a new lever to pressure for national implementation. The new international codification of Farmers’ Rights could thus be used to support targeted lobbying.

Policy Proposals Related to the PVP Act

Since many PGRFA policy issues are interlinked, it would have been possible to use the passage of the PVP bill to deal with other PGRFA issues at the same time. Thus the law could have become an encompassing *sui generis* law for PVP, Farmers’ Rights and the conservation of agrobiodiversity. With such a law, the Philippines could have complied simultaneously with its obligations under the WTO and the ITPGR. Some elements of Farmers’ Rights and agrobiodiversity conservation have been included in the Act. The following policy proposals could make the law a comprehensive *sui generis* law and could be included in the Implementing Rules and Regulations of the Act.

Farmers’ Rights: the Farmers’ Right to freely exchange, re-use and sell their harvest should be firmly anchored for all small farmers. A clear definition of small farmers should be codified, including subsistence farmers and all farmers, landowners and tenants alike, below a fixed income level. These definitions should not be left to the discretion of the board. The Farmers’ Right to get a share of the benefits from PGRFA use could be further promoted by allocating a larger share of the fees and charges of the Community Gene Trust Fund to measures that support farmers who conserve PGRFA. The Farmers’ Right to the protection of traditional knowledge should be operationalized by means of concrete measures. One promising option would be to support the

133 Policy proposals with regard to the ITPGR governing body as the implementing authority on the international level are presented in Chapter six.

setup of community seed registries with the simultaneous setup of registries for traditional knowledge. In this way traditional knowledge would be made publicly available and protected against misappropriation. An additional share of the fees and charges should be allocated to support this end.

PVP board: the PVP board should include all relevant stakeholders. The Farmers' Right to political participation in PGRFA issues should be strengthened by raising the number of small farmers' representatives and NGOs on the PVP board. These should not be nominated by the Department of Agriculture but be elected in a democratic and transparent process to be initiated by the Secretary of Agriculture.

Community Gene Trust Fund: the percentages of the fees and charges to be paid out to the Community Gene Trust Fund should be increased in order to make benefit-sharing effective. The share should be clearly established in the Implementing Rules and Regulations and not left to the discretion of the board.

Prior informed consent: the PIC provision should be removed, since it is in conflict with the requirement of free and expeditious access under the ITPGR.

Protection of traditional varieties and incentives for farmers to breed new varieties - three-tiered system of protection: a three-tiered system of protection could be established to protect existing agrobiodiversity and to give incentives to farmers and breeders alike to continue to develop new varieties: (1) UPOV requirements (DUSN) and protection for modern varieties, including royalty payments by seed propagators and large-scale farmers, (2) more lax protection requirement for farmers' varieties, e.g. protection if they are distinct, identifiable and new (DIN). If seeds protected by these criteria are multiplied and spread by others, there should be some form of remuneration for the individual breeder or to the community as a whole, but no requirement for royalty payments for the use of these varieties by others, (3) a registration of existing traditional

varieties in community registers in order to prevent modern breeders from claiming these varieties as their own discoveries or inventions (misappropriation regime). The first tier is fully, the third one only partly realized in the PVP Act. Training of farmers in breeding techniques financed by the Trust Fund could be a step towards the realization of the second tier.

PART III: REFLECTIONS AND RECOMMENDATIONS

6 Reflections and Recommendations

The findings of the study presented in Chapters four and five have focused on the reality of bilateral access and the potential for multilateral access and benefit-sharing in the Philippines, on obtained achievements, identified constraints, as well as on policy options suitable to overcoming them. The following synthesis is derived from the findings: first, a confrontation of the relative strengths and weaknesses of bilateral and multilateral ABS, second, lessons learned from the Philippine experience for the international debate on ABS, especially within the CBD, and third, recommendations for international cooperation on different levels.

6.1 Bilateral and Multilateral Access and Benefit-Sharing

It would be premature to compare the bilateral approach with the multilateral approach. While some experiences have already been made with bilateral ABS, the multilateral approach is still in a conceptual stage. Moreover, the two approaches do not present alternative options for policy-makers in developing countries. Biodiversity falls under bilateral ABS, whereas agrobiodiversity is to be accessed and shared under a multilateral system. Nevertheless, from a theoretical point of view it makes sense to use the findings of the present study to analyze comparative strengths and weaknesses of both approaches and the conditions needed for them to live up to expectations. Five areas deserve particularly to be highlighted: transaction costs for the user, implementing costs for the provider, effects on research and innovation, effects on technology transfer, and effects on local communities in terms of empowerment and economic development.

Transaction Costs for the User

Transaction costs for the user are higher under the bilateral approach, for theoretically anticipated reasons such as the need to negotiate each particular contract, as well as for unforeseen reasons such as slow processes involving government bureaucracy and multiple stakeholders. This proposition would, however, apply only if governments resist to building unnecessary bureaucracies in implementing the multilateral system of exchange in their countries.

Bilateral Approach: in contrast to the theoretical notion of “bi”-lateral negotiations, the total process from access determination to benefit-sharing comprises several, sequential negotiations, each of which entails transaction costs. The present study has found four types of negotiations to be important: (1) Principal Collector – Co-collector: a foreign institution (Principal Collector) negotiates with a partner institution in the source country (Co-collector) to reach mutually agreed terms stipulated in the CBD. (2) Applicants – IACBGR/government: the applicants have to convince multiple stakeholders and the government of their research proposal. To provide for government control, one department is even to become a party to research agreements, making, de facto, for trilateral contracts. (3) Co-collector – Local Community: as implied in the Bonn Guidelines on ABS, local communities are to be involved by acquiring their prior informed consent. (4) Principal Collector – Third Party: to develop genetic resources to a point where benefits arise, the parties to an ABS-agreement usually collaborate with a third party, mostly a private company, on the basis of a material transfer agreement.

Multilateral Approach: under the multilateral approach, the user receives genetic resources from the open multilateral system under a standardized material transfer agreement, leaving no space for negotiation. Transaction costs for the user are therefore minimal, at least in theory. In practice, interview partners stated that national patent and PVP laws have increasingly led to restricted access to genetic resources, since private actors have stopped contributing materials to the multi-

lateral system. In addition, experience with regulatory policy in the Philippines has led stakeholders to anticipate that new regulatory bodies might be created as part of the implementation process for ITPGR. Thus, under the multilateral approach transaction costs may increase, frustrating the Treaty's objective of free and expeditious access to agrobiodiversity.

