PART 1

ARTICLES

Symposium

Southern Bluefin Tuna Cases Preliminary Measures

Introduction

On 27 August 1999, the International Tribunal for the Law of the Sea (ITLOS) delivered the Order for Provisional Measures in the *Southern Bluefin Tuna* cases (Order). The dispute involves two cases: Case No. 3 between New Zealand and Japan and Case No. 4 between Australia and Japan. On 15 July 1999, Australia and New Zealand instituted arbitral proceedings in the dispute in accordance with Annex VII of the United Nations Convention on the Law of the Sea (LOSC). Requests for provisional measures were submitted by Australia and New Zealand to ITLOS on 30 July 1999, on the basis of Article 290(5) of the LOSC. By Order of 16 August 1999, the tribunal joined the proceedings in the two cases. The arbitral procedures on the merits of the two cases are pending, hearings started in early May.

The case concerns a dispute over a Japanese experimental fishing program for southern bluefin tuna. The catches taken within the program are in addition to the national quota allocated to Japan within the total allowable catch (TAC) agreed upon by Australia, Japan, and New Zealand under the 1993 Convention for the Conservation of Southern Bluefin Tuna (SBT Convention). Australia and New Zealand alleged that the continuation of the experimental fishing program was contrary to Articles 64 and 116 through 119 of the LOSC, to the SBT Convention, and to the rules of customary law. Japan denied these allegations. It argued that the dispute was of a scientific nature, related to the state of the southern bluefin stocks, and that the dispute concerned the application of the SBT Convention and not of the LOSC.

The provisional measures requested by the applicants were the following: that Japan cease its unilateral experimental fishing program; that Japan restrict its commercial catches to its national allocation agreed on under the SBT Convention minus its catches under the experimental program; that the parties act consistently with the precautionary principle pending a final settlement of the dispute; that the parties ensure that no action is taken that might aggravate the dispute or render more difficult the arbitral procedure instituted; and that the parties take no action that might prejudice their rights in respect of the arbitral procedure. Japan submitted that the application for provisional measures should be denied or, alternatively, that Australia and New Zealand should be ordered to resume negotiations with Japan.

The tribunal prescribed the provisional measures largely as requested by the applicants, albeit in more cautious terms than they had requested. For example, it did not prohibit the current Japanese experimental fishing program, but determined that the program could only be conducted with the consent of the other parties, unless catches are counted against the Japanese national allocation of the TAC. Nor did the tribunal explicitly endorse the precautionary principle. Instead, it held that the parties should act with prudence and caution in light of the depleted stock, the scientific uncertainty regarding the appropriate measures, and the level of exploitation of the stock. For a comprehensive survey of the facts of the case and the ITLOS Order, we refer the reader to the Year-in-Review section and to the report by Ted McDorman on the International Tribunal for the Law of the Sea.

The Order in the *Southern Bluefin Tuna* cases is of interest for several reasons. First, like the *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)* and the *United States—Import Prohibitions of Certain Shrimp and Shrimp Products* case, which were discussed in the symposiums in volume 8 and 9**,** the Order concerns the linkages between international environmental law and other areas of international law—fisheries law in this case. Second, it addresses questions related to the relationship between different treaties and the dispute settlement mechanisms contained in those treaties. Third, the Order provides further substance to the manner in which the precautionary principle can be implemented as well as insight into the role of scientific uncertainty in determining rights and duties under international law. Finally, the Order provides an example of how responsibilities towards the international community—in this case, the duty to conserve the bluefin tuna stocks and thus to protect the environment—can be dealt with in a legal system that largely constructs legal relationships between states as bilateral relationships.

The latter point assumes particular importance in view of the fact that other states are also engaged in commercial fishing activities that target the southern bluefin tuna stock beyond the scope of any international conservation measures. These catches are in addition to the commercial catches taken by the three states parties to the case, although the catches of the parties are subject to international conservation measures. Taken together, the commercial catches are likely to present a greater threat to the species and to the environment than the experimental fishing activities undertaken by Japan. This aspect of the case certainly occupied the members of the tribunal, as is evident by paragraphs 48 through 50, 75 through 78, and 90(e) and (f) of the Order as well as by the various opinions that individual judges appended to the Order. ITLOS, in an essentially *inter partes* dispute settlement procedure for provisional measures regarding an experimental fishing program, probably found it difficult to address the commercial catches of the parties and impossible to address the commercial catches of third parties. It is therefore conceivable

that the tribunal in fact treated the three states, in their capacity as parties to the SBT Convention, as guardians of the community interest in the conservation of the bluefin tuna stocks or, at least, as guardians of a part thereof. By determining the TAC and their national quotas, the three states had, *de facto*, acted pursuant to this guardianship. Furthermore, given the state of the stock and the total fishing effort applied to the stock, one wonders whether the tribunal, or at least individual members of the tribunal, were influenced by the following consideration: that the three states had to respect a TAC and national quotas that they themselves had *agreed* to, or amend that TAC and the quotas by agreement. Such an agreement would serve to not only honour their mutual commitments but also to protect the interest of the international community in the conservation of the stock and in the protection of the environment. We decided to take this opportunity to highlight this point, which finds expression not only in several of the contributions to this year's symposium but was also made by Alan Boyle in the 1997 symposium, with respect to the *Gabčíkovo-Nagymaros* case. In our view, the point merits attention because traditional *inter partes* dispute settlement procedures, as was also noted by Judge Weeramantry in his separate opinion in the *Gabčíkovo-Nagymaros* case, are not well equipped to consider cases involving obligations *erga omnes*.

The contributors to the S*outhern Bluefin Tuna* symposium were asked to address one or more of the following questions: (1) Did ITLOS apply the precautionary principle in the case and, if so, in what manner? (2) What might be the wider implications of the decision for international fisheries law? (3) What might be the wider implications of the decision for international environmental law? (4) What is the significance of the decision for the development of the dispute settlement regime under the LOSC and how might it affect the relationship between the various forms of dispute settlement that play a role in that regime, in particular, ITLOS and the arbitral tribunals constituted under Annex VII of the LOSC? (5) Beyond the realm of the law of the sea, what might be the implications of the decision for the relationship between international dispute settlement forums, in particular, for a possible future international environmental court or tribunal?

We are privileged to have found, yet again, a number of excellent contributors who did not shy away from sharing with us their thought-provoking views on the Order. Malcolm Evans's contribution questions the reasoning of the tribunal in deciding to order preliminary measures and asserts that the precautionary principle should have had no role to play in the award made by ITLOS. Adriana Fabra, on the other hand, welcomes the manner in which the tribunal applied the precautionary principle, arguing that the award makes an important contribution to the implementation of the precautionary approach in practice. In addition, in a further difference of opinion with Malcolm Evans, she welcomes the views expressed by the tribunal on the

relationship between the dispute settlement provisions of the LOSC and those of the SBT Convention. David Freestone, under the evocative title "Caution or Precaution: A Rose By Any Other Name. . .?" explores the manner in which the tribunal applied the precautionary principle in order to prevent serious harm to the marine environment and relates that approach to the precautionary methodology contained in the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Douglas Johnston presents the Order as operating at the interface between "the traditional logic of the law of the sea and the progressive ethic of international environmental law." He furthermore welcomes the facilitative function of the modern approach to adjudication exercised in this case by ITLOS. By so concluding, he effectively disagrees with Judge *ad hoc* Shearer, who in his separate opinion comments that he would like to have seen the provisional measures worded in stronger terms and the tribunal act more as a court of law than as an agency of diplomacy. Finally, Francisco Orrego Vicuña compares the Order to the decision in the 1893 *Bering Sea Fur-Seals* arbitration. He concludes that very little has changed during the past one hundred years, noting that the precautionary approach, being an expression of prudence and caution, had already inspired the 1893 arbitral tribunal.

The individual contributions to the symposium present insightful analyses, and together they offer a broad perspective on the Order. The ultimate fate of the *Southern Bluefin Tuna* cases will of course depend on the merits phase, which commenced as we were writing this introduction. It will be especially interesting to see whether the arbitral tribunal decides to "modify, revoke or affirm" the provisional measures ordered by ITLOS, as it is entitled to do on the basis of Article 290(5) of the LOSC.

Jutta Brunnée and Ellen Hey

The *Southern Bluefin Tuna* Dispute: Provisional Thinking on Provisional Measures?

Malcolm D. Evans

I. INTRODUCTION

Any newly established tribunal must be acutely aware that the first handful of cases that it considers will be poured over in great detail, whereas its later pronouncements are unlikely to be scrutinized so thoroughly once the novelty has worn off. It is therefore inevitable that these initial cases will be invested with considerable significance and that the signals they give as to the manner in which the tribunal promises to exercise its functions will be a point of departure both for potential users and for the tribunal itself. The Order for Provisional Measures of the International Tribunal for the Law of the Sea (ITLOS), which concerns the request by Australia and New Zealand for an award of provisional measures against Japan in the *Southern Bluefin Tuna* cases (Order),[1] usefully highlights a number of important aspects of the dispute settlement mechanisms within the newly emerging regime of the seas, which may have a number of important implications both for potential litigants and for negotiators of subsequent international instruments that bear upon the law of the sea.

Its most obvious significance, however, lies in its elaboration of the criteria that need to be fulfilled in order that an award of provisional measures can be made. It would be pleasing to be able to say that ITLOS had set out its position on this important matter clearly, but it has not. Indeed, the wording of the Order itself is Delphic to the point of being almost totally obscure, but thanks to the light shed by a number of the separate and dissenting opinions, it is possible to identify the essence of its approach. Unfortunately, the more one probes the Order, the less satisfactory the reasoning behind the award appears to be. Even these two aspects of the Order raise far too many issues to be properly canvassed in this contribution and so what follows is no more than an introduction to some of the questions that arise.

[1] Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan), Provisional Measures Order of 27 August 1999 (International Tribunal for the Law of the Sea) [hereinafter Order].

II. THE STRUCTURE OF DISPUTE SETTLEMENT

It is uncontested that southern bluefin tuna is a highly migratory species and is covered by Article 64 of the 1982 UN Convention on the Law of the Sea (LOSC), which enjoins states to enter into regional arrangements for the conservation and management of this species. In 1989, before the LOSC had entered into force, New Zealand, Australia, and Japan entered into a voluntary agreement that set a total allowable catch (TAC) and quota for each country. This approach to the management of the stock was then reflected in the 1993 Convention for the Conservation of Southern Bluefin Tuna (SBT Convention), to which these three states are the only parties. The previously agreed TAC and quotas were adopted within the convention framework until 1997, since which time no annual TAC has been set but, *de facto*, the previously agreed quotas have remained the benchmarks. In the current proceedings, there was no suggestion that any party had been exceeding their quota by commercial fishing, but it was argued by New Zealand and Australia that Japan was in breach of Articles 64 and 116–20 of the LOSC by implementing an experimental fishing program (EFP), which had taken its catch beyond that figure. The reason why Japan had been conducting an EFP was, it claims, in order to establish the actual state of the stock, which is in dispute between the parties,[2] and in order that a new TAC could be set. New Zealand and Australia have themselves agreed in principle that an EFP could be of assistance, but they insist that this be conducted on a consensual basis and they have raised objections to the current Japanese program. Clearly, there are many difficult issues here, but, as far as structure of dispute settlement within the law of the sea is concerned, two issues stand out.

The first issue relates to the nature of the dispute. At first sight, the nub of the problem lies in the inability of the parties to the SBT Convention to agree upon a TAC in light of the conflicting scientific data. This inability is not uncommon and is likely to become even more common should more regional bodies of the sort envisaged by Article 64 of the LOSC and by the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks

[2] It might be noted in passing that all three parties appear to be in varying degrees of disagreement with each other over the method of calculating the stock and over the related question of the age of maturity of this long-lived species. For example, Japan claims that Australia's figures, which indicate a still declining "parental biomass" do so only because it has recently adopted twelve years as the age of maturity, whereas traditionally this number has been fixed at eight years. Hence, the recent improvements that Japan claims justify an increase in the total allowable catch are not reflected in Australian figures. New Zealand, while opposing the experimental fishing program, does not appear to endorse the twelve-year age of maturity and subscribes to an eight- to ten-year figure. It is noticeable that this is one of the few issues on which the memorials of the two applicants differ.

(UN Fish Stocks Agreement) come into being.[3] It is, of course, true that every such instance amounts to a failure to give effect to Article 64, but does this mean that it is appropriate to take action under the LOSC dispute settlement procedures? There are two questions here. First, does the fact that the states in dispute are parties to a regional convention "oust" the applicability of the LOSC? ITLOS clearly thinks not and says that "the fact that the Convention of 1993 applies between the parties does not exclude their right to invoke the provisions of the Convention on the Law of the Sea in regard to the conservation and management of SBT."[4] The second question concerns the applicability of the dispute settlement procedures under the LOSC. Article 282 expressly provides that these procedures do not apply in cases where the parties to a dispute have agreed to a binding dispute settlement procedure under "a general, regional or bilateral agreement or otherwise" that can be unilaterally activated. Article 16 of the SBT Convention does indeed set out a series of procedures for resolving disputes under that convention, but it does seem that they are ultimately consensual in nature. Hence, it was not difficult for ITLOS to conclude that "the fact that the Convention of 1993 applies between the parties does not preclude recourse to the procedures in Part XV, section 2, of the Convention on the Law of the Sea."[5]

There is a problem with this approach. At what point can a party to a dispute under a regional, or other, convention that does not have a binding dispute settlement procedure, "switch" into the LOSC procedures? Is there any threshold? And does the subject matter of the "dispute" have relevance? It is not difficult to imagine that parties to a regional convention that seeks to lend substance to the general obligations in the LOSC might quite legitimately deem it appropriate to require agreement on a proposed course of action in a particular matter. Indeed, Article 31 of the UN Fish Stocks Agreement expressly provides for "disputes of a technical nature" and holds out the prospect of settlement by a panel of experts outside of the binding dispute settlement procedures. It may, therefore, be necessary to adopt a more rigorous approach to the question of what constitutes the essence of a case. For example, in the *Southern Bluefin Tuna* cases, Australia and New Zealand themselves objected to the Japanese EFP not because it involved catches beyond the TAC but rather because they disagreed with the scientific merits of the particular program. ITLOS did not dispute the scientific background to the case but took the view that "the differences between the parties also concern points of law."[6] One is tempted to observe, first, that by the time a case is presented to a tribunal, it inevitably will involve points of law for that is the manner in which it has to be presented to it. Second, courts are adept at spotting the relevance of law in virtually any situation. A counter-scenario might be helpful: could Japan have initiated a claim under the LOSC dispute

[3] 34 ILM 1542 (1995).
[4] Order, *supra* note 1, at para. 51.
[5] *Id.* at para. 55.
[6] *Id.* at para. 43.

settlement mechanisms on the grounds that Australia and New Zealand were not acting in conformity with their obligations under the LOSC to establish a TAC in light of the best scientific evidence and request, as an interim measure, that they did not obstruct the Japanese program? There may be a need for a greater degree of subtlety in determining at what point, and in relation to which issues, it is appropriate to trigger the LOSC provisions even when Article 282 does not present a formal barrier.

It should also be remembered that it may not always be clear whether the parties have adopted a binding procedure. For example, in the *Qatar v. Bahrain* case, the International Court of Justice (ICJ) was willing to construct an agreement to a binding settlement procedure on the flimsiest of evidence, and it may well be that a state might claim that a bilateral exchange of notes amounts to an acceptance of a binding procedure even if a regional convention under which that exchange has taken place does not.[7] Indeed, in the case in hand, there was a dispute as to the status of the report of a group of experts bearing upon the scientific matter under dispute. Is it necessary to resolve this issue before determining whether or not Article 282 applies? As has already been seen, much depends on the characterization of the dispute by the parties and by ITLOS. At the other end of the spectrum, is jurisdiction under the LOSC ousted if the parties to the dispute have accepted the "compulsory jurisdiction" of the ICJ under Article 36(2) of its statute?

Many more questions could be asked, but it is enough for the time being to observe that careful consideration needs to be given to the relationship between the dispute settlement procedures established under the various instruments. It is, therefore, somewhat unfortunate that ITLOS did not make it absolutely clear in paragraph 55 of its Order that the reason why the applicability of the SBT Convention did not preclude recourse to the LOSC dispute settlement procedures rests in the non-binding nature of the settlement procedures in Article 16 of the SBT Convention. Paragraph 50 of the Order is similarly unfortunate, since it states that the conduct of the parties under the SBT Convention "is relevant to an evaluation of the extent to which the parties are in compliance with their obligations under the Convention on the Law of the Sea." Normatively, this may be generally true, but, procedurally, such an evaluation will only occur under the LOSC if there is no binding dispute settlement mechanism (unless, of course, the parties agree otherwise). It would be easy to read the Order as implying that the regional and global systems function in parallel. They do not.

The second general observation is in a sense an outgrowth of the first. It must always be remembered that this Order relates to an award of provisional measures, for which it is necessary to establish only that there is a *prima facie* basis for jurisdiction under the LOSC. This point will be considered further

[7] Maritime Delimitation and Territorial Questions between Qatar and Bahrain (Qatar v. Bahr), 1995 ICJ 6 (15 February).

in the following section, but it would be quite bizarre for a convention containing only a non-binding procedure to provide for the issuance of provisional measures and, indeed, the SBT Convention does not. It would seem, however, that since any such settlement procedures are liable to be "trumped," as between the parties to the LOSC, then binding provisional measures will potentially be available at the request of one of the parties anyway. It would seem that a shrewd negotiator might well see an advantage in accepting a binding dispute settlement mechanism under a regional or other arrangement in order to obviate this possibility. Indeed, since, as Judge *ad hoc* Shearer observed, the ICJ is only empowered to "indicate," rather than "prescribe" provisional measures, it might be that there is advantage in opting for the ICJ under Article 287 of the LOSC or under a relevant regional or other arrangement. Of course, it might be that Judge Shearer has overlooked the obligation contained in Article 290(6) of the LOSC, which provides that "[t]he parties to a dispute shall comply promptly with any provisional measures prescribed under this article." Since Article 290(1) refers to disputes submitted to courts or tribunals having "jurisdiction under this part"—that is, Part XV of the LOSC—the conclusion must be that where the ICJ hears a dispute by virtue of declarations under Article 287 of the LOSC then its awards of provisional measures are in fact binding, the ICJ statute notwithstanding. Of course, this conclusion would not be correct for awards made by the ICJ in cases where its jurisdiction flowed from a binding dispute resolution mechanism in *another* convention, regional or bilateral. Thus, if, for example, the SBT Convention had provided for unilateral applications to the ICJ, the application of Part XV of the LOSC would have been excluded by Article 282, and so an award of provisional measures by the ICJ would not now be made *under* Part XV of the LOSC at all and would potentially lose its binding status. Again, this is a point worth pondering.

Quite enough has been said to make it clear that much work remains to be done to clarify the relationship between the various dispute settlement mechanisms that now exist in relation to the regimes of the seas and that in this Order ITLOS has done more to point up the issues than to help resolve them.

III. THE CRITERIA FOR AN AWARD OF PROVISIONAL MEASURES: A NEED FOR "URGENT" CLARITY

The structure of Article 290 of the LOSC is clear enough. Subparagraph 1 empowers any court or tribunal that has *prima facie* jurisdiction under Part XV to "prescribe any provisional measures which it considers appropriate under the circumstances to preserve the respective rights of the parties to the dispute or to prevent serious harm to the marine environment, pending the final decision." In the current dispute, this power will reside with the Annex VII arbitral tribunal that, at the time of the order, was in the process of being

constituted. Since the constitution of such tribunals inevitably takes some time, Article 290(5) allows ITLOS itself to hear a request for provisional measures if that process is not completed within fourteen days (or unless the parties have agreed that some other body could make such an award in the interim). It is this rule that forms the basis for the current Order of ITLOS. The only possible justification for not waiting for the Annex VII arbitral tribunal to be constituted is that the matter is so urgent that it cannot wait. Thus, it is not surprising that in order to make an award of interim measures under Article 290(5), ITLOS must determine not only that the stipulations of Article 290(1) are met but also that "the urgency of the situation so requires." The more one looks at the Order, the more difficult it is to see quite how this award fits into this framework. Under Article 290(1), an award must be for one of two purposes—either to preserve the rights of the parties or to prevent serious harm to the marine environment (or both). Which is it in this case?

In paragraph 70 of the Order, ITLOS declared that "the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment." It might have been better if ITLOS had said that "conservation and management" was an essential element, but let that pass for the time being. What is important is that ITLOS is linking the award to the need to prevent serious harm, and, through a series of carefully modulated paragraphs (70–7), it paints a picture of the increasing pressures on the stock and so concludes that "the parties should in the circumstances act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of SBT."[8]

The problem is obvious. It might well be appropriate for the Annex VII arbitral tribunal to conclude that prudence and caution require provisional measures to prevent serious harm, but is it really possible to argue that "prudence and caution" are required "urgently"? The essence of ITLOS's competence under Article 290(5) is that the urgency of the situation is such that the matter simply cannot wait. In the very next paragraph, however, ITLOS demolishes its own argument since it concludes that "catches taken within the framework of any experimental fishing program should not result in total catches which exceed the levels last set by the parties for each of them, *except under agreed criteria*."[9] This point is mirrored in operative paragraph 90(1)(c) and (d), which enjoins all three states to abide by the quotas and to ensure that any EFP is conducted within those quotas unless the parties agree otherwise. In other words, ITLOS is quite prepared to see an increase in the total catch provided all parties agree to it. It is very difficult to see how this squares with a perceived need for "prudence and caution" in order to prevent serious harm to the stock (and therefore the marine environment).

[8] Order, *supra* note 1, at para. 77.

[9] *Id.* at para. 81 [emphasis added].

A fortiori, it is difficult to see why the need to prevent Japan from conducting a unilateral EFP can be "urgent" if ITLOS is relaxed about the possibility of a jointly agreed EFP taking place. And, in truth, it is difficult to avoid the impression that this was what ITLOS was attempting to do. As Judge Vukas points out, the Order was issued on 27 August 1999. Japan had announced that the EFP for 1999 was due to terminate four days later. How could there possibly be an urgent need to exercise prudence by stopping the last four days of the program? There was not such an urgency. What was urgent, in the eyes of ITLOS, was the need to ensure that the grand total amount of SBT taken by Japan commercially and under the EFP did not exceed the TAC in the calendar year. Given that commercial fishing was shortly to resume (and that ITLOS chose to elicit this information from the parties in the course of the proceedings), there was a danger that the total Japanese take might exceed the TAC before the arbitral tribunal could consider the matter. Taken in the round, it appears that the urgency of the need flowed from ITLOS's favoured approach to the management of the dispute at this interim phase. Despite the protestations of ITLOS to the contrary, it is difficult to see this approach as a legitimate exercise of the powers provided for in Article 290(5).

ITLOS's approach might appear more acceptable if it was based upon the alternative ground for an award in Article 290(1)—the need to preserve the rights of the parties—and paragraph 80 of the Order does indeed refer to these rights as a justification for ordering interim measures. However, this point is stated rather than explained. One might ask what rights of Australia and New Zealand are in need of protection *urgently*? The only possibility seems to be a right that Japan refrains from fishing in excess of the TAC. The Order is conspicuously silent on the debate, which was canvassed at length in the proceedings, concerning the nature of the threat to the rights of the applicants by the conduct of the respondent. Must it amount to "irreparable prejudice"? If so, then this prejudice spills over into the threat of serious harm to the fish stocks and to the marine environment but this simply leads us back to the problems identified earlier—that ITLOS itself does not seem to believe that exceeding the TACs will necessarily cause harm. If it is sufficient that there is merely a threat of a breach of a right (which is surely too low a threshold), then this seems to invest the TAC with a sanctity that it hardly deserves. After all, the entire dispute centres on the question of the appropriateness of this figure in light of the best scientific advice, whilst what constitutes the *best* scientific advice is itself disputed. This point actually takes us back to the starting point. What is this dispute all about?

IV. CODA

I have deliberately avoided a discussion of the "precautionary principle/approach" as a matter of general international law in this contribution since it seems to me that this principle should have no role in an award made by ITLOS under Article 290(5). Moreover, and despite what it says, it is difficult to see how this Order gives effect to a "precautionary" approach at all. It is an unfortunate fact that the greatest threat to the SBT at the moment comes from the increasing catch of states that are not party to the SBT Convention at all. If there is an urgent need to prevent serious environmental harm, perhaps, as was rather cheekily suggested by some of the judges,[10] all three SBT Convention states ought to consider reducing their catches to take this into account. But it does not appear to be *that* urgent!

[10] *See* the dissenting opinion of Judge Vukas and also the joint declaration of Vice-President Wolfrum and Judges Caminos, Marotta Rangel, Yankov, Anderson, and Eiriksson.

The LOSC and the Implementation of the Precautionary Principle

Adriana Fabra

The implementation of the dispute settlement system of the United Nations Convention on the Law of the Sea (LOSC)—one of the most ambitious international regimes of all times—had been long awaited. Scholars and diplomats for decades have anticipated—with more confidence at some moments than at others—an important role for this convention in the implementation and progressive development of international law. The Order for Provisional Measures of the International Tribunal for the Law of the Sea (ITLOS) in the *Southern Bluefin Tuna* cases[1] (Order) demonstrates that the dispute settlement mechanisms of the LOSC are finally meeting these raised expectations.

The order delivered in the *Southern Bluefin Tuna* cases is unprecedented for its bold incursion in a field that has been timidly explored by courts and tribunals, namely, the need for precautionary action in the face of environmental damage. However, it is, above all, a "historic proceeding"—using the language recalled by Judge Laing—because of its exercise of compulsory jurisdiction by a universal body and because of the fact that it is one of the first occasions where provisional measures have been granted in an environmental case[2] and the first time they are to be applied beyond the limits of national jurisdiction. Moreover, the Order clarifies some aspects of the international system for fisheries management and makes important suggestions as to the relationship between international fisheries law and international environmental law.

I. PUTTING THE PRECAUTIONARY PRINCIPLE INTO PRACTICE

A central element in ITLOS's Order is its prescription that fishing for experimental or scientific purposes does not justify taking catches over the allocated

[1] Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan) Provisional Measures Order of 27 August 1999 (International Tribunal for the Law of the Sea) [hereinafter Order].

[2] See Nuclear Tests (Austl. v. Fr.), 1973 ICJ 99 (Interim Protection Order of 22 June); and Nuclear Tests (N.Z. v. Fr.), 1973 ICJ 135 (Interim Protection Order of 22 June), where the court admitted the request for provisional measures and prescribed that France should avoid atmospheric nuclear tests causing the deposit of radioactive fall-out on Australian and New Zealand territories. These measures became moot after France announced its decision to bring those tests to an end.

annual national total allowable catch (TAC). ITLOS determined that Australia, Japan, and New Zealand should refrain from conducting an experimental fishing program unless the experimental catch is counted against each country's national TAC. In addition, it established that, in calculating the annual catches for 1999 and 2000, parties to the 1993 Convention for the Conservation of Southern Bluefin Tuna (SBT Convention) "pay back" for catch taken over their quota in 1999 as part of any experimental fishing. ITLOS justified such a restriction by stating that the parties should "act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna." Are these references to "prudence and caution" an appeal to the precautionary principle?

The precautionary principle, or precautionary approach—depending on the legal rank that we may want to attribute to it—has been permeating different aspects of environmental regulation in the past decade. It has proven to be essential to the development of some multilateral environmental regimes and, as an instrument of environmental policy, is contained in a good number of international legal instruments. However, the precautionary principle, due to its differing formulations and interpretations, and to the lack of generalized state practice recognizing it as a binding rule of law, cannot yet be considered to be a principle of customary international law. There is broad consensus though on its status as an emerging rule.[3]

II. PASSING THE TEST FOR A PRECAUTIONARY APPROACH

Notwithstanding its different legal formulations, the implementation of the precautionary principle requires the coincidence of at least the following conditions: (1) there must be a risk of "serious," "irreversible," or just *some form* of environmental damage; (2) no conclusive scientific evidence can explain the exact cause of such risk; and (3) an *a priori* appreciation of such risk is sufficient to justify the need to take measures to prevent environmental degradation. As a result, the implementation of the precautionary principle also leads to a shift in the burden of proof regarding environmental damage, requiring those actors intending to carry out environmentally sensitive activities to demonstrate that they shall not have a "harmful" effect.

[3] For an analysis of the origin and development of this principle as well as of its different formulations in international instruments, *see*, among others, David Freestone and Ellen Hey, eds., The Precautionary Principle and International Law: The Challenge of Implementation (1996); J.M. Macdonald, *Appreciating the Precautionary Principle as an Ethical Evolution in Ocean Management*, 26 Ocean Development and International Law Journal 255 (1995); Philippe Sands, Principles of International Environmental Law, 208–13 (1995); David Freestone, *The Precautionary Principle, in* International Law and Global Climate Change (Robin Churchill and David Freestone, eds., 1991); James Cameron and Juli Abouchar, *The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment*, 14 B.C. Int'l & Comp. L. Rev. 1, 2 (1991).

ITLOS did not expressly admit in its Order that it was implementing a precautionary approach, but it is evident that it was doing so when one reads several of its paragraphs in conjunction. Going over the conditions mentioned above, we may conclude that ITLOS's argument "passes the test" for a precautionary approach. First, ITLOS established that "the stock of southern bluefin tuna is severely depleted and at its historically lowest levels and that this is a cause for serious biological concern," thus inferring that this species is at risk given that commercial fishing for it continues. Second, ITLOS addressed the issue of scientific uncertainty, acknowledging the existence of contradictory scientific evidence regarding the impact of the Japanese experimental fishing program upon the stocks, and the effects of conservation measures taken so far. Finally, it concluded that despite a lack of full scientific certainty regarding the effects of current fishing activities upon the stock and considering the need for the parties to "act with prudence and caution to ensure that effective conservation measures are taken," it would be necessary to take urgent measures "to avert further deterioration of the southern bluefin tuna stock." As a result, it prescribed a limitation to experimental fishing. Without a doubt this was a fully fledged implementation of a precautionary approach in fisheries management.

III. A CONTRIBUTION TO THE CLARIFICATION OF THE PRECAUTIONARY PRINCIPLE?

The importance of ITLOS's Order resides, however, not only in its support of precautionary action at a time when other judicial bodies have proven to be reluctant to implement it in environmentally related matters but also in the Order's contribution to the development of the concept.[4]

The Order addresses fundamental aspects of putting the precautionary principle into practice, such as risk assessment, the definition of environmental damage, and the implications of a shift in the burden of proof. However, ITLOS's decision also evidences the difficulties of making *effective* use of a precautionary approach, given the need to balance a number of, at times, contradictory interests (that is, the prevention of environmental damage and the economic and social costs of taking precautionary measures) as well as the complexity of operating in the face of uncertainty.

It is not possible to establish a catalogue of situations that are in need of a precautionary approach, given that it is such an intrinsically *relative* concept and that it requires consideration on a case-by-case basis. However, efforts have been made to identify some general rules that could facilitate the

[4] For an example of a decision by another dispute settlement body that was reluctant to implement the precautionary approach, *see* WTO Appellate Body Report on EC Measures Concerning Meat and Meat Products (Hormones), WTO Doc. WT/DS26/AB/R, (16 January 1998).

implementation of precautionary action, such as "the greater the possible risk to the environment, the greater the level of scientific uncertainty which may be acceptable for the precautionary principle to become engaged."[5] Did ITLOS take into account such directly proportional correlation in the *Southern Bluefin Tuna* cases when it assessed the need to limit experimental fishing in order to prevent further depletion of the stock?

It is apparent that Australia and New Zealand on the one hand, and Japan on the other, sustained opposing scientific views with regard to the impact of experimental fishing upon the stock. ITLOS acknowledged this situation of scientific uncertainty but decided to ban experimental fishing above the TAC in order to prevent further damage to the stock. According to the criterion stated earlier in this article, in order to take preventive measures in the face of high uncertainty, the risk to the environment also needs to be very high. And it is in regard to this point that some complex questions in the case may be raised, given that it is not clear that experimental fishing could be the decisive factor in pushing the stock towards its depletion. In other words, in order to prevent the depletion of the stock, other factors must have been taken into account by ITLOS when prescribing provisional measures.

For example, due to their inability to reach agreement on a new quota, Australia, Japan, and New Zealand were implementing in 1999 the TAC that they had agreed upon in 1989. Considering that a decline in the stock had been observed in recent years, would it not have been appropriate in order to prevent further depletion of the stock for ITLOS to prescribe a reduction in the national quota or even to prescribe a moratorium? The limitation of Japanese experimental fishing would have provided for a reduction in catches of approximately 1,500 tonnes per year. Would this amount have been sufficient to address the risk of depletion of the stock when parties were taking annually over 11,000 tonnes altogether and, in addition, non-parties to the SBT Convention were taking unreported catches? In this light, it does not seem that the tribunal was taking up the rule that "the greater the risk (posed by experimental fishing), the higher the level of acceptable scientific uncertainty," given that the possible impact of that activity upon the environment was not as high as the uncertainty over its effects.

Therefore, we could conclude that ITLOS was accepting a low threshold in its appreciation of risk when taking a precautionary approach *with regard to experimental fishing*. However, if we know that one of the conditions for applying a precautionary approach is that there be a risk of environmental damage and that in the *Southern Bluefin Tuna* cases ITLOS had identified an *a priori* risk of depletion of southern bluefin tuna, it would seem reasonable to think that other measures besides the restriction of experimental fishing should have been taken to prevent such damage. Under Article 290(1) of the

[5] See Freestone, *The Precautionary Principle*, *supra* note 3, at 33.

LOSC, ITLOS is clearly entitled to prescribe any provisional measures it considers appropriate in order to prevent serious harm to the marine environment and it is not constrained to the requests formulated by the parties. Why did it not prescribe any other restriction on fishing to the parties in the dispute?

There may be several answers to this question, all of which may point to some of the *limits* of taking a precautionary approach. First, ITLOS could have been taking into consideration another possible general rule of implementation that is related to the precautionary approach: "[T]he greater the economic costs of taking certain precautionary actions, the smaller the level of scientific uncertainty which should be acceptable." Given the socio-economic implications that would arise if one reduced or halted completely the fishery of southern bluefin tuna, ITLOS could have decided to take the least costly of all possible measures available in order to prevent further damage to the stock. Second, ITLOS perhaps was reluctant to contradict the terms of the national annual allocations that were last agreed upon by the three sovereign states involved in the dispute. And, in addition, it could have wanted to emphasize the importance of cooperative action in the management of highly migratory species, thus prohibiting those actions taken unilaterally, without the consent of other parties in the regime. Such an approach would certainly have responded to a far-reaching interpretation of the duty to cooperate in fisheries management.

We may conclude from these considerations on risk assessment that, to pass the test for a precautionary approach, the precautionary measures to be adopted should also be effective in the face of the environmental concerns that they are trying to address. A truly precautionary approach should not lose sight of its rationale: the prevention of environmental damage.

1. Environmental Damage

Harm or *damage* in this case does not refer to the collapse of the stock but rather to the cumulative effect towards such a collapse, as explained by Judge Treves. It would seem that ITLOS was moving away from a requirement of "irreparability" as a justification for precautionary action and that it considered it to be sufficient that the damage was "serious."[6] ITLOS's standard for damage might be even lower, in light of its statement in paragraph 80. In contrast to paragraph 77, where it makes more of a value judgment on the desirable behaviour of parties to ensure that effective conservation measures are taken, in paragraph 80, ITLOS refers to its own findings and, in this regard, it establishes that measures should be taken urgently to avert "further deterioration" of the stock, not *severe* deterioration.

[6] Order, *supra* note 1, at para. 77.

2. Shifting the Burden of Proof

ITLOS seems to favour shifting the burden of proof onto the agent that is carrying out an environmentally sensitive activity, although it does not make any explicit pronouncement in this regard. Despite the evident difficulties for Japan to prove beyond doubt that its experimental fishing program does not have a negative impact upon the southern bluefin tuna stock, ITLOS prescribed provisional measures prejudicing Japan. It appears therefore that ITLOS is also applying a low threshold when shifting the burden of proof, particularly, when one considers how notoriously difficult it is in fisheries management to prove conclusively that certain fishing activities will not have any negative impact upon the resources.

By contrast, with regard to commercial fishing—which may also contribute to the depletion of the stock—ITLOS did not impose on Australia, Japan, and New Zealand a shift in the burden of proof. This fact could be explained by a desire to not be excessively strict in the application of the precautionary principle—and to leave some room for "negative impact" upon the fisheries, given the difficulties in proving the absence of such impact. However, it could also respond to an effort to balance economic costs and sovereign rights with the conditions of high scientific uncertainty.

IV. DISPUTE SETTLEMENT IN MOTION

The second central contribution of this Order to international fisheries law relates to the current state of dispute settlement mechanisms. The *Southern Bluefin Tuna* cases shall certainly be remembered for the provisional measures that the tribunal ordered. The Order, however, also contributes to clarifying the relationship between the LOSC and regional fisheries agreements and raises several questions about the coexistence of a wide range of international dispute settlement bodies at a time when the judicial settlement of international disputes is intensifying.

The order is the third decision taken by ITLOS since its establishment after the entry into force of the LOSC, and it is premature to assess the implications of its rulings for the implementation, and perhaps the progressive development, of the international law of the sea. We can, however, assess this decision in light of what ITLOS was designed to be. The Order demonstrates that the dispute settlement system established under the LOSC, despite being complex and unsatisfactory to some, is extremely clear and can operate like clockwork.

Questions of jurisdiction certainly arose in this case. Japan contested the jurisdiction of ITLOS in the proceedings, arguing that the dispute concerned the implementation of the SBT Convention and not of the LOSC. ITLOS clarified—probably once and for all—that given that the parties in the dispute

were parties to both the LOSC and the SBT Convention, they were subject to the dispute settlement obligations under both regimes. According to the LOSC, on the basis of Article 287, state parties to it may select one of four dispute settlement procedures. Failure to submit a declaration indicating their choice of procedure leads any party to accept compulsory arbitration in accordance with Annex VII. In the case of a dispute where the parties had chosen differing procedures or had not made any declaration in this regard, the parties would be obliged under the convention to also accept compulsory arbitration in accordance with Annex VII. Under Article 282 of the LOSC, parties to a regional or bilateral regime that had agreed to settle their disputes under a different mechanism could do so provided that that procedure entailed a binding decision. Given that the SBT Convention does not provide for a compulsory settlement mechanism, parties in the dispute are entitled to revert to mechanisms provided under the LOSC. Arbitration in accordance with Annex VII is the automatically applicable procedure, and the prescription of provisional measures by ITLOS, at the request of a party in the dispute, is the legally established mechanism under Article 290(5). This is the language of the LOSC and of ITLOS in its Order.

In the past, scholars have voiced some concern in regard to the weakening of the LOSC's compulsory jurisdiction regime in fisheries disputes as a result of the implementation of the exceptions of Article 297, whereby coastal states are not obliged to accept such jurisdiction in disputes concerning their sovereign rights in the exclusive economic zone. There is no doubt that there will be occasions when coastal states shall refuse submission to compulsory settlement if they fear an infringement of their sovereign rights. However, the Order in the *Southern Bluefin Tuna* cases indicates that there may be many cases where it will be in the best interest of coastal states to accept (or request) compulsory settlement under the LOSC. This practice may become particularly relevant with the strengthening of regional fisheries agreements, whereby coastal states enter into international commitments with neighbouring and high-seas fishing nations in order to cooperate in fisheries management. By doing so, coastal states may limit the exercise of some of their sovereign rights in favour of cooperative approaches. If states are willing to accept new international obligations concerning fisheries management, the areas of sovereignty that they may desire to protect from foreign interference may also become fewer.

No doubts arise as to ITLOS's jurisdiction in this case, but it is interesting to note that, in establishing its competence, the tribunal may have gone even further than necessary. Under Article 290(1), ITLOS may prescribe provisional measures to preserve the rights of the parties or to prevent serious harm to the environment. The former would have been sufficient in order to act under Article 290(1). Instead, ITLOS expressly stated that provisional measures need to be taken to preserve the rights of the parties and to avert the

further deterioration of stocks. In paragraph 70, it expressly considers that "the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment." Some judges see this assertion as obvious, while others find it imprudent. Given the compactness of ITLOS's written arguments, it is difficult to appreciate how much meaning it placed on this statement. The implications are potentially large. The LOSC's provisions on the conservation of marine living resources may become subject to interpretation under the general obligation to protect and preserve the marine environment contained in Article 192. In addition, the risk of depleting a fish stock shall be sufficient grounds for prescribing provisional measures, even if there is no need to preserve the rights of the parties. However, it is unlikely that exceptions to compulsory jurisdiction under Article 297 may be weakened as a result of such an interpretation.

A final sign of ITLOS's support for states resorting to compulsory jurisdiction is found in its statement that parties do not have to be engaged in settlement through diplomatic means indefinitely. It establishes that it is their right to determine when it is time to revert to compulsory jurisdiction.

V. WIDER IMPLICATIONS

What are the implications of this decision for international fisheries law? The concrete order to refrain from conducting experimental fishing unless such an experimental catch is counted against a party's national allocation, as well as the obligation to "pay back for catch," may have an important precedent value in international fisheries law. This decision certainly sounds the alarm for all regimes that allow for some sort of experimental or scientific fishing program, since, in the light of a precautionary approach, the TAC determines the maximum amount to be fished and there are no exceptions to it. Such debate, however, is not new in several regional forums, where precautionary approaches have been upheld more or less successfully. The moratorium on commercial whaling and the high-seas driftnet ban are examples of efforts to adopt a precautionary approach. However, ITLOS clearly stated that precautionary measures could not be taken if parties had agreed to other criteria. Thus, the Order is important in preventing unilateral actions, but it is not a call for the precautionary principle to rule over sovereignty. Hence, regimes, such as the international whaling regime under the International Convention for the Regulation of Whaling, shall not be shaken by ITLOS's approach, as its constitutive treaty permits unilateral objections to the general regime and expressly allows for whaling for scientific purposes as an exception to the provisions set in its schedule.

The case certainly brings good news to the settlement of ocean-related disputes. The prescription of provisional measures offers urgent remedies to the parties and, with ITLOS's broad interpretation of the concept of "protection

and preservation of the marine environment," perhaps extends their applicability to aspects not expressly foreseen by the LOSC. Mechanisms for compulsory jurisdiction over disputes strengthen not only the LOSC but also the regimes under regional agreements, which often lack binding dispute settlement procedures. Aspects of the 1995 dispute between Canada and Spain concerning high seas fisheries in the framework of the North Atlantic Fisheries Organization would have had a good case for being resolved at least by an arbitral tribunal under Annex VII of the LOSC. Yet, the only judicial mechanism available at the time was recourse to the International Court of Justice (ICJ), and Canada had previously registered an exception to accepting the ICJ's jurisdiction. This situation resulted in the inadmissibility of the case, and those aspects of the dispute with Spain that were not settled through bilateral negotiations between the European Community (EC) and Canada remained unresolved.[7] It should be noted that under the LOSC the EC could also have had standing before both ITLOS and an arbitral tribunal.

This last argument makes a case for the positive role of such tribunals, particularly in light of some concerns over the risk of fragmentation of substantive law of the sea as a result of the *à la carte* recourse to dispute settlement provisions under the LOSC. It is not yet possible to assess the real implications of such a proliferation of mechanisms, but, as pointed out by Alan Boyle, in nearly fifty years of judicial activity in cases concerning the law of the sea there have been approximately as many cases resolved by the ICJ as by means of arbitration and there appears to be no overt conflict between the decisions.[8] There is no reason why the proliferation of judicial bodies would not contribute to developing a body of sound case law, as they all need to draw, in the end, from the same sources of international law. The existence of more specialized bodies may contribute to more expeditious and technically sound decisions and, at the same time, in cases such as the LOSC's, ensure the coherent interpretation of one international agreement (and, through consensual jurisdiction, also grant standing to more actors with interests in the dispute). In the end, it is for the parties to determine which judicial body they prefer. What matters under the LOSC is that, with exceptions, parties are committed to accepting compulsory jurisdiction.

In order to address the concerns of "fragmentation," one solution could be to have an "international court of appeal" of sorts. There has been an ongoing debate in the past decade about the appropriateness of establishing a

[7] Fisheries Jurisdiction (Spain v. Can), ICJ, 4 December 1998.

[8] Alan E. Boyle, *Dispute Settlement and the Law of the Sea Convention: Problems of Fragmentation and Jurisdiction*, 46 Int'l & Comp. L.Q. 41 (1997). For reference on the debate on the tension between the risk of fragmentation and effective settlement of disputes, *see also* Jonathan I. Charney, *The Implications of Expanding International Dispute Settlement Systems: The 1982 Convention on the Law of the Sea*, 90 Am. J. Int'l L. 69 (1996), and Shigeru Oda, *Dispute Settlement Prospects in the Law of the Sea*, 44 Int'l & Comp. L.Q. 863 (1995).

specialized international judicial body to consider environmental disputes. In this process, the Environmental Chamber of the ICJ was created, although some commentators have continued to advocate for a world court on the environment. Considering the terms of current environmental disputes, where economic, social, and ecological considerations are tightly interwoven, perhaps the debate over the need for a universal, specialized body should consider the establishment of, instead, an international court for *sustainable development*. However, in going back to the LOSC and its dispute settlement mechanisms, it is only reasonable to wait and observe the work of ITLOS and its arbitration procedures. The need for sustainable development has already been incorporated into international law and, as stated in Article 293 of the LOSC, a court or tribunal shall also apply international law not incompatible with the convention. As far as the precautionary principle is concerned, the Order of ITLOS in the *Southern Bluefin Tuna* cases indicates that this principle—an emerging rule of international environmental law—is not only "compatible" with, but guides, the implementation of the LOSC.

Caution or Precaution: "A Rose By Any Other Name . . ."?[1]

David Freestone

It is difficult to overestimate the significance of the decision of the International Tribunal for the Law of the Sea (ITLOS) in the *Southern Bluefin Tuna* cases (Order).[2] It is not only the first international dispute involving substantive issues of fisheries law to be litigated since the signing of the 1982 UN Convention on the Law of the Sea (LOSC), but it is also the first to have to deal in some way with the revolution that has taken place in international fisheries law since the 1992 UN Conference on Environment and Development. It is of note as a case brought against Japan—an infrequent party to international litigation. It has also resulted in the establishment of the first tribunal under Annex VII of the LOSC. What is less clear is whether or not ITLOS is the first international tribunal to apply the precautionary principle.

For readers of this *Yearbook* with a professional interest in the development of international environmental law and the law of sustainable development, the decision has significance not only in relation to precaution but also in relation to the wider issue of sustainable utilization of natural resources. Moreover, the ITLOS decision also raises some interesting questions regarding the future litigation of law of the sea cases and international environmental law cases before the still-developing array of relevant tribunals.

As this writer has argued at length elsewhere, the emergence of the precautionary principle in international environmental policy and law has been one of the most remarkable developments of the last decade, and, arguably, one of the most significant in the emergence of the new discipline of international environmental law itself. It has inevitably generated a great deal of interest and controversy among the legal, as well as scientific, community. With its acceptance (albeit in one of its weakest formulations) in Principle 15 of the Rio Declaration, precaution has moved to a central place in any realistic strategy for the achievement of sustainable development and, particularly, for

This article represents the personal view of the author and should in no way be taken to represent the official view of any institution for which he works or with which he is associated.

[1] "What's in a name? That which we call a rose by any other name would smell as sweet." William Shakespeare, *Romeo and Juliet* (1595), Act II, scene 2, line 43.

[2] Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan), Provisional Measures Order of 27 August 1999 (International Tribunal for the Law of the Sea) [hereinafter Order].

the sustainable use of the planet's natural resources. Indeed, Judge Weeramantry, in the *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*,[3] saw precaution as a constituent part of the wider legal principle of sustainable development.

The precautionary approach has infiltrated virtually every recent international environmental and natural resource treaty regime and is increasingly being adopted by national legal systems. Precaution is an essential part of the tool kit of sustainable development, and sustainable development itself provides a new lens through which existing, as well as new, obligations should now be viewed. There is some symbolic significance in the fact that ITLOS decided this case in the closing months of the last decade of the twentieth century. The 1990s have seen the establishment of international environment law as a distinctive system rather than simply as a collection of rules about the environment, and the precautionary principle has of course also been at the centre of discussions about the emerging principles of such a system. The challenge for the twenty-first century must surely be the development of modalities by which the rhetoric of the 1990s can be operationalized. Foremost among the relevant issues is the extent to which precautionary methodologies can be developed to give effect to what is otherwise an abstract concept. These are the issues of operationalization and of implementation that Ellen Hey and I have previously described in a work cited by both Judge Laing and Judge *ad hoc* Shearer as "second generation" thinking about the precautionary principle.[4]

Against this background, discussions about whether the precautionary principle is a binding principle of international customary law have a distinctly 1990s feel about them. It would be depressing to think that the debate has not moved further than a discussion about whether the precautionary principle is still too vague to be a regarded as a legal principle. We might usefully recall that in jurisprudential terms the difference between a rule and a principle is the very level of generality in which it is phrased—indeed, it is the nature of principles to be vague. A rule is formulated with a degree of precision that will allow for its equal application in similar cases, whereas the very notion of a principle requires that it be formulated at a sufficient level of generality that it can be of broad application. However, that does not mean that the application of a principle is automatic in every case nor indeed that the method of its application is the same, or even similar, in every case. André Nollkaemper has reminded us that "[p]rinciples serve as guidelines, rather than imposing concrete obligations. The precautionary principle states reasons that argue in the direction of precaution, yet do not necessitate one par-

[3] Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), (Judgment of 25 September 1997) (separate opinion of Judge Weeramantry); reprinted in 37 ILM 162 at 215 (1998).

[4] David Freestone and Ellen Hey, eds., The Precautionary Principle and International Law: The Challenge of Implementation (1996).

ticular decision that would guarantee total protection."[5] It is in the nature of principles that uncertainties about their application and even their content remain. To cite an example I have used before, more than thirty years after the UN General Assembly Resolution 1514 on self determination,[6] international lawyers, and indeed the members of the International Court of Justice (ICJ) itself,[7] still debate its exact content and application. Considerable controversy surrounded its acceptance as a legal, rather than a purely political, principle by Judge Dillard in the *Western Sahara* Advisory Opinion.[8] Despite continued dispute as to how the principle might be applied, few international lawyers would today deny that self-determination is a principle of international law. These same remarks can be applied equally to other principles.

Acceptance of the precautionary principle, however, entails acceptance of the fact that restrictions should be placed on activities that are likely to have significant negative impacts on the environment, even if science is unable to predict accurately what these impacts will be. It is not, or is not necessarily, an absolutist doctrine in the sense that concepts such as "significant negative impacts" and "restrictions" require the making of important value judgments.

The *Southern Bluefin Tuna* cases provide a classic situation for the sensible application of precaution in an international context. Indeed, it might be the most pertinent such situation since the World Trade Organization's Appellate Body chose not to apply precaution in the 1998 *EC Measures Concerning Meat and Meat Products (Hormones)* case.[9] Both sides in the *Southern Bluefin Tuna* dispute are anxious to continue fishing the southern bluefin tuna. It is a multi-million dollar operation, which provides rich returns to the fishermen of all the states concerned. Individual specimens are so valuable that they are sometimes caught live and then held in holding pens to increase their body weight and therefore their value at the Tokyo fish market. However, a great deal is still unknown about the stock. As Judge Laing pointed out in his separate opinion, diametrically opposite views are held by scientists on several critical issues, such as the prediction of future levels of parental biomass, the changes in size composition, the rate of recruitment of juveniles, the mortality rates of juveniles, the projection of recovery levels as well as the appropriate approach to necessary scientific investigation.

[5] André Nollkaemper, *"What You Risk Reveals What You Value" and Other Dilemmas Encountered in the Legal Assault on Risk*, *in* Freestone and Hey, *id.*, at 80.

[6] UNGA, *Declaration on the Granting of Independence to Colonial Countries and Peoples,* UN GAOR 15th Sess., Supp. No. 16, at 66, UN Doc. A/RES/1514 (XV) (1960).

[7] For an excellent contemporary assessment, Rosalyn Higgins, Problems and Process: International Law and How We Use It 111–28 (1994).

[8] 1975 ICJ 12 (advisory opinion of 16 October) (separate opinion of Judge Dillard). For an appraisal, see Rosalyn Higgins, *Judge Dillard and the Right of Self Determination*, 23 Va. J. Int'l L. 387 (1982).

[9] *See* WTO Appellate Body Report on EC Measures Concerning Meat and Meat Products (Hormones), WTO Doc. WT/DS26/AB/R, (16 January 1998).

Despite this uncertainty though, both sides in the case agreed that the stock is at an all time low (Order, para. 71). One side (Japan) thought that the scientific evidence suggested that the stock was about to recover, while the other (Australia and New Zealand) thought that it was about to collapse completely. It is against this background that ITLOS was asked by Australia and New Zealand to approve provisional measures to stop Japan from continuing its unilateral experimental fishing program, under which it had substantially increased its catches from those agreed within the context of the tri-lateral 1993 Convention on the Conservation of Southern Bluefin Tuna (SBT Convention), and, *inter alia,* to enjoin Japan to act in accordance with the precautionary principle.

I. THE DISPUTE ABOUT SCIENCE

The southern bluefin tuna (*Thunnus maccoyii*) is listed as a highly migratory species in Annex 1 of the LOSC. According to Jean-Jacques Maguire, the fishery started in the early 1950s with landings peaking in 1961 at more than 80,000 tonnes.[10] Despite increased efforts, landings fluctuated with a downward trend to 35,000 tonnes in 1978. After a modest recovery in 1982–3, there followed a steady decline to some 14,000 tonnes in 1990, and catches have been less than 20,000 tonnes per annum since that time. Japan, Australia, and New Zealand have been the traditional harvesters, and, after informal cooperation during the 1980s, the three countries began to limit their catches as of 1985 in order to enable the stock to recover. In May 1993, the three countries signed the SBT Convention, which came into force in May 1994. In the meantime, vessels from other countries began to fish for the stock—principally Indonesia, Korea, and Taiwan—and the catch of these vessels increased from some 500 tonnes in 1988 to nearly 5,000 tonnes in 1996.

There are obvious scientific difficulties in devising a satisfactory stock assessment technique for a pelagic species that is caught over a huge area. The Scientific Committee of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) uses a "virtual population analysis" (VPA) technique to "back-calculate" historical estimates of the stock size. To make this calculation, it estimates the total numbers caught by age during each year from 1969 onwards. These figures provide a minimum estimate of stock size, though they do not account for fish that die from natural causes and those still left in the water, particularly in areas where fishing has not taken place. From these minimum estimates, actual stock sizes are calculated. As with all such statistical methods, however, there are significant uncertainties in this method of stock assessment, and, as a result, scientists disagree not only

[10] Jean-Jacques Maguire, *The Southern Bluefin Tuna Dispute*, paper to the United Nations Food and Agriculture Organization/Virginia Centre for Oceans Law and Policy Conference, Rome, 16–17 March 2000.

about the current stock size but also about historical estimates of stock size upon which the current calculations are based. Population projections therefore vary widely depending on the interpretation put upon the data and on the reliability of the historical catch-at age data.

CCSBT scientists have therefore been discussing an experimental fishing program for some years in order to try and fill some of the gaps in their data. However, they had not been able to agree among themselves on the parameters of such a program. It is against this background that the Japanese decision in 1998 to implement a three-year unilateral experimental fishing program should be viewed.

II. CAUTION OR PRECAUTION?

It is important to note that, in reaching its decision to award provisional measures in the case, ITLOS did not make a qualitative assessment of the scientific evidence in the case. It did not favour one side's science against the other. What it did rather was to recognize that both sides took different views—that is, that there was scientific uncertainty as to the impact of the experimental fishing program, just as there was scientific uncertainty about the health of the stock and the necessary measures that might be needed to ensure conservation and optimum utilization (*see* Order, paras 73 and 74). It then ruled that the parties "should act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern blue fin tuna." These measures included the cessation of the unilateral experimental fishing program. It is true that it is caution, rather than precaution, that is urged, but the order does *de facto* prescribe measures that are precautionary—that is, the lack of full scientific certainty is not used as a reason for refusing to take action.

Commentators have rushed to point out that the tribunal used the word "should" in paragraph 77 rather than the familiar words of obligation, such as "must" or "shall." They conclude from this that the tribunal did not regard this requirement as mandatory and was thus reaffirming the non-binding character of the precautionary principle. It is of course true that "should" is not a general word of legal obligation, but the issue is not black and white. Just as with the more famous usage of the word "should" in Article 28 of the LOSC, the equally authoritative French text of the judgment uses the word "devraient," which is a word of obligation in French.[11] Similarly, it is worth remembering that this wording appears in the "Considering. . ." clauses of the judgment and that, in its binding order, ITLOS does unequivocally rule that

[11] Article 28 of the LOSC provides that "[t]he coastal state should not stop or divert a foreign ship passing through the territorial sea for the purposes of exercising civil jurisdiction in relation to a person on board the ship."

"Australia, New Zealand and Japan *shall* each refrain from conducting an experimental fishing programme."

That ITLOS is willing to make an order for provisional measures not on the basis of whether there is a risk of irreparable damage to the interests of one of the parties but rather "to prevent serious harm to the marine environment" is indeed a major move away from the jurisprudence of the ICJ. Judge Treves provided a very useful commentary on this issue in his separate opinion, where he suggested that the urgency of the needed measures should be judged not by whether there is a danger of an immediate or short term collapse of the stock but by whether there is a threat of serious harm posed by a "trend towards such collapse," each step of which can be cumulatively seen as serious harm. He must be correct in classifying such an approach as precautionary and in his classification of provisional measures themselves as precautionary. His approach to the urgency issue is much more useful than that of Judge Vukas who seems to have neglected the point that the unilateral experimental fishing program was planned to continue into 2000 and 2001 and that no undertaking had been received by ITLOS informing it that the program would stop at the end of the 1999 fishing season. Judge Vukas also made the interesting point that all the parties were keen to continue their existing fishing programs. His concern was that the applicants had not met the requirement to show the urgency of the requested measures, and he commented that "notwithstanding their pretended concern about the future of the stock, none of them intends to reduce the pace of its regular catch." Perhaps his remarks miss the full significance of the introduction of precaution into fisheries agreements mandated by the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement).

Under the UN Fish Stocks Agreement, there is now an obligation on state parties to be cautious and to utilize the procedures set out in Annex II. Article 6 requires that in order to preserve the marine environment as well as to protect marine living resources, the precautionary approach should be applied to conservation, management, and exploitation measures. This requirement represents a major change in the traditional approach of fisheries management, which has tended to react to management problems only after they arrive at crisis levels. The new regime is designed to allow fishing states, as well as regional and international fisheries organizations, to more easily justify pro-active measures. Indeed, from now on, such measures should be built into their system. The UN Fish Stocks Agreement also mandates that stock management standards be handled in a precautionary manner, taking into account such factors as the uncertainty of size and productivity in fish stocks, the level and distribution of fish mortality, and the impact of fishing activities

on associated or dependent species, including existing and predicted oceanic, environmental, and socio-economic conditions (Article 6(3)(c)).

The precautionary methodology in the UN Fish Stocks Agreement centres on the use of reference points. The reference points that are identified as being necessary to ensure the conservation and management of species are to be based on data collection and research programs referred to in Article 6(3)(d) and on the Guidelines for Application of Precautionary Reference Points in Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, which are set out in Annex II to the agreement. These guidelines feature strategies that prescribe biological limits on harvesting, allow only a limited risk of exceeding harvesting limits and address situations where there is insufficient information on specific species by permitting provisional reference points. In the event that precautionary reference points are approached, they must not be exceeded. If they are exceeded, then states must take immediate remedial action pursuant to Annex II of the UN Fish Stocks Agreement. In the light of these criteria, if fishing takes place above a cautious limit when information is uncertain or inadequate then it may be characterized as over-fishing. The same applies when precautionary reference points are being approached and fishing activities are not modified. This is the precautionary approach that the UN Fish Stocks Agreement mandates and that is, in effect, being applied in this Order.

Perhaps it is also worth commenting on the fact that the Order, overall, gives some support to the view that ITLOS is prepared to begin to give effect to the UN Fish Stocks Agreement despite the fact that the agreement is yet to enter into force. There is a strong reason for ITLOS taking this approach: the UN Fish Stocks Agreement is an agreement for the implementation of the LOSC, which *is* in force. The implicit endorsement of the UN Fish Stocks Agreement can be found not only, as I argue earlier, through its *de facto* endorsement of the precautionary methodology in the agreement but also through the fact that it takes a more environmental view of the issue of urgency—a view that is perhaps only expressly articulated by Judge Treves but that is also alluded to by Judge Laing's observation in a footnote to his separate opinion that there is no urgency requirement for applications for provisional measures to prevent "damage to the stocks in question" under Article 31 of the UN Fish Stocks Agreement.

III. THE SIGNIFICANCE FOR FUTURE CASES

There is as much that is left unsaid as there is said in the Order. However, this fact may be the price that is paid for the welcome move of ITLOS to what might be seen as a more collegiate approach to its judicial task. This collegiality is reflected in the overwhelming support among the tribunal judges for the decisions. It has to be said that this contrasts vividly with previous ITLOS

decisions, and it must have a very positive impact on the credibility of the tribunal itself as it seeks to establish a distinctive role.

It is surely gratifying that there has been such a sharp increase in peaceful dispute settlement under international law in matters relating to sustainable development. This increase is not only evident in the forums that are available but also in the numbers of issues being litigated. Indeed, the international disputes settlement arena has become more crowded than ever before. We witness today the ICJ with an unprecedented large docket, an increasing case law for ITLOS, the establishment of the first Annex VII Tribunal under the LOSC, not to mention the activities of the World Trade Organization bodies. One could add to this list the *ad hoc* tribunals on boundary delimitation and the distinguished panels assessing issues such as the quantum of environmental damage in the Gulf as well as the numerous national and regional courts, such as the European Court of Justice, also ruling on highly relevant issues. Waiting in the wings is the yet untried Environmental Chamber of the ICJ and a persistent proposal for a new International Environment Court.

In this context, it is of some relevance that ITLOS has ruled that the "fact that the 1993 Convention [on the Conservation of Southern Bluefin Tuna] applies between the parties does not preclude recourse to the procedures of Part XV, section 2, of the Convention on the Law of the Sea." One of the first tasks of the Annex VII tribunal will be to make a decision once again on this issue of jurisdiction that was hotly disputed by Japan. At root is a question about whether every fisheries convention with disputes settlement provisions should operate autonomously or whether they have been incorporated into Part XV of the LOSC, even if, as in this case, the 1993 SBT Convention postdates the 1982 LOSC. Although the ITLOS decision has provided a *prima facie* view on this point, it is ultimately a matter for the Annex VII tribunal to decide. The jurisdictional rounds of that tribunal will therefore provide some important markers for the way in which future natural resource disputes and possibly also international environmental disputes may be litigated.

In the final analysis, the overarching significance of this case for the development of international environmental law must be the profile that the precautionary principle, or approach, has been given by the case. Precaution has been argued in previous international litigation. In this case, however, the dispute involved the exploitation of a highly migratory species expressly mentioned in the LOSC and to which the provisions of the UN Fish Stocks Agreement, which in Article 6 and Annex II mandates the use of precaution, were designed to apply. Even if ITLOS only urged "caution" on the parties, it did oblige them also to suspend possibly damaging activities despite the presence of scientific uncertainty. This is a classic application of precautionary methodology.

Fishery Diplomacy and Science and the Judicial Function

Douglas M. Johnston

The *Southern Bluefin Tuna* cases[1] brought before the International Tribunal for the Law of the Sea (ITLOS) resulted in the prescription of six provisional measures, pending constitution of an arbitral tribunal in accordance with Annex VII to the UN Convention on the Law of the Sea (LOSC). ITLOS is authorized to take such action under Article 290(5), "if it considers that *prima facie* the tribunal which is to be constituted would have jurisdiction and that the urgency of the situation so requires."

In responding to this request by Australia and New Zealand for provisional measures, it was not necessary for ITLOS to respond directly to the applicants' allegations that Japan (the respondent) had failed to comply with its obligation to "cooperate in the conservation of the southern bluefin tuna stock by, *inter alia*, undertaking unilateral experimental fishing" for that species in 1998 and 1999.[2] Nor did ITLOS have to deal with the further allegations that Japan had "breached its obligations under Articles 64 and 116–19 of UNCLOS in relation to the conservation and management" of the southern bluefin tuna stock.[3] The latter matter certainly belongs to the province of the arbitral tribunal to be constituted by the parties in accordance with Annex VII, and arguably the former does also. Given the necessity to avoid, and to be seen to avoid, prejudging the matter on its merits, ITLOS was faced with a question of *procedural propriety*: how to interpret its own adjudicative responsibility in that provisional capacity.

It appears, from the facts presented to ITLOS, that the dispute between the applicants and the respondent arose from a *diplomatic deadlock* within the Commission for the Conservation of Southern Bluefin Tuna: Japan wished to increase the total allowable catch (TAC) of 11,750 tonnes previously agreed upon, and Australia and New Zealand wished to maintain the TAC at that level, at least through 1999 and 2000. But the difficulty of determining the scope of ITLOS's responsibility was compounded by the existence of *scientific uncertainty* regarding the degree of seriousness of the situation with which

[1] Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan), Provisional Measures Order of 27 August 1999 (International Tribunal for the Law of the Sea) [hereinafter Order].

[2] *Id.* at paras. 28 and 29.

[3] *Id.*

ITLOS was confronted, and by ITLOS's *lack of professional qualifications* to evaluate the differing scientific opinions offered by the parties on the stock. The most interesting juridical question is, then, how the majority of ITLOS chose to resolve the issue of procedural propriety in light of these diplomatic, scientific, and institutional considerations.

Any successful request for provisional measures depends on establishing the existence of some degree of urgency in the situation with which a court or tribunal is faced. But this proceeding initiated by Australia and New Zealand was based on Article 290(5), which deals with the special circumstances in which ITLOS as tribunal of initial resort must defer to a different tribunal of final resort on substantive matters and yet specifically requires the tribunal of initial resort to justify its "interventionary" action by reference to the "urgency of the situation." The existence of this language in Article 290(5), which does not arise in Article 290(1), might be interpreted as placing a particular burden of *contextual inquiry* on ITLOS in these circumstances despite the need for procedural propriety.

It is not entirely clear from the Order of ITLOS, but it might be inferred that Japan denied the existence of sufficient urgency to justify ITLOS's "intervention," since the diplomatic deadlock arose apparently from its demand for an increase in the TAC. Conversely, the applicants insisted on the presence of urgency, and yet had not apparently taken the logical position in negotiations that the TAC should be reduced! Is it possible that ITLOS was left in some doubt about the good faith of all three parties, and had no choice but to go "down the middle"?

The middle road consisted in accepting three, and rejecting two, of the applicants' requests. On the one hand, ITLOS prescribed three provisional measures essentially in conformity with requests by Australia and New Zealand: (1) that Japan (like the two other parties) shall restrict its catch to the level last agreed upon in the Commission for the Conservation of Southern Bluefin Tuna; (2) that the parties shall each ensure that no action is taken that might aggravate or extend the disputes submitted to the arbitral tribunal; and (3) that they shall each ensure that no action is taken that might prejudice the carrying out of any decision on the merits that the arbitral tribunal may render.[4] On the other hand, ITLOS declined to endorse two other, bolder, courses of action advocated by Australia and New Zealand: (1) it declined to prescribe that Japan must immediately cease unilateral experimental fishing for southern bluefin tuna, holding only that in calculating the annual catches for 1999 and 2000 "account shall be taken of the catch during 1999 as part of an experimental fishing programme," and that the experimental catch of any party shall be counted against its annual national allocation"; and (2) it declined to hold that the parties must act consistently with the

[4] *Id.* at para. 34.

precautionary principle in fishing for southern bluefin tuna pending a final settlement of the dispute.[5]

ITLOS's reluctance to adopt these two suggestions may be a source of disappointment to many environmentalists. In my view, however, the middle course chosen by ITLOS reflects a principled balance of considerations. A preliminary ruling on provisional measures is not an appropriate mode of adjudication on these two issues, which continue to divide the environmental and resource management camps in the diplomatic arena.

This particular adjudication by ITLOS, at the interface between the "traditional logic" of the law of the sea and the "progressive ethic" of international environmental law—and perhaps between the domains of "hard law" and "soft law"—is likely to be succeeded by other adjudications of this kind within the emerging framework of the "environmental law of the sea." Therefore, it is timely to address the questions posed by the editors of this *Yearbook*.

I. DID ITLOS APPLY THE PRECAUTIONARY PRINCIPLE?

Certainly not explicitly, and not directly. It is surely significant that the majority declined to endorse that principle as requested by the applicants, although we cannot tell why. At least five possible reasons come to mind: (1) that the majority felt that the precautionary concept is not yet sufficiently established in concordant state practice as a governing principle to be recognized as such by an international tribunal at the global level; (2) that ITLOS as a whole was divided on that juridical issue, but agreed that in any event it was institutionally unwise to embrace controversy so early in its history; (3) that ITLOS agreed on the relevance of the precautionary *concept*, but differed on whether to characterize it as a "principle," an "emergent norm," an "approach," or merely a type of "preventive measure"; (4) that the majority believed that to pronounce on this question, in the declaratory mode of adjudication, would bring ITLOS too close to the merits of the case, which it was not authorized to address; and (5) that the majority regarded a declaration on this question as dependent on an expert assessment of the scientific evidence, which ITLOS is not qualified to undertake.

My view is that the first two explanations are highly speculative, based on over-interpretation of the Order, whereas the last three are reasonable inferences, albeit subject to re-examination as future adjudications accumulate.

[5] *Id.*

II. WHAT ARE THE IMPLICATIONS OF THE DECISION FOR INTERNATIONAL FISHERIES LAW?

By declining to exceed its limited role as the tribunal of initial resort, under Article 290(5) of the 1982 LOSC, ITLOS avoided substantive comment on the fishery provisions of the convention, and on cognate fishery conventions such as the 1993 Convention for the Conservation of Southern Bluefin Tuna (SBT Convention). Since the nature of the respondent's argument that recourse to an arbitral tribunal should be excluded because the 1993 SBT Convention provided for its own dispute settlement procedure, ITLOS took judicial notice of that instrument for jurisdictional purposes only—that is, in order merely to reject the Japanese suggestion that ITLOS should defer to that mode of settlement.

ITLOS did not provide any reasoning for its decision to accept jurisdiction for the purpose of provisional measures under Article 190(5) on the ground that an arbitral tribunal in accordance with Annex VII would have jurisdiction over the merits. We are left to speculate on the reasoning in the minds of the majority. One line of reasoning might have been that the parties themselves had not chosen to use that method and that international law abhors a judicial vacuum when a justiciable issue presents itself. Reinforcing that argument might have been the hierarchical consideration that ITLOS, as creature of one of the most fundamental law-making instruments of the world community, is bound to prevail over all sub-global tribunals in the absence of a clear intention to the contrary on the part of the parties to the dispute.

My first impression is then that the implications of this decision for international fisheries law are procedural, not substantive. Yet some commentators might take the view that more can be gleaned from the Order without falling prey to over-interpretation. ITLOS's rejection of the Japanese argument that the dispute was scientific rather than legal in nature[6] might be construed as an encouragement to this and other tribunals to "intervene" in future fishery conservation disputes that arise, at least in part, from disagreements within the scientific community. Again, it might be argued that ITLOS seems to have been influenced by the urgency of the *global* situation as much as by the local situation in the Southern Ocean, although references to the UN Food and Agriculture Organization's Code of Conduct for Responsible Fisheries and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks as evidences of global concern were made only by certain members of ITLOS—for example, by Judge Laing,[7] Judge Treves,[8] and Judge *ad hoc* Shearer.[9]

[6] Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan), at para. 42.
[7] *Id.,* separate opinion by Judge Tullio Treves, at para. 20.
[8] *Id.,* separate opinion by Judge Tullio Treves, at paras. 10 and 11.
[9] *Id.,* separate opinion by Judge *ad hoc* Shearer, at para. 3.

As to the impact of this decision on the whaling sector, it should be noted that ITLOS rejected the applicants' request to prohibit unilateral experimental fishing by Japan. To the extent that Japan has continued to espouse the original *regulatory* philosophy of the International Whaling Commission against the majority's conversion to a largely *prohibitory* philosophy, this Order appears to be a moral and legal victory for Japan. It would be possible now for the Japanese to claim that the first international adjudication on the issue treats experimental fishing as legitimate provided it is incorporated within a science-based regulatory regime based on the TAC approach, and that the analogous activity of scientific whaling should be treated in a similar fashion. On the other hand, Japan as a whaling nation committed to the concept of regulation based on scientific findings may feel that ITLOS, in rejecting its argument that the bluefin tuna dispute was primarily a scientific dispute, has weakened the moral authority of the scientific community. Indeed the ethos pervading the Order reflects genuine, if not acute, concern over the worldwide threat to the living resources of the sea.

III. WHAT ARE THE WIDER IMPLICATIONS FOR INTERNATIONAL ENVIRONMENTAL LAW?

Since this decision is clearly not a victory for a prohibitory ethic in international environmental law, many environmentalists may be discouraged by this resort to adjudication and redouble their efforts to influence the diplomatic arena. Yet comfort may be taken in the fact that ITLOS under Article 290(5) had to tread most carefully, more so than it might have done if it had been free to deal directly with the merits of the applicants' arguments under Article 290(1).

The point should be made, however, that ITLOS is a truly global institution, reflecting a variety of cultural traditions in resource and wildlife conservation, and that the need to find a cross-cultural compromise in such a case will assert itself, whatever legal technicalities arise. Some cultural traditions reflected in international adjudication are certainly more comfortable with the middle way, rather than the winner-take-all approach to adjudication favoured by other, more confrontational, cultures.

Given the ingenuity of the legal mind, I predict that different commentators will find different implications in this Order and that it will not discourage government lawyers from returning to ITLOS to build on selected sections of its decision.

IV. WHAT IS THE SIGNIFICANCE OF THIS DECISION FOR THE LOSC DISPUTE SETTLEMENT REGIME?

Given the limitations imposed on it by Article 290(5), ITLOS went as far as it could go, I believe, without intruding on the domain of the arbitral tribunal to be set up under Annex VII. Some commentators, of course, will argue that it went too far; for example, in requiring the parties, in paragraph 90(1)(c), to abide by the TAC last agreed to in the absence of a new agreement. But this ruling can be defended on the ground that it reflects ITLOS's commitment to the principle of good faith in negotiation rather than its wish to involve itself in the merits of regulatory decisionmaking. To have limited itself to measures that are simply hortatory would have weakened faith in resort to this kind of provisional litigation. The principle of effectivity requires that ITLOS should exercise its limited jurisdiction in this kind of situation so as to have some degree of *operational* significance.

This decision has no adverse effect on the future work of an arbitral tribunal, which in any event may take several years to be completed. Under Article 290(5), that tribunal, once constituted, may "modify, revoke or affirm" the provisional measures of ITLOS. It remains to be seen what differences, if any, may emerge between the two procedures.

V. WHAT INFLUENCE MIGHT THIS DECISION HAVE ON DISPUTE SETTLEMENT PROCEDURES OUTSIDE THE LOSC FRAMEWORK?

Again, because of the limitations imposed by Article 290(5), this decision should not be over-interpreted. Many lawyers will argue that it is relevant only to other awards in the form of provisional measures, and not to mainstream litigation on substantive issues of international law that may, for example, come before the International Court of Justice. It may be, however, that requests for provisional measures become the rule rather than the exception in the repertoire of ITLOS, and that an accumulation of such decisions by ITLOS will eventually have a very considerable impact even outside the field of the law of the sea.

As pointed out by Judge *ad hoc* Shearer, ITLOS can be seen to have moved to the middle in the manner of an "agent of diplomacy" rather than as a court of law.[10] In my own view, the willingness of a tribunal, especially one of a specialized nature, to "assist the parties in resolving their dispute amicably" should be applauded. This *facilitative* function of modern international adjudication should in no way be relegated to a lower position than the more traditional *resolutive* and *declaratory* functions.

[10] *Id.*, separate opinion of Judge Laing, at para. 3.

Environmentalists disappointed with this decision may feel that it is more desirable than ever to press for a specialized tribunal to settle international environmental disputes. Yet, from my own jurisprudential perspective, the strongest argument for such an initiative would be to have a tribunal willing to adopt a facilitative, problem-solving approach, and this, as I see it, is one of the most valuable contributions of ITLOS in the *Southern Bluefin Tuna* dispute.

From the 1893 *Bering Sea Fur-Seals* Case to the 1999 *Southern Bluefin Tuna* Cases: A Century of Efforts at Conservation of the Living Resources of the High Seas

Francisco Orrego Vicuña

In examining the issues discussed before the arbitral tribunal that decided the 1893 *Bering Sea Fur-Seals* case,[1] one cannot be anything but surprised by the similarity they have with the recent submissions on the *Southern Bluefin Tuna* cases and the Order for Provisional Measures (Order) adopted by the International Tribunal for the Law of the Sea (ITLOS).[2] Only a century has lapsed between the two decisions, and yet, in the course of this time, legal concepts, principles, and rules have become to a greater extent clarified, albeit, not entirely.

In both instances, there was a question of conservation of the living resources of the high seas, beyond the limits of national jurisdiction (three and two hundred miles, respectively). Also in both cases, there was the issue of the coastal state interest in ensuring that this conservation was effectively implemented (United States and Australia and New Zealand, respectively), which led to a dispute with a distant water fishing nation (Great Britain and Japan, respectively) about the meaning and extent of this conservation. And finally, also in both instances, the international decision that was rendered recognized the depletion of the stocks and ordered measures (regulations or provisional measures, respectively) so as to protect the species in question and allow for an orderly development of the fishery with the agreement of the parties.

I. CONSERVATION ISSUES IN DISPUTE

Discussing the events prior to the 1893 arbitration, the US representative in London stated that under the circumstances his country either had to

[1] Bering Sea Fur-Seals (Gr. Brit v. U.S.), 1 International Environmental Law Reports 43, 67 [hereinafter Bering Sea Fur-Seals].

[2] Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan), Order on Provisional Measures of 27 August 1999 (International Tribunal for the Law of the Sea) [hereinafter Order].

submit to have these valuable fisheries destroyed or must take measures to prevent their destruction . . . Between these two alternatives it does not appear to me there should be the slightest hesitation . . . It is proposed to destroy this business by the indiscriminate slaughter and extermination of the animals in question, in the open neighboring sea, during the period of gestation, when the common dictates of humanity ought to protect them . . . And it is suggested that we are prevented from defending ourselves against such depredation because the sea at a certain distance from the coast is free . . . The best international law has arisen from precedents that have been established when the just occasion for them arose, undeterred by the discussion of abstract and inadequate rules.[3]

In its submissions before the arbitral tribunal, the United States queried

whether the United States and Great Britain ought not in justice to each other, in sound policy, for the common interest of mankind, and in the exercise of the humanity which all civilized nations accord to wild creatures, harmless and valuable, to enter into such reasonable arrangement by concurrent regulations or convention, in which the participation of other Governments may be properly invited, to prevent the extermination of this seal herd, and to preserve it for themselves and for the benefit of the world.[4]

These arguments strike a note of similarity with those made by New Zealand and Australia before ITLOS one century later. Indeed, the proper management and conservation of southern bluefin tuna is justified by the petitioners by reason of its intrinsic worth, its ecosystem significance, and its economic value.[5] To this end, states are obliged to take action to conserve the depleted stock, in particular, by not exceeding the previously agreed limits, above all, if there is a risk of non-recovery of such stock. The sustainability of the stock for future generations is also emphasized in this context. Experimental fishing, in this case, is denounced as being particularly harmful, being unilateral in nature, containing a high component of commercial fishing, and not complying with the agreed guidelines.

II. CONCLUSIONS OF THE TRIBUNALS

Of particular interest is the comparison one can draw between the conclusions reached by the respective tribunals. First, while ITLOS ordered the parties not to exceed the agreed annual national allocations, including therein the catch taken as part of the experimental fishing program, the arbitral tribunal issued regulations under which the parties were to prohibit the taking of seals in a sixty-mile area at all times and were to introduce such prohibitions during certain months in a specified area of the Pacific Ocean, including the

[3] Bering Sea Fur-Seals, *supra* note 1, at 50.

[4] *Id.* at 55.

[5] Arguments by Australia and New Zealand, public sitting held on 18 August 1999, at 10:00, Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan) (ITLOS/PV.99/20).

Bering Sea. It must be noted that the purpose of the measures agreed to by the tribunals is identical. Second, experimental fishing was restricted by ITLOS, unless agreed to by the parties or counted against the national allocation. The arbitral tribunal restricted fishing to licensed sailing vessels, thereby ensuring control over the fishery, and allowed for a limited exception for fishing by the indigenous population. Third, ITLOS ordered the parties to resume negotiations with a view to reaching an agreement on conservation and management measures, while the arbitral tribunal laid down regulations that were to be agreed upon by the parties. Fourth, ITLOS encouraged the parties to reach an agreement with other states and fishing entities engaged in the fishery. The arbitral tribunal omitted such a reference, as the regulations applied only to citizens of both parties, and this fact indeed clearly led to difficulties with Japan and Russia. However, this situation eventually led to the adoption of the 1911 Convention for the Preservation and Protection of Fur Seals[6] and thereupon to a number of conservation conventions in the North Pacific. Fifth, ITLOS introduced the requirement of periodical reports, and the arbitral tribunal provided for a review of the regulations by the parties every five years.

One point of apparent difference between the measures laid down by the respective tribunals is the geographical scope of their application. The 1893 regulations expressly apply only to the high seas, but a separate declaration of the tribunal invites the parties to adopt similar regulations within the limits of their sovereignty.[7] The measures prescribed by ITLOS do not expressly address this point. This omission, however, cannot be taken to mean that the measures apply also under national jurisdiction.

The provisional measures ordered by ITLOS do not apply to waters under national jurisdiction for several reasons: (1) because the applications to ITLOS by New Zealand and Australia rely on Articles 64 and 116–19 of the UN Convention on the Law of the Sea (LOSC), which jointly relate to the fisheries on the high seas; (2) because pursuant to these provisions, the applications denounce Japan for "failing to adopt conservation measures for its nationals fishing on the high seas"; (3) because ITLOS could not order provisional measures that have not been requested; and (4) because the context of the case relates to the high seas only.[8]

A different interpretation would amount to a rearrangement of the provision of Article 297(3)(a) of the LOSC, which does not oblige a state party to submit fisheries disputes relating to its sovereign rights in the exclusive economic zone to binding dispute settlement, and would deeply upset the meaning of the 1995 Agreement for the Implementation of the Provisions of the LOSC Relating to the Conservation and Management of Straddling Fish

[6] *See* Bering Sea Fur-Seals, *supra* note 1.

[7] Bering Sea Fur-Seals, *supra* note 1 at 76–7.

[8] *See*, in particular, the statements by James Crawford and Henry Burmester (ITLOS/PV.99/21), sitting held on 18 August 1999.

Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement),[9] which expressly keeps the high seas fishing issues separate from those that take place under national jurisdiction.

III. INTRODUCING THE PRECAUTIONARY APPROACH

While it has become common academic practice to read what was not said into the decisions of international tribunals, this author will refrain from so doing. The petitioners expressly founded their request for provisional measures before ITLOS on the precautionary approach. Japan denied the relevance of this principle in the case.[10] ITLOS did not expressly address the issue but, in prescribing the measures, made use of the concept and its implications.

It should first be noted that the petitioners rightly emphasized the difference between the precautionary principle and the precautionary approach. The former entails the risk of leading to a ban or a moratorium on economic activity, while the latter provides the necessary flexibility to allow for the undertaking of activities within the restraints mandated by the needs of conservation. The principle did not prove to be acceptable in the context of the UN Fish Stocks Agreement, but the approach was subject to agreement.

Although ITLOS did not specifically address this issue, it did refer to the need to act with "prudence and caution" in order to ensure the effective conservation of the stocks.[11] In turn, ITLOS associated the measures that were adopted with both "ensuring conservation and promoting the objective of optimum utilization of the stock,"[12] implying, thereby, that exercising prudence and caution does not require the banning of the activity in question and maintains the balanced approach reflected in the fisheries provisions of the LOSC. Most importantly, ITLOS also referred expressly to the scientific uncertainty surrounding the measures required for the appropriate conservation of the stocks,[13] which is the starting premise for the operation of either the precautionary principle or approach.

In developing its rationale for the measures adopted, ITLOS made a broad opening statement about the conservation of the living resources of the sea being an element of the protection and preservation of the marine environment.[14] This statement is indeed correct, but it could lead too far if the statement is not qualified, which ITLOS managed to do in associating conservation with optimum utilization and other criteria noted earlier in the article.

[9] 34 ILM 1542 (1995).

[10] *See*, in particular, the statements made by K. Togo, public sitting held on 18 August 1999, at 15:00, Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan) (ITLOS/PV.99/21).

[11] Order, *supra* note 2 at para. 77.

[12] *Id.* at para. 78.

[13] *Id.* at para. 79. *See also* joint declaration by Vice-President Wolfrum, Judges Caminos, Marotta Rangel, Yankov, Anderson, and Eiriksson.

[14] *Id.* at para. 70.

The end result of this approach by ITLOS was the specific order that overall catches should not exceed the total allowable catch (TAC) agreed upon by the parties, including therein the catches of any experimental fishing program. This order thus leaves the specific determination of the TAC and the allocation of national quotas to negotiations between the parties and possibly also to negotiations with third states. This solution may be the more realistic one.

The precautionary approach is perhaps nothing more than an expression of prudence and reasonableness. It is therefore possible to reach the same result whether or not one resorts to the precautionary approach. Many decisions of international tribunals on fisheries questions, including the decision in the 1893 *Bering Sea Fur-Seals* case, have been inspired by such elements of prudence and reasonableness, even at times when the concept of precaution had not been advanced. It follows that the ITLOS Order on Provisional Measures, which is both prudent and reasonable, is perfectly in line with the meaning of the precautionary approach as presently formulated. The separate opinions of Judges Laing[15] and *ad hoc* Shearer[16] expressly address the extent of the precautionary approach in ITLOS's Order.

IV. IMPLICATIONS FOR INTERNATIONAL FISHERIES LAW

ITLOS's decision is the first to apply the precautionary approach within the limited meaning discussed earlier to a dispute on high seas fisheries, and it is therefore to be welcomed.

It is of interest to note in this respect that this implementation of the approach occurred independently of the UN Fish Stocks Agreement, which is where the approach is embodied. However, as Judge Treves has rightly noted, this fact does not mean that the precautionary approach is a part of customary international law.[17] As concluded earlier in this article, any decision meeting the standards of prudence and reasonableness will be in line with the precautionary approach, and this does not require that either a convention or customary law be found as a ground of justification. It is therefore to be expected that increasingly this line of argument will be followed by international decisions on fisheries disputes.

In regard to the implications of this Order for the international whaling regime, two considerations must be kept in mind. The first is that fisheries arrangements are generally inspired by the balanced approach reflected in the fisheries provisions of the LOSC—that is, they aspire both to conservation and optimum utilization. The whaling regime, however, is based solely on the conservation element, leaving, at least, at present, no room for considerations

[15] *Id.*, separate opinion by Judge Laing, at paras. 12 et seq.
[16] *Id.*, separate opinion by Judge *ad hoc* Shearer.
[17] *Id.*, separate opinion by Judge Tullio Treves, at paras. 9–11.

related to the element of optimum utilization. The second consideration is that in the whaling regime scientific uncertainty does not apparently exist—that is, the scientific evidence points to a situation of extinction of the stock. It follows that there would be no room either for flexibility or for a negotiated solution between the parties, as allowed under the precautionary approach. It is rather the more stringent standard of the precautionary principle that is being applied in respect of whaling. In view of the fact that the situation of the whaling regime is entirely different from that of the southern bluefin tuna, ITLOS's Order cannot be held to have a specific implication for the whaling regime, except in the general sense that agreed solutions or catch levels must be respected—a conclusion that would be reached in any event under international law.

V. IMPLICATIONS FOR INTERNATIONAL ENVIRONMENTAL LAW

Two implications can be noted in this context. The first is that the Order opens the way for a continuing application of the precautionary approach, not only in respect of fisheries but in other matters as well. The precautionary approach and its in-built flexibility are to be generally preferred to the more drastic view and implications of the precautionary principle. It can even be imagined that the "approach" will begin to replace the "principle."

The second implication is that increasingly states will be held to abide by the statements made before international tribunals. Just like in the *Gulf of St. Lawrence* case, where France was held to abide by its statement that a given fishing quota would not be exceeded,[18] ITLOS has now held that Japan's agent before the tribunal made a clear commitment that its experimental fishing program for 1999 would end by a given date.[19] Statements of this kind are thus increasingly becoming a source of enforceable obligations under international law and, particularly, under international environmental law.

VI. DEVELOPMENT OF DISPUTE SETTLEMENT ARRANGEMENTS

ITLOS has made in this case a broad jurisdictional linkage. Notwithstanding its recognition that the 1993 Convention for the Conservation of Southern Bluefin Tuna (SBT Convention) applies between the parties to the case, the tribunal has held that this does not exclude the right to invoke the provisions on conservation of the LOSC[20] nor does it "preclude recourse to the procedures in Part XV, section 2, of the Convention on the Law of the Sea,"[21] presumably because under the SBT Convention dispute settlement arrangements

[18] *See*, generally, Haritini Dipla, *L'Affaire concernant le filetage à l'interieur du Golfe du Saint-Laurent entre le Canada et la France*, 32 Annuaire Français de Droit International 239 (1986).

[19] Order, *supra* note 2, at para. 83.

[20] *Id.* at para. 51.

[21] *Id.* at para. 55.

are non-binding. It follows that in the tribunal's view any matter dealt with under a fisheries convention can be brought into a relationship with the LOSC and, thus, can be transformed into a dispute on the interpretation or application of the latter, which is enough to find jurisdiction under Article 298(1).

While the connection between the two conventions might be close in this case,[22] such a jurisdictional finding entails the danger of rendering meaningless any dispute settlement arrangement made under a separate convention and of the binding arrangements of the LOSC prevailing. It would suffice, for example, for a party to notify its request for arbitration to another party in order to enable it to request provisional measures from ITLOS while the arbitral tribunal is constituted. The issue of arbitration without privity, which has been discussed extensively in the International Center for Settlement of Investment Disputes and other arbitration forums, reappears rather unexpectedly in this context.

Perhaps the jurisdictional approach might be justified in this case, but it would certainly introduce a disquieting factor if it became the standard approach for jurisdictional finding in ITLOS proceedings. If this were the case, gradually state parties would begin to turn away from the tribunal.

Two other aspects are important to note in respect of the development of dispute settlement arrangements in this case. The first is that ITLOS reiterates the binding nature of provisional measures by using the term "prescribe" and by referring expressly to their binding force, as it had done earlier in the Order for Provisional Measures in the *SAIGA* case.[23] The second aspect is that the tribunal follows the definition of a legal dispute adopted repeatedly by the International Court of Justice—a matter that has in many cases been the source of different interpretations.[24] Quite naturally, ITLOS safeguards the function of the arbitral tribunal, once constituted, in order to modify, revoke, or affirm the provisional measures prescribed, as mandated by the LOSC.[25]

VII. IMPLICATIONS FOR OTHER DISPUTE SETTLEMENT FORUMS

The success of ITLOS lies in its balanced approach to the rights and interests of the contending parties, an approach that is indeed the spirit and the approach of the LOSC and international law generally. This author has criticized the *SAIGA* series of decisions because they lean excessively towards the

[22] Statement by Bill Mansfield, public sitting held on 18 August 1999 at 10:00, Southern Bluefin Tuna (N.Z. v. Japan; Austl. v. Japan) (ITLOS/PV.99/20).

[23] Order, *supra* note 2, at paras. 86–7; *see also* M/V SAIGA (Saint Vincent v. Guinea), Order on Provisional Measures of 11 March 1998 (International Tribunal for the Law of the Sea) at para. 25. The Order for provisional measures in the *SAIGA* case was delivered by ITLOS on 11 March 1998; the judgment on the merits was given on 1 July 1999.

[24] Order, *supra* note 2, at para. 44.

[25] *Id.* at para. 65.

rights and interests of flag states as opposed to the rights of coastal states.[26] The Order in the *Southern Bluefin Tuna* cases is indeed more balanced.

To this extent, ITLOS's Order is likely to influence other dispute settlement forums and orientate them in the direction of prudence. Such prudence is particularly appropriate in the context of the idea of an international environmental tribunal, which is becoming increasingly doubtful as a proposition, in part because of concerns over the proliferation of dispute settlement forums and in part because of the perceived danger that such a tribunal might become a rather radicalized forum on the subject matter.

VIII. ONE HUNDRED YEARS

The 1893 arbitral tribunal asked both litigants to consider the following measure:

> In view of the critical condition to which it appears certain that the race of fur-seals is now reduced in consequence of circumstances not fully known, the Arbitrators think fit to recommend both Governments to come to an understanding in order to prohibit any killing of fur-seals, either on land or at sea, for a period of two or three years, or at least one year, subject to such exceptions as the two Governments might think proper to admit of.[27]

ITLOS has not gone that far—it has simply ordered the parties to abide by their agreed levels and allocations. The precautionary approach has thus been substituted for the precautionary principle that is evident in that early historical experience. So much, yet so little, has changed in a hundred years.

[26] Francisco Orrego Vicuña, *L'Affaire SAIGA et l'interpretation judiciare des droits et devoirs des Etats dans la zone economique exclusive*, Espaces et Ressources Maritimes (2000).

[27] Bering Sea Fur-Seals, *supra* note 1, at 76.

Intellectual Property and Agrobiodiversity: Towards Private Ownership of the Genetic Commons

Mary E. Footer

I. INTRODUCTION

The rapid erosion of plant genetic resources raises concerns not only about the sustainability of the planet's biodiversity but also about humanity's access to seed in order to grow primary food crops for its basic survival. This article examines the encroachment of private rights, principally in the form of intellectual property rights, upon public goods and institutions that are concerned with the conservation, use, and management of plant genetic resources for agricultural purposes (PGRFA)[1]—in short, the trend towards "private ownership of the genetic commons"[2]— and analyzes some of the consequences of this process for the world's agrobiodiversity.

The starting point of this discussion is the commodification of the sources of propagation that are usually recognized as a public good—knowledge about which is held in the public domain. Since time immemorial, farmers have planted back their harvested seeds and improved basic crops such as rice, maize, millet, and wheat without asserting individual or collective ownership over them.[3] Additionally, some 3,000 varieties of essential crop germplasm have been brought within *ex situ*[4] gene bank collections, which

The following text takes account of events through 15 May 2000.

[1] Plant genetic resources for food and agriculture [hereinafter PGRFA] are the genetic material of plants used for agricultural purposes, which are of value as resources for present and future generations of humans. As sub-species of the wider concept of genetic resources (and plant genetic resources or PGR) they form part of what is commonly known as biological diversity (or "biodiversity"). PGRFA (1) form part of an ecosystem, (2) are a species, and (3) constitute genetic diversity.

[2] The term "private ownership of the genetic commons" is taken from John Frow, *Gift and Commodity, in* Time and Commodity Culture: Essays in Cultural Theory and Postmodernity 102, at 198 (1997). An earlier version of this essay appears in John Frow, *Information as Gift and Commodity* 219 New Left Review 89, at 94 (September/ October 1996).

[3] Gurdial Singh Nijar, *Sui Generis Law for Plant Varieties: Preserving the Knowledge and Creativity of Traditional Breeders—A Third World View* (Third World Network, 22 April 1999), <http://www.twnside.org.sg/access.htm>.

[4] *Ex situ* conservation is "the conservation of components of biological diversity outside their natural habitats," Convention on Biological Diversity, 5 June 1992, Article 2, 31 ILM 818 (1992) (entered into force 29 December 1993) [hereinafter CBD]. Examples include gene bank and botanical gardens' collections; *see* for an overview Sam Johnston, *Conservation Role of Botanic*

are administered by research stations as part of the network of the Consultative Group on International Agricultural Research (CGIAR).[5] The purpose of this international agricultural research program is to develop and promote science-based solutions to problems arising from constraints on the production and sustainability of basic food crops. Until now, the germplasm in the CGIAR gene bank collections has been freely accessible (free in the sense of unrestricted, not necessarily in the sense of unpaid access) and exchangeable. Internationally, scientists and many governments consider this germplasm to be held in trust for the benefit of the international community, in particular, for developing countries, and consider it to form part of the common heritage of humankind.[6]

The international system for the conservation and management of PGRFA, which is principally supported by the CGIAR network and is operated through the UN Food and Agricultural Organization (FAO) Global System for the Conservation and Utilization of Plant Genetic Resources (Global System),[7] has from its inception come under pressure from private operators in the seed, agrochemical, and pharmaceutical industries to control access to and use of PGRFA for research and development in agrobiodiversity. In the following discussion, it will be established that developments within the FAO and the CGIAR over the past thirty years have worked hand in glove with the further privatization and commodification of crop germplasm.

Two developments are noteworthy—the first comes about as a result of the privatization process and the second stimulates that process. First, there has been a gradual paradigm shift in the attitude towards PGRFA. They have gone from being thought of as a public good, freely accessible and exchangeable for conservation and use by all to being thought of as a private good that can be bargained for because they are subject to claims and entitlements that

Gardens and Gene Banks 2 Review of European Community and International Environmental Law (RECIEL) 172 (1993). It is distinguishable from *in situ* conservation, which is "the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties," CBD, *id.*, at Article 2.

[5] For further details, *see* note 40.

[6] This has particular relevance for the future of these *ex* situ collections of germplasm, stored in international agricultural research centres that are part of the Consultative Group on International Agricultural Research [hereinafter CGIAR], as a result of a revised International Undertaking on Plant Genetic Resources [hereinafter IUPGR] and its relationship to the CBD, as well as requests for grants of intellectual property protection that have been made in recent years. For more information about this subject, *see* section VI in this article.

[7] Established by the United Nations Food and Agriculture Organization [hereinafter FAO] in 1983 by Res. C 9/83, FAO Conference, 22nd Sess., the FAO Global System for the Conservation and Utilization of Plant Genetic Resources [hereinafter FAO Global System] is an intergovernmental framework for the safe conservation, promotion of unrestricted availability, and sustainable utilization of PGRFA for present and future generations.

are protected by national intellectual property regimes.[8] Where PGRFA remain a public good, they may still be subject to shared access as part of a multilateral system of access and benefit-sharing. Second, two multilateral instruments, both of which have something to say about the conservation and use of PGRFA, though in different contexts, aid the current trend towards private ownership.

The entry into force of the Convention on Biological Diversity (CBD) has hastened the assertion of sovereignty over genetic resources and, as a corollary thereof, the exercise of jurisdiction by many parties to the CBD. In the context of PGRFA, this fact has meant that several countries have already adopted, or are in the process of adopting, legislation that restricts access to genetic resources, imposes conditions on access, and makes them subject to prior informed consent. Similarly, the ongoing review at the World Trade Organization (WTO) of Article 27.3(b) of the Uruguay Round Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs Agreement)[9] makes clear that WTO members must legislate for patents, plant variety protection, or a *sui generis* system (or a mixture thereof) yet leaves considerable flexibility to individual governments with respect to the scope of that legislation.

The purpose of this article is to review these developments and to examine how the public and private spheres of operation of the global system for conservation and use of PGRFA are being reconciled. An attempt will also be made to determine whether the increase in private ownership of PGRFA means that the future for a multilateral exchange system of crop germplasm, which is freely accessible, lies in jeopardy.

II. AGROBIODIVERSITY AND THE COMMODIFICATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

It is widely accepted that genetic diversity is the main concern of plant genetic resource programs for agricultural development around the globe since these programs hold the key to humankind's basic food sources and, hence, to its survival.[10] Nevertheless, there are two discernible facts about agrobiodiversity that pull in opposite directions.

[8] *See* Thomas Cottier, *The Protection of Genetic Resources and Traditional Knowledge: Towards More Specific Rights and Obligations in World Trade Law* 1 J. Int'l Econ. L. 555, at 556 (1998).

[9] Agreement on Trade-Related Aspects of Intellectual Property Rights [hereinafter TRIPs Agreement], 15 April 1994, Annex 1C to the Marrakesh Agreement Establishing the World Trade Organization [hereinafter WTO Agreement], *in* GATT Secretariat, *Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts* (1994) 365; also available at <http://www.wto.org>; for further details, *see* section IV.5.

[10] Crucible Group, People, Plants and Patents: The Impact of Property on Trade, Plant Biodiversity, and Rural Society at 4–7 (1994), and Cottier, *supra* note 8, at 558.

First, PGRFA are being eroded at an alarming rate due to intensive agricultural practices and monoculture.[11] At the same time, farmers and modern plant breeders must rely on genetic variation in primitive forms and wild species, land races, and traditional varieties in order to produce better adapted and higher yielding crop plants. The benefits of genetic conservation are long term and rarely predictable. Second, and no less important, is the fact that the rapid advance of technology, particularly in molecular biology and genetic engineering, has introduced new players into the field. Major agricultural and pharmaceutical companies understand the potential of isolating and exploiting specific genetic characteristics that result in greater opportunities to produce stronger pest- and disease-free crops and, at the same time, to improve yields.[12] However, the cost of research and development (R and D) is substantial, and companies perceive the acquisition of property rights in PGRFA as the only way in which to ensure the recuperation of some of the vast amounts of money spent on R and D.

With increased human knowledge being applied to plant genetic resources, the perception of genetic resources has changed. Whereas natural resources have traditionally been identifiable by their physical features as movable and immovable property (land, sea, airspace, fish, forests, and so on), genetic resources have a dual character. They too exist in the movable, tangible form of genetic material, but they also contain genetically encoded information that is intangible, yet subject to appropriation. This information is either exclusively contained in nature and is untouched by humans, or it exists in combination with human knowledge on how to make the best use of such information.[13] In the latter case, the genetic resource may be regarded as a commodity.

Since information cannot be precisely located—it is both indeterminate and ubiquitous—two problems arise with respect to its "commodification."[14]

[11] One estimate puts this at 1–2 per cent of all PGRFA per annum; *see* Hope Shand, Agricultural Biodiversity and Farm-Based Food Security 1 (1997). *See* FAO, Report on the State of the World's Plant Genetic Resources for Food and Agriculture (Prepared for the International Technical Conference on Plant Genetic Resources, Leipzig, Germany, 17–23 June 1996) 9–15 (1997), on the "The State of Diversity," with specific reference to modern, commercial agriculture as the chief cause of loss of genetic diversity, *id.,* at 13.

[12] A more cynical view is that, although biotechnology has the possibility of weaning agriculture of chemical pesticides and fertilizers by enhancing genetic defence and growth mechanisms, much biotechnological research is directed towards the consumption of chemicals; *see* Jack R. Kloppenburg, Jr., First the Seed: The Political Economy of Plant Biotechnology, 1492–2000, 245–51(1988) and David S. Tilford, *Saving the Blueprints: The International Legal Regime for Plant Resources* 30 Case W. Res. J. Int'l L. 373 (1998), who refers to pesticides and fertilizers as the "symbiotic paring of chemical and crop," with reference to the role of parent chemical and subsidiary seed companies, *id.,* at 398.

[13] Cottier, *supra* note 8, at 558.

[14] Commodification refers to the process whereby the commodity form is extended to an object that is produced for use and exchange. Many of the observations about commodification and its relationship to PGRFA draw on the second part of John Frow's essay on *Gift and Commodity*, *supra* note 2, which in turn relies on Kloppenburg's observations in Kloppenburg,

The first is the problem of defining and enforcing exclusive property rights and the second is the problem of attaching exchange value to something of almost limitless value—that is, of making an abundant good scarce.[15] The means of achieving this commodification are to be found in the protection of intellectual property rights (IPRs). Applied to the specific context of plant genetic resources, the genetic material, or germplasm is made up of a combination of genes (genotypes), which are held in cell lines and which determine the physical and functional characteristics of a plant. However, it is the genetic information related to such material and its expression (phenotype) that is most valuable and for which an IPR is sought.[16]

The impetus for the private appropriation of plant varieties, which has transformed the management and conservation of PGRFA across the globe, has been the appearance of hybridization in the seed industry in the United States and Europe, beginning in the 1930s.[17] Hybridization introduced a plant breeding technique that was capable of providing more productive varieties but which eliminated the possibility of saving and replanting the seed. While the process of hybridization stimulated the movement to collect and analyze untapped plant genetic resources, it also, at the same time, had significant consequences for genetic erosion, which led to early initiatives aimed at conservation.[18] The incentive for seed improvements moved to the agro-industry, which was in a position to support agricultural research.

With hybridization came the commodification of PGRFA, which wrought a change in farmer preferences and a fundamental transformation of the agricultural industry.[19] Whereas at the beginning of the last century, farmers were largely self-sufficient in their own means of crop production, many of the factors of agricultural production moved "off-farm," including the industrial production of agricultural inputs, one of which is seed.[20] Furthermore, hybridization fused the identity of seed as a product and a means of produc-

supra note 12, at 9–11. Frow posits the theory that the commodification of real property arises out of the enclosure movement in England from the fifteenth to the nineteenth century, which changed communal and customary notions of real property and led to a wholesale transformation of agrarian practices during which rights were assigned away from their users. The same process of enclosure today informs the commodification of information, by privatizing it and removing it from the commons.

[15] Frow, *Gift and Commodity*, *supra* note 2, at 189.

[16] Carlos M. Correa, *Sovereign and Property Rights over Plant Genetic Resources, Background Paper No. 2 for the Secretariat of the FAO Commission on Plant Genetic Resources*, 2, at note 4 (1994).

[17] Hybridization is the process of crossing two or more different biotypes of the same species, or biotypes from two different species; *see* for a definition of "hybrid," Crucible Group, *supra* note 10, at 110. In the US, hybrid corn seed had already made significant leaps and bounds in one decade from 1937 to 1945; *see* Tilford, *supra* note 12, at 386, citing Jean-Pierre Berlan and Richard C. Lewontin, *The Political Economy of Hybrid Corn,* Monthly Review 35 (July 1986).

[18] Robin Pistorius, Scientists, Plants and Politics: A History of the Plant Genetic Resources Movement 5 (1997).

[19] Tilford, *supra* note 12, at 387.

[20] Kloppenburg, *supra* note 12, at 31.

tion. In Jack Kloppenburg's words, "the progeny of hybrid seed cannot economically be saved and replanted, it has use-value and exchange-value only as grain, not as seed."[21]

Hybridization also led to the creation of a new kind of monopoly right over the germplasm of sexually reproducing plants, including most commercial agricultural crops, in the form of plant variety protection,[22] which grants to breeders of new plant varieties an exclusive property right on the basis of a set of uniform and clearly defined principles. At the same time, patents, which were formerly only applied to the *inventions* of industrial processes and not to the *discoveries* of the laws of nature on which they are based, were increasingly tolerated for ownership of the products of nature. The only requirements, according to most countries' patent laws, are that the inventor should have changed the product for which a patent is sought and that it must conform to the requirements of utility, novelty, and non-obviousness.[23]

While few countries have patent laws that extend to plant genetic resources, there are significantly more countries that have adopted plant variety protection legislation, thereby conforming to one of the acts of the International Union for the Protection of New Varieties of Plants (UPOV), usually the 1978 or 1991 version.[24] Protection is granted to new varieties of plants as long as they are distinct from existing, commonly known varieties, stable, and sufficiently homogenous. In addition, the new variety must be new in the sense that it must not have been commercialized prior to certain dates, which are established by reference to the date of the application for protection.

[21] *Id.,* at 11. Kloppenburg maintains that, for corn, there is a further difference between open-pollinated varieties and hybrid varieties. Seed from hybrid grain varieties produce a diminished yield when saved and replanted, unlike open-pollinated varieties. Hybridization of corn "uncouples seed as "seed" from seed as "grain" and thereby facilitates the transformation of seed from a use-value to an exchange value." Thus, farmers have to return to the market each year for a fresh supply of seed. Moreover, in the case of hybrid corn, breeding peculiarities mean that the parent lines of a variety can be developed and maintained as a trade secret, thus endowing the hybrid seed with a proprietary quality, *id.*, at 93.

[22] Kloppenburg, *supra* note 12, at xiii.

[23] Nevertheless the patenting of the products of nature does cause controversy; *see* the successful challenge to the "Neem Tree patent," issued in 1992 by the US Patent Office under No. 5,124,349 to W.R. Grace & Co., and the issues of commodification of life forms that the case raised; reported in Emily Marden, *The Neem Tree Patent: International Conflict over the Commodification of Life* 22 B. C. Int'l & Comp. L. Rev. 279 (1999). Similarly, a patent on turmeric granted to the University of Mississippi Medical Center in December 1993, under US patent number 5,401,504, has been invalidated by the US Patent Office, upon the request of India's Council for Scientific and Industrial Research, noted in Pat Roy Mooney, *The Parts of Life: Agricultural Biodiversity, Indigenous Knowledge and the Role of the Third System*, Development Dialogue 152 (Special Issue, 1998).

[24] The acronym UPOV is derived from the French name of the organization—Union internationale pour la protection des obtentions végétales—which was established by the International Convention for the Protection of New Varieties of Plants, 2 December 1961, 815 UNTS No. 11609 (1972) (entry into force 10 August 1968). The convention was revised on 10 November 1972, 23 October 1978, and 19 March 1991. The 1978 amendments entered into force on 8 November 1981 and the 1991 amendments entered into force on 24 April 1998.

The grant of exclusive intellectual property rights in crop germplasm either by means of patents or plant variety protection is increasingly falling within the private domain of agrochemical and pharmaceutical companies. This development means that the seeds of many major agricultural crops have been transformed from "an infinitely reproducible public good to a scarce commodity."[25]

III. THE DEVELOPMENT OF PUBLIC AND PRIVATE SPHERES FOR THE MANAGEMENT AND CONSERVATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

How did this gradual transformation towards private ownership of plant genetic resources come about, and in what way is it related to the international developments within the public and private spheres of PGRFA management and conservation? This section looks at five major developments. The first of these was the emergence of a mixture of public and private approaches towards ownership, use, and conservation of PGRFA, which is related to the expansion of *ex situ* collections of crop germplasm by scientists, acting individually or collectively. The initial emphasis of this development was on public research in order to yield new varieties of crop germplasm. However, private research initiatives have gradually started to play a more prominent role.

Until the late 1950s, scientists at the international level emphasized the development of germplasm collections through international assistance programs, crop centres, and through international training and education programs to those individuals who could use them. Only a few gene banks exchanged genetic material, and many of these were inadequate for international agricultural research because the collections were considered too unsystematic and unreliable, or both.[26]

The Rockefeller Foundation financed and organized the first extensive and targeted *ex situ* collection of wheat and maize germplasm. Alongside this undertaking, the US Department of Agriculture set up four regional plant introduction stations, which included gene or seed banks and a long-term cold storage facility in the 1950s that formed the model for later *ex situ* collections outside the United States.[27] Meanwhile, in Europe, the European Society for Research and Plant Breeding, which was established in the early 1960s, was the first organization to set up a collection network that was originally intended to be eco-geographical and yet ended up being crop-specific.[28]

[25] Frow, *Gift and Commodity*, *supra* note 2, at 199.
[26] Pistorius, *supra* note 18, at 1–5.
[27] Kloppenburg, *supra* note 12, at 159.
[28] Pistorius, *supra* note 18, at 8–10, especially at page 9 for the work of the European Society for Research and Plant Breeding (EUCARPIA) and for the establishment of four regional gene banks in Europe in the 1960s.

Additionally, there were networks of private plant breeders who used PGRFA as raw materials for their work—for example, multinational pharmaceutical companies that used such resources to develop new drugs or private nurseries that used them to develop new lines as well as farmers seeking to use and improve on old strains.[29] These private efforts at collection and conservation, through informal (and sometimes private) networks together with existing collections in the United States and Europe, served the interests of the breeders alone and not the international community at large. Conservation and use became linked with storage in industrialized countries and tied to plant breeding institutes.

At the same time, many developing countries witnessed a rapid replacement of their old adapted "land races" that ensured constant crop production[30] with modern varieties of "advanced" or "elite" breeders' lines from the industrialized world that produced high crop yields. The scope of plant variety protection laws, formulated in industrialized countries, supported these breeding and export practices. Thus, germplasm containing vital genetic information from the developing world[31]—sometimes the result of millennia of breeding and improvement by peasant farmers—became the property of powerful multinational seed, agrochemical and pharmaceutical companies that then demanded royalties for their use in the countries of origin.[32]

The second development was in the public sphere and related to the intergovernmental initiative on conservation and use of PGRFA, with particular emphasis on the role of the FAO. The 1961 Technical Meeting on Plant Exploration and Introduction, which was hosted by the FAO, was the first

[29] *See* Johnston, *supra* note 4, at 176.

[30] Landraces are varieties of crop plant species that have been developed by farmers selecting plants that are adapted to pests, diseases, and local environmental conditions. They are prized for their genetic diversity since, at least, peasant farmers can rely upon some of the seed sown each year to yield a crop. Kloppenburg, *supra* note 12, at 48–9, shows that many of the staple crops, which now dominate the agricultural economics of industrialized nations, for the most part, are not indigenous to North America or Europe but are found in the so-called Vavilovian centres of genetic diversity (named after the Russian botanist N.I. Vavilov who first charted the centres of origin of the world's most important crops, almost all of which are in the developing world). Some examples include wheat and barley (Asia Minor, Mediterranean lands, Ethiopia), corn and potato (Peru, Ecuador, Bolivia).

[31] Kloppenburg, *supra* note 12, at 49, describes the development of the world's most productive agricultures in advanced industrialized countries as being predicated on "transfers of plant germplasm from the periphery."

[32] *See* Frow, *Gift and Commodity*, *supra* note 2, at 201. Pat R. Mooney, *Genetic Resources in the International Commons* 2 RECIEL 149–50 (1993), emphasizes the "bio-poor" and the "bio-rich" in North-South crop germplasm transfers and the inequities of royalty distribution; *see also* his seminal work: Pat Roy Mooney, Seeds of the Earth: A Private or Public Resource (1979), which was the first attempt to conceptualize the economic value of genetic resources for the northern agro (chemical) industry. It postulated that genetic resources are instrumental in capital accumulation and that corporate actors have an interest in protecting PGRFA through the industrial patent system. Mooney was also of the view that control of PGRFA both in the public and private sectors, in terms of conservation and use, lacked transparency and was detrimental to developing countries.

truly inter-governmental initiative to streamline germplasm conservation and distribution with the establishment of a panel of experts to advise and assist efforts in finding and mapping PGRFA. At a second Technical Conference on the Exploration, Utilisation and Conservation of Plant Genetic Resources, organized by the FAO and the International Biological Programme (IBP) in 1967, a global strategy for the conservation of plant genetic resources was mapped out with the twin aims of stemming the "genetic erosion" of land races and wild relatives for modern agriculture and of managing the demands of the growing agrochemical industry for a steady flow of new germplasm.[33]

The assembled scientists (mostly geneticists and breeders) favoured a broad strategy on conservation and use of PGRFA that was practical, economical, and that could be centralized in long-term *ex situ* storage sites, in preference to *in situ* conservation. During the third FAO/IBP Technical Conference on Crop Genetic Resources, which was held in 1973, the panel of experts formulated a number of sampling strategies for *ex situ* collections. Crucially, it lacked proper institutional and financial backing, primarily because allocating money in favour of the conservation of genetic resources was not likely to be supported by developing countries at the FAO.[34]

The third major development also operated within the public sphere but had private and non-governmental elements. As a counterbalance to the scientific community, represented by the panel of experts, a series of International Agricultural Research Centres (IARC) was established across the globe, based in developing countries. Each IARC was given the task of improving a particular set of crops in a particular region—a practice that has continued up until the present day.[35] The role of these agricultural research centres around the globe was pivotal in channelling "flows of genetic information from the gene-rich periphery to the gene-hungry center."[36]

In 1971, the Consultative Group on Agricultural Research (CGIAR), led by the Rockefeller and Ford Foundations, was established to coordinate and

[33] The 1967 FAO/International Biological Programme meeting led to the influential publication of the conference proceedings: Otto H. Frankel and Erna Bennett, eds., Genetic Resources in Plants: Their Exploration and Conservation (1970). Further details of these two meetings can be found in Pistorius, *supra* note 18, at chapter 2.

[34] Pistorius, *supra* note 18, at 52.

[35] In fact one of these IARCs—the Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT) or International Center for Maize and Wheat Improvement, established in Mexico in the late 1960s—led the development of high-yield varieties (so-called "super crops") of corn and wheat that increased agricultural production and dramatically boosted world food supplies. This was the beginning of the much-touted Green Revolution, the negative aspects of which eventually came to outweigh the positive gains due to the abandonment of diverse, relatively low-yielding landraces, or traditional cultivars, in favour of "elite breeds" that were introduced (or re-introduced) into developing countries with disastrous results as they could not withstand disease and pests; for further details, *see* Tilford, *supra* note 12, at 391–7.

[36] Kloppenburg, *supra* note 12, at 161.

support the activities of the IARCs.[37] It currently consists of an informal association of fifty-seven public and private sector members, drawn from developed and developing countries, private foundations, and development banks and is based upon an informal arrangement between the World Bank, the UN Development Programme (UNDP), and the FAO.[38]

Some members of the panel of experts (through the FAO) realised that the CGIAR collections could embrace a coordinated and extended global network of gene banks, and their proposal for a "World Network of Genetic Resources Centres" found favour with the CGIAR's Technical Advisory Committee at a meeting held at Beltsville, Maryland, in March 1972. It was to be managed from within the FAO by a coordinating centre that later became the International Board for Plant Genetic Resources.[39]

Central to the establishment and management of gene banks in new IARCs located in the germplasm rich countries of the southern hemisphere was the understanding that PGRFA form part of humanity's collective "genetic estate" or are part of the common heritage of humankind and not subject to individual appropriation. Since PGRFA are a freely available commodity, the only cost associated with their acquisition is that of collecting the germplasm. In practice, free availability translates into the free exchange paradigm, which mandates the unrestricted exchange of banked germplasm among plant breeders and other scientists.[40] The 1972 Beltsville meeting moved the conservation of plant genetic resources from the purely scientific realm into the field of "donor" politics[41] and put agrobiodiversity on the map.

[37] Jean Pierre Dobbert, *Food and Agriculture, in* United Nations Legal Order 907, at 930 and note 63 (Oscar Schachter and Christopher C. Joyner, eds., 1995). Dobbert states that despite never acquiring an "identifiable legal status," it is an influential group that receives substantial political and financial backing from certain governments.

[38] Nominally under the auspices of the FAO, the CGIAR Secretariat is located at World Bank headquarters in Washington, DC, from where it is administered. The CGIAR supports eighteen IARCs, twelve of which are concerned with the genetic improvement and conservation of major food crops, forages (animal foodstuffs), and forest species. The CGIAR currently holds the world's largest international *ex situ* collection of PGRFA with more than 500,000 accessions, representing some 3,000 species that are vital for crop improvement and the maintenance of global food security. Besides being centres for the storage of germplasm, the IARCs also function as centres of international research and testing of crop germplasm and they assist with the training of scientists for national agricultural research programs.

[39] The International Board for Plant Genetic Resources was established in 1974 with its headquarters at the FAO in Rome. It was constituted as a CGIAR institution, devoid of any legal status but with financial resources provided by the CGIAR; *see* Dobbert, *supra* note 37.

[40] In its formative years, in the absence of detailed legal regulation, the CGIAR norm of free exchange was sufficient to maintain the relatively free international flow of plant genetic material stored in the genebanks at IARCs around the world. The norm developed spontaneously, accumulating from the practice of free exchange in which the small community of research scientists on PGRFA participated; on spontaneous orders, *see* Frieder Roessler, *Law, De Facto Agreements and Declarations of Principle in International Economic Relations*, 21 German Ybk Int'l L. 27 (1987).

[41] Pistorius, *supra* note 18, at 69.

Attention for agrobiodiversity received a vital boost from the growing awareness of a need to protect the earth's biodiversity, which eventually led to the development of a normative framework on the conservation and sustainable use of biological diversity. Thus, a fourth development originated at the UN Conference on the Human Environment, which was held in Stockholm in June 1972 and which brought the issue of genetic resources onto the global environmental agenda and led to the inclusion of six paragraphs (paras. 39–45) on the conservation of genetic resources in the Stockholm Declaration.[42]

This fourth development was to some extent boosted by the underlying global debate surrounding the UN Agenda for a New International Economic Order (NIEO Agenda)[43] that dealt, *inter alia,* with the permanent sovereignty of states over their natural resources in a North-South context, even though the subject of genetic resources was one of the last items on the NIEO Agenda.[44] The critical point about the Stockholm Declaration is that it not only sparked the biodiversity debate with respect to genetic resources but it also determined that ownership, access, and control of resources would be exercised by the state within the national boundaries of which the resources are located.

There has been a fifth development that has been running parallel to the other four. This is the trend towards the extension of IPR protection to living forms, including plants, plant varieties, and their genetic information. The most common form of plant variety protection that has existed in most developed countries and that is increasingly being adopted by developing countries is the right of the breeder, which protects plant varieties that are distinct, stable, uniform, and new.[45] Plant breeders' rights do not confer ownership over PGRFA but instead recognize a breeder's monopoly for a limited period over the new crop varieties that are produced, subject to the limitation that the

[42] Declaration of the United Nations Conference on the Human Environment (Stockholm, 5 June 1972), *Report of the United Nations Conference on the Human Environment,* UN Doc. A/CONF.48/14/Rev.1, 11 ILM 1416 (1972).

[43] A decade earlier, on 14 December 1962, the UN General Assembly had adopted GA Res. 1803 (XVII), *Permanent Sovereignty over Natural Resources; see* Basic Documents in International Law 230–4 (Ian Brownlie, ed., 3rd ed., 1983). The further debate at the UN in the early 1970s eventually led to the adoption by consensus on 1 May 1974 of two UN General Assembly Resolutions, GA Res. 3201 (S-VII), *Declaration on the Establishment of a New International Economic Order*, and GA Res. 3202 (S-VII), *Programme of Action on the Establishment of a New International Economic Order*. However, the proposed Charter on Economic Right and Duties of States [hereinafter CERDS] later that year (GA Res. 3281 (XXIX) of 12 December 1974), with its emphasis on the permanent sovereignty of states over natural resources and the recognition of their jurisdiction to regulate economic activity on their territories with respect to foreign investment, although adopted, failed to gain the approval of developed countries due to the principles of compensation that the CERDS called for in the event of expropriation.

[44] Pistorius, *supra* note 18, at 70.

[45] For more information, *see* section II in this article.

monopoly covers only the variety in question and not the genetic material it contains. Any breeder, therefore, may use the germplasm of a protected variety in order to develop a new one. Plant breeders' rights differ from patents in that their subject matter of protection applies to a specific variety, which must physically exist, whereas patents refer to inventions that need not be realised in order to obtain protection.

Until recently, a limited number of mostly developed countries had adopted one of the versions of UPOV[46] (usually the 1978 version) and had enacted plant variety protection laws that were either (1) in accordance with UPOV; (2) substantially in accordance with UPOV; or (3) a hybrid system of laws that did not substantially follow the system of UPOV. Until the 1991 version of UPOV, the earlier versions (the acts of 1961, 1972, and 1978) recognized that there were two major exemptions to plant breeders' rights.[47] One was a "research exemption," which allowed other breeders to use protected varieties as parents, the products of which could be protected under a Plant Variety Protection Act. The other was a so-called "farmer's privilege," which allowed farmers to save seed in order to plant future crops (also known as "plant back" or "crop exemption").

The biotechnology industry has put the system of plant breeders' rights under severe strain as plant variety protection laws do not lend themselves to absolute forms of proprietary protection, including the protection of plant breeders' techniques *per se*,[48] although some countries get around this problem by granting protection under an industrial "utility" patent that is extended to plants (and even to animals in some industrialized countries).[49] In contrast to plant breeders' rights, patents prevent plant breeders, or indeed anyone else, from freely using varieties belonging to other individuals, since exclusive rights are granted over part of the germplasm (the genetic information or phenotype). The extension of industrial patents to plants has been controversial and only a limited number of countries have legislated in its favour.[50]

[46] UPOV Convention, *supra* note 24; *see also Background Documentation Provided by the International Union for the Protection of New Varieties of Plants (UPOV) to the FAO Commission on Genetic Resources for Food and Agriculture*, FAO Commission on Genetic Resources for Food and Agriculture [hereinafter CGRFA], 8th reg. Sess., FAO Doc. CGRFA-8/99/Inf.15. It lists the current status of accessions to the different versions of UPOV and the extent to which the member states' laws conform with them; *id.*, at 1.

[47] Correa, *supra* note 16, at 21.

[48] Breeders may have an interest in protecting genes and gene complexes that arise out of direct gene transfer and similar techniques but plant variety protection legislation does not cover this; *see Implications of New Biotechnologies for the International Undertaking*, FAO Commission on Plant Genetic Resources [hereinafter CPGR], 3rd reg. Sess., FAO Doc. CPGR/89/9 (January 1989) at para. 20.

[49] Industrial utility patents recognize the property rights in single genes, gene complexes, genetic characteristics, and specific techniques used to produce new crop varieties, *id.*

[50] The United States, Australia, and Korea all allow the patenting of plants. Article 4(2) of EC Directive 98/44 of the European Parliament and of the Council of 6 July 1998 on the Legal

In 1980, a landmark decision of the US Supreme Court decision in *Diamond v. Chakrabarty*[51] determined that patent eligibility could be extended to living organisms, and this practice rapidly extended in the United States to complex organisms including plants and animals. A year later, the United States had adhered to the 1978 version of UPOV, which paved the way for a "double protection" standard in the protection of plant varieties. It ultimately led to a revision of UPOV in 1991 that sought to strengthen the minimum standards of protection of plant varieties and to eliminate the prohibition of a cumulative protection with patent rights.

The main changes in the UPOV Convention to a large extent reflect the wishes of the burgeoning biotechnology industry (but not necessarily of the developing countries where many new varieties originate)[52] for a system of plant variety protection that is similar to that conferred under a patent system. The revised UPOV Convention imposes restrictions on breeders with respect to the free use of propagating genetic material since the holder of a variety may now limit the right of another breeder to develop, sell, export, import, or stock any variety that is "essentially derived" from another variety ("the initial variety").[53] Moreover, the extension of the scope of plant breeders' rights virtually excludes the farmer's privilege by allowing this on an optional basis[54] but does not affect the research exemption (also known as "the breeders' privilege" or "breeders' exemption").[55]

All of the foregoing developments emphasize the trend towards private ownership of genetic material or germplasm, coupled with the increased exploitation and commercialization of genetic information, both of which are relevant to the commodification of PGRFA. Even before the CBD entered into force and the International Undertaking on Plant Genetic Resources[56] had undergone its revision to take account of plant breeders' rights, there were in the industrialized world, where IPRs over PGRFA are more prevalent, concerns that private companies might be unwilling to share proprietary

Protection of Biotechnological Inventions, 1998 OJ (L 213) 13, effectively does too. It states that "inventions which concern plants or animals shall be patentable if the technical feasibility of the invention is not confined to a particular plant or animal variety." *See* WTO Council for Trade-Related Aspects of Intellectual Property Rights, *Review of the Provisions of Article 27.3(b): Information from the European Communities and Their Member States to the WTO Council for Trade-Related Aspects of Intellectual Property Rights*, WTO Doc. IP/C/W/125/Add.4 (10 February 1999).

[51] *See* the United States Supreme Court decision, Diamond, Commissioner of Patents and Trademarks v. Chakrabarty, 447 U.S. 303 (1980).

[52] For an alternative view of the effect of the 1991 UPOV Convention, *see* Noel Byrne, *Plant Breeding and the UPOV* 2 RECIEL 136 (1993).

[53] UPOV Convention 1991, *supra* note 24, at Article 14.

[54] Countries that adhere to UPOV 1991 have the *optional exception*, under Article 15(2), of restricting the breeder's right "in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings," *id.*

[55] *Id.,* at Article 15(1).

[56] Discussed in section IV.1 later in this article.

genetic material with public sector breeders[57] and that plant patenting could have serious implications for the free exchange of crop germplasm.[58] Three further trends are discernible: the trend towards the grant of IPRs over PGRFA introduces the potential for monopoly rights in the food supply system; plant breeders' rights, with their emphasis on uniformity, could increase genetic erosion; and farmers may end up paying royalties on seeds, initial varieties of which they may have had a hand in developing.[59]

IV. TOWARDS PRIVATE OWNERSHIP OF THE GENETIC COMMONS: THE RESPONSIBILITIES OF THE FAO, THE CBD, AND THE TRIPS AGREEMENT

The new century marks a critical juncture in the field of agrobiodiversity, related to the conservation and sustainable use of genetic resources for food and agricultural purposes. There has been a paradigm shift away from the public-orientated free availability and free exchange[60] of germplasm for agricultural research, based upon common ownership and use. The new paradigm, which takes its lead from the CBD, is sovereignty-based and opens the way for private ownership of the genetic commons by enclosing it through the grant of rights and entitlements to private actors, mostly in the commercial sector. The developments that were noted in the previous section led to the evolution of three international instruments or regimes. Each of these instruments or regimes deals with specific, sometimes overlapping, aspects of the nexus between agriculture, environment, and intellectual property rights, and each is crucially linked to issues of ownership, control, and use of PGRFA.

First, the relationship between the FAO Global System (including the International Undertaking on Plant Genetic Resources) and the CBD will be examined. The latter instrument with its emphasis on the principle of state sovereignty over genetic resources supports the trend towards the exercise of property rights and entitlements over those resources. Subsequent paragraphs consider how this trend has moved in the direction of increased

[57] Of course, the counter argument also applies that public breeders might hesitate to share their genetic material with the private sector, for fear that it might become patented and removed from the domain of the breeder and effectively the public domain, thereby undermining public sector seed production and distribution; *see* CPGR, *supra* note 48, at para. 24.

[58] *Id.*, at para. 25.

[59] *See* Genetic Resources Action International (GRAIN), *UPOV: Getting a Free TRIPs Ride?* 13 Seedling 2 (1996), <http://www.grain.org/publications/jun96/jun964.htm>.

[60] The free exchange paradigm was believed to have largely benefited developing countries by encouraging public and private sector plant breeding although some developing countries maintain that the free-exchange paradigm worked to their disadvantage by allowing the North unprecedented access to their genetic diversity without fair and adequate compensation; for a criticism of the role of the CGIAR in this process, *see* the "Introduction" by Janet Bell and Michel Pimbert, *in* The Life Industry 14 (Miges Baumann, Janet Bell, Florianne Koechlin and Michel Pimbert, eds., 1996).

private ownership of plant genetic resources with particular emphasis on the grant of exclusive proprietary rights by means of IPR protection and the role of the TRIPs Agreement in moving this process forward. Since various aspects of each of these three instruments or regimes are under review, the salient and interlinking aspects of their review procedures will be treated.

1. FAO International Undertaking on Plant Genetic Resources and PGRFA: Scope and Coverage

Increasingly, as the germplasm of major crops was collected and stored in gene banks, questions arose related to the long-term security of the genetic material, its ownership in *ex situ* collections, and guarantees relating to its free exchange.[61] Developing countries, in particular, were keen to know how their farmers, who had produced, improved, and conserved germplasm over millennia (using traditional knowledge and practices), could benefit from developing their genetic resources since they lacked the technical and financial capacity to use these resources for their advantage. Moreover, the advancement of IPRs over new plant varieties continued to make inroads into the public system, and a crusade was mounted at the FAO to try and prevent the establishment of proprietary rights over germplasm, which would benefit private breeding

The FAO in the late 1970s and early 1980s was one of the forums where developing countries had a voice and could pursue their interests. Whereas the FAO, due to a lack of financial resources, failed to develop its own gene bank network for the collection of crop germplasm, it succeeded in developing an institutional framework.[62] At the twenty-second session of the FAO conference in 1983, the idea of coordinating the management of the world's PGRFA came about through the adoption of Conference Resolution 8/83 on an International Undertaking on Plant Genetic Resources (IUPGR).[63]

[61] *See* the article by the secretary of the CGRFA, José Esquinas-Alcazar, *The Global System on Plant Genetic Resources* 2 RECIEL 152 (1993).

[62] The FAO Conference, by Res. 9/83, FAO Conference, 22nd Sess., established the intergovernmental CPGR to coordinate, oversee, and monitor the IUPGR and to function as the central point for the Global System for the Conservation and Utilization of Plant Genetic Resources for Food (Global System). Renamed the Commission on Genetic Resources for Food and Agriculture (CGRFA) in 1995, the commission currently comprises over 150 countries and the European Community. Apart from the non-binding IUPGR, the Global System includes under "Other International Agreements" international agreements on gene banks, a code of conduct for the collection and transfer of germplasm and a code of conduct for plant biotechnology (including biosafety and environmental concerns). It also contains a number of "Global Mechanisms" including the World Information and Early Warning System (WIEWS), the international network of *ex situ* collections (CGIAR) and an international network of *in situ* collections in on-farm areas. Under "Global Instruments" it counts the rolling Global Action Plan on Plant Genetic Resources and a periodical reporting system (by member governments) on the state of the world's plant genetic resources. The system was supposed to take on responsibility for funding under the International Fund for Plant Genetic Resources that was set up in 1989 but this has never become operational.

[63] *See,* generally, David Cooper, *The International Undertaking on Plant Genetic Resources* 2 RECIEL 158 (1993).

The aim of the IUPGR, a non-binding international agreement, is to "ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes" and is based on "the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction" (Article 1 of the IUPGR). The IUPGR calls for the conservation of plant genetic resources in both *in situ* and *ex situ* collections (Articles 4(1) and 4(3) of the IUPGR respectively) and exhorts governments to adhere to the paradigm of free accessibility and exchange of plant germplasm for the "purposes of scientific research, plant breeding or genetic resource conservation" on a free of charge basis (Article 5 of the IUPGR).

However, the definition and scope of plant genetic resources in Article 2(1)(a) of the IUPGR gives rise to controversy because it includes farmers' land races, other traditional varieties, and wild varieties that are freely available as well as cultivated varieties in current use and newly developed varieties that are often the products of formal breeding and subject to plant breeders' rights. The IUPGR seeks to put all plant genetic resources on an equal footing by referencing them as "a heritage of mankind."[64] For many developed countries, the lack of an explicit reference to plant breeders' rights as provided for in their national legislation, in conformity with one of the acts of UPOV, was sufficient to merit reservations.[65] Similarly, some developing countries were cautious because they felt that certain species of special economic interest were not covered by the scope of the IUPGR and that it failed to recognize that many primitive cultivars (or land races) had been genetically improved and conserved by farmers.[66]

Three "agreed interpretations" of the IUPGR were adopted by the FAO conferences of 1989 and 1991 and were annexed to the original text in order to broaden its acceptance. The first was an interpretative resolution, which acknowledged that plant breeders' rights (as provided for under the UPOV Convention) are not incompatible with the IUPGR. It allowed for some minimum restrictions on the free exchange paradigm and recognized the contribution of farmers to the conservation and development of plant genetic resources.[67] The second interpretative resolution defined farmers' rights as

[64] *Id.*, at 159.

[65] New Zealand reserved its position on Res. 8/83, FAO Conference, 22nd Sess., (the IUPGR is available at <ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/Res/C8–83E.pdf>) while Canada, France, Germany (Federal Republic of), Japan, the Netherlands, Switzerland, the United Kingdom, and the United States all made reservations to Res. 9/83 (establishment of the CPGR) and/or Res. 8/83, FAO Conference, 22nd Sess., mainly on the basis of financial considerations and in the absence of a provision that took into account plant breeders' rights; *see* FAO, Docs. C 83/REP, at para. 285; C 83/II/PV 18, at 1–8, reported in Dobbert, *supra* note 37, at 933.

[66] Dobbert, *supra* note 37, at 932.

[67] Adopted in 1989, Res. C 4/89, FAO Conference, 25th Sess., <ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/Res/C4–89E.pdf>, explicitly recognized that: "[P]lant Breeders' Rights, as provided

"rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the centres of origin/diversity."[68] The third resolution was prompted by the emergence of the CBD. The CBD threatened to restrict the free access and exchange of PGRFA, since it is premised on the notion of sovereign rights over genetic resources and the recognition of intellectual property rights in the access and transfer of technology provisions.[69] FAO Conference Resolution 3/91 affirmed the sovereignty of states over their plant genetic resources and further limited the scope of the free access provision, such that breeders' lines and farmers' breeding materials were excluded.[70]

2. Review of the IUPGR

Since the early 1990s, the Commission on Plant Genetic Resources (the CPGR) (which is now the Commission on Genetic Resources for Food and Agriculture (CGRFA)[71]) has been involved in negotiations for a fundamental revision of the IUPGR, seeking to harmonize it with the CBD and possibly to make it a protocol to that treaty.[72] Since then, the future of the IUPGR has been intertwined with that of the CBD, beginning with Resolution 3 of the 1992 Nairobi Conference,[73] which addresses the interrelationship between

for under UPOV . . . are not incompatible with the International Undertaking" (clause 1); "a state may impose only such minimum restrictions on the free exchange of materials covered by . . . the International Undertaking as are necessary for it to conform to its national and international obligations" (clause 2); and "the contribution that farmers of all regions have made to the conservation and development of plant genetic resources, which constitute the basis of plant production throughout the world, and which form the basis for the concept of Farmers' Rights" (clause 3). Moreover, "the term "free access" does not mean "free of charge" (clause 5(a)).

[68] Adopted in 1989, Res. C 5/89, FAO Conference, 25th Sess., went on to state that "these rights are vested in the International Community, as trustee for present and future generations of farmers."

[69] Besides recognizing sovereignty over natural resources in general, the CBD also recognizes intellectual property rights and proposes that access to genetic resources should be on "mutually agreed terms"; *see* Cooper, *supra* note 63, at 159 and section IV.3 in this article.

[70] Adopted in 1991, Res. 3/91, FAO Conference, 26th Sess.,<ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/Res/C3–91E.pdf>, recognizes that "[t]he concept of mankind's heritage . . . is subject to the sovereignty of the states over their plant genetic resources" and endorses the principle "[t]hat nations have sovereign rights over their plant genetic resources." It also endorses the idea "[t] hat breeders' lines and farmers' breeding materials should only be available at the discretion of their developers during the period of development." However, it should be noted that the provision on free access to and exchange of PGRFA in Article 5 of the original text of the IUPGR was not repealed even though the recognition of sovereign rights in Res. 3/91 implies that states are free to act as they please, if necessarily restricting, or conditioning access and exchange.

[71] The mandate of the CPGR was broadened to cover all components of biodiversity to food and agriculture and thus, also its name was charged to the CGRFA, *see* Res. 3/95, FAO Conference, 28th Sess., clauses 1 and 2.

[72] Res. 7/93, FAO Conference, 27th Sess.,<ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/Res/C7–93E.pdf>; and *Revision of the International Undertaking: Mandate, Context, Background and Proposed Process*, CPGR, 1st extraordinary session, at Appendix 2, FAO Doc. CPGR-Ex1/94/3.

[73] Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity [Hereinafter Nairobi Conference], Resolution 3—The Interrelationship between the Convention on

the CBD and the promotion of sustainable agriculture.[74] Specifically, Resolution 3 of the Nairobi Conference calls for strengthening the FAO Global System, aligning it with the CBD, and seeking solutions to two outstanding matters. The first relates to "access to *ex situ* collections not acquired in accordance with this Convention" and the second is "the question of farmers' rights."[75] FAO Conference Resolution 7/93 provides the follow-up to Resolution 3 of the Nairobi Conference in both of these respects.[76]

At its first extraordinary session in 1994, the CPGR agreed that such negotiations should proceed in three stages, dealing first with the three interpretative annexes, their integration into the IUPGR, and their harmonization with the CBD. Second, consideration would be given to access to plant genetic resources, including PGRFA that were held in *ex situ* collections, an issue that the CBD did not explicitly address as well as the realization of farmers' rights. Finally, there would be a need to consider the legal and institutional options, including the legal status, of the renegotiated IUPGR.[77]

Over the past six years, negotiations moved very slowly over a series of CGRFA meetings between its first and fifth extraordinary sessions in November 1994 and June 1998 respectively. This has been the case despite the impetus that the negotiating process received from the Leipzig Conference in June 1996 that adopted a Global Plan of Action and Declaration on Conservation and Sustainable Use of PGRFA, which was aimed at facilitating the implementation of Agenda 21 and the CBD.[78] By 1998, the negotiators had reached a virtual impasse over the subject of benefit sharing derived

Biological Diversity and the Promotion of Sustainable Agriculture, adopted 22 May 1992, 31 ILM 846 (1992); *see also* section IV.3 in this article.

[74] Kerry ten Kate and Carolina Lasén Diaz, *The Undertaking Revisited: A Commentary on the Revision of the International Undertaking on Plant Genetic Resources for Food and Agriculture* 6 RECIEL 284, at 285 (1997).

[75] The issue of "farmers rights," as set out in Res. 5/89, *supra* note 68, is controversial and raises many questions as to the definition and scope of such rights and their articulation, particularly with respect to benefit sharing from the use of PGRFA and financial responsibilities; *see* ten Kate and Lasén Diaz, *supra* note 74, at 287–9. A more recent and very comprehensive study of the issue has been undertaken by Martin A. Girsberger, Biodiversity and the Concept of Farmers' Rights in International Law: Factual Background and Legal Analysis (1999).

[76] Specifically, Res. 7/93, *supra* note 72, calls: (1) for the adaptation of the International Undertaking on Plant Genetic Resources, in harmony with the CBD; (2) for consideration of the issue of access on mutually agreed terms on plant genetic resources, including *ex situ* collections not addressed by the Convention, and (3) for the realization of farmers' rights.

[77] For the mandate, context, and background for this process, *see* FAO Doc. CPGR-Ex1/94/3, *supra* note 72.

[78] The FAO International Technical Conference on Plant Genetic Resources met in Leipzig, Germany, 17–23 June 1996, and adopted the Global Plan of Action for Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture and emphasized the importance of completing the revision of the IUPGR and the adjustment of the Global System, in line with the CBD, in its Declaration on Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (the so-called Leipzig Declaration, <http://www.fao.org/focus/f/96/06/more/declar-f.htm>); for full details, *see* <http://www.fao.org/waicent/faoinfo/agricult/cgrfa/default.htm>.

from commercial and other uses of PGFRA,[79] leaving the chairman, Fernando Gerbasi, to proceed further with a Contact Group, composed of forty countries and the European Community.[80]

During early 1999, progress was made at the specially convened Montreux Meeting.[81] Subsequently, two versions of a revised text on benefit sharing in the Multilateral System appeared—the first resulted from the Montreux Meeting and was presented to the eighth Regular Session of the CGRFA (19–23 April 1999), while the second, in an effort to bridge the widening gap between developed and developing countries, was negotiated later in the year at the first Intersessional Meeting of the Contact Group (20–4 September 1999). In addition, a revised text on farmers' rights was negotiated at the first of these two meetings.

As a result, there is now a composite draft of the revised IUPGR that reflects these two sets of texts.[82] While both emphasize the need for fair and equitable sharing of the results of R and D as well as the benefits arising from the commercial and other utilization of PGRFA, the draft text of Article 14 on "Benefit-Sharing in the Multilateral System," negotiated by the Contact Group, is more detailed. It calls for "facilitated access"—that is, shared access to technologies for the conservation and use of PGFRA under the Multilateral System,[83] specifically "to provide access . . . to such technologies

[79] The chairman at the fifth Extraordinary Session of the CGRFA, Rome (8–12 June 1998) noted that "positions remained distinct and distant"; *see Report of the Fifth Extraordinary Session of the Commission on Genetic Resources for Food and Agriculture*, at para. 39, FAO Doc. CGRFA-Ex5/98/REPORT, <ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/Ex5/Ex5rep-E.pdf>.

[80] Angola, Argentina, Australia, Benin, Brazil, Burkina Faso, Canada, China, Colombia, Cuba, Ethiopia, Finland, France, Germany, India, Islamic Republic of Iran, Japan, Korea, Libya, Malaysia, Malta, Mexico, Morocco, Netherlands, New Zealand, Norway, Philippines, Poland, Romania, Samoa, Senegal, South Africa, Switzerland, United Republic of Tanzania, United Kingdom, United States, Uruguay, Venezuela, Zambia, and Zimbabwe.

[81] *See Report of the Chairman of the Commission on Genetic Resources for Food and Agriculture on the Status of Negotiations for the Revision of the International Undertaking on Plant Genetic Resources, in Harmony with the Convention on Biological Diversity—Annex 2—Chairman's Elements*, CGRFA, 8th reg. Sess., FAO Doc. CGRFA-8/99/13 (February 1999), which was presented to the eighth regular session of the CGRFA (19–23 April 1999); the "Chairman's Elements" from the Montreux Meeting are taken up in the *Composite Draft Text of the International Undertaking on Plant Genetic Resources incorporating the Chairman's Elements*, CGRFA, 8th reg. Sess., FAO Doc. CGRFA-8/99/13/Annex (March 1999) and are reproduced in their entirety in the subsequent version of the composite text, *see* note 82 and accompanying text.

[82] *See Composite Draft Text of the International Undertaking on Plant Genetic Resources, Incorporating the Texts of Articles 11, 12 and 15 negotiated during the Commission's Eighth Regular Session, and the Text of Article 14, negotiated during the First Inter-Sessional Meeting of the Contact Group*," CGRFA, second Inter-Sessional Meeting of the Contact Group, FAO Doc. CGRFA/CG-2/00/2 (October 1999) [hereinafter *1999 Composite Draft*].

[83] This is to include all PGRFA listed in an annex, according to the criteria of food security and interdependence, as well as genetic material held in the *ex situ* collections by IARCs of the CGIAR that accept the provisions of the revised IUPGR and material held in the gene bank collections of other international institutions that accept the revised IUPGR (that is, non-IARCs), *id.*, at 11.

and genetic material which is under the Multilateral System and to improved varieties and genetic material developed through the use of PGFRA under the Multilateral System" while respecting applicable property rights and national access legislation.[84] At the same time, it is anticipated that access to, and transfer of, technology to developing and transition economy countries will be achieved through various measures, including "crop-based thematic groups on utilization of PGRFA," R and D partnership, commercial joint ventures, and effective access to research facilities.[85]

The most controversial point in the Contact Group's draft text of Article 14 concerns the regulation of access to, and the utilization of, genetic information and technology that is protected by IPRs and confidentiality clauses. That information and technology will be made freely available if it is to be used for conservation and improvement purposes of PGFRA in the Multilateral System or will be provided through support measures if it is for the use of small farmers in developing countries and transition economy countries (the "small farmer exemption"). However, if it is to be used for commercial purposes then access will be bargained for under contractual access and benefit-sharing agreements.[86] Effectively, it means that whereas parties to the CBD had to be content with making interpretative statements on the effect of the obligations that provided access to research based on genetic resources contained in Articles 15(6) and for access to technology subject to IPR protection in Article 16(2) of the CBD,[87] the members of the Contact Group have managed to negotiate these considerations into one of the versions of the draft texts for access and benefit sharing under the revised IUPGR.[88]

This provision cuts deeper than it initially appears to—it is based on the notion of segmented markets in PGRFA. It assumes the existence of two types of markets: non-commercial markets, which are for the conservation and improvement (including related research activities) of protected material in the Multilateral System[89] and in commercial markets, which are decisive in negotiating preferential access to patented technologies.[90] It demonstrates that the IUPGR, despite its lofty objectives on sustainable agriculture and

[84] *Id.*, draft Article 14(2)(b)(i), at 13.

[85] *Id.*, draft Article 14(2)(b)(ii).

[86] *Id.*, draft Article 14.2 (b) [(iii)].

[87] *See* Cottier, *supra* note 8, at 567, who reports the reservations of the European Community and Switzerland to the CBD; it will be recalled that the United States is still not a party to the CBD.

[88] The record states that members had a rich and constructive debate on the issue of sharing monetary benefits from commercialization, whereby members undertook to make annual contributions to an agreed funding strategy and some even committed themselves to present modalities for achieving fair and equitable benefit sharing, involving the private sector; *see* Chairman's Note following the text of draft Article 14.2(d)(ii), in *1999 Composite Draft*, *supra* note 82, at 14.

[89] Also the "small farmer exception," referred to in the text.

[90] Charles Spillane, *Recent Developments in Biotechnology as They Relate to Plant Genetic Resources for Food and Agriculture*, *Background Study Paper No. 9 to the CGRFA* 45 (April 1999).

social justice, is moving closer to a system of proprietary rights. Through the current direction of its negotiations on access and benefit sharing under draft Article 14, the IUPGR is realising a more commercialized approach to the exchange of, and access to, crop germplasm than one might at first suppose. This point will be returned to in the following section when reviewing similar provisions in the CBD.

In addition to the substantive considerations discussed up to this point, the question of the legal status of the revised IUPGR and its harmonization with the CBD also plays a role in the negotiations. The options that have been considered include: (1) the continuation of the present legal status of the IUPGR as a voluntary non-legally binding instrument; (2) its adoption as a legally binding agreement under Article XIV of the FAO constitution, similar to the 1951 International Plant Protection Convention; (3) its adoption as a legally binding instrument under the auspices of the FAO but outside its constitutional framework; (4) its adoption as a legally binding protocol to the CBD under Article 28; or (5) its adoption as a legally binding Agreement for the Implementation of the CBD in the Area of PGRFA, similar to the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.[91] At present, all drafts point in the direction of a legally binding text, to which no reservations would be permitted, for adoption by FAO members and without any reference to the CBD.[92] This is in line with either option (2) or (3), although there is no reason to suppose that further negotiations might not lead to one of the other options.

3. Convention on Biological Diversity (CBD)

The vital role that plant genetic resources for food and sustainable agriculture play in agrobiodiversity and development is reflected in the various decisions and mandates flowing from Agenda 21 of UNCED, from Resolution 3 of the Nairobi Conference,[93] and from FAO Conference Resolution 7/93.[94] However, there is a fundamental difference in approach towards the ownership of genetic resources in the IUPGR and the CBD.

While genetic resources had previously been considered "open access resources" and part of the heritage of humankind under the IUPGR,[95] at

[91] These five options and their potential legal and institutional consequences are discussed as Agenda Item 4: *Revision of the International Undertaking on Plant Genetic Resources: Legal and Institutional Options*, CGRFA, 8th reg. Sess., FAO Doc. CGRFA-8/99/9 (November 1998).

[92] *See* draft Articles 22 through 32 of the *1999 Composite Draft*, *supra* note 82, at 19–20.

[93] Clause 2 of Resolution 3 of the Nairobi Conference, *supra* note 73.

[94] *See* section IV.2 and note 72 in this article.

[95] *See* Frederic Hendrickx, Veit Koester, and Christian Prip, *Convention on Biological Diversity, Access to Genetic Resources: A Legal Analysis* 23 Environmental Policy and Law 250,

least until the revision of the CGIAR and the adoption of Resolution 3/91,[96] the CBD is premised on the concept of permanent sovereignty over natural resources and thus goes further than the FAO Multilateral System, the IUPGR, and the CGIAR system in subjecting genetic resources to property rights. While the CBD has entered into force, there remain differences among the parties as to its application and interpretation, not least in the field of genetic resources.

In addition to a reference to sovereign rights over biological resources in the preamble, Article 3 of the CBD contains an explicit reference to the principle of sovereign rights over natural resources.[97] However, the key provision in the CBD is in Article 15, which, in recognizing "[the] sovereign rights of States over their natural resources,"[98] gives the prerogative to national governments to legislate and determine access to genetic resources (Article 15(1)).[99]

The freedom to regulate access to genetic resources and to share in the benefits thereof is limited by the obligation imposed on contracting parties to try and "create conditions to facilitate access to genetic resources for environmentally sound purposes and not to impose restrictions that run counter to the objectives of the Convention" (Article 15(2) of the CBD). Article 15(3) of the CBD makes clear that the provisions on access to genetic resources apply to both countries of origin—that is, those countries that possess genetic resources in *in situ* conditions and parties that have acquired genetic resources "in accordance with this Convention." The term "source countries" will be used to refer to these two types of countries jointly. It is noteworthy that Article 15(3) does not cover *ex situ* collections of a state that is a contracting

at 250 (1993), who, note developing countries' opposition in applying the common heritage principle to genetic resources and instead pushing for sovereignty. It was the view of such developing countries that gene-poor developed countries had obtained genetic resources from the gene-rich developing nations, had secured proprietary rights over the genetic information and sought to sell the products developed from there to the countries of origin.

[96] Resolution 3/91, *supra* note 70.

[97] The text of Article 3 reads, in part: "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies," *see* CBD, *supra* note 4.

[98] *Id.*

[99] Some examples of countries that have enacted such legislation, or where draft legislation exists include: the Philippines (Philippines Executive Order No. 247 of 18 May 1995), the Andean Pact countries of Colombia, Ecuador, Peru, Bolivia, and Venezuela adopted a Common System on Access to Genetic Resources (Decision 391 of 2 July 1996). Other countries that are considering, or have since adopted, access legislation include Fiji, India, and Ethiopia while there is a draft of "African Model Legislation for the Recognition and Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Genetic Resources," Addis Ababa, Organization for African Unity, June 1999: for the latter, *see* <http://www.twnside.org.sg/title/oau-cn.htm> and for an assessment of the Andean Pact Decision, *see* Monica Rosell, *Access to Genetic Resources: A Critical Approach to Decision 391 "Common Regime on Access to Genetic Resources" of the Commission of the Cartagena Agreement* 6 RECIEL 274 (1997).

party to the CBD but which acquired the material before the convention entered into force. Relevant collections would be, for example, germplasm in certain *ex situ* collections and the twelve IARCs of the CGIAR. These collections as well as others, therefore, are not currently subject to any access or benefit-sharing scheme, although that could soon change as a result of current negotiations for a revised IUPGR.[100]

Two further conditions are imposed on the access to genetic resources in source countries by paragraphs 4 and 5, respectively, of Article 15. Access "shall be on mutually agreed terms" and "shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party."[101] Paragraphs 6 and 7 of Article 15 of the CBD, which are not dealt with in detail in this article, provide for participation in scientific research and for the sharing of the results of research, development, and the benefits of its utilization for those countries that have provided the genetic resources.

It should be noted that, in practice, the access and benefit-sharing provisions of Article 15 of the CBD may not necessarily guard a contracting party against disputes arising out of potential conflicts with its international obligations in other fields, such as the international trading system. An example might be where a country is a party to the CBD and a member of the WTO[102] and seeks to justify an export prohibition on its crop germplasm as part of a program for the management and conservation of its PGRFA within the context of Articles 15(1) and 15(2) of the CBD on the grounds that it is protecting its genetic resources.[103] This act could be in violation of the prohibition on export restrictions contained in Article XI:1 of GATT 1994 unless the WTO member can demonstrate that the prohibition is a domestic measure that falls under one of the environmental exceptions of Article XX(b) or (g) of GATT 1994 and that the measure fulfils the criteria in the *chapeau* of GATT Article XX—that is, that it dos not constitute "unjustifiable and arbitrary discrimination" as between countries where the same conditions prevail.[104] While recent

[100] On this point, *see* section IV.2 in this article (on the revision of the IUPGR) and also section VI in this article, dealing with the future of the Multilateral Exchange System.

[101] Almost identical provisions with respect to access are to be found in Article 16 (Access to and Transfer of Technology), Article 18 (Technical and Scientific Co-operation) and Article 19 (Handling of Biotechnology and Distribution of its Benefits) of the CBD, *supra* note 4.

[102] Cottier, *supra* note 8 at 567, reminds us that several multilateral conservation agreements seek to preserve biodiversity yet in order to achieve this they must operate an import or export restriction, for example, the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 12 ILM 1085 (1973).

[103] Similarly, that same country might apply a selective licensing scheme as part of its prior informed consent requirement of Article 15(5) of the CBD, which conflicts with its WTO obligations under Article XI of the GATT in connection with the Agreement on Import Licensing Procedures, 15 April 1994, *in* Annex 1A to the WTO Agreement, *supra* note 9 at 255.

[104] *See* WTO Appellate Body Report on United States – Import Prohibition of Certain Shrimp and Shrimp Products, WTO Doc. WT/DS58/AB/R at paras. 15, 165, and 177 <http://www/wto.org/wto/dispute/dispute.htm>.

case law suggests that the WTO is prepared to go some way in interpreting and defining the relationship between international trade and environmental provisions, it is less certain how the WTO Dispute Settlement Body would react when the parties before it are also parties to one of the multilateral environmental agreements, such as the CBD or possibly the revised IUPGR, should it be adopted as a protocol to the CBD.

Thus, an access and benefit-sharing scheme, as provided for in the national legislation of a CBD contracting party, might inadvertently restrain the flow of PGRFA. It might not only impede access to, and exchange of, genetic resources for conservation and sustainable use,[105] but it might also impede commercial access, the effects of which could be judged as trade restrictive. Another result might be that it inadvertently locks up a country's national resources in ways that it had not anticipated.

This undesired consequence of the application of the sovereignty principle cannot be ignored, given that the commercial exploitation of genetic resources has grown considerably over the past few decades with the rise of the biotechnology industry to the extent that one can now speak of markets for genetic resources. One commentator sees the CBD "as much as an agreement on transfers in biotechnology to the extent that it regulates access to genetic resources and the sharing of benefits of biotechnological research."[106] Another view is that, in spite of its environmental protection and social justice objectives, the CBD's provisions on access and benefit sharing reflect nothing other than a new property-rights, market-orientated approach to genetic resources, contained in an environmental treaty.[107] By endorsing sovereign rights in genetic resources and stipulating that a source country can regulate access and the terms thereof, the source country has limited, but valuable, property rights to dispose of as it sees fit, and this fact opens the way for the further commodification of PGRFA. It cannot be discounted that the IUPGR will support this process with its proposed revisions to include access and benefit-sharing clauses that simply maintain this trend.[108]

Finally, as part of the overall options and mechanisms for access and benefit sharing of genetic resources, it has been considered important, when implementing the CBD, to enhance, from the outset, the capacities of local and indigenous groups to conserve and use their genetic resources. In

[105] On this point, *see* the viewpoint of the International Seed Trade Federation/International Association of Plant Breeders (FIS/ASSINEL) in its *Background Documentation provided by the International Association of Plant Breeders for the Protection of Plant Varieties (ASSINEL)*, CGRFA, 8th reg. Sess., FAO Doc. CGRFA-8/99/Inf.9, at 1 (March 1999). In its statement, ASSINEL regrets the current state of affairs, as detrimental to the maintenance of plant genetic resources, and considers it paradoxical that the entry into force of the CBD has been counterproductive in this regard.

[106] Cottier, *supra* note 8, at 566.

[107] Jonathan C. Carlson, *Strengthening Property-Rights Regimes for Plant Genetic Resources: The Role of the World Bank* 6 Transnational Law & Contemporary Problems 91, at 93–4 (1996).

[108] *See* section IV.2 in this article.

particular, they should be encouraged to negotiate for the benefits that arise from the use by others of genetic information, in the form of traditional knowledge, which they have added to by strengthening crop germplasm over many generations. This falls within the remit of Article 8(j) of the CBD,[109] which relates to the preservation of biological diversity of indigenous and local communities embodying traditional lifestyles.[110] Since implementation of Article 8(j) is currently under review, the further implications of this consideration are addressed in the next section.

4. Review of Access and Benefit-Sharing Mechanisms under the CBD

At the fourth meeting of the Conference of the Parties (COP-4) to the CBD,[111] a decision was taken to convene a Panel of Experts to explore the options for access and benefit-sharing mechanisms under the CBD.[112] The panel has only met once so far and is due to deliver its *Report on Access and Benefit-Sharing* at COP-5 to the CBD, which is to be held in Nairobi on 15–16 May 2000. In its report, the panel notes that national access legislation for access and benefit sharing of PGRFA should "take account and allow for the development of a multilateral system to facilitate access and benefit-sharing for plant genetic resources for food and agriculture."[113] This refers to the ongoing negotiations for a revised IUPGR, with respect to the access and benefit-sharing provisions.[114] The panel also considers that IPRs may influence access and benefit-sharing arrangements and may play a role in provid-

[109] Article 8(j) of the CBD, *supra* note 4, stipulates that subject to its national legislation, each state shall "respect, preserve and maintain knowledge, innovation, and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and improvement of the 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."

[110] *See Knowledge, Innovations and Practices of Indigenous and Local Communities: Implementation of Article 8(j)—Note by the Executive Secretary*, Conference of the Parties to the Convention on Biological Diversity (COP CBD), 3rd Meeting, CBD Doc. UNEP/CBD/COP/3/19 (18 September 1996), that led to the adoption of Decision III/14—Implementation of Article 8(j); <http://www.biodiv.org/Decisions/COP3/pdf/COP3_decisions_e.pdf>, which established an inter-sessional process, including a five-day workshop, to advance work on implementation of Article 8(j). It also called for the executive secretary to prepare a background document that studied the linkages between Article 8(j) and IPRs; *see Traditional Knowledge and Biological Diversity—Note by the Executive Secretary*, Workshop on Traditional Knowledge and Biological Diversity, CBD Doc. UNEP/CBD/TKBD/1/2 (18 October 1997), which was followed by a workshop in Madrid, Spain, 24–8 November 1997.

[111] Fourth COP to the CBD, Decision IV/8—Access and Benefit-sharing, CBD Doc. UNEP/CBD/COP/4, <http://www.biodiv.org/cop4/pdf/cop4_decisions_e.pdf>.

[112] *See* the minutes of the Inter-Sessional Meeting on the Operation of the Convention of the Conference of the Parties to the Convention on Biological Diversity, Montreal, 28–30 June 1999, <http://www.biodiv.org/ISOC/index.html>.

[113] *Report of the Panel of Experts on Access and Benefit-Sharing*, COP CBD, 5th Meeting, at para. 153, CBD Doc. UNEP/CB/COP/5/8 (2 November 1999) [hereinafter *Report of the Panel of Experts*].

[114] *See* section IV.2 in this article.

ing incentives for users to seek prior-informed consent but records that it could not reach any conclusion on the matter and recommends that the COP consider the matter further.[115]

Furthermore, the Panel of Experts specifically recognizes that, where national access legislation has been enacted, recognition has often been given to the rights of indigenous and local communities to decide on access to, and utilization of, resources on their territories, as well as to the knowledge, innovations, and practices derived therefrom—all of which have implications for the implementation of Articles 15, 16, and 8(j) of the CBD. The panel notes that, in practice, many countries are adopting *sui generis* legislation that articulates those rights and makes further provisions for their protection.[116] Of particular note is the fact that the panel considers it necessary to define the relevant terms, including subject matter, of traditional knowledge and the scope of existing rights, in order to determine whether existing IPR regimes can be used to protect traditional knowledge and to consider the options for the development of *sui generis* protection of traditional knowledge rights. The findings are then to be related to the implementation of access and benefit-sharing arrangements. The ideas pertaining hereto are still in their infancy because the spectre of enhanced property rights under the CBD raises specific issues for indigenous and local communities concerning customary laws that govern custodianship and concerning the use and transmission of traditional knowledge, neither of which conform to traditional property and IPR regimes. [117]

5. WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs Agreement)

The TRIPs Agreement is one of the major new annexes to the Marrakesh Agreement Establishing the World Trade Organization.[118] It sets out the minimum standards of IPR protection for WTO members and also contains strong provisions on enforcement. Of the 136 countries that are WTO members, all but the least-developed members and some developing countries and

[115] *Report of the Panel of Experts*, supra note 113, at para. 155.

[116] The modalities for such *sui generis* legislation are extremely varied and could include any of the following combinations: recognition of ancestral community rights over traditional knowledge; that such rights might be collective, rather than individual; that there is a distinction between genetic resources (which are vested in the state) and rights over knowledge associated with such resources (vested in local and indigenous custodians); and that benefit-sharing mechanisms must ensure an equitable distribution among the custodians, irrespective of whether they are parties to access agreements; for these and other modalities, *see Report of the Panel of Experts*, *supra* note 113, *Annex VI Possible Elements of* Sui Generis *Legislation to Protect the Knowledge, Innovations and Practices of Local and Indigenous Communities.*

[117] It thus calls for further study of the matter and for the *ad hoc* working group to take account of similar activities related to indigenous and local communities at UNESCO, World Intellectual Property Organization (WIPO), the WTO, and the FAO.

[118] Trips Agreement, *supra* note 9.

countries with economies in transition, which have requested transitional periods to bring their national legislation into line with their international obligations, are bound by the new agreement. The WTO was established in 1995, and the transitional arrangements for developing countries have largely lapsed as of 1 January 2000.

One of the features of the new IPR regime is that WTO member countries may exclude from "patentability" "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" (Article 27.3(b)). However, it then calls upon WTO members to "provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof" (Article 27.3(b)).[119]

Essentially, a WTO member must provide legislation for patents in order to protect micro-organisms and microbiological processes that are common in the biotechnological industry even though they are free to exclude plants and animals from patentability. Nevertheless, for plant varieties, WTO members are under an obligation to provide for a system of IPR protection that can take the form of patents, plant variety protection legislation, or a *sui generis* system of intellectual property protection (which could combine any of the preceding systems). Provided that the minimum requirements on non-discrimination under the TRIPs Agreement (national treatment and most-favoured-nation treatment) are met, Article 27.3(b) leaves considerable flexibility to WTO members. For example, a member could go beyond the confines of existing patent, or plant breeders' regimes, and include indigenous knowledge as a subject matter to be covered by its *sui generis* system for IP protection or it could set up a separate system for the protection of farmers' rights as part of its plant variety protection legislation.

Indeed, countries that are WTO members, parties to the CBD, and have signed on to the IUPGR should be aware that the development of *sui generis* legislation in respect to plant varieties that include PGRFA, may have to take account of several overlapping international obligations. Relevant obligations include Article 27.3(b) of the TRIPs Agreement, the access and benefit sharing provisions under Article 15 of the CBD, the access to, and transfer of technology provisions in Article 16 of the CBD and possibly also the rights of, indigenous and local communities under Article 8(j) of the CBD as well as the access and benefit-sharing clauses and farmers' rights pursuant to a revised IUPGR.

6. Review of Article 27.3(b) of the TRIPs Agreement

Significantly, Article 27.3(b) contains a built-in agenda for its review within four years after the entry into force of the agreement. This review process,

[119] *Id*.

which began in February 1999, also serves to assess the possible impact of IPRs, through plant variety protection, on the conservation and sustainable use of plant genetic resources and on the equitable sharing of benefits arising from their use.

During the Uruguay Round, the granting of IPRs over life forms was extremely controversial with industrialized countries, particularly the United States, seeking a harder patent regime and developing countries remaining bitterly opposed. The current text of Article 27.3(b) represents a compromise solution, based on European Community law. The review process to date has primarily consisted of information gathered by the WTO TRIPs Council,[120] a number of international organizations, including the FAO,[121] and the secretariats of the CBD[122] and UPOV.[123] There have been no substantive discussions to date, and such talks are not likely to take place in the near future for reasons related in particular to the manner in which the knowledge and innovations of indigenous and local communities are to be treated.

Several WTO members, during the course of the review, have emphasized the need to focus on harmonizing Article 27.3(b) of the TRIPs Agreement with the CBD and the revised IUPGR in order to protect the knowledge and innovations that are present in the agricultural practices of indigenous people and local communities.[124] Developing countries, in particular, are interested in introducing a *sui generis* system for plant varieties that would (1) specifically recognize the traditional knowledge and creativity of traditional

[120] Information has been gathered from a diverse range of WTO members, including many but not all developed countries for which TRIPs compliance has been mandatory since 1995 (those reporting including Australia, Canada, the European Community and its member states, Japan, Korea, New Zealand, Switzerland, South Africa, and the United States), as well as some developing and transition economy countries that have had a longer time frame for TRIPs implementation (Bulgaria, Czech Republic, Hungary, Morocco, Poland, Romania, Slovenia, and Zambia), Council for Trade-Related Aspects of Intellectual Property Rights—Review of the Provisions of Article 27.3(b), WTO Doc. IP/C/W/125 and addenda, Council for Trade-Related Aspects of Intellectual Property Rights—Review of the Provisions of Article 27.3.b, WTO Doc. IP/C/W/130 and addenda; all WTO documents are available at <http://www.wto.org>.

[121] *Review of the Provisions of Article 27.3(b)—Information from Intergovernmental Organizations—Addendum—FAO*, Council for Trade-Related Aspects of Intellectual Property Rights, WTO Doc. IP/C/W/130/Add.2 (12 April 1999).

[122] *Review of the Provisions of Article 27.3(b)—Information from Intergovernmental Organizations—Addendum—Secretariat of the Convention on Biological Diversity*, Council for Trade-Related Aspects of Intellectual Property Rights, WTO Doc. IP/C/W/130/Add.1 (16 March 1999).

[123] *Review of the Provisions of Article 27.3(b)—Information from Intergovernmental Organizations—UPOV*, Council for Trade-Related Aspects of Intellectual Property Rights, WTO Doc. IP/C/W//130 (17 February 1999).

[124] *See Preparations for the 1999 Ministerial Conference—The TRIPs Agreement—Communication from Kenya on behalf of the African Group Preparations for the 1999 Ministerial Conference*, WTO Doc. WT/GC/W/302 (6 August 1999). Additionally, the international non-governmental organization GRAIN recently called for a full review of Article 27.3(b) of the TRIPs Agreement. *See* GRAIN, For a Full Review of TRIPS 27.3(b)—An Update on Where Developing Countries Stand with the Push to Patent Life at WTO (March 2000) <http://www.grain.org/publications/reports/tripsfeb00.htm>.

breeders—that is, local farmers and indigenous groups; (2) allow them to claim rights over any distinct and identifiable varieties that they have developed as well as others that are essentially derived from these varieties; and (3) allow them to continue their traditional farming practices, including the right to save, exchange, and reuse seed as well as to sell the harvest wheresoever it is derived from.[125] In addition, countries may also consider imposing limitations on any rights given to commercial breeders that would satisfy one of the TRIPs provisions, such as the *ordre public* exemption and morality exceptions that conform to Articles 27(2)[126] and 30 of the TRIPs Agreement respectively. Nevertheless, there is increasing evidence that WTO members are seeking the easy way out by simply adopting plant variety protection legislation in conformity with the 1991 Act of UPOV,[127] perhaps without considering in detail their overlapping obligations under other international instruments, such as the CBD and the revised IUPGR, which call for access and benefit-sharing mechanisms that respect all forms of IPR, including sources of traditional knowledge.[128]

The Article 27.3(b) review process is currently awaiting the outcome of ongoing effort under the CBD to clarify the relationship between traditional knowledge and the conservation of biological diversity under Article 8(j) of the CBD. Moreover, some developing WTO members have indicated that they need time to explore more fully the potential for establishing *sui generis* IPR legislation at the national and/or regional level, which would take into account traditional knowledge, including innovations, creations, and cultural expressions.[129] There appears, therefore, to be little hope for early completion of the Article 27.3(b) review of the TRIPs Agreement.

V. AGROBIODIVERSITY AND INTELLECTUAL PROPERTY AT A CROSS-ROADS

The CBD, supported by the ongoing reform proposals for the IUPGR, is actually encouraging a system of bilateral arrangements between those from

[125] Singh Nijar, *supra* note.

[126] Dan Leskien and Michael Flitner, *Intellectual Property Rights and Plant Genetic Resources: Options for a Sui Generis System*, Issues in Genetic Resources No. 6, 16–17 (June 1997). India has reportedly done just this in Article 29(1) of its draft Act for the Protection of Plant Varieties and Farmers' Rights, which excludes varieties that are contrary to public morality; *see* Rural Advancement Foundation International (RAFI), *RAFI Communiqué*, March/April 2000, at 7, *available at* <http://www.rafi.org>.

[127] *See* GRAIN, *supra* note 124 at section 2.

[128] Details on the status of UPOV ratifications is given in the information that the UPOV Secretariat provided to the TRIPs Council, *supra* note 123, at 2.

[129] *See* General Council, Preparations for the 1999 Ministerial Conference, Proposal on Protection of the Intellectual Property Rights Relating to the Traditional Knowledge of Local and Indigenous Communities—Communication from Bolivia, Colombia, Ecuador, Nicaragua, and Peru, WTO Doc. WT/GC/W/362, (12 October 1999).

the gene-poor countries (mostly corporations and bioprospectors) who need access to PGRFA and their related knowledge, and governments from the gene-rich countries that retain sovereign control over those resources. The review of Article 27.3(b) of the TRIPs Agreement, which seeks to secure the grant of exclusive monopoly rights over plant genetic resources, simply reinforces this trend and in the long term could be seen to facilitate the appropriation of genetic information, much of which has until now been part of the genetic commons. Thus, a new act of enclosure by the IP system is being endorsed by the operation of major treaty regimes. The preceding sections have endeavoured to map out the legal contours of this complex problem, involving issues of sovereignty, natural resource management, and basic property rights, especially where intangible property rights are concerned, such as with IPRs, and to demonstrate the need for some serious consideration of the consequences that will arise from their coalescence.

An important issue remains outstanding. It is not yet clear to what extent, if any, modern biotechnology will contribute to achieving food security,[130] which is an issue that the FAO must address alongside its mandate to oversee the process of developing sustainable agriculture. The first-ever Global Forum on Agricultural Research (GFAR)[131] is due to convene shortly with the objective of bringing together all the stakeholders in research and development of agrobiodiversity to discuss ways of achieving food security besides conserving and managing PGRFA. The GFAR is a multi-stakeholder initiative that was started in 1996 by the CGIAR and comprises the IARCs in the CGIAR, research organizations in the northern hemisphere, and the National Agricultural Research Systems in the southern hemisphere, as well as donors, private sector participants, NGOs, and farmers' organizations.

The planned GFAR meeting will consider the role of proprietary technologies and their impact on the flow of germplasm and the conditions of access to technology in light of the developments reviewed in this article. The intention is that the GFAR stakeholders will adopt a declaration in which they will stress the importance of providing flexibility in national access legislation to reflect the peculiarities of the flow of PGRFA among countries for research and technology purposes, through the development of a multilateral

[130] *See Sustainable Agriculture and Rural Development: Trends in National Implementation: Report of the Secretary-General—Addendum 2—Biotechnology for Sustainable Agriculture*, UN Economic and Social Council, Commission on Sustainable Development, 8th Sess., at para. 8, UN Doc. E/CN.17/2000/7/Add.2 (2 February 2000). According to footnote 2 of the report an attempt has been made to analyze the issue: Per Pinstrup-Andersen et al, World Food Prospects: Critical Issues for the Early Twenty-First Century, 2020 Vision Food Policy Report (1999). The International Food Policy Research Institute (IFPRI, a member of the CGIAR) has also reviewed the issue in G.J. Persely (ed.), Biotechnology for Developing Country Agriculture: Problems and Opportunities, 2020 Vision Focus 2 (1999).

[131] The Global Forum on Agricultural Research (GFAR) is due to meet in Dresden from 21–3 May 2000, followed by the CGIAR Mid-Term Meeting (24–6 May 2000); for information, *see* <http://fao.org/nars/gfar2000/index.htm>.

exchange system of access and benefit sharing under a revised IUPGR, and to relate emerging IPRs over PGRFA to the interests of developing countries besides recognizing farmers' rights.

VI. PRIVATE OWNERSHIP AND THE FUTURE FOR A MULTILATERAL EXCHANGE SYSTEM OF CROP GERMPLASM

The legal status of crop germplasm held in the *ex situ* collections of the IARCs within the CGIAR, and other centres where the collections were made prior to the entry into force of the CBD, remains on the international agenda.[132] In 1994, as an interim measure, the CPGR (now the CGRFA) and the CGIAR jointly decided to develop agreements that would keep IARC-held germplasm in the public domain for the benefit of all humanity in line with the CGIAR system. As a result of the 1994 FAO/CGIAR agreements,[133] most of the designated material in the IARCs is held "in trust" for the world community. The IARCs have agreed to conserve PGRFA germplasm under conditions that meet international standards and not to take out any form of IPRs on the genetic information pertaining to the collected germplasm. They have also undertaken to ensure that entities receiving germplasm samples are bound by the same obligations (Articles 3 and 10). They must also transfer this obligation in the event that the material is transferred or exchanged under a so-called material transfer agreement (MTA).[134]

These latter agreements actually arose out of the entry into force of the CBD, which emphasizes sovereignty and a renewed bilateral approach, and have been superimposed on the free exchange paradigm, leading to a form of restricted, rather than free, access. Without such agreements, the IARCs might have been reduced to the role of "brokers" for individual countries in bilateral exchange transactions. Despite these measures, the future of the Multilateral Exchange system on crop germplasm looks uncertain. The changing IPR environment and the increasing privatization of agricultural research has forced the CGIAR to develop its own policies and procedures on

[132] It will be recalled that this is an outstanding issue under the CBD which does not explicitly deal with *ex situ* collections, such as exist at the 12 IARCs in the CGIAR or other genebanks, which were established prior to the convention's entry force mainly because no agreement could be reached on the matter. *See* section IV.2 in this article on the IUPGR revision and section IV.3 for information on the CBD. Instead, negotiators adopted Resolution 3 at the Nairobi Conference, requesting that the matter be dealt with through the FAO Global System; *see* Nairobi Conference, *supra* note 73.

[133] The FAO/CGIAR model agreements were concluded between the FAO and each of the twelve IARCs in the CGIAR system during the course of 1994. They led to the placing of some 500,000 germplasm accessions in the International Network and they were renewed in 1998; for details *see Progress Report on the International Network of Ex Situ Collections under the Auspices of FAO*, CGRFA, 8th reg. Sess., FAO Doc. CGRFA-9/99/7 (April 1999).

[134] *See* John H. Barton and Wolfgang E. Siebeck, *Material Transfer Agreements in Genetic Resources Exchanges—The Case of the International Agricultural Research Centres*, Issues in Genetic Resources No. 1 (1994).

IPRs over the past decade. It will be recalled that the CGIAR has no legal status and that its members often represent opposing sides of the debate over the conservation and use of PGRFA.[135] In late 1997 and again in 1998, there were a number of well-publicized cases of third parties seeking IPR protection (either plant variety protection or patent protection) over designated germplasm that was provided by CGIAR centres under MTAs.[136]

This situation raises questions about the IARCs' effectiveness in implementing and enforcing the terms of those MTAs that they have thus far entered into. The chairman of the CGIAR, Ismail Serageldin, even went so far as to call for a moratorium on the granting of IPRs on designated germplasm held in the collections of the CGIAR IARCs around the world.[137] In the face of this sentiment, some of those parties seeking to appropriate plant breeders' rights over crop germplasm have retreated. If the revised IUPGR is adopted, there could be a swift, but partial, conclusion to this issue—the current composite drafting text foresees the possibility of bringing PGRFA in the Multilateral Exchange System within the reach of "facilitated access" arrangements.[138]

VII. SUMMARY AND CONCLUSIONS

Current developments indicate that issues of ownership, control, and use of PGRFA, for the purposes of conservation and sustainable agriculture, are undergoing profound changes resulting from the growing privatization and commercialization of genetic material and genetic information. This article has reviewed some of the most salient features of those developments, including the commodification of the sources of propagation, both of germplasm and of genetic information, by privatizing these sources and removing them from the commons. The process has been aided by legal and institutional changes in three different regimes, which have been confronted with the issue of tangible and intangible property rights in genetic resources within the FAO global system, under the CBD, and as a consequence of the implementation

[135] Correa, *supra* note 16, at 9.

[136] Request filed with the Australian Plant Breeders' Rights Office for IPRs over the genetic information contained in germplasm designated under the CGIAR's Centre Agreements, regarding chickpeas, lentils, and forage crops. Following a CGIAR investigation, the request was withdrawn. Later that same year a patent on Basmati rice lines in the United States was found not to be in violation of a Centre Agreement since there was no designated rice germplasm the phenotypes of which were covered by a patent, and that could constitute an IPR claim; the rice germplasm in question had been distributed prior to the agreements between the CGIAR and the FAO, *see Progress Report on the International Network of Ex Situ Collections under the Auspices of FAO*, CGRFA, 8th reg. Sess., at paras. 11–13, FAO Doc. CGRFA-8/99/7 (February 1999).

[137] *Id*, at para. 14 and *CGIAR Urges Halt to Granting of Intellectual Property Rights for Designated Plant Germplasm*, CGIAR Secretariat Press Release (11 February 1998) <http://www.worldbank.org/html/cgiar/press/germrel.html>.

[138] *See* text and accompanying footnotes dealing with the proposed revisions to the IUPGR in section IV.2 in this article.

of Article 27.3(b) of the TRIPs Agreement. It also reveals the extent to which the boundaries delimiting the public and private spheres in PGRFA management and conservation are being redrawn, based upon the revisions to access and benefit-sharing mechanisms for genetic resources. This leads to some conclusions.

The advent of new biotechnologies in the agrochemical and pharmaceutical industries will continue to change the social and commercial context surrounding the access to, and exchange of, PGRFA. The CBD has provided the impetus for the growing recognition of state sovereignty over genetic resources, with its emphasis on national access and benefit-sharing mechanisms. Until recently, the access to, and exchange of, scarce PGRFA has largely been achieved through contractual arrangements between private actors and public authorities or private research entities with access on mutually agreed terms. By contrast, there is free access for designated germplasm, or material, located in *ex situ* collections at IARCs within the CGIAR system, which is held "in trust" for the world community.

Gradually though, parties to the CBD are seeking to implement the convention through the adoption of national legislation that creates genuine systems of rights and obligations on the access to, and transfer of, technology in genetic resources with regard to third parties. This trend is reinforced by the ongoing negotiations at the FAO on a revised IUPGR that includes a draft text on access and benefit sharing in the multilateral system and that, for the first time, introduces the notion of shared access (or facilitated access) for all PGRFA in the multilateral system, including genetic material that is held in *ex situ* collections (including those of the IARCs in the CGIAR system). If this text is adopted it will remove the last vestige of the common heritage principle on which free access and exchangeability of PGRFA in these *ex situ* collections was based because they formed part of the genetic commons.

This development is reinforced by the current status of the draft texts of Article 14 of the IUPGR, which reveals a more commercialized approach towards access and exchange of crop germplasm, based on the notion of private ownership of PGRFA and the removal of these resources from the genetic commons. The trend towards private ownership is further supported by the review of Article 27.3(b) of the TRIPs Agreement, which supports this process by calling on WTO members to provide protection for plant varieties, either by patents or a *sui generis* system.

The above developments also reveal the complexity of the relationship between agriculture, the environment, and intellectual property not only with respect to the overlapping subject matter but also with respect to the scope and reach of different legal regimes and instruments that address a diversity of stakeholders in the international management of PGRFA, which include public, private, individual, community, commercial, and non-profit actors and interests. It is too soon to draw any conclusions about the future of agro-

biodiversity and the private rights arising from the quest by these different actors to meet their different interests and objectives in the conservation and use of PGRFA.

What does seem likely is that the course is set for the further privatization and commercialization of genetic resources to the extent that we can speak about markets in genetic resources. Whether the increasing trend towards private ownership of PGRFA will pose a threat to world food supplies, particularly those of developing countries, is yet to be determined. The answer may lie in the degree to which public-private partnerships in genetic resource management, especially involving developing countries where essential crop germplasm is located, are successful in balancing the equities with respect to the results and benefits derived from crop conservation and improvement measures through the new biotechnologies that are based upon these genetic resources.

Controlling the Risks of Genetically Modified Organisms: The Cartagena Protocol on Biosafety and the SPS Agreement

Peter-Tobias Stoll

On 29 January 2000, after some five years of difficult negotiations, the Cartagena Protocol on Biosafety (Biosafety Protocol) to the UN Convention on Biological Diversity (CBD) was adopted.[1] It seeks to promote the "safe transfer, handling and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking into account risks to human health" (Article 1).[2] For a number of reasons, the Biosafety Protocol

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[1] Convention on Biological Diversity, 5 June 1992, reprinted in 31 ILM 818 (1992); also available at <http://www.biodiv.org/chm/conv/default.htm> [hereinafter CBD] and Protocol on Biosafety to the Convention on Biological Diversity, adopted 29 January 2000 <http://www.biodiv.org/biosafe/BIOSAFETY-PROTOCOL.htm> [hereinafter Biosafety Protocol]. The protocol has been elaborated according to a mandate in Article 19(3) of the CBD and was adopted at an Extraordinary Meeting of the Conference of the Parties to the CBD, which was convened initially in Cartagena in February 1999 and then resumed, after having been suspended, in January 2000 in Montreal. For details of the negotiation history, see *Report of the Extraordinary Meeting of the Conference of the Parties for the Adoption of the Protocol on Biosafety to the Convention on Biological Diversity*, CBD Doc. UNEP/CBD/ExCOP/1/3 (20 February 2000), <http://www.biodiv.org/excop1/pdf/engl/ExCOP-1–03-e.pdf> [hereinafter *Ex-COP Report*]. The protocol will be opened for signature in Nairobi on 15–26 May during the fifth Conference of the Parties [hereinafter COP] to the CBD. It will enter into force for its members after being ratified by fifty countries, according to Article 37 of the Biosafety Protocol.

[2] According to Article 3(g) of the Biosafety Protocol, *id.*, the term "*living* modified organisms" means "*any* living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology." According to a press release of the Secretariat of the CBD, "*LMOs* include various food crops that have been genetically modified for greater productivity or nutritional value, or for resistance to pests or diseases. Common examples include tomatoes, grains, cassava, corn, and soybeans. Seeds for growing crops are particularly important because they are used intentionally to propagate or reproduce LMOs in the environment. Together, these agricultural LMOs form the basis of a multi-billion-dollar global industry. Pharmaceuticals derived by using LMOs form the basis of an even larger industry (although pharmaceuticals are not covered by this agreement)." *Global Treaty Adopted on Genetically Modified Organisms,* Montreal, 29 January 2000, <http://www.biodiv.org/press/pr-2000-01-28-biosafety.html>.

can be considered a turning point in the legal developments in a field that found itself at the interface between transboundary risk management and international trade. First, trade and environment issues took centre stage in the protocol negotiations, which were dominated by interventions from a group of states that have a vested interest in exporting genetically engineered agricultural goods. Second, some of the protocol's core provisions mirror rules that are contained in the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement),[3] which was added to the body of international trade law with the establishment of the World Trade Organization (WTO). Third, the protocol in its final version includes three preambular recitals that concern its relationship to trade rules.[4] In view of the much-discussed interaction between trade and environment law, these recitals have been considered by some observers as an achievement of sorts.[5] Finally, the protocol puts the precautionary principle in a prominent position, placing it both in its preamble and objectives provision, and in its operative provisions.

This article seeks to illustrate that the Biosafety Protocol's ability to control the risks associated with LMOs is questionable, given the many legal uncertainties that states will face when applying it. After considering the background to the Biosafety Protocol, the article will first consider the protocol's core elements: the advanced informed agreement (AIA) procedure, the risk assessment associated with the AIA, and the provisions on precautionary action. In doing so, reference will be made to two other recent international agreements that relate to transboundary movements of particular types of hazardous substances and materials, namely the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention),[6] and the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC Convention).[7] The discussion will then

[3] Agreement on the Application of Sanitary and Phytosanitary Measures, 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, 33 ILM 1226 (1994) [hereinafter WTO Agreement], Annex 1A 1994 OJ (L 336) 40 [hereinafter SPS Agreement], *see also* <http://www. wto.org/goods/spsagr.htm>.

[4] Preambular Recitals 9 to 11 of the Biosafety Protocol, *supra* note 1, read: "*Recognizing* that trade and environment agreements should be mutually supportive with a view to achieving sustainable development, Emphasizing that this Protocol shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreements, Understanding that the above recital is not intended to subordinate this Protocol to other international agreements."

[5] For cautiously optimistic views on this issue, *see* Michelle Swenarchuk, *The Cartagena Biosafety Protocol: Opportunities and Limitations*, February 2000, <http://www.web.net/cela/Trad&Env/biosafe.htm> and Lim Li Lin, *Biosafety Talks End on Mixed Note*, 31 January 2000, <http://www.twnside.org.sg/title/mixed2-cn.htm>.

[6] Adopted 22 March 1989, 1673 UNTS, No. 28911 (5 May 1992); reprinted in 28 ILM 649 (1989) [hereinafter Basel Convention].

[7] Reprinted in 38 ILM 1 (1999) [hereinafter PIC Convention]. The convention was signed on 11 September 1998 by ministers and representatives from fifty-seven countries and the European

turn to relevant provisions of international trade law and, in particular, the most salient provisions in the SPS Agreement, which, like the protocol, provides for risk assessment and also for precautionary action. The article will highlight the potential for coherence and conflict, respectively, between the two agreements. An overview will be provided on how the protocol seeks to address its relationship to the SPS Agreement. Finally, the article will consider whether the Biosafety Protocol can really ensure a "mutually supportive" relationship between trade and environment agreements "with a view to achieving sustainable development," as is envisaged in its preamble.[8]

As will be shown, doubts arise in this regard, because the potential for establishing interlinkages between the protocol and trade rules, especially the SPS Agreement, has neither been fully explored nor used. It will be argued that while the provisions of the Biosafety Protocol and the SPS Agreement need not be construed as being inconsistent, the many legal uncertainties resulting from the considerable overlap of comparable, but significantly different, concepts will render it difficult for states to use the authority entrusted to them by the protocol.

I. MODERN BIOTECHNOLOGY: RISKS, INTERESTS, AND THE BIOSAFETY PROTOCOL

Modern biotechnology is used to modify organisms by creating a novel combination of genetic material in order to generate a variety of products and applications, including pharmaceuticals, food, and animal feed.[9] Sometimes, as is the case with seeds, food, or feed crops, LMOs are directly used.[10] In other cases, they are used to produce substances in contained fermenters (which is known as a "contained use") or may be further processed into a product. In the latter situations, the final product may no longer be a

Community. It will have to be ratified by at least fifty countries to enter into force. In order to ensure that work under the convention can start immediately, the meeting of representatives adopted an interim procedure on the voluntary implementation of the treaty until it becomes legally binding. See *Rotterdam Convention on Harmful Chemical and Pesticides Adopted and Signed*, FAO/UNEP Press Release, 11 September 1998, <http://www.fao.org/ag/agp/agpp/pesticid/pic/picnews7.htm>. For the negotiation history, *see* Katharina Kummer, *Prior Informed Consent for Chemicals in International Trade: The 1998 Rotterdam Convention* 8 Review of European Community and International Environmental Law 322, at 323 (1999).

[8] Biosafety Protocol, *supra* note 1, at the ninth preambular recital.

[9] According to Article 3(i) of the Biosafety Protocol, *supra* note 1, "modern biotechnology means the application of:

a. *in vitro* nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or
b. Fusion of cells beyond the taxonomic family,

that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection."

[10] For example, in planting pesticide-resistant seeds of soybeans, corn, potatoes, tomatoes, and maize.

living organism and, in some cases, may no longer even contain genetic material.[11]

The proliferation of biotechnology and its growing commercial use have given rise to policy and legislative initiatives that aim to address the potential hazardous effects on human, animal, or plant health and on the environment. A variety of different rules and standards have been developed at the national and regional levels. They address concerns relating to issues as diverse as laboratory practice, occupational safety, field testing, approval of foods, labeling of products, drugs, or the deliberate release of LMOs into the environment.[12]

1. The CBD Mandate

Some of the concerns about the potential risks associated with LMOs were raised during the negotiations of the CBD, which focuses on the conservation of biodiversity and the sustainable use of its components.[13] Indeed, the introduction of a genetically modified organism into the environment may have an impact on the receiving ecosystem, such as a possible transfer of genes and a subsequent modification of native species. In order to address these concerns, Article 8(g) of the CBD calls on states "to establish or maintain means to regulate, manage or control risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity" and adds "taking also into account the risks to human health." Article 8(g) probably marked the first time that international law explicitly pronounced itself on this issue. The provision is of special relevance because it establishes a link between the risks associated with LMOs and the conservation of biological diversity, which is no longer considered an exclusively national matter but, according to the CBD's third preambular recital, constitutes a common concern of humankind.[14]

Article 8(g) is not the only provision on biotechnology in the convention. Other provisions reflect the high expectations of modern biotechnology and

[11] For instance, in the case of oil pressed from genetically modified soybeans.

[12] *See,* for instance, the following EU instruments: EEC Directive 90/219 of 23 April 1990 on the Contained Use of Genetically Modified Micro-Organisms, 1990 OJ (L 117) 1, as amended by EC Directive 98/81 of 26 October 1998, 1998 OJ (L 330) 13; EEC Directive 90/220 of 23 April 1990 on the Deliberate Release into the Environment of Genetically Modified Organisms, 1990 OJ (L 117) 15, as amended by EC Directive 97/35 of 18 June 1997, 1997 OJ (L 169) 72; Regulation (EC) No 258/97 of the European Parliament and of the Council of 27 January 1997 Concerning Novel Foods and Novel Food Ingredients, 1997 OJ (L 043) 1; Council Regulation (EC) No 1139/98 of 26 May 1998 Concerning the Compulsory Indication of the Labeling of Certain Foodstuffs Produced from Genetically Modified Organisms of Particulars Other Than Those Provided for in EEC Directive 79/112, 1998 OJ (L 159) 4.

[13] *See* CBD, *supra* note 1, at Article 1.

[14] *See id.,* at the third preambular recital, which reads: "*Affirming* that conservation of biological diversity is a common concern of humankind."

aim at attaining a fair and equitable distribution of its benefits.[15] Moreover, in its Article 19(3), the CBD calls on parties "to consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity." Article 19(3) provided the mandate for the negotiation of the Biosafety Protocol, but indicates only in rather vague terms the aspects regarding the use of LMOs that should be subject to international regulation, in addition to the already existing obligation to take appropriate domestic measures. The use of the term "transfer" of LMOs, however, indicates that the main focus of the negotiations was to be on the transboundary movements of LMOs—primarily in the course of trade. Indeed, the Biosafety Protocol's most disputed core provisions deal with the control of such transboundary movements.

2. The Biosafety Protocol and Its Negotiations: Interests, Groups, and Issues

On the basis of the CBD mandate, negotiations started within an Open-ended Ad Hoc Working Group on Biosafety (BSWG), which held six meetings between July 1996 and February 1999. Negotiations were to be concluded by an Extraordinary Meeting of the Conference of the Parties (ExCOP), which convened in Cartagena in February 1999. After the failure of the Cartagena Conference and the resulting suspension of negotiations, negotiations resumed in January 2000 in Montreal, where the Biosafety Protocol was adopted on January 29.[16] During the negotiations, states formed coalitions around overlapping interests. Five main coalitions were formed during the negotiations for the Biosafety Protocol.

First, a majority of the developing states, which normally gather under the heading of the "Group of 77 and China," for the purposes of the protocol convened and acted as a group of "like-minded states." They expressed an overall skepticism regarding the desirability of developing LMOs and the benefits that might be obtained from their use. This group was particularly concerned about the economic and social consequences that would result from the export and use of genetically engineered crops by the influential international seed industry. Furthermore, they emphasized their lack of capacity to assess and control the risks of LMOs. Thus, the like-minded group favoured a strict control scheme, taking into account the critical shortage of technical and regulatory capacity in developing countries, and argued

[15] *See id.*, for example, Article 15(7), Article 16(1), and Article 19.

[16] For a summary of ExCOP and the Open-ended Ad Hoc Working Group on Biosafety (BSWG) negotiations leading up to it, see Earth Negotiations Bulletin, vol. 9, no. 137, 31 January 2000, available at <http://www.iisd.ca/vol09/enb09137e.html>. *See also Ex-COP Report*, *supra* note 1.

for the consideration of socio-economic factors, such as the impact of regulatory measures on rural agricultural communities, in addition to biological aspects.

The European Union (EU) also emphasized the need for efficient controls. The EU had revised its policies regarding biotechnology and LMOs in view of the growing domestic public concern during the course of the negotiations. The EU had an interest in seeing its new and more restrictive approaches translated into an international instrument in order to bolster its position in the case of a conflict between importing and exporting state interests. In addition, the EU took the position that the precautionary principle should play an important role in the biosafety regime.

At the other end of the spectrum of views was a third small group of states—the so-called Miami group—which had formed around its members' shared interest in safeguarding the export trade in genetically modified products, in particular, in agricultural products. The group included Australia, Canada, and the United States, which had traditionally played a leading role as exporters of agricultural products.[17] Argentina, Uruguay, and Chile, which had only recently become important players in international agricultural trade and genetic engineering, also joined the Miami group. While the group questioned the concerns about LMOs and associated risks as such, it was especially concerned with avoiding cumbersome procedures for the shipment of agricultural products that were destined for direct consumption as food, (animal) feed, or for processing rather than for release into the environment.

A fourth coalition, the "compromise group," which comprised Norway, Japan, and Switzerland, formed during the later stages of the negotiations and attempted to bridge the different positions outlined above. While sharing the main environmental concerns regarding LMOs, the compromise group sought to find solutions that would be compatible with existing trade rules and interests. The fifth group included the central and eastern European states, which pointed to their critical shortage of capacity. In all other respects, this group tended to rely on the EU's positions.

The fundamental differences between the positions of the five groups became evident especially in relation to the most difficult aspects of the negotiations, namely, the concept of the AIA; the question of whether there should be special rules for LMOs intended for direct use as food, feed, or processing; the precautionary principle and its application; the question of what documentation is to accompany shipments of LMOs; liability issues; and non-discrimination.

[17] The United States officially participated in the negotiations as an observer. As a non-party to the CBD, the US cannot be a party to the Biosafety Protocol. *See* CBD, *supra* note 1, at Article 32(1).

3. The Outcome: The Biosafety Protocol's Objective and Regulatory Framework

The Biosafety Protocol aims to "contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements."[18] It covers all LMOs (Article 4) but allows for some exceptions in the cases of pharmaceuticals (Article 5) and mere transit or contained use of LMOs (Article 6(1) and (2)).

For the regulation of transboundary movements of LMOs, the protocol primarily relies on action to be taken by states in the form of AIA and risk assessment, as provided in, respectively, Articles 6 and 8. These provisions will be reviewed in detail in the next section of this article.

Through its Article 16, the protocol also imports obligations that already exist under Article 8(g) of the CBD with respect to "risk management" at the national levels, adding little new substance in this regard. Further, it contains provisions on early information and cooperation among states in the case of "unintentional" transboundary movements (Article 17). Both the terminology used and the regime established in this regard track previous developments in international environmental law.[19] The much-debated question of liability and redress for damage resulting from transboundary movements of LMOs is left for the parties to consider at a later stage. Article 27 calls upon the first meeting of the parties to adopt a process for the elaboration of appropriate international rules and procedures and to endeavour to complete the process within four years.[20]

For the purpose of information exchange and sharing, the protocol relies on an internet-based clearinghouse mechanism.[21] The newly established "biosafety clearinghouse" is modeled after and will be a part of the clearinghouse mechanism that already exists under the CBD.[22] The biosafety

[18] Biosafety Protocol, *supra* note 1, at Article 1.

[19] *See* Tobias Stoll, *The International Environmental Law of Cooperation*, *in* Enforcing Environmental Standards: Economic Mechanisms as Viable Means, 39 (Rüdiger Wolfrum, ed., 1996).

[20] The Basel Convention, *supra* note 6, contains a similar mandate in its Article 12. It is noteworthy in this regard that a draft Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal has been elaborated for adoption by the fifth Conference of the Parties on 12 December 1999, *see* <http://www.unep.ch/basel/COP5/cop5.html >.

[21] Biosafety Protocol, *supra* note 1, at Article 20.

[22] The clearinghouse mechanism of the CBD was established by Decision I/3 on the Clearing-House Mechanism for Technical and Scientific Cooperation, *Report of the First Meeting of the Conference of the Parties to the Convention on Biological Diversity*, at 37, CBD Doc. UNEP/CBD/COP/1/17 (28 Feburary 1995), pursuant to the mandate of Article 18(3) of the CBD, *supra* note 1. *See* <http://www.biodiv.org/chm/>.

clearinghouse will serve to centrally gather information submitted by the member states' national authorities and relevant national focal points. Aside from providing general information, it will assist in the information exchange concerning particular cases of transboundary movements of LMOs, thus adding to the transparency of national decisions.[23]

The protocol also envisages the establishment of a non-compliance procedure that "shall include provisions to offer advice or assistance . . ."[24] The procedure is separate from the dispute settlement mechanism provided for by the CBD, which is, in principle, applicable for disputes arising under the protocol.[25]

A final issue that merits attention is the relationship between state parties and states not party to the Biosafety Protocol. This matter is likely to give rise to legal debate, in particular, with regard to the United States, who participated as an observer in the negotiations for the protocol as it is not a party to the CBD.[26]

II. CONTROL OF TRANSBOUNDARY MOVEMENTS OF LMOS UNDER THE PROTOCOL: AN ENVIRONMENTAL APPROACH TO RISK

The core provisions of the Biosafety Protocol deal with the intended transboundary movements of LMOs. They establish the AIA mechanism and include a special procedure for LMOs intended for food, feed, or processing (LMO FFPs), the risk assessment procedure, and the precautionary principle. To some extent, these provisions build on other international instruments governing the transboundary movements of certain goods, including wastes and chemicals.[27] However, due to the different underlying risk philosophy, the protocol provisions differ from these models in several important respects.

1. AIA Procedure: The Core Mechanism for Controlling Transboundary Movements

A. Procedures for LMOs in General

Pursuant to the mandate for the protocol negotiations, the control of transboundary movements of LMOs relies on a procedure called the AIA.[28] The AIA procedure is preventive; it aims at controlling the movement of certain

[23] For details, *see* section II.1.A later in this article.

[24] Biosafety Protocol, note 1, at Article 34.

[25] CBD, *supra* note 1, at Article 27 and Annex II and Biosafety Protocol, *supra* note 1, at Article 34.

[26] On this issue, *see supra* note 17.

[27] *See* the Basel Convention, *supra* note 6, and the PIC Convention, *supra* note 7.

[28] The mandate of Article 19(3) of the CBD, *supra* note 1, in this respect reads: "*The* Parties shall consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement."

goods and materials *before* the export actually takes place. Thus, under the AIA procedure, intended transboundary movements of LMOs have to be notified to the importing party in advance and may only proceed after that state has given its explicit consent.

Pursuant to Article 7(1), the AIA procedure applies to the "first intentional transboundary movement" of LMOs "for intentional introduction into the environment" of the importing party.[29] According to Article 8, the AIA procedure begins with a written notification that must contain a minimum range of information, as set out in an annex to the protocol. Rather than handle the notification directly, the exporting party may require its exporters to ensure that notification occurs and that it contains accurate information.[30] The next step in the AIA process involves a specific written acknowledgment of receipt of the notification by the importing party (Article 9). The acknowledgment must also include a statement as to whether the importing state intends to proceed according to its domestic regulatory framework or according to the Biosafety Protocol's rules, as stipulated in Article 10. The protocol's reference to domestic regulatory frameworks acknowledges that such frameworks may already be in place. However, Article 9(3) clarifies that the frameworks must be consistent with the Biosafety Protocol.[31] The acknowledgment must occur within ninety days. However, the failure of a party to act accordingly does not imply its consent to the shipment in question (Article 9(4)).

The protocol then sets out a decision-making procedure that, first of all, requires the importing party to inform the notifier within ninety days whether it will subject the transboundary movement to a requirement of written consent or whether the shipment may proceed, without such consent, after a period of no less than ninety days (Article 10(2)) has passed. If a written consent procedure is chosen, the importing party can reach a range of decisions, which include final prohibition or unconditional or conditional approval, and can include conditions on subsequent imports. Further, additional relevant information may be requested or the decisionmaking time frame extended for an additional "defined period of time" (Article 10(3)(a)-(d)). This time frame amounts to 270 days after receipt of notification. As Article 10(5) clearly indicates, a failure of the party of import to communicate its decision within this

[29] Biosafety Protocol, *supra* note 1. Its range of application according to Article 7(1) excludes pharmaceuticals (Article 5) and cases of transit or contained use (Article 6) and may in the future exclude specific LMOs so identified by the governing body of the Biosafety Protocol pursuant to Article 7(4). Furthermore, a special procedure applies to commodities, now referred to as "*living* modified organisms intended for direct use as food or feed, or for processing" (Article 7(2) and (3), Article 11).

[30] Article 8(1) and (2) of the Biosafety Protocol, *id.*, refer to the task of notification generally, while Annex I lays down specific requirements concerning the information that is to be included in the notification.

[31] As the European Union has enacted elaborate provisions governing the marketing and release into the environment of LMOs that, moreover, are under review, it has a particular interest to see its regulatory approaches accommodated by the protocol.

time frame does not imply a consent.[32] Any decision is to be communicated to the notifier as well as to the biosafety clearinghouse.[33]

The AIA procedure is very much in line with the prior informed consent procedures established under the Basel Convention and the PIC Convention.[34] In the case of the Biosafety Protocol, however, more detailed rules for the procedure are provided, including the above-mentioned specific time frames, the option for import parties to rely on domestic legislation, and the explicit exclusion of implicit consent.[35]

In the Basel and the PIC Conventions, a clear-cut prohibition of exports is provided for in cases where consent by the import state is pending or has been denied.[36] In addition, in the Basel Convention, export states accepted an obligation to take back materials moved "illegally" (that is, without the prior consent of the importing state) or to arrange for their destruction.[37] The Biosafety Protocol contains a similar "take back" duty[38] but refrains from stating an unequivocal prohibition of export. Instead, it adopts a less strict approach by requiring states to "adopt appropriate domestic measures aimed at preventing and, if appropriate, penalizing transboundary movements of living modified organisms carried out in contravention of its domestic measures to implement this Protocol" (Article 25(1)). At the same time, an innovative type of "enforcement" is introduced by Article 25(3), which requires that "each Party shall make available to the Biosafety Clearing-House information concerning cases of illegal transboundary movements pertaining to it."

B. Special Procedure for LMO FFPs

As hinted at the outset of this article, the application of the AIA procedure to agricultural commodities was one of the most contentious issues in the protocol negotiations. Only in the final negotiating round was it possible to achieve a compromise. As Article 7(2) indicates, the AIA procedure does not

[32] In effect, this stipulation undercuts the strict applicability of the time frame and opens up the possibility of circumvention. However, the member states will legally be bound by the specifically defined time frame. This is a matter to be dealt with by the compliance mechanism that is to be developed under Article 34 of the Biosafety Protocol, *supra* note 1.

[33] The decisionmaking by parties of import shall be facilitated in the future through appropriate procedures and mechanisms to be decided upon by the COP to the Biosafety Protocol, *id.*, at Article 10(7).

[34] *See* Basel Convention, *supra* note 6, and PIC Convention, *supra* note 7.

[35] *See* Biosafety Protocol, *supra* note 1, at Article 8 et seq., as discussed above in comparison to the Basel Convention, *supra* note 6, at Article 6, and the PIC Convention, *supra* note 7, at Article 10 *et seq*.

[36] Basel Convention, *supra* note 6, Article 4(b), and PIC Convention, *supra* note 7, Article 11.

[37] Basel Convention, *supra* note 6, Article 8: "Duty to Re-import."

[38] See Biosafety Protocol, *supra* note 1, at Article 25 and, in particular, Article 25(2), which states that the affected party "may request the Party of origin to dispose, at its own expense, of the living modified organism in question by repatriation or destruction, as appropriate."

apply to LMOs intended for direct use as food, feed, or for processing. Article 11 establishes a distinct mechanism for LMO FFPs. Instead of requiring there to be notification of each individual intended movement, the compromise mechanism requires that a party's final decision regarding domestic use of an LMO must be communicated through the clearinghouse to all protocol parties within fifteen days of the decision being made. On the basis of such information, other parties may take decisions on import according to their domestic regulatory framework, provided that it is consistent with the objective of the Biosafety Protocol (Article 11(4)). In the absence of such legislation, developing country parties or parties with an economy in transition may declare that, within a predictable and limited time frame not exceeding 270 days and prior to the first import of an LMO FFP, they will take a decision on the basis of the Biosafety Protocol's risk assessment provisions (Article 11(6)).

This special procedure was included to accommodate the Miami group's trade-related concerns by exempting LMO FFPs from shipment-by-shipment decisionmaking by the importing state. At the same time, importing states' safety concerns are addressed by providing an opportunity for the timely consideration of the risks associated with new LMOs and for decisionmaking regarding future imports of that LMO.

C. Transport-Related Provisions on Handling, Packaging, and Documentation

The control of movements of LMOs as envisaged by the AIA procedure is accompanied by rules addressing the specific needs and dangers associated with transports of such items. In keeping with, and referring to, the large body of international rules and standards on the issue,[39] Article 18(1) addresses questions regarding the safe handling, packaging, and transport of LMOs. The question of documentation, which is part of the rather technical body of law on the safety of international transports, turned out to be a highly troublesome and difficult issue in the case of the protocol negotiations. Early

[39] There are a number of international provisions on the transport of hazardous substances. They often deal specifically with certain means of transport. A European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) (available at <http://www.unece.org/trans/danger/publi/adr/pubdet.htm#151>) has been concluded in 1975 under the auspices of the United Nations Economic Commission for Europe (ECE). The International Convention Concerning the Carriage of Goods by Rail (CIM), 7 February 1970, UK TS 40 (1970), addresses the question of hazardous goods in the framework of dealing with railroad transport. Similar rules exist under the International Air Transport Association (at <http://www.iata.org>) and the International Civil Aviation Organization (at <http://www.icao.org>). In regard to transports on sea, the International Convention for the Prevention of Pollution from Ships (MARPOL), 2 November 1973, <http://sedac.ciesin.org/ pidb/texts/pollution.from.ships.1973.html> contains a specific set of rules in Annex III, "Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Forms, or in Freight Containers, Portable Tanks or Road and Rail Tank Wagons"; Annex III entered into force on 1 July 1992.

drafts had required the documentation accompanying a shipment to contain information about (1) the type of LMO and its properties; (2) safety aspects; (3) a contact point for further information, and information on the exporter and the importer; and (4) a declaration of conformity of the movement with the Biosafety Protocol.[40]

As ultimately adopted, the protocol distinguishes the different kinds of uses for each LMO that is to be moved and envisages different information for each case. The full amount of information as outlined above is only required for movements of LMOs intended for intentional introduction into the importing party's environment (Article 18(2)(c)). In the case of LMOs destined for contained use, their clear identification as LMOs; the information on requirements for their safe handling, transport, storage, and use; the contact point for further information; and "the name and address of the individual and institution to whom the living modified organisms are consigned" suffice (Article 18(2)(b)).

The most disputed case, again, was that of LMOs FFPs. According to Article 18(2)(a), the accompanying documentation has to "clearly identify" that shipments "may contain" LMOs and that these are not intended for intentional introduction into the environment, as well as indicate a contact point for further information. In addition, within two years of the entry into force of the protocol, the CBD Conference of the Parties (COP), serving as a meeting of the parties to the Biosafety Protocol (COP/MOP), shall decide on "detailed requirements, including specification of their identity and any unique identification."[41]

2. Rules for Import State Decisions: Risk Assessment, Socio-Economic Considerations, and Review

Notwithstanding their differences, both the general AIA procedure and the special procedure for LMO FFPs ultimately rely on individual states' import decisions. Given that the core of the international control regime thus rests on these import decisions, the Biosafety Protocol contains rather specific rules in this regard. It requires parties to undertake a risk assessment prior to taking a decision, provides for a possible review of the decision, and points to other factors that need to be taken into account, including socio-economic considerations and the precautionary principle. This approach differs considerably from that of the Basel and PIC Conventions. Those conventions, providing

[40] Draft Protocol on Biosafety, Article 15(1)(b)(i)–(iv), *Draft Report of the Extraordinary Meeting of the Conference of the Parties for the Adoption of the Protocol on Biosafety to the Convention on Biological Diversity,* Annex V, CBD Doc. UNEP/CBD/ExCOP/1/L.2/Rev.1 (23 February 1999).

[41] More generally, the Biosafety Protocol, *supra* note 1, at Article 18(3), obliges the COP to "consider the need for and modalities of developing standards with regard to identification, handling, packaging, and transport practices, in consultation with other relevant international bodies."

for a prior informed consent-type mechanism for transboundary movements of hazardous wastes and banned or severely restricted chemicals, do not offer any guidance for the decisionmaking process. Rather, they confine themselves to setting out and limiting the possible final decisions to be taken by the national authorities.[42]

A. Risk Assessment

The Biosafety Protocol's most important provisions on risk assessment are Articles 10(1), 11(6)(a), and 15(2), which oblige states to undertake a risk assessment *prior* to taking decisions on import. The Biosafety Protocol provides extensive rules on the details of such assessment. Article 15(1) and Annex III, section 3, which flesh out the risk assessment process envisaged by the protocol, require that such an assessment be carried out in a scientifically sound manner and also take into account recognized risk assessment techniques. At a minimum, risk assessment must be based on information obtained under Article 8, which requires the prior notification of movements accompanied by basic information, and on other available scientific evidence.[43]

(i) Rules on the details of the assessment

Building on these general principles, Annex III lists a number of specific obligations concerning methodology and "points to consider," which must be included in a risk assessment. According to Annex III, section 1, it is "[t]he objective of risk assessment, under this protocol . . . to identify and evaluate the potential adverse effects of living modified organisms on the conservation and sustainable use of biological diversity in the likely potential receiving environment, taking also into account risks to human health." The emphasis on each particular situation as defined by the "likely potential receiving environment" is further highlighted by the case-by-case approach outlined in Annex III, section 6. Furthermore, Annex III, section 5, calls for the consideration of risks associated with LMOs "in the context of the risks posed by the non-modified recipients or parental organisms in the likely potential receiving environment."

Annex III, section 7, outlines specific steps that risk assessment should entail in order to fulfil its objective. These steps include the identification of the novel characteristics associated with the LMO "that may have potential adverse effects in the likely potential receiving environment." Further points of reference concern "the likelihood of these adverse effects being realized," the potential consequences of such effects, and an estimation of the overall

[42] Basel Convention, *supra* note 6, at Article 6(2), and PIC Convention, *supra* note 7, at Article 10(4) and (9).

[43] The information required in notifications under Articles 8, 10, and 13 is specified in Annex I to the Biosafety Protocol, *supra* note 1.

risk.[44] The assessment is to provide a "recommendation as to whether or not the risks are acceptable or manageable, including, where necessary, identification of strategies to manage these risks" (Annex III, section 8(e)) and, in the case of uncertainty regarding the level of risk, includes the option of requesting further information, implementing appropriate risk management strategies, or monitoring the LMO in the receiving environment (Annex VII, section 8(f)). Thus, the approach of the Biosafety Protocol is to link import state controls to a case-by-case risk assessment that is to be undertaken at a national level in accordance with the protocol's international standards.

(ii) The Biosafety Protocol's risk assessment concept

The risk assessment provision is a peculiarity of the Biosafety Protocol. Neither the Basel Convention nor the PIC Convention contain a comparable provision, nor do they even use the term "risk." The PIC of the importing state is the main control mechanism employed by those two instruments, and it is within the full discretion of each party. The differences in approach are explained by how the Basel and PIC Conventions define the items to be moved.

The Basel Convention and its controls apply to "hazardous waste" as defined by its annexes and by national legislation.[45] It reflects an agreement of states that this whole category of materials is "hazardous" and that their movements should best not take place at all. The PIC Convention applies a similar approach to the hazardous chemicals listed in its Annex III, which are referred to as "banned" or "severely restricted" because they have provoked regulatory action of a particular state or states.[46]

The Biosafety Protocol's unique combination between import state control and risk assessment results from the fact that it does not contain an agreed definition of materials that the importing state may refuse without condition or even an agreement that the substances it regulates are "undesirable." Indeed, to the extent that the protocol envisages a substantive international judgment on the effects that LMOs may have on the protocol's objectives, such judgment would point in the opposite direction: the COP/MOP can declare that a given LMO is not likely to have adverse effects (Article 7(4)). For all other cases, the Biosafety Protocol confines itself to prescribing the details of a risk assessment, which has to be undertaken at the national level. The primary purpose, then, of import state control as envisaged by the AIA

[44] *Id.*, at Annex III (8)(a), (b), (c), and (d).

[45] Hazardous wastes may be defined by national legislation according to Article 3 of the Basel Convention, *supra* note 6. Additionally, the Basel Convention in Annex I lists "Categories of Wastes to Be Controlled" and contains a "List of Hazardous Characteristics" in its Annex III.

[46] The PIC Convention, *supra* note 7, at Annex III, lists twenty-seven specific substances that shall be subject to the PIC procedure. Additionally, the PIC Convention contains an elaborate procedure to add substances to the list, depending on national regulatory action as a trigger. *See also* Article 5(5) of the convention.

procedure and the special procedure for LMO FFPs is to enable the early assessment of *potential* risks according to internationally agreed rules. This approach reflects the underlying risk philosophy, which holds that the effects a given LMO may produce largely depend on the kind of ecosystem or environment into which it is introduced.

(iii) Sharing the burdens of risk assessment

The duty to conduct a risk assessment places a considerable burden on potential importing states, which must take decisions in the absence of internationally agreed determinations and in an area that is likely to be much disputed internationally. Options for compensation for the burden and cost of risk assessment are provided for in the Biosafety Protocol in a rather innovative way. Aside from technical cooperation, assistance, and capacity building, an importing party, under Article 15(2) and (3), may require the exporter to carry out the risk assessment or may require the notifier to bear the cost. However, as their wording reveals, both provisions are only applicable in the case of an AIA and, thus, do not cover an import state's risk assessment in the case of LMO FFPs.[47]

B. Socio-Economic Considerations

The Biosafety Protocol distinguishes between risk assessment, decisions on import, and a broader notion of risk management. Thus, it takes into account that the results of a scientific assessment are one, but not the only, element in a broader concept of decisionmaking in view of a risk. The protocol's provisions do not comprehensively list all possible elements and steps that need to be taken to arrive at a decision on import. Some aspects, however, are specifically mentioned. In particular, in order to capture concerns voiced by developing states, Article 26 provides that parties, "in reaching a decision on import, may take into account, consistent with their international obligations, socio-economic considerations arising from the impact of living modified organisms on the conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities." The relevant socio-economic considerations have hardly been precisely specified. However, it can be assumed that these considerations will include the impact of the rules and structures of the growing international market for seeds and agricultural technologies on rural agricultural communities. Insofar, the reference to indigenous and local communities is to Article

[47] Biosafety Protocol, *supra* note 1, at Article 15(2), which refers to Article 10 only. Article 15(3) stipulates that the cost shall be borne by the "*notifier* if the Party of import so requires." Article 11, however, dealing with the procedures for LMO FFPs does not envisage a notification. Also, Annex I, which lays down specific notification obligations for the importer—including a risk assessment—is entitled "Information Required in Notifications under Articles 8, 10, and 13," and does not mention Article 11.

8(j) of the CBD on the same subject. It is worth noting that the protocol does not link socio-economic considerations to "adverse effects" but focuses them more generally on impacts of the LMO in question. However, the reference to international obligations will likely limit the relevance of Article 26. By subjecting the socio-economic considerations to consistency with other international obligations it is clear that rules laid down in international agreements on trade and intellectual property will prevail.

C. Review Procedure

In Article 13, the Biosafety Protocol provides for an elaborate procedure for the review of import decisions, which reflects the uncertainties and difficulties of assessing potential adverse effects of LMOs and which attempts to balance the need for a review option and the rights, interests, and views of exporting states and exporters. This procedure may be invoked by the importing state party at any time to review and change decisions in light of new scientific information on possible adverse effects on the conservation and sustainable use of biological diversity. Notifiers of previous transboundary movements of the LMO in question and the biodiversity clearinghouse are to be informed within thirty days. More importantly, however, an exporting party or a notifier may request the importing party to review a decision in view of a change of circumstances or as a result of the availability of additional relevant scientific or technical information (Article 12(2)).

3. Making the Precautionary Principle Work

The final and perhaps most significant element of the protocol's risk assessment regime is its reliance upon the precautionary principle.[48] In the case of biosafety, application of the precautionary principle is crucial because modern biotechnology has only recently developed and its impact on ecosystems is difficult to ascertain and may be difficult to reverse. Moreover, the complex interactions with individually receiving ecosystems are difficult to ascertain. In view of these particularities, the Biosafety Protocol, unlike the Basel and PIC Conventions, not only places the precautionary principle in prominent positions in its preamble and objectives provision (Article 1) but also builds it directly into the operative provisions on risk assessment.[49] The recognition and legal expression of the precautionary principle as highlighted in these provisions can be considered an important and genuine achievement.

[48] *See,* generally, James Cameron and Juli Abouchar, *The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment*, 14 B.C. Int'l & Comp. L. Rev. 1, 2 (1991); David Freestone and Ellen Hey, eds., The Precautionary Principle and International Law: The Challenge of Implementation (1996); Lothar Gündling, *The Status in International Law of Precautionary Action*, 5 International Journal of Estuarine and Coastal Law 23 (1990).

[49] See Biosafety Protocol, *supra* note 1, at Annex III, section 4, Article 10(6) and Article 11(8).

A. Precaution and Risk Assessment

In a general sense, the Biosafety Protocol's combination of import control and risk assessment can be considered to be reliant on a precautionary approach because it allows for the early assessment and decision on a potential risk. From the point of view of the development of international environmental law on the transboundary movements of certain materials, this approach may be considered to be an important step forward since, rather than implementing a prior international consensus on a given risk, the protocol allows for the application of import controls to assess and decide upon that very risk.

However, due to the uncertainty concerning the potential adverse effects of LMOs, and in view of the responsibility that governments have to protect their biodiversity and their citizens, a purely science-based approach to risk assessment would seem inappropriate. Annex III, section 4, seeks to address this consideration by circumscribing scientific uncertainty in an elaborate way. It specifically refers to the "lack of scientific knowledge" and alternatively to a lack of "scientific consensus." The provision goes on to state that such a lack "shall not necessarily be interpreted as indicating a particular level of," an "absence of," or an "acceptable" risk. This formulation acknowledges the "interpretation" of scientific knowledge that is required in any risk assessment and highlights the "acceptance" of risks as an option for addressing them. The provision thereby fully takes into account that risk assessments include an element of judgment in the use of scientific information. In short, the provision reflects the precautionary principle at the level of risk assessment.

B. Authority to Take Precautionary Action

In addition, Article 10(6) and Article 11(8) provide that a lack of scientific certainty shall not prevent a party from taking a decision with regard to the import of the LMO in order to avoid or minimize such potential adverse effects. The importance of these provisions lies in the fact that they explicitly allow states to take precautionary action in reaching their decisions on import. Thus, the protocol clarifies that the right to say "no" to imports also applies beyond clear scientific justification.

However, the effect of the relevant provisions is limited to some extent by the precise and overly restrictive definition of the relevant kind of "lack of scientific certainty." According to Articles 10(6) and 11(8), such lack of certainty must be due to "insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects." The important word in this phrase is "extent." This term carries a notion of quantity that does not match well with the type of risk in question. Moreover, the notion of "extent"

does not easily conform to the patterns of risk assessment set out in the protocol. Annex III does not refer to potential adverse effects but uses different terminology. Notably, "extent" should not be confounded with "level" of risk as addressed in Annex III, section 8(f). In order to address this problem, one could consider interpreting the notion of "extent" in a broader manner, so as to cover the likelihood and magnitude of potential consequences of identified adverse effects as it is envisaged in Annex III, section 8(d).

C. Summary

The Biosafety Protocol envisages a new approach to the control of transboundary movements of certain goods. It applies a PIC-type mechanism. The PIC approach was originally designed to control items that are considered to be clearly hazardous by international agreement. The protocol uses the PIC approach to allow for an initial assessment of risk at the national level under international procedural discipline. The desire to highlight this conceptual, difference, rather than the difference in legal technique, persuaded negotiators to refer to the procedure as "AIA" rather than as "PIC." The assessment of potential environmental effects before an activity takes place is closely connected to the precautionary principle. Indeed, aside from referring to precaution as a legal principle, the Biosafety Protocol expressly and clearly authorizes states to refuse the import of LMOs on a precautionary basis and without scientific certainty.

In the absence of domestic regulations, states may rely on the protocol's risk assessment and decisionmaking provisions and may take actions thereunder. This point is of special importance for developing countries and countries with economies in transition, which face a critical shortage of capacity, including regulatory capacity. Perhaps even more significant is the fact that the burden of undertaking risk assessment and the attendant costs can be transferred to the exporter or notifier. This potential for transfer is in line with a number of trends in environmental law towards passing on the burden of control to the interested party.[50]

Not surprisingly, to arrive at these achievements, a number of concessions had to be made. The Biosafety Protocol is notably weak on export controls. However, this inherent weakness may be compensated by the clearinghouse mechanism, which, by making all relevant information publicly available, may have a considerable deterrent effect on uncontrolled exports. Of course, the LMO FFP procedure is a concession, but, in the end, it offers at least the

[50] Principle 16 of the Rio Declaration on Environment and Development in this regard reads: "*National* authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment." *Report of the United Nations Conference on Environment and Development*, Annex I, UN Doc. A/CONF.151/26 (Vol.1), (12 August 1992).

opportunity for early consideration and decisionmaking, including a risk assessment. Lastly, limiting precautionary action to cases where the scientific uncertainty relates to a lack of evidence regarding the "extent" of effects is questionable. However, a solution may be found by means of legal interpretation.

III. MANAGING RISKS OF TRANSBOUNDARY MOVEMENTS OF CERTAIN MATERIALS: THE TRADE APPROACH

Movements of goods, including LMOs, take place primarily for commercial reasons. Thus, they involve trade, which at the international level is governed by a number of trade regimes, most prominently the WTO.[51] The WTO aims at facilitating international trade in order to contribute to international economic growth and economic welfare.[52] In this regard, it strives for the elimination of trade barriers and seeks to promote non-discrimination and transparency in national measures. WTO rules focus upon both trade measures that are applied to imports at the border and the treatment of foreign goods in relation to domestic goods within a national market. While trade regimes as such are not competent to control environmental and health risks, they have always allowed for the right of states to protect their citizens and their environment.[53] In addition, the Marrakesh Agreement Establishing the World Trade Organization refers to the principle of sustainable development and to the protection and preservation of the environment.[54]

1. General Trade Rules, National Policy Exceptions, and Dispute Settlement

Currently, when a state takes a measure to restrict the import of a good, the international trade order comes into play and imposes a number of "disciplines." As a general rule, in order to effectively cover all trade barriers, any restriction of the import of goods falls under GATT Article XI, which provides for the elimination of quantitative restrictions.[55] Similarly, any treat-

[51] Other regimes are, for instance, the European Union's internal market, the North American Free Trade Agreement (NAFTA), and *El Mercado Común del Sur* (MERCOSUR).

[52] Preambular paragraph 1 of the WTO Agreement reads: "*Recognizing* that their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development," WTO Agreement, *supra* note 3.

[53] Such rights are guaranteed by the General Agreement on Tariffs and Trade 1994 [hereinafter GATT], 15 April 1994, WTO Agreement, Annex 1A, *id.*, Article XX and SPS Agreement, *supra* note 3, at Article 2, and will be discussed in detail in section III.2 of this article.

[54] *See* WTO Agreement, *supra* note 3, preambular paragraph 1.

[55] GATT, *supra* note 53, at Article XI:1, reads: "*No* prohibitions or restrictions other than duties, taxes or other charges . . . shall be instituted or maintained by any contracting party on

ment of imported goods that is less favourable than that afforded to like domestic products is outlawed by GATT Article III.[56]

Taking into account the right of states to adopt national risk policies, GATT Article XX, however, exempts those policies from its disciplines if they meet a number of conditions. Article XX is constructed as a general exception to the trade disciplines and especially to the prohibition of quantitative restrictions and non-discrimination rules.[57] It contains a list of policy objectives that states may legitimately pursue even if the attendant measures cause trade restrictions. In the case of biosafety, "Human, animal or plant life or health" and "exhaustible natural resources" (GATT Article XX(b) and (g)) are relevant objectives. Importantly, even where one of the exceptions is at issue, trade restrictive measures must be "necessary" to address the concern and may not be applied in a manner that would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or that would constitute a disguised restriction of international trade.[58] In sum, then, the GATT does impose certain limitations upon national approaches to risk management undertaken in pursuit of legitimate public policy goals.[59]

All trade-restrictive measures may be reviewed through WTO dispute settlement procedures, which may be invoked by a potential exporting state.[60] A WTO member state may ultimately resort to trade sanctions where a responding party fails to bring its trade measures into conformity with WTO rules.[61]

the importation of any product of the territory of any other contracting party or on the exportation or sale of export of any product destined for the territory of any other contracting party."

[56] This may even be the case where the measures do not discriminate on their face but formally apply to imported as well as domestic products. GATT, *id.*, at Article III:4, reads: "*The* products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use."

[57] See *GATT/WTO Dispute Settlement Practice relating to GATT Article XX Paragraphs (b), (d) and (g) of GATT*, WTO Committee on Trade and Environment, WTO Doc. WT/CTE/W/53/Rev.1 (1998).

[58] GATT, *supra* note 53, at Article XX, in this respect, reads: "*Subject* to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures."

[59] In short, this system may be considered to function as follows: first, the competence of states to take such measures is limited to certain objectives; second, measures must have some rational link to such objective; third, there are specific principles of non-discrimination to be observed; finally, the trade restrictive effects need to be proportionate.

[60] See Understanding on Rules and Procedures Governing the Settlement of Disputes, 15 April 1994, WTO Agreement, *supra* note 3, at Annex 2, Article 19(1); <http://www.wto.org/wto/dispute/dsu.htm> [hereinafter DSU]; *see*, generally, Ernst-Ulrich Petersmann, The GATT/WTO Dispute Settlement System: International Law, International Organizations, and Dispute Settlement (1997).

[61] Dispute settlement according to the DSU is roughly divided into four stages: first, a consultation phase; second, a panel stage in which the dispute is referred to a panel that gives

Importantly, and in comparison to the "old" GATT 1947 system, the WTO decisionmaking system of "reversed consensus," which automates the whole dispute settlement procedure, gives the challenging party a "right to a panel" and subsequently a "right to retaliation" without the veto-power of the defendant.[62]

The WTO dispute settlement process thus provides an avenue for the international review of national risk management approaches in trade-related areas.

2. National Risk Policies and the SPS Agreement of the WTO

In view of the growing importance of regulation and standards in the areas of health, environmental protection, and consumer safety at the national, regional, and global levels and in view of the variety of approaches and concepts used and the resulting potential for trade conflicts, more specific guidance to states by an international organization was deemed necessary.

Initially, in order to prevent the use of standards and technical regulations as trade barriers, an Agreement on Technical Barriers to Trade, the so-called Standards Code, was adopted during the GATT Tokyo Round in 1979.[63] On the basis of the standards code, a new Agreement on Technical Barriers to Trade (TBT Agreement),[64] which is wide-ranging and covers all kinds of technical regulations, standards, and conformity-assessment procedures, was elaborated. Moreover, a specific instrument was negotiated to govern certain "measures necessary to protect human, animal and plant life or health." This instrument is known as the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).[65] The SPS Agreement's range of application is defined in Annex A, section 1. The definitions, on the one hand, highlight the objectives: the protection of human, animal, and plant life and health (Annex A, sec. 1(a), (b), and (c)) and the prevention of "other damages" (Annex A, sec. 1(d)), while, on the other hand, they describe the kinds of "risks" against which these interests may be protected. These risks include the entry, establishment, or spread of pests, diseases, disease-carrying organ-

recommendations or rules on the issue; third, subject to the will of the parties, a review phase by the Standing Appellate Body; finally, a retaliatory phase in which a member state may be authorized to implement trade sanctions in case of the other party's non-compliance to rulings and recommendations.

[62] *See* DSU, *supra* note 60, at Article 2(4), generally, for the consensus and DSU, *id.,* at Articles 16(4), 17(14), and 22(6) for the "negative consensus" rule.

[63] Agreement on Technical Barriers to Trade, 12 April 1979, GATT, BISD (26th Supp.) at 8 (1980) or 1980 OJ (L 71) 29 or 18 ILM 1079 (1979); *see*, generally, R.W. Middleton, *The GATT Standards Code*, 14 Journal of World Trade Law 201 (1980); Jacques Nusbaumer, *The GATT Standards Code in Operation*, 18 Journal of World Trade Law 542 (1984).

[64] Agreement on Technical Barriers to Trade, 15 April 1994, WTO Agreement, Annex 1A, 1994 OJ (L 336) 86; *see also* <http://www.wto.org/goods/tbtagr.htm> [hereinafter TBT Agreement].

[65] *See* SPS Agreement, *supra* note 3.

isms, or disease-causing organisms (Annex A, sec. 1(a) and (d)); diseases carried by animals, plants, or products thereof (Annex A, sec. 1(c)); additives, contaminants, toxins, or disease-causing organisms in foods, beverages, or feedstuffs (Annex A, sec. 1(b)).[66]

The SPS Agreement is closely linked to GATT Article XX(b). It purports to provide rules "for the application of the provisions of GATT 1994, which relate to the use of sanitary or phytosanitary measures, in particular the provisions of Article XX(b)."[67] In this vein, it states that measures that conform to the relevant provisions of the SPS Agreement "shall be presumed to be in accordance with the obligations of the members under the provisions of GATT 1994, which relate to the use of such measures, in particular the provisions of Article XX(b)."[68] In keeping with GATT Article XX, Article 2(1) of the SPS Agreement emphasizes that states have the right to take sanitary and phytosanitary measures, provided that they are applied only to the extent necessary to protect human, animal, or plant life or health, are based on scientific principles, and are not maintained without sufficient scientific evidence, except as provided for in Article 5(2).[69] Moreover, states "shall ensure that their sanitary and phytosanitary measures do not arbitrarily or unjustifiably discriminate between members where identical or similar conditions prevail, including between their own territory and that of other members. Sanitary and phytosanitary measures shall not be applied in a manner which would constitute a disguised restriction on international trade."[70]

The SPS Agreement applies a threefold approach in order to address conflicts arising from divergent policies in risk-related areas: harmonization, mutual recognition (equivalence), and a coordination of national risk policies, including risk assessment. These three approaches, as well as the dispute settlement and transparency provisions, are surveyed below.

A. Harmonization: The Endeavour for International Risk Approaches

The SPS Agreement encourages governments to establish national SPS measures consistent with certain relevant international standards, guidelines, and recommendations.[71] It identifies such standards, guidelines, and recommendations both by way of reference to the work of the particular competent international institutions and by distinguishing the different protected

[66] To avoid confusion, matters covered by the SPS Agreement are excluded from the TBT Agreement (TBT Agreement, *supra* note 64, at Article 1(5)); *see* John J. Barceló III, *Product Standards to Protect the Local Environment—the GATT and the Uruguay Round Sanitary and Phytosanitary Agreement*, 27 Cornell Int'l L J 755 at 762 (1994); David Wirth, *The Role of Science in the Uruguay Round and NAFTA Trade Disciplines*, 27 Cornell Int´l L J 817 at 828 (1994); Tobias Stoll, *Die WTO: Neue Welthandelsorganisation, neue Welthandelsordnung*, 54 Zeitschrift für ausländisches öffentliches Recht und Völkerrecht 241 at 283, note 161 (1994).

[67] SPS Agreement, