Genetic Resources, Traditional Knowledge and the Law

Solutions for Access and Benefit Sharing

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Stoll, P.-T. (2008) 'Global public goods – the governance dimension', in Rittberger, V. et al (eds) *Changing Patterns of Authority in the Global Political Economy*, vol I, New Institutions and the Provision of Global Public Goods, New York

Wolfrum, R., Klepper, G., Stoll, P.-T. and Stephanie, F. (2001) 'Implementing the Convention on Biological Diversity: Analysis of the links to intellectual property and the international system for the protection of intellectual property', in Hahn, A. von (ed) *Implementing the Convention on Biological Diversity Analysis of the Links to Intellectual Property and the International System for the Protection of Intellectual Property*, Bonn, German Federal Agency for Nature Conservation, BfN-Skripten 47

Chapter 2

Towards Regional Common Pools of GRs – Improving the Effectiveness and Justice of ABS[1]

Gerd Winter

Introduction

The CBD acknowledges sovereign rights of states over their natural resources including GRs. User states are obliged to share the benefits derived from the utilization of GRs with states providing the GRs. Thus, provider states and user states are expected to create bilateral exchange relationships. Legal practice on international and national levels has proved that this individualistic approach lacks efficiency: while the scope and content of sovereign rights of provider states over their GRs are far-reaching, due to the territoriality principle they are hampered to control the downstream process of value creation. Enforcing their legal powers effectively would also cause high transaction costs. User states, on the other hand, could be asked to make leeway. While they are less hindered by the territoriality principle because research and development (R&D) activities related to GRs are largely under their jurisdiction, they also face substantial transaction costs if they use what powers they have in order to control the upstream process. However, even if the control by provider and user states is improved, questions of distributional justice arise. Many GRs have a geographical range shared by regions of states, suggesting that benefits should be shared among all states in which the GR is endemic instead of the first provider state taking all of the share. Therefore, for reasons of efficiency and justice, I propose regional common pools for GR management. They are meant not to replace but to complement bilateralism. This chapter outlines structures and functions of common pools and suggests national legislation supporting them. The focus is on GRs as such and leaves common pools of TK associated with GRs for further reflection.

Sovereign rights over GRs

The CBD attributes GRs to the individual realm of states hosting them, thereby rejecting earlier concepts of common heritage. On this subject Article 15.1 CBD states:

> *Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.*

In the following paragraphs, I will discuss what this means in terms of content and scope of sovereign rights.

The content of sovereign rights

'Determining access to genetic resources' is not just a means of ensuring administrative oversight of access, but rather constitutes a part of the sovereign rights of states. GRs are thus made the property of a state. This implies that the state has the right to (i) reserve the utilization of GRs for itself, (ii) exclude others from utilization, and (iii) make utilization dependent on conditions (or require the signing of a contract) obliging users to report about R&D steps and to share material and immaterial benefits drawn from the GR or derivatives.

It is true, though, that limits are established by the Convention itself, in particular by Article 15.2, which says:

> *Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.*

However, the wording 'shall endeavour to create conditions to facilitate' is very vague.[2] Nobody could object on this ground if the provider state links access to conditions prescribing meticulous reporting and benefit sharing. Some strengthening of the user country position may be derived from Article 15.4, which states that 'access, where granted, shall be on mutually agreed terms'. However, the clause 'where granted' acknowledges that the provider state has the power to decide about whether to grant access at all. This makes bilaterally agreed terms dependent on a unilateral decision of the provider country.

How has state legal practice implemented the sovereign rights of provider states? Those states that have adopted access and benefit-sharing (ABS) legislation have usually established a regulatory framework. This framework requires that the access seeker must obtain a permit and agree on a contract on the transfer of the GR, the allowed uses, knowledge transfer and the sharing of benefits (material transfer and benefit-sharing agreements – MTAs/BSAs). States have hardly ever constituted private property rights in GRs. For instance, they might have framed GRs as intellectual property rights (IPR) sui generis; that is, absolute rights of utilization, which like patents, breeders' rights or trademarks are to be registered and can be exploited and traded.[3] But regardless of regulatory or property law, the instruments laid down by national laws have raised high expectations of remuneration for the transfer of GRs. However, these expectations have resulted in delusion.

Due to the territoriality principle, the control of access, transfer, utilization, knowledge transfer and benefit sharing is confined to the territory of the regulating state. The state is entitled to oversee access to and transfer of its GRs, while in relation to utilization and benefit sharing it can only impose conditions to the permit but has no powers to enforce such conditions in user states. It can only ask the user state to provide assistance. Instead, as stated previously, most provider states have opted for the conclusion of MTAs/BSAs. But in order to enforce the contractual obligation, the provider state must address the user state courts as a forum. If the parties have agreed on provider state courts as being competent, the execution of the judgement in the user state would still have to involve the user state courts.[4] In fact, hardly any case has as yet been reported where provider states have searched assistance of provider state administrations or have filed complaints at user state courts in order to pursue their authorizations or contracts.

The scope of sovereign rights

High expectations and in effect delusions are also characteristic of the scope of the sovereign rights of provider states. The scope of access determination is, by Article 15.1 CBD, delimited by the term 'genetic resources'.

Article 1 CBD defines GR as 'genetic material of actual or potential value' and genetic material as 'any material of plant, animal, microbial or other origin containing functional units of heredity'. In a nutshell, therefore, the sovereign right of access determination extends to the functional units of heredity contained in natural resources of a given state and being of value.

Functional units of heredity

'Units of heredity' could be organisms, cells, chromosomes, genes and deoxyribonucleic acid (DNA) fragments (Ten Kate and Laird, 1999, p18,

Box). I submit that all of these levels should be included because the hereditary function may already be attached to an extracted DNA fragment, or it may result from the combination of DNA fragments within a gene, or of genes in a cell or from cooperating cells within an organism.

'Functional' does not imply that the unit of heredity must be able to reproduce itself. It suffices that the unit is subjected to technological manipulation, such as genetic engineering. This means, of course, that the term 'functional unit' widens with the development of genetic technology (Ten Kate and Laird, 1999, p18).

It has been suggested that, in addition to the material genetic substratum, the intangible scientific information about the genetic function should also be included in the definition of GRs (Tvedt and Young, 2007, p62ff). This would have two consequences: (i) the access to and transfer of information created within a provider country could be made subject to the regulation of the provider state; and (ii) the provider state could extend its reporting and benefit-sharing claims to benefits drawn from the information. However, it appears that 'unit of heredity' is meant to be the material genetic substratum contained in the genes. Incidentally, as will be explained later, this does not exclude the obligation of user states to ensure the sharing also of those benefits that are drawn from intangible information.

Functional units of heredity are often not the immediate basis of beneficial utilization. Rather, DNA fragments or genes may be extracted and transferred into another organism which then provides benefits, or they may be synthesized as artefacts and as such trigger the benefits. Hybrid microorganisms, plants or animals derived from interbreeding of organisms may rather be used to gain benefits than the original organisms. Should such so-called derivatives be covered by the sovereign rights of states? The CBD mentions derivatives only in the definition of biotechnology, not in that of GRs. Indeed, as they are different from original units of heredity, they cannot be counted as property of the state. Therefore, the CBD does not grant states the right to exclusive use of derivatives. Instead, states may use their sovereign rights on GRs and grant access on the condition that the beneficiary agrees to share also those benefits that arise from derivatives.

Actual or potential value

Genetic material becomes a GR if it has (actual or potential) value. Considering that Article 2 CBD characterizes biological resources as being of value to humanity, it can be deduced that value for humanity is also meant in relation to GRs. Thus, value is broader than just commercial profitability: it covers exchange value as well as use value. The use value even extends to pure scientific interest, thus including access for scientific purposes in the access regime established by Article 15 CBD.

It must be the genetic material that creates value. This link helps to exclude from the ABS regime the use of biological resources for bulk purposes such as consumption, heat generation or construction work. Only the value resulting from the utilization of the genetic characteristics constitutes GRs. It is true, though, that the line between bulk use and the use of the genetic code is far from clear. The biochemical compounds are a particularly controversial case in point. Although they are results of functional units of heredity but not such units by themselves, some states claim that they are to be considered as GRs.

It has been suggested that the access seeker must have the intention to utilize the genetic material and thus realize its value in order to make genetic material a GR. This would exclude genetic material from the access regime for which the intention is different, such as consumption. However, the text of the CBD does not speak of such intentions. It clearly includes potential value, that is, uses not yet realized or intended. This means that a provider state may regulate access to biological resources that are presently used as bulk material, but have the potential to be used as genetic material too.

Once again, while the promise of individualization of resources is far-reaching, it is illusionary at the same time. Even with the exclusion of intangible information and of derivatives, the remaining scope of GRs is still very large. Given the fast development of biotechnology, there is hardly any biological material whose genetic code could not be used. Moreover, with the decline of biodiversity, the scientific interest in preserving genetic information increases, which implies that virtually any biological material becomes of actual or potential value. Therefore, provider states can regulate access to any biological material.

However, this would not much help provider states to get a share in the benefits. If resource states establish access regulations for every single specimen of biological material, transaction costs for the state and private actors would be enormous. Disrespect for the law would ensue. Moreover, access control would be ineffective because, as stated earlier, provider states would not have the power to enforce the obligations attached to the access permit. For instance, mutually agreed reporting duties would imply that the recipient of material must inform the provider state about any biotechnological treatment, sales of the material or benefit drawn from it – an entirely futile expectation given the possible multiplication of downstream users. On the whole, traceability from sources forwards to subsequent users appears to be an impossible task.[5]

Benefit sharing

Given the unrealistic expectations connected with the determination of access on the provider side, it has been suggested that the focus on access should be replaced by a focus on benefit sharing (Tvedt and Young, 2007, p62ff). This brings the obligations of user countries into play. Rather than provider states trying to pursue their interests in user states, the user states themselves are called to take their international duties seriously. In principle, user states are less impeded than provider states to ensure benefit sharing because most of the knowledge and added value is created within their jurisdiction.[6] Their duties follow from Article 15.7 CBD:

> *Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 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 with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.*

This article obliges states hosting the utilization of GRs to share R&D results and commercial or other benefits in an equitable way. As a consequence, the user state must introduce legislation concretizing this obligation. A major advantage of this approach also is that those benefits that arise from genetic material obtained without the consent of a country of origin can be controlled, as well as benefits from uses not intended at the time of exportation from the resource country. Mutually agreed terms, as Article 15.7 requires, can still be concluded at the utilization stage. The kind of needed legislation will largely be regulatory. Users of GRs must be obliged to keep provider states informed about new knowledge, technology and benefits obtained, and to share benefits. Details concerning trade secrets and intellectual property protection could be left to MTAs/BSAs or specified by regulation. Administrative oversight must be established. For this to be effective, importers and users of GRs must be submitted to notification and information duties. Administrative agencies must be enabled to track benefits back to provider states. In addition, court procedure law and the international private law of the user states must ensure that MTAs/BSAs are enforceable within their jurisdiction.

However, other than Article 15.7 suggests, user states have largely remained passive. They have almost exclusively relied on provider states' legislation and the MTAs/BSAs triggered by a permit of access requirements.

The instruments discussed thus far are either hardly effective or cause massive transaction costs. Contract claims at user state courts are possible but costly. The execution of provider state courts is subject to a double check of user state courts in terms of ordre public. It is true that some primary administrative law tools have been practised, such as guidelines of public research funding organizations and disclosure requirements, in procedures granting IPRs.[7] However, research guidelines do not capture private sector research and are also difficult to enforce once a research funding has been granted. Disclosure requirements would only be useful if the origin of the genetic resource had a material impact on the granting of an IPR (such as a patent or breeder's right), which has hardly ever been effected by any user state.[8] Patent applicants could even argue that disclosure is an unproportional intrusion into rights of free enterprise and profession if it does not serve a purpose.[9]

Certificates of origin and of compliance have been proposed as another means of user state control. However, they pose many problems of construction and function. The consequences of obtaining or lacking them are unclear; they can only be issued for a specific moment in time: a moment later, the GR may have changed shape due to technological treatment; the certificate cannot be physically attached to the genetic material once this has been turned into intangible information; unique identifiers of the genetic code and its origin would have to be developed with a worldwide scope – a task needing immense effort and cooperation to accomplish.

Thus there are many technical difficulties in tracing the utilization of GRs back to a provider country. Often genetic material changes hands before it is utilized in profitable ways. The chain of utilization can be very long reaching from the plant and the extracted gene to organisms modified by the original or synthesized genes. In the meantime, a strain of genes may have been replaced by newer ones that were obtained from another state or from another parent organism. These and other factors can easily blur the country of origin.

All this proves that even the focus on user states is largely illusionary. User state measures if called to take the lead easily reach limits of efficiency.

Common pools: More efficient, but also more just

As a way out of illusionary expectations, it is submitted that common pools should be established by states constituting biogeographical regions. Such common pools would not question the basic decision of the CBD that GRs are the property of host states. They would not replace bilateralism, but provide an opportunity for provider and user states to opt for more efficiency of

ABS regimes. The concept offers provider states a chance to make use of their property in a way that ensures a realistic return. User states can regard the concept as attractive because it simplifies their international duty to trace provider countries and organize the sharing of benefits.

In addition to providing efficiency, common regional pools would also enhance distributional justice. GRs are, by their very nature, not bound to the territories of states. As living organisms they migrate between states or live in ecosystems occurring in several states. The simple fact that the organism containing the GR was taken from the land or marine area of a state is in CBD terms ground enough to provide the state with the full right to control access and claim a share from the benefits: Article 15.1 CBD attaches determinative rights to the eventuality of access, Article 15.3 introduces the notion of resources provided by a state, and Article 15.7 states that the user state must share benefits with the provider state.

From the perspective of distributional justice this is hardly justifiable. The simple and often adventitious event of access in one provider state is no good reason for that state to entirely control the utilization of and benefit from the genetic material if the same genetic material also occurs in other states. Therefore, even if a state of origin operates a perfect system of monitoring and claiming benefit sharing, there remains the distributional question of whether that is just. These same doubts were, for instance, uttered in relation to Costa Rica, with the most successful ABS regime of a provider state, and its managing agent the National Biodiversity Institute (INBio):

> *Some time in the future, a pandemic genetic resource provided by INBio will become a blockbuster biotechnology. Citing the CBD, other countries in the region will challenge the legitimacy of the patent, inasmuch as they will not have received any 'fair and equitable' share of the benefit arising from the pandemic genetic resource. It is no small irony that the success of INBio lies in its failure to have a commercial hit (Vogel, 2007, p130).*

Additionally, there is a side effect of the radical individualization of property rights in GRs. The privileging of the provider state will lead to forum shopping; that is, access seekers approaching that state with the least demanding reporting and benefit-sharing duties (Brand and Görg, 2001). A regulatory competition would lower standards and jeopardize the very goal of the CBD: to ensure technology transfer and the sharing of commercial benefits. It may also jeopardize the goal of conservation and sustainable use because weak access legislation could attract more bioprospectors and thus increase bioprospecting pressure.

Looking once again at the text of the CBD, one can find certain hints that it is open for a regional concept. As noted before, Article 15.1 starts with the assumption 'Recognizing the sovereign rights of States over their natural resources'. The word 'their' is commonly understood to establish property of resource states as contrasting the concept of global common heritage. In addition to this 'negative' significance, 'their' could be understood to have a 'positive' meaning aiming at neighbouring states: the GR of states must be 'theirs' in the sense that it must have a genuine and exclusive link to the territory of the single state in question. Where this is not the case, the GR is either common good (as GRs found in the oceans or in Antarctica) or common to a region. With this reading, property shared by several states within a region can be regarded as a concept recognized by the CBD.

A difference should, however, be noted between GRs as such and TK associated with GRs. While the mere presence of an organism in one state is no good reason to recognize property in its entire genetic potential, this may be different for TK. Such knowledge has been created by individuals and communities; investigation of organisms and experience drawn from them; and creativity, time and labour spent on breeding and other activities to improve the resource. Thus the value of the GR is highly enhanced by human intelligence. In line with the basic ideas underlying intellectual property regimes, this fact would justify the application of a scheme of stricter individualization in relation to TK, allowing for a 'first takes all' approach. As a corollary, the voluntary pooling of TK might be considered, reflecting the fact that TK often spreads over several communities. However, such pools will primarily be a matter of internal national legislation. To the extent TK reaches over national borders, states may consider including TK into the pools of GRs as they are proposed here. This, however, requires more in-depth study this chapter cannot provide.

Looking for blueprints

A number of concepts have been proposed and sometimes put into practice, all of which aim at communal solutions. Three that appear to be particularly significant are discussed in the following sections.

Science commons

One approach is based on the science commons project. This project is destined to create a worldwide exchange of scientific data (Wilbanks and Boyle, 2006, pp9–12). The various sectors include one on biological

material. A standard material transfer agreement (SMTA) shall be developed for all those who exchange material. Each concluded contract shall be registered and made accessible to the whole community so that every participant in the system knows who possesses what material. The material is not collected in a common bank but rather shipped bilaterally between contract partners. In addition, information on research results on the characteristics and effects of material shall be collected and made accessible. This will, however, require a meta-language and a huge effort of data collection that needs to be financed. Also, copyrights of publishers will have to be dealt with. The system will use semantic web language; that is, instead of referring to documents as the internet traditionally does, it will refer directly to genetic material and associated knowledge.

The project is attractive because it ensures the exchange of material and scientific knowledge at low costs. Everybody including researchers from resource-rich developing countries has access to the system. There are, however, drawbacks which make the system less suitable for the common pool here envisaged. Although the system could be designed to enable the tracking of individual genetic material back to the provider state (Buck, 2007, pp88–91), this would be difficult and costly to implement. Unique identifiers for genetic material would have to be developed and included in the MTA, although the knowledge necessary for this is not yet available at the stage of accession. Another difficulty is that unique identifiers, as applied to genetically modified organisms (GMOs) that have been registered under European Community (EC) law,[10] are still widely lacking in relation to genetic material as such. Furthermore, any further transfer and technological treatment of GRs would have to be registered, which is hardly enforceable.

International Plant Exchange Network

The International Plant Exchange Network (IPEN) is a network of botanical gardens facilitating exchange of plant GRs in line with the requirements of Article 15 CBD (Gröger, 2007, pp121–123). The IPEN website is provided by Botanic Conservation International at Kew, England. Ninety-one botanical gardens are members, all of which are European. The exchange is regulated by a Code of Conduct and every individual plant is documented. The 'maximum documentation' includes information about collection, source, taxonomy, type of material, permits related to the acquisition and any terms of the country of origin. This maximum documentation is kept by the first garden, which introduces the plant material into IPEN. This garden also tags an individual IPEN number to the plant material. The number, referred to as 'minimum documentation', follows the plant through

descendants and transfers. The transfer to non-members requires the signing of an SMTA binding the recipient to the same terms as contained in the Code of Conduct. The exchange is confined to the use of the GR for scientific and conservation purposes. In the case of intended commercial use, the requesting institution must obtain prior consent of the original provider state. As a measure of trust building, IPEN extends this requirement also to that plant material which was accessed prior to the enactment of the CBD.

IPEN is an exemplary case of a system that ensures the backtracking of plant material to sources. It is successful in facilitating exchange; however, since it is destined for exchange only for conservation and scientific purposes, it has intentionally excluded any management of reporting on commercial utilization and benefit sharing. Any intention to make commercial use of a GR is referred back to the provider country. It has been considered whether the system could be opened to use management, but it is feared that provider countries would then refrain from providing material. In conclusion, the system is a model for a common pool for conservation and scientific purposes, but not for the sharing of commercial benefits.

International Treaty on Plant Genetic Resources

The International Treaty on Plant Genetic Resources (ITPGR) is the basis for a multilateral system of ABS for plant GRs comprising 35 food crops and 29 forage genera.[11] The system establishes a common pool of GRs agreed upon by the Contracting Parties 'in the exercise of their sovereign rights'.[12] The system aims at including all brands of the listed food crops and forage genera that are under the management and control or jurisdiction of the Contracting Parties.[13] It also includes GRs held in the ex situ collections of the International Research Centres (IARCs) of the Consultative Group on International Agricultural Research (CGIAR).[14] In addition, other states shall be encouraged to include their Annex I GRs in the system.[15]

The Contracting Parties and the IARCs are obliged to provide access to their GRs according to terms laid down by an SMTA. Access is generally free of charge. No tracking of individual accessions in provider states is foreseen. In exchange for the free access, the recipient is not allowed to claim or establish IPRs on the GR in the form received from the multilateral system. However, the recipient is free to seek intellectual property protection for newly developed brands suitable for such protection.

The treaty establishes far-reaching duties to share benefits, including the exchange of information, access to and transfer of technology, capacity building and the sharing of monetary and other benefits of commercialization.

With regard to information exchange, the Contracting Parties are obliged to make available to each other all relevant information including characterization, evaluation and utilization of Annex I GRs, respecting restrictions from intellectual property protection. The information shall be made available through the Global Information System on Plant Genetic Resources for Food and Agriculture, which includes more GRs than those listed in Article 17.

With respect to commercial benefits, the MTA states that recipients must pay an equitable share to the trust account of the system:

> *(A) recipient who commercializes a product that is a plant genetic resource for food and agriculture and that incorporates material accessed from the Multilateral System, shall pay to the mechanism referred to in Article 19.3f, an equitable share of the benefits arising from the commercialization of that product.*[16]

Hence the money does not flow bilaterally but is channelled into a common fund. Direct and indirect payments are to be made from the fund to farmers, especially in developing countries and countries with economies in transition.[17]

In conclusion, the multilateral system set up by ITPGR creates a global common pool of certain GRs destined to share the genetic material, knowledge and monetary benefits. The GRs are disconnected from the states of origin; that is, the material and knowledge is freely exchanged and the monetary benefits are shared among participants with no regard for the states of origin. Disregarding doubts concerning the implementation of monetary transfers,[18] the system appears to be highly appropriate for crops and forage that are truly global in relation to their origin and use: they originate from global human efforts of breeding, and they are utilized and consumed as a fundamental means of subsistence by almost everybody. However, to go further and extend the approach to all other GRs will hardly meet the source states' interests. The disregard for the origin of the GR and the sharing of benefits with all and not only source countries runs counter to the basic approach of the CBD, which is to privilege source countries in relation to benefit sharing.

Towards regional common pools of GR endemic to a region

The three concepts presented all suffer from specific drawbacks, which do not recommend them as a general model. The science commonly

disconnects information flow about provider states and does not engage in the sharing of benefits other than the sharing of knowledge. IPEN does generate and store information about provider states, but is – like the science commons – not engaged in benefit sharing other than knowledge. ITPGR does not track GRs back to provider states. Although it arranges benefit sharing it does not do this by channelling shared benefits primarily to provider states.

This experience suggests that a regional approach establishing regional common genetic pools (RCPs) might serve the various interests best. Although much more thought is needed to make RCPs practicable, some suggestions shall be made in the following concerning a possible legal basis, the shape of RCPs and auxiliary national legislation.

Features of RCPs

To give RCPs shape, the following characteristics are suggested:

- Participants in the regional agreements setting up RCPs should be provider and user states, as well as international organizations related to the use and protection of GRs.
- Based on the international agreements, RCPs should be established as corporations with legal personality under national law. This would enhance their ability to act. They would be partners of the MTAs/BSAs and able to pursue such contracts in user states. They could be endowed with trusteeship for the GRs managed by the pool and as such claim tort liability in cases of misappropriation. They could also be given powers to take binding decisions under national administrative laws.
- RCPs should build up data banks (and a meta data bank linking it to other useful banks) on their GRs.
- Participating states should notify the RCPs of any GRs they wish to be managed by the common pool; these are primarily GRs endemic to several states. But a provider state may also notify GRs specific to it in order to benefit from the system's management capacity.
- The data banks should contain common names of organisms, a description of their genetic code, any scientific knowledge about their potential and actual uses, and any technology related to the utilization of the GRs. RCPs may develop a system of unique genetic identifiers.
- Participant states must ensure that any scientific and technological information is provided to the RCPs by scientists and industry under their jurisdiction.
- The RCPs are entitled to enhance their information basis by literature research and links with existing data banks.

- Names of organisms, the genetic code, scientific knowledge and technology will be freely available for scientists and industry under the jurisdiction of the participant states.
- RCPs will be in charge and empowered to conclude MTAs/BSAs with users.
- RCPs will manage the sharing of commercial benefits by:
  - establishing principles on calculating equitable shares of benefits (a) between the beneficiary and the states of origin, and (b) among states of origin;
  - deciding on an individual basis about the shares of benefits to be paid;
  - operating a trust fund collecting the money;
  - deciding on the individual shares for the countries of origin;
  - transferring the money to them.
- Participant states must ensure that the necessary information on commercial benefits is provided to RCPs.
- RCPs should be integrated on a global level.

National legislation

National legislation would still have to be elaborated on bilateral relations concerning ABS; although specific provisions would be necessary to support the RCPs. If a state decided that all of its GRs should be managed by RCPs, it could confine its legislation to this supportive function.

As noted above, user states, if called to take their obligations under the CBD seriously, would have difficulty in tracking GRs to provider states. With common pools this task will become easier because it will be sufficient to identify the involved GR and the RCP managing it. However, both regulatory and private law will have to be used in order to provide support. Users of GRs under the jurisdiction of RCPs will be obliged to keep RCPs informed about new knowledge, technology and accruing commercial benefits, and to share commercial benefits. The extent to which IPRs and trade secrets are respected has yet to be specified, but such duties would be supervised by administrative agencies. User states would have to establish a duty of users to conclude MTAs/BSAs with the pertinent RCP. In relation to commercial benefits, special efforts will have to be made because this is of particular concern to provider states and important as a means of creating trust. Disclosure requirements could help in this respect; they could be tied to the marketing of GR-based products. Alternatively, the supervisory potential of the taxation system could be used by requiring users to reveal the origin in their income tax declaration. The user state must also enforce RCP decisions ensuring that the beneficiary pays the due amount into the trust fund.

The task of source state legislation would also be eased in a common pool system. National legislation would not need to require access authorization and MTAs/BSAs in each individual case of access. A notification of access would suffice except in cases of possible environmental harm. General legal rules would submit any person acceding to GRs to a set of specific obligations, including duties to keep RCPs informed on new knowledge, technology and accruing commercial benefits, to conclude MTAs/BSAs with the RCP and to share benefits according to rules set up by RCPs.

Legal basis

As stated earlier, RCPs should be based on an international agreement between regional provider states and interested user states. The regional fisheries commissions of the southern hemisphere might be studied as a model for such pools. They bring Southern and Northern fishing states together in order to manage a regional resource (Applebaum and Donohue, 1999). Alternatively, the basis for RCPs could be the already existing regional international organizations (IOs) or regional branches of universal IOs such as the five regional Commissions of the UN Economic and Social Council (ECOSOC). Yet another basis might be international sectoral organizations – or more precisely their regional substructures – such as the Food and Agriculture Organization (FAO; for agriculture and fisheries) and the World Health Organization (WHO; for healthcare and cosmetics). A fourth option would be to found RCPs on (yet to be created) regional substructures of the Biosafety Clearing House (BCH) or UN Conference on Trade and Development (UNCTAD). The next CBD Conference of Parties might be asked to take a resolution endorsing the introduction of RCPs. This would greatly help to disseminate the idea.

Notes

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2 See further on this clause Kamau and Winter, in this book.

3 See, on ways to do this, Gerstetter, in this book.

4 See Isozaki and Godt, in this book.

5 There is one case frequently cited as perfecting a fully controlled upstream concept: Costa Rica. See Gomez (2007), p85, and Cabrera, in this book. However, this may be a singular case, which eventually raises questions of distributional justice. See below.

6 Problems may, however, arise if R&D activities span over several states.
7 See, for example, the research guidelines of the DFG, http://www.dfg.de/forschungsfoerderung/formulare/download/1_021e.pdf/ accessed 20 May 2009, and Kamau ('Disclosure requirement'), in this book.
8 On doctrinal constructs to this effect, see Godt (2007), pp603, 653.
9 Disclosure of origin may be suited to reveal that the invention was known before. This may sometimes be the case with regard to TK, but rarely ever with regard to GRs as such because research is often underdeveloped in provider countries.
10 Commission Regulation (EC) No 65/2004 of 14 January 2004 establishing a system for the development and assignment of unique identifiers for genetically modified organisms, OJ L10/2004, p5. The unique identifier is composed of letters for the applicant, letters and numbers indicating the transformation event, and a verification number. See Annex to Regulation 65/2004.
11 The food crops and forage genera are listed in Annex I to the treaty. In addition to the common pool, the treaty somehow reinforces and concretizes the bilateral ABS regime of the CBD.
12 Article 10.2 ITPGR.
13 Article 11.2.
14 Article 11.5.
15 Article 11.2.
16 Article 13.2(d)(ii).
17 Article 13.3.
18 It seems that no monetary benefits have yet been channelled through the system.

References

Applebaum, B. and Donohue, A. (1999) 'The role of regional fisheries management organizations', in Hey (ed) *Developments in International Fisheries Law*, The Hague, Kluwer Law International, pp217–249

Brand, U. and Görg, C. (2001) *Zugang und Vorteilsausgleich – das Zentrum des Konfliktfelds Biodiversität*, Bonn, Forum Umwelt & Entwicklung/Germanwatch

Buck, M. (2007) 'The science commons project approach to facilitate the exchange of biological research material – implications for an international system to track genetic resources, associated user conditions and traditional knowledge', in Feit, U. and Wolff, F. (eds) *European Regional Meeting on an Internationally Recognized Certificate of Origin/ Source/LegalProvenance*, Federal Agency of Nature Conservation, pp88–94, www.bfn.de/0502_international.html/ accessed 12 March 2009

Godt, C. (2007) *Eigentum an Information. Patentschutz und allgemeine Eigentumstheorie am Beispiel genetischer Information*, Tübingen, Mohr Siebeck

Gomez, R. (2007) 'The link between biodiversity and sustainable development: Lessons from INBio's bioprospecting programme in Costa Rica', in Manis, C. (ed) *Biodiversity and the Law*, London, Earthscan, pp76–90

Gröger, A. (2007) 'Botanic gardens and the International Plant Exchange Network (IPEN) – A brief statement on an internationally recognized certificate', in Feit, U. and Wolff, F. (eds) *European Regional Meeting on an Internationally Recognized Certificate of Origin/Source/Legal Provenance*, Federal Agency of Nature Conservation, pp49–59, www.bfn.de/0502_international.html/ accessed 12 March 2009

Ten Kate, K. and Laird, S. A. (1999) *The Commercial Use of Biodiversity. Access to Genetic Resources and Benefit Sharing*, Sterling, Earthscan

Tvedt, M. W and Young, T (2007) *Beyond Access: Exploring Implementation of the Fair and Equitable Sharing Commitment in the CBD*, IUCN, Gland, Switzerland

Vogel, J. H. (2007) 'From the "tragedy of the commons" to the "tragedy of the commonplace": Analysis and synthesis through the lens of economic theory', in Manis, C. (ed) *Biodiversity and the Law*, London, Earthscan, pp115–134

Wilbanks, J. and Boyle, J. (2006) 'Introduction to science commons', Science Commons, http://sciencecommons.org/wp-content/uploads/ScienceCommons_Concept_Paper.pdf/ accessed 29 March 2009