Implementing Costs for the Provider

The bilateral approach burdens the implementing country with higher costs, since it is necessary here to create additional institutions for access determination and benefit-sharing as well as surveillance mechanisms, whereas the multilateral approach mainly requires legal recognition of ITPGR provisions.

Bilateral Approach: implementation of the bilateral approach has been shown to require additional resources. One of the results of the present study is that the bilateral approach to ABS in the Philippines faces problems because the costs of its implementation have not sufficiently been met. It is necessary to create laws regulating bioprospection and to allocate funds for administrative activities related to their efficient implementation.¹³⁴ To reach the goals of sustainable use and equitable and fair sharing of benefits at the local level, additional educational measures are necessary. All these costs can be seen as a major obstacle to the implementation of the CBD at the national level. In the long run, once a functioning regulatory framework has processed sufficient research agreements that produce benefits, the Philippine government may be able to recoup at least part of the implementation costs through its participation in benefit-sharing.

Multilateral Approach: Participation in the open multilateral system does not burden the implementing country with additional costs, aside from

the need to recognize ITPGR provisions in national law. Additional institutions are not necessary *per se*, although a country like the Philippines might consider installing a body to screen applications to the ITPGR fund with an eye to fostering coherence in agricultural policy.

Effects on Research and Innovation

While the bilateral approach creates restrictions before research starts, the multilateral approach steps in only following successful research, when intellectual property rights are acquired for the results. The multilateral approach therefore puts few restraints on research and innovation, while the bilateral approach entails adverse effects.

Bilateral Approach: Academic and commercial research are in need of acquiring research agreements prior to accessing genetic resources, thus placing regulatory restrictions upstream of the research process itself. Given the transaction costs involved in obtaining research agreements, as analyzed in Chapter four, research and innovation based on genetic resources from the Philippines are relatively costly. Nevertheless, it should be kept in mind that regulatory requirements like PIC can prove to be beneficial in terms of both development and academic research.

Multilateral Approach: Scientific and commercial researchers are free to access genetic materials from the multilateral system on the basis of standardized material transfer agreements. When marketable products emerge which fall under exclusive intellectual property rights, benefits are paid into a common fund. The multilateral approach thus places regulatory restrictions at a point following the research process, leaving research itself unrestricted. As a consequence, research on genetic resources involves fewer costs. This is in line with the ITPGR goal of food security, since it encourages research on the improvement of plant varieties.

¹³⁴ Although different agencies had promised to allocate funds for the implementation of EO 247, the political will has not been sufficient for these resources actually to flow.

Effects on Technology Transfer

The bilateral approach gives providers the option to discuss technology transfer with partners in ABS agreements, making this a more concrete option than the mere postulations contained in the ITPGR. However, it must be borne in mind here that institutions in the North are reluctant to transfer technology.

Bilateral Approach: since the contract between user and provider is freely negotiable, providers have a say on the technology they would like to see included as a type of benefit. However, limited bargaining power and lack of financial means to maintain expensive machinery frequently make this a rather theoretical option. Since companies in the North can hardly be forced to transfer technology, it is important for developing countries to build up a stock of knowledge and capital with a view to making themselves attractive as cooperation partners. This could induce technology transfer because it would be in the self-interest of a company in the North to outsource certain activities.

Multilateral Approach: although technology transfer plays a role in the text of the ITPGR, it appears to be no less pure rhetoric than in the case of many other international agreements. Developing countries should not expect too much from this option.

Effects on Local Communities in Terms of Empowerment and Economic Development

Both approaches have the potential to contribute to local empowerment and development. Nevertheless, it is obvious that the intended positive outcomes can only be reached if additional educational measures accompany activities related to ABS.

Bilateral Approach: effects on local communities can assume two forms: first, PIC, the “fact of being asked permission”, may contribute to empowerment in the sense of command over own resources as well as to sustainable use by raising

awareness of the value of biodiversity. Second, monetary and non-monetary benefits can contribute to all of the above-mentioned goals if appropriately used (e.g. by transforming them into public goods like education or health). As the present study points out, however, neither PIC by itself nor the disbursement of benefits leads directly to the intended effects. PIC can be obtained without awareness at the local level of the value of genetic resources, and benefits are of an ambiguous nature, since they can promote local development, though they may also lead to socially and ecologically adverse effects if used inappropriately.

Multilateral Approach: effects on local communities may come about through *in situ* conservation projects in specific communities as well as through implementation of Farmers’ Rights in national legislation. *In situ* conservation of agrobiodiversity means supporting communities that maintain farming systems which employ landraces and agricultural techniques associated with them. *In situ* conservation may also include reintroduction of landraces in farming systems that switched to monocultures at the time of the green revolution.¹³⁵ In both cases, *in situ* conservation will be promoted by projects with a comprehensive agenda aimed at improving living and farming conditions in the community. The institutionalization of Farmers’ Rights at the national level opens up chances for communities to protect traditional and farmers’ varieties against misappropriation and to gain more influence in political issues concerning plant genetic resources. The extent to which these chances can be used to realize concrete effects on the local level is a question that remains to be seen. The ITPGR in itself will not change the power relations in a society.

135 The CBDC project presented in Box 15 in Chapter five is an example of such a project.

6.2 Lessons Learned from the Philippine Experience with Bilateral ABS

Since the CBD was adopted, an international debate has sought to refine the interpretation of the treaty's provisions and the means for its implementation. One central document intended to help governments to implement the CBD in national ABS legislation is the Bonn Guidelines on access and benefit-sharing, adopted in April 2002 (see Section 3.1.2). This section relates some of the lessons learned from the Philippine experience to specific points mentioned in the Bonn Guidelines.¹³⁶ Aspects of ABS discussed below include roles and responsibilities of governments of provider countries, participation of stakeholders, and steps involved in the ABS process.

Roles and Responsibilities

National focal point (Bonn Guidelines, para. 13): *“Each party should designate one national focal point for access and benefit-sharing and make such information available through the clearing-house mechanism. The national focal point should inform applicants [...] on procedures for acquiring PIC and MAT, including benefit-sharing, and on competent national authorities, relevant indigenous and local communities and relevant stakeholders [...].”*

According to the findings of the present study, the existence of one clearly visible focal point is essential for a country to lower transaction costs for applicants. In the Philippines, two agencies see themselves as focal points in practice, while the Department of Foreign Affairs formally appears as a focal point on the CBD homepage.¹³⁷ As a consequence, foreign stakeholders state information problems when asked about major hindrances concerning ABS in the Philippines. Countries choosing a multi-stakeholder approach, like the Philippines, to regulate ABS should therefore be aware of the necessity to clearly define one

agency as a *primus inter pares* to act as a focal point.

Competent national authorities (Bonn Guidelines, para. 14, 15): *“Competent national authorities, where they are established, may [...] be responsible for granting access and be responsible for advising on (a) the negotiation process; (b) requirements for obtaining prior informed consent and entering into mutually agreed terms; [...] (g) mechanisms for the effective participation of different stakeholders [...].”*

The case of the Philippines has shown that competences have to be well defined and demarcated between the different government agencies if the ABS process is to operate efficiently. The definition and assignment of additional competences, however, must be accompanied by measures to ensure that the agencies concerned have the necessary capacities to assume their new tasks. As happened in the Philippines, agencies that lack capacities can be an obstacle to ABS agreements.

Responsibilities: Countries of origin (Bonn Guidelines para. 16 a): *“Contracting Parties which are countries of origin of genetic resources [...] should [...] establish mechanisms to ensure that their decisions are made available to indigenous and local communities and relevant stakeholders, [...] [and] support measures [...] to enhance indigenous and local communities' capacity to represent their interests fully at negotiations.”*

According to the findings of the present study, NGOs assume important roles in the areas defined by the guidelines as the responsibility of governments. The reasons for this lie in a lack of capacities on the part of state agencies (funds and know-how) as well as in a lack of political will. Judging from the Philippine experience, we are skeptical about the ability of most developing countries to live up to the responsibilities set out in the guidelines. Notwithstanding, governments might consider using collaboration to draw on the capacities and know-how of NGOs with an eye to increasing the chances of compliance.

¹³⁶ Decision VI/24 is available at www.biodiv.org/decisions.

¹³⁷ See www.biodiv.org/world/map.asp.

Participation of Stakeholders

Consultative national body (Bonn Guidelines, para. 19): *“To facilitate the involvement of relevant stakeholders, including indigenous and local communities, appropriate consultative arrangements, such as national consultative committees, comprising relevant stakeholder representatives, should be made.”*

In the Philippines, stakeholder participation has been institutionalized in a committee which must be consulted for access, mutually agreed terms and benefit-sharing and which was even intended to work in policy formulation. As was shown, it is essential to provide sufficient funds and to ensure that a functional organizational setup is in place if such a committee is to work smoothly. Otherwise, significant delays in ABS procedures can be expected to lead to prohibitive transaction costs for applicants, and important questions of policy and national strategy will remain unresolved.

Promotion of stakeholder participation (Bonn Guidelines, para. 20): *“The involvement of relevant stakeholders should be promoted by: (a) providing information, especially regarding scientific and legal advice, in order for them to be able to participate effectively; (b) providing support for capacity-building.”*

According to the findings of the present study, indigenous and local communities in fact are faced with significant difficulties in participating in a meaningful way in ABS negotiations, since they lack the capacity to judge the value of their resources and the scientific advice needed for the purpose. Capacity-building has also been found to be essential for using PIC as a vehicle for empowerment as well as a necessary measure to promote the goals of conservation and sustainable use.

Steps in the ABS Process

Competent authority(ies) granting prior informed consent (Bonn Guidelines, para. 28-32): *“[...] In accordance with national legislation, PIC may be required from different levels of Govern-*

ment. [...] Respecting established legal rights of indigenous and local communities [...], the prior informed consent of indigenous and local communities and the approval and involvement of the holders of traditional knowledge, innovations and practices should be obtained, in accordance with their traditional practices, national access policies and subject to domestic laws.”

It has been shown that requiring prior informed consent from local and indigenous communities could work as a vehicle for empowerment if it is accompanied by additional measures. However, requiring PIC at different government levels requires additional efforts to provide local government units with the capacity to fulfill their newly acquired responsibilities. Otherwise, significant delays may be imminent and/or local governments may not be able to act in accordance with the objectives of the CBD. Specifying PIC for indigenous communities according to their respective traditional practices implies harmonization of the national legislation defining rights for indigenous communities (where existent) with ABS legislation in such a way that the provisions are complementary in nature. It would be helpful for users if customary practices of indigenous communities were well documented, which would increase the transparency of the requirements users are obliged to meet.

Types of benefits (Bonn Guidelines, para. 46 and Appendix II): the guidelines merely list possible benefits as potentially conducive to conservation and sustainable use. In the Philippines, stakeholders representing local and indigenous communities have frequently warned against overly concentrating on monetary benefits. They have even referred to this an “obsession” of researchers in the North. Instead of contributing to the objectives of the CBD, it is feared that such benefits may corrupt social coherence in source communities. The discussion about benefits should concentrate more on empowerment and respect for the rights of marginalized peoples. The international debate should be aware of the ambiguous character of monetary benefits and place emphasis on the complementary nature of benefit-sharing and awareness-raising of the value of biodiversity.

Distribution of benefits (Bonn Guidelines, para. 48): “[...] *benefits should be shared fairly and equitably with all those who have been identified as having contributed to the resource management, scientific and/or commercial process. The latter may include governmental, non-governmental or academic institutions and indigenous and local communities. Benefits should be directed in such a way as to promote conservation and sustainable use of biodiversity.*”

According to the findings of the present study, it is important for a country to have a clear policy on how benefits are to be distributed and who is to decide on distribution. The more transparent the mechanism is designed, the better are the chances to avoid corruption and inefficient use of funds. Communities should have a possibility to obtain benefits according to their preferences. However, benefits should not be shared exclusively with the source community that has provided the resources. Trust funds are an adequate mechanism for an interpersonal and intertemporal redistribution of benefits.

6.3 Recommendations for International Cooperation

The present study is about the attempt of a developing country to implement international conventions with a view to benefiting from the use of genetic resources. The international community has an interest in supporting developing countries in the implementation of global rules. Biological diversity and agrobiodiversity are typical global public goods whose conservation and sustainable use require global governance. In a first step, this means to develop global policies of the type achieved with the adoption of the CBD and the ITPGR. In a second step, it is necessary to move from policy definition to policy implementation. We have pointed out that the implementation of globally defined policies is still deficient and in need of reform. This section aims to show how and where the international community can contribute to the reforms needed to make global governance work.

6.3.1 Recommendations for German Bilateral Development Cooperation with Countries Implementing the CBD and the ITPGR

German bilateral development cooperation should contribute to the implementation of the CBD and the ITPGR by providing technical assistance, by facilitating public private partnership projects and by fostering scientific cooperation.

- Technical and/or personnel cooperation in the implementation of the CBD: provide funding for German, international or local short-term experts, as appropriate. The projects/experts should (1) advise governments in designing simple but comprehensive ABS legislation based on the Bonn Guidelines on ABS and taking into account the findings of the present study, (2) advise and train competent national authorities to gain the capacities needed to implement the CBD, as listed in the Bonn Guidelines on ABS, (3) organize and conduct workshops in different regions to train NGOs that act as multipliers for awareness-raising among local communities. The workshops should at the same time foster South-South cooperation between competent NGOs.
- Technical cooperation regarding the implementation of the ITPGR: fund international or local experts to assist local NGOs in conceptualizing and implementing *in situ* conservation projects. A special focus could be set on *in situ* conservation projects which pursue a holistic approach including conservation, education and enhancement of livelihoods.
- Financial and/or technical cooperation agencies: support implementing agencies in source countries by funding local long-term experts to organize a focal point for bilateral ABS (this could, alternatively, be financed through the Global Environment Facility). Locals, including NGOs, should be advised on how to apply for funding from the fund to ensure that they benefit from the new ITPGR trust fund.

- Technical cooperation agencies: facilitate public-private partnership (PPP) projects for German and source country companies in fields such as natural health, cosmetic products and breeding. Involving the public in private business activities is justified in this context because some profitable partnerships could fail to materialize due to temporarily high transaction costs, which a public agency could shoulder. Moreover, medium-sized companies from the North could see too large a risk in cooperation projects of this kind. Finally, the analysis in Chapter four has shown that it is extremely important to generate positive examples of benefit-sharing in order to build trust in local communities in the South. PPP projects should therefore induce collective learning processes and aim at facilitating technology transfer and creating benefits to be shared.
- National research-funding institutions: support academic cooperation and technology transfer by financing capacity-building and equipment for scientific institutions in source countries. It would be important to streamline existing programs with ABS policies and adjust them to development goals such as transfer of technology and knowledge.

6.3.2 Recommendations for International Policy

International organizations can contribute to the implementation of CBD and ITPGR by facilitating communication among implementing countries by means of conferences and regional initiatives and by refining the Treaty/Convention.

- UNEP and FAO: facilitate South-South conferences to promote an exchange of experience regarding ABS legislation, realization of *in situ* and *ex situ* conservation projects, and implementation of Farmers' Rights in national legislation.
- Regional organizations (ASEAN, OAU, etc.): set up regional initiatives to develop uniform

procedures in ABS legislation designed to head off substitution strategies by users of genetic resources.

- Conference of the Parties to the CBD: introduce deadlines for the implementation of ABS regulations following the Bonn Guidelines to avoid punitive effects for pioneering countries through substitution strategies by users of genetic resources.
- Governing body of the ITPGR: design trust fund for ITPGR in such a way that it is open to applications from all PGRFA stakeholders (government, science, NGOs, national and international agricultural research centers) to encourage project funding and a "competition of ideas". There should be separate budgets for *in situ* and *ex situ* conservation. Allocation of financial support to projects or institutions should be based on three criteria: (1) efficiency of PGRFA conservation, (2) direct and indirect benefits for farmers in developing countries, and (3) promotion of Farmers' Rights. It should be ensured that only new conservation activities are supported in order to avoid the emergence of donor substitution strategies.

6.3.3 User Measures

User countries should undertake efforts to adapt procedures and regulations related to access and benefit-sharing in a way supportive of implementation of the CBD.

- National patent offices, the World Trade Organization, the World Intellectual Property Organization: require patent applicants to document source materials and prove compliance with source country laws, esp. ABS legislation. Such measures would ease the pressure on developing countries to monitor the use of materials received from them and enable them to rely on material transfer agreements. This would reduce the need for governments to "overregulate", leading to both

lower implementing costs for the provider as well as lower transaction costs for the user.

- National research funding institutions: induce researchers from developed countries to include ABS-related activities such as PIC in their research applications and guarantee separate funding for these activities. Institutions should generally develop a policy regarding access and benefit-sharing. Such a policy should include a regular check of applicants for compliance with source country ABS legislation. The ABS policy of the National Cancer Institute (USA) can be consulted as a model.¹³⁸ Moreover, funding institutions should foster technology transfer to developing-country institutions by requiring researchers in the North to provide as much capacity-building and knowledge-sharing as possible.
- National departments of environment: promote awareness-raising campaigns in developed countries among potential users of genetic material, both academic and private, regarding their roles and responsibilities in accessing genetic material in foreign countries.

138 See ten Kate / Laird (2000a), pp. 310-311.

7 Annex

7.1 Table A-I: Research Applications under EO 247

Applicant	Typ of RA	Begin of Application	Status	Remark
Approved Applications				
UP-MSI Concepcion	CRA	February 97	Approved in January 98; Signed in June 98	First CRA signed
UP System	ARA	September 98	Approved in March 99; Signed at end of 00	DENR, DA, DOST, DOH had to sign; documents long delayed particularly with DOST
UP-MSI Cruz	CRA	October 98	Approved by end 00; Signed in April 02	Long processing period for documents in BFAR
IRRI	ARA	end of 98	Approved in August 01; Still not signed	DENR, DA, DOST and DOH as signatories; 2 signatures still missing; document long delayed with DOST
UP-MSI Concepcion	CRA/ Renewal	February 01	Approval in March 02; not signed	PIC certificates submitted in November 2001; Signing expected before June 02
Pascual Laboratories Inc.	CRA	July 01	Approved in January 02; signed end of April 02	DOST and DOH as signatories; DOH signature by fast track; DOST signed April 2002
Withdrawn Applications				
PNM/NCI/CRRF	CRA	January 96	Withdrawn	According to BFAR, NCI rejected negotiations on benefit-sharing and collected in other Asian countries instead (country substitution) PNM, however, accused BFAR of delaying negotiations
Kagoshima University, Japan	CRA	November 96	Withdrawn	Application withdrawn right after information was provided on procedures, which were regarded as too complicated
Silliman University / UC San Diego / NCI	CRA	December 96	Withdrawn	US collaborators NCI and UC San Diego terminated the cooperation contract with Silliman at the end of 98, because of long procedures; documents long delayed with BFAR
West Visayas State University	CRA	June 97	Withdrawn	
Pending Applications / Applications with unclear status				
Rizal Technological Colleges	CRA	November 96	Not concluded	No applicant response; PAWB waiting for required documents
University of Hong-kong	CRA	January 97	Not concluded	No applicant response; Awaiting required documents, especially PIC certificates, since 1998
Batgi Producers Association	CRA	1999	Initial review by TS in June 01	Required documents not completed, PAWB waiting for reply; On the opposite side, the applicant claims to have complied with all requirements and expects CRA to be signed by mid-2002 (Interview Rose Bellow)

Central Luzon Agriculture and Resources R & D Consortium	CRA	No information (before June 01)	Initial review by TS in June 01	Required documents not completed, PAWB waiting for reply
De la Salle University	ARA	No information	No information	
Research Institute for Tropical Medicine (RITM)	ARA	No information	No information	Long decision-making process in IACBGR: at first, a MoU was suggested, after one year a new decision was taken, that ARA is requested
Tibotec	CRA	No information	No information	
Aurora State College of Technology	ARA	No information	No information	
Central Mindanao University	ARA	No information	No information	
Application referred to PalCSD				
State Polytechnical College Palawan (SPCP)	ARA	2001	No ARA required	TS decided in June 01, that ARA is not needed; instead a MoU with the PalCSD is required; On the opposite side, SPCP is waiting for reply from PAWB and signing of the ARA
Sources: PAWB (2001); PAWB (1996-2002)				

7.2 Table A-II: Basic information about the Commercial Research Agreements between University of Utah, University of the Philippines - Marine Science Institute and the Department of Agriculture

	CRA 1998	CRA 2002
Project Title	“Anticancer Agents from Unique Natural Products Sources”	“Conus peptides and their receptor targets”
Duration of Agreement	July 1998 – June 2001	March/April 2002 – March 2005
Research Objective	Examination of marine organisms as source of extracts and compounds with potential anticancer activity	Examination of conus specimen (for comparison also turridae and terribidae) as source of venom for the search for neurologically and other biologically active compounds
Principal Collector (PC)	University of Utah Dr. Lynne Chronister (Director of the Office of Sponsored Projects) Dr. Chris Ireland (Principal Investigator)	University of Utah Dr. Raymond F. Gesteland (Vice-President for Research) Dr. Baldomero Olivera (Principal Investigator)
Co-collector (CC)	UP Marine Science Institute (MSI) Dr. Claro T. Llaguno (Chancellor) Dr. Gisela P. Concepcion Dr. Porfirio M. Aliño	UP Marine Science Institute (MSI) Dr. Emerlinda R. Roman (Chancellor) Dr. Lourdes Cruz

Philippine Government Partner Agency	Department of Agriculture (DA) Bureau of Fisheries and Aquatic Resources (BFAR) Salvador H. Escudero III (Secretary)	Department of Agriculture (DA) Bureau of Fisheries and Aquatic Resources (BFAR) Leonardo Q. Montemayor (Secretary)
Funding Agency	National Cancer Institute (USA) through National Cooperative Natural Product Drug Discovery Group	National Institutes of Health (USA)
Third parties involved	Wyeth-Ayerst, formerly American Cyanamid (receives materials through MTA for further research and commercialization)	n.n. (receives materials through MTA for further research and commercialization)
Main responsibilities of Principal Collector	<ul style="list-style-type: none"> - direct and lead collection - chemical investigation - transfer of samples to third parties for further anti-cancer testing - prepare, prosecute, enforce, maintain patents - take lead in identifying potential licensees and negotiating license agreements 	<ul style="list-style-type: none"> - direct and lead collection - chemical investigation - transfer of samples to third parties for further anti-cancer testing - prepare, prosecute, enforce, maintain patents - take lead in identifying potential licensees and negotiating license agreements
Main responsibilities of Co-collector	<ul style="list-style-type: none"> - apply for CRA - secure all permits and submit all reports required by IACBGR or involved government agencies - conduct PIC campaigns - collect samples - conduct preliminary investigations - export materials to principal collector 	<ul style="list-style-type: none"> - apply for CRA - secure all permits and submit all reports required by IACBGR or involved government agencies - conduct PIC campaigns - collect samples - conduct preliminary investigations - export materials to principal collector
Main responsibilities of Philippine Government Agency	<ul style="list-style-type: none"> - grant permits - monitor research activities and prepare reports - accompany principal collector during collection trips 	<ul style="list-style-type: none"> - grant permits - monitor research activities and prepare reports - monitor purchased specimens and accompany principal collector during collection trips
Collection Sites	<p>Davao-Zamboanga/Mindanao 1998</p> <p>Batanes Region 1999</p> <p>Central Visayas 2000</p> <p>Coron Island 2000</p>	<p>Mabini & Batangas March 1999</p> <p>Panglao & Balicasag/Bohol 2001</p> <p>Application being processed in:</p> <p>Punta Engano/Cebu</p> <p>Buena Vista/Marinduque</p> <p>Preliminary talks: Morong/Bataan</p> <p>Other places to be identified later as needed</p>
Sources: University of Utah / UP-MSI / DA (1998); University of Utah / UP-MSI / DA (2002); Batungbacal (2000), pp.14-19		

7.3 List of Interview Partners in Chronological Order

09 January 2002	Andreas Drews, GTZ, Bonn
10 January 2002	Reinhard Liersch, Medicinal Plant Consulting, Bonn
23 January 2002	Thomas Henkel, Bayer AG, Wuppertal
25 January 2002	Frank Klingenstein, University of Bonn Botanic Garden, Bonn
04 February 2002	Wilbert Himmighofen, Federal Ministry of Consumer Protection, Food and Agriculture, Bonn
08 February 2002	Burkhard Port, Federal Ministry for Economic Cooperation and Development, Bonn
20 February 2002	Eliseo T. Balaynal, Deputy Director General of PITAHC, Manila
21 February 2002	Atty. Analiza Albano Vitug, Bureau for Fisheries and Aquatic Resources, Manila
21 February 2002	Meriden E. Maranan, Chief of Wildlife Regulation Section, Protected Area Wildlife Bureau, Manila
21 February 2002	Lourdes Cruz, Professor, Marine Science Institute, University of the Philippines, Diliman, Manila
21 February 2002	Ephraim Patrick T. Batungbacal, Research Officer, Tambuyog (NGO), Manila
22 February 2002	Porfirio Aliño, Professor, Marine Science Institute, University of the Philippines, Diliman, Manila
22 February 2002	Amelia Guevarra, Vice Chancellor, University of the Philippines, Diliman, Manila
22 February 2002	Eufe Tantia, Pharmaceutical and Healthcare Association of the Philippines, Manila
26 February 2002	Fabian Dayrit, Professor, Ateneo University, Manila
26 February 2002	Domingo A. Madulid, Botany Division, Philippine National Museum, Manila
26 February 2002	Dave de Vera, PAFID (NGO), Manila
26 February 2002	Carlito P. Fernandez, Acting Chief, Agricultural Support and Coordination Division, Florelitz Avellana, Special Project Division, National Agricultural & Fishery Council, Manila
27 February 2002	Josie de Leon, Division Chief, Protected Area Wildlife Bureau, Manila
27 February 2002	Noel Saguil, research staff, Marine Science Institute, University of the Philippines, Diliman, Manila
28 February 2002	Rene Ledesma, former Sr. Fishing Regulations Officer, Edwyn B. Alesna, Sr. Fishing Regulations Officer, Bureau for Fisheries and Aquatic Resources, Manila
28 February 2002	Toni Santos, Brod Nagar, PAKISAMA (NGO), Manila
01 March 2002	Paul, Project Supervisor, CBDC Project, Bohol
05 March 2002	Pamela Fernandez, Professor, Oscar Zamora, Professor, Department of Agronomy, University of the Philippines, Los Baños
05 March 2002	Gary N. Atlin, Upland Rice Breeder, Plant Breeding, Genetics, and Biochemistry Division, International Rice Research Institute, Los Baños
05 March 2002	Michael T. Jackson, Director for Program Planning and Coordination, Duncan Macintosh, Senior Manager and Head, Riceworld Museum & Learning Center, Visitors and Information Services, International Rice Research Institute, Los Baños
06 March 2002	Romero Quijano, Professor, College of Medicine, University of the Philippines, Manila
06 March 2002	Gemiliano A. Aliqui, Executive Director, Philippine Council for Health Research and Development, Manila
07 March 2002	Clarito M. Barron, Assistant Director, Anastacia M. Gochangco, Chief of Crop Research Division, Bureau of Plant Industry, Department of Agriculture, Manila
07 March 2002	Saturnina C. Halos, Geneticist, Senior Project Development Adviser, Bureau of Agricultural Research, Manila
07 March 2002	Perry Ong, Professor for Wildlife Biology, University of the Philippines, Science Director, Conservation International, Manila
07 March 2002	Virgilio S. Palpal-Latoc, Marivene Manuel, Rodolfo Caberoy, Department of Zoology, Philippine National Museum, Manila

- 11 March 2002 Assistant of Mary Jean C. Du, Bohol Agricultural Promotion Center, Tagbilaran City, Bohol
- 11 March 2002 Sabine Schoppe, Chairperson, State Polytechnic College of Palawan, Puerto Princesa, Palawan
- 11 March 2002 Joselito C. Alisuag, Executive Director, Palawan Council for Sustainable Development, Puerto Princesa, Palawan
- 11 March 2002 Raymundo D. Crisostomo, Officer in Charge, Dalia Sualog, Senior Science Research Specialist, Provincial Environment and Natural Resources Office, Puerto Princesa, Palawan
- 11 March 2002 Priscilla Adriano, Chief, Department of Environment and Natural Resources, Puerto Princesa, Palawan
- 12 March 2002 Teresita L. Salua, President, Lilian Bayron, Research Planning and Development, Edgardo H. Castillo, Soil Scientist Research Extension, Palawan State University, Puerto Princesa, Palawan
- 12 March 2002 Telesforo Paredes, City Councilor, Puerto Princesa, Palawan
- 12 March 2002 Rogelio C. Daquer, City ENR Officer; David T. de la Torre, Project Manager of INGAT KAGUBATAN (Forest Watch). Noel R. Ramos, Environmental Management Specialist II, City ENRO, Puerto Princesa, Palawan
- 12 March 2002 Nelson S. Salvator, Provincial Agriculturist, Office of Provincial Agriculture, Puerto Princesa, Palawan
- 12 March 2002 Central Visayas State College of Agriculture, Forestry and Technology, Bohol
- 12 March 2002 Group interview with farmers (both members and non-members of CBDC) at Compagao, Bohol
- 13 March 2002 Cleofe P. Bernardino, Executive Director, Palawan NGO Network, Inc., Palawan
- 13 March 2002 Group interview with farmers (CBDC project participants) at Riverside Community, Bilar, Bohol
- 13 March 2002 Group interview with farmers (non-participants in CBDC project) at Riverside Community, Bilar, Bohol
- 13 March 2002 Group interview with farmers of Zamora Organic Farmer-Researcher's Association, Zamora, Bohol
- 13 March 2002 Group interview with farmers (non-members of CBDC project) at Zamora Community, Bohol
- 14 March 2002 Grizelda Mayo-Anda, Assistant Executive Director, Environmental Legal Assistance Center, Inc., Puerto Princesa, Palawan
- 14 March 2002 Group interview with members of the Tagbanua ethnic group, Palawan
- 14 March 2002 Quirino Hora, Shell Salesman, Panglao Poblacion, Bohol
- 16 March 2002 "Babes" Cruz, Secretary of Mayor of Coron, Coron City, Busuanga, Palawan
- 16 March 2002 Rose-Liza V. Eisma, Legal Environmental Advisor to Marine Lab, Silliman University, Dumaguete
- 19 March 2002 Rueben Dasay Lingating, Commissioner for North Western Mindanao, Norma Mapansa Gonos, Commissioner of South Eastern Mindanao National Commission on Indigenous Peoples, Manila
- 19 March 2002 Isidro Sia, National Integrated Research Program on Philippine Medical Plants, College of Medicine, Manila
- 19 March 2002 Gisela P. Conception, Professor, Marine Science Institute, University of the Philippines, Diliman, Manila
- 20 March 2002 William Padolina, Vice Director, International Rice Research Institute, Los Baños
- 20 March 2002 Eliseo Ponce, Director, Bureau of Agricultural Research, Manila
- 20 March 2002 Lourdes Amos, Kasapi (NGO), Manila
- 21 March 2002 Segfredo R. Serrano, Assistant Secretary Policy and Planning, Chamo Amjil, Chief Policy Advocacy and Legislation Support, Policy Research, Department of Agriculture
- 21 March 2002 Francis Gomez, Altermed / Pascual Laboratories, Manila
- 23 March 2002 Benny Campos, formerly Marine Science Institute, Working Group Conception (telephone interview)
- 01 April 2002 Nancy Aspuria, Agriculturalist II, Bureau of Plant Industry Regional Research Center, Baguio
- 01 April 2002 Celia M. Austria, Associate Professor of Zoology, University of the Philippines College, Baguio
- 01 April 2002 Raymundo Rovillos, Research Coordinator, Tebtebba (NGO), Baguio
- 02 April, 2002 Leo A. Viray, Regional Protected Areas and Wildlife Bureau, Baguio
- 02 April 2002 Rose Bellow, Batgui Producers Association, Inc., Baguio

03 April 2002	Windel, Cordillera Peoples Alliance, Bagio
04 April 2002	Quirino de la Cruz, Plant Breeder (tissue culture), Central Luzon State University, Muñoz
04 April 2002	Shubert L. Ciencia, Branch Manager, PRRM, Muñoz
04 April 2002	Leocadio S. Sebastian, Director, Philrice, Muñoz
05 April 2002	Gordon Cragg, Natural Products Branch, National Cancer Institute, USA (e-mail)
Feb.-April 2002	Elpidio Peria, Elenita Daño, SEARICE, Manila

Literature

- Barber, C.V. / A.G.M. la Viña** (1997): Regulating Access to Genetic Resources. The Philippine Experience, in: J. Mugabe et al. (eds.): Access to Genetic Resources. Strategies for Sharing Benefits, Nairobi
- Barber, C.V. / L. Glowka / A.G.M. la Viña** (2002): Developing and Implementing National Measures for Genetic Resources Access Regulation and Benefit-Sharing, in: S.A. Laird (ed.): Biodiversity and Traditional Knowledge, Equitable Partnerships in Practice, London, pp. 363-414
- Barbier, E.B.** (2000): How to Allocate Biodiversity Internationally? in: H. Siebert (ed.): The Economics of International Environmental Problems, Tübingen, pp. 79-106
- Barret, C.B. / T.J. Lybbert** (2000): Is Bioprospecting a Viable Strategy for Conserving Tropical Ecosystems? in: *Ecological Economics*, 34 (2000), pp. 293-300
- Belgian Clearing House Mechanism** (2002): Glossary of Terms Related to the CBD, Electronic Document <webbie.kbinirsnb.be/bch-cbd/belgium/glossary/glos_b.htm> [03 Feb. 02]
- Brand, U. / C. Görg** (2001): Access & Benefit-Sharing. Zugang und Vorteilsausgleich - das Zentrum des Konfliktfelds Biodiversität, Germanwatch, Bonn
- Braun, J. von / D. Virchow** (1997): Conflict-Prone Formation of Markets for Plant Genetic Resources. Institutional and Economic Implications for Developing Countries, in: *Quarterly Journal for International Agriculture*, 1 (1997), pp. 6-38
- Chanco, B.** (1998): The Philippines Environment. A Warning. Electronic Document <gbgm-umc.org/asia-pacific/philippines/ecophil.html> [13 Nov. 01]
- Columbia University** (1999): Access to Genetic Resources. An Evaluation of the Development and Implementation of Recent Regulation and Access Agreements, Environmental Policy Studies Working Paper #4, Columbia University, School of International and Public Affairs, New York
- Congress of the Philippines** (1997): Indigenous Peoples Rights Act of 1997. [Republic Act No. 8371], Manila
- (2001): An Act Providing for the Conservation and Protection of the Wildlife Resources and their Habitats, Appropriating Funds therefore and for Other Purposes. [Republic Act No. 9147], Manila
- Convention on Biological Diversity (CBD)** (2001): Global Biodiversity Outlook, Montreal, Electronic Document <www.biodiv.org/outreach/gbo/#> [15 Dec. 01]
- Cordillera Peoples Alliance / DINTEG** (1998): IPRA Critique. A Critique of the Indigenous Peoples Rights Act (RA 8371) and its Implementing Rules and Regulations, Baguio
- Correa, C.M.** (2000): Options for the Implementation of Farmers' Rights at the National Level, South Center, Geneva
- Crucible Group II** (2000): Seeding Solutions. Volume 1. Policy Options for Genetic Resources: People, Plants, and Patents revisited, Rome
- Department of Agriculture of the Philippines** (1995): Country Report to the FAO International Technical Conference on Plant Genetic Resources, Quezon City
- Downes, D.R.** (1999): Integrating Implementation of the Convention on Biological Diversity and the Rules of the World Trade Organization, IUCN, Gland, Cambridge/UK
- Drews, A. / A. Gettkant** (2000): The Philippine Access Legislation. A View from Practice, in: R. Wolfrum / P.-T. Stoll (eds.): European Workshop on Genetic Resources Use and Related Aspects. Access and Benefit-Sharing, Intellectual Property Rights, Ex-situ Collection Proceedings and Materials, Berlin, pp. 59-79
- Dutfield, G.** (2000): Intellectual Property Rights, Trade and Biodiversity. Seeds and Plant Varieties, London
- Glowka, L.** (1998): A Guide to Designing Legal Frameworks to Determine Access to Genetic Resources, IUCN, Gland, Bonn
- Glowka, L., et al.** (1994): A Guide to the Convention on Biological Diversity, IUCN Environmental Policy and Law Paper, No. 30, Gland, Cambridge/UK
- Guerin-McManus, M / K.C. Nnadozie / S.A. Laird** (2002): Sharing Financial Benefits: Trust Funds for Biodiversity Prospecting, in: S.A. Laird (ed.): Biodiversity and Traditional Knowledge, Equitable Partnerships in Practice, London, pp. 333-359
- Heller, M.A.** (1998): The Tragedy of the Anticommons. Property in the Transition from Marx to Markets, in: *Harvard Law Review*, 111 (1998), pp. 621-688
- International Institute for Sustainable Development (IISD)** (2001): Summary of the First Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, in: *Earth Negotiations Bulletin*, 9, No. 209, Electronic Document <www.iisd.ca/biodiv/abs-wg1> [15 Dec. 01]
- International Rice Research Institute (IRRI)** (1998): Annual Report Biodiversity – Maintaining the Balance, Los Baños, Electronic Document <www.irri.org/Biodiversity/biodiversityindex.htm> [15 Dec. 01]
- Katsumoto, S.** (2002): Participation in International Development, Electronic Document <http://trochim.human.cornell.edu/gallery/katsumoto/shuzo.html#what> [09 May 02]
- Koo, B. / B.D. Wright** (1999): Dynamic Implications of Patenting for Crop Genetic Resources, IFPRI Environment and Production Technology Division Discussion Paper No. 51, Washington D.C.

- La Viña, A.G.M. / M.J.A. Caleda / M.L.L. Baylon (eds.)** (1997): Regulating Access to Biological and Genetic Resources in the Philippines. A Manual on the Implementation of Executive Order No. 247, Quezon City
- Liebig, K.** (2001): Geistige Eigentumsrechte. Motor oder Bremse wirtschaftlicher Entwicklung? Entwicklungsländer und das TRIPS-Abkommen, Deutsches Institut für Entwicklungspolitik, Bonn
- Manicad, G.** (1996): Biodiversity Conservation and Development: The Collaboration of Formal and Non-Formal Institutions, in: *Biotechnology and Development Monitor*, No. 26 (1996), pp. 15-17. Electronic Document www.biotech-monitor.nl/2604.htm [22 July 02]
- Maskus, K.E.** (2000): Intellectual Property Rights in the Global Economy, Washington D.C.
- National Committee on Indigenous Peoples** (2002): Revised Guidelines for the Issuance of Certification Precondition and the Free and Prior Informed Consent, Quezon City (mimeo)
- Nortis Foundation for Sustainable Development** (2002): The Social Dimension of Sustainable Development, Electronic Document www.foundation.novartis.com/social_development/social_sustainable_development.htm [09 May 02]
- Palawan NGO Network inc. (PNNI)** (2001): Final Report. Investigative Research Results January 1999 – December 2000, in: SEARICE (2001a)
- Pharmaceutical and Healthcare Association of the Philippines (PHAP)** (no year): Position Paper of the Pharmaceutical and Healthcare Association of the Philippines (PHAP) on Prior Informed Consent (PIC) and Benefit-Sharing Provisions of Executive Order 247 and its Implementing Rules and Regulations (IRR), Manila (mimeo)
- Posey, D.A. / G. Duffield** (1996): Beyond Intellectual Property. Towards Traditional Resource Rights for Indigenous Peoples and Local Communities. Paper presented to the Conference of the Science Centre of North-Rhine Westphalia, 21-22 November 1996, Wuppertal
- Protected Area Wildlife Bureau (PAWB)** (1996-2002): Minutes of IACBGR Meetings and Technical Secretariat Meetings, Manila (mimeo)
- (2001): Status of Executive Order 247 Implementation, Manila (mimeo)
- Rural Advancement Foundation International (RAFI)** (1996): The Geopolitics of Biodiversity. A Biodiversity Balance Sheet. Crucial Decisions in 1996. The Real Hot Spots, in: *RAFI Communiqué*, 30 January 1996
- Seiler, A. / G. Duffield** (2001): Regulating Access and Benefit-Sharing. Basic Issues, Legal Instruments, Policy Proposals, Bundesamt für Naturschutz, Bonn
- Shanley P. / S.A. Laird** (2002): 'Giving back': Making Research Results Relevant to Local Groups and Conservation, in: S.A. Laird (ed.): Biodiversity and Traditional Knowledge, Equitable Partnerships in Practice, London, pp. 102-124
- Shon, H.-D.** (2001): Fruitful Deliberations, in: *Down to Earth*, 9, No. 14, Electronic Document www.oneworld.org/cse/html/dte/dte20011231/dte_srep.htm [11 Jan. 02]
- Singh, R.** (1996): The Indigenous Peoples of the Philippines, in: C. Nicholas (ed.): Indigenous Peoples of Asia. Bangkok, Asia Indigenous Peoples Pact, no place, pp. 231-258
- South East Asia Regional Institute for Community Education (SEARICE)** (2001a): Explorations in Scientists' and Community Perspectives on Biodiversity, Dumaguete City (mimeo)
- (2001b): The Effect of Current Seed Supply System on the Diversity and Flow of Rice Varieties in the Municipality of Lambayong, Southern Philippines, Electronic Document www.condesan.org/infoandina/Foros/insitu2001/C.Jesus-english.htm [15 Dec. 01]
- (2001c): Final Report – Bioprospection Program on the Philippines, Manila (mimeo)
- Swiderska, K. / E. Daño / O. Dubois** (2001): Participation in the Formulation of the Philippines' Executive Order No. 247 on Access to Genetic Resources, International Institute for Environment and Development (IIED), London
- Ten Kate, K. / S.A. Laird** (2000a): The Commercial Use of Biodiversity. Access to Genetic Resources and Benefit-Sharing, London
- (2000b): Biodiversity and Business: Coming to Terms with the 'Grand Bargain', in: *International Affairs*, 76, No. 1, pp. 241-264
- United Nations Environment Programme (UNEP)** (1995): Global Biodiversity Assessment, Nairobi
- United Nations Food and Agriculture Organization (FAO)** (1997): The State of the World's Plant Genetic Resources for Food and Agriculture, Rome
- University of Utah / University of the Philippines Marine Science Institute (UP-MSI) / Department of Agriculture (DA)** (1998): Commercial Research Agreement, Manila (mimeo)
- (2002): Commercial Research Agreement, Manila (mimeo)
- Virchow, D.** (1999a): Conservation of Genetic Resources. Cost and Implications for a Sustainable Utilization of Plant Genetic Resources for Food and Agriculture, Berlin
- (1999b): Economic Value of Genetic Resources. An Agenda for Research. AgBiotechNet 1999, Vol. 1, February, ABN 009, Electronic Document www.agbiotechnet.com [15 Dec. 01]

Walker, S. (2001): The TRIPS Agreement, Sustainable Development and the Public Interest, IUCN Environmental Policy and Law Paper No. 41, Cambridge

Wood, A., et al. (no year): Socioeconomic Root Causes of Biodiversity Loss in the Philippines. Summary, no place

Wood, S., et al. (2000): Pilot Analysis of Global Ecosystems: Agroecosystems, Electronic Document <www.wri.org/wri/wr2000/agroecosystems_page.html> [15 Dec. 01]

World Rainforest Movement (ed.) (2001): The Philippines. The Decline of a Megabiodiverse Giant, Electronic Document <www.wrm.org.uy/bulletin/44/Philippines.html> [13 Nov. 01]

World Resources Institute (2001): Ecosystems and Habitats, Electronic Document <www.wri.org/biodiv/ecosys.html> [10 Dec. 01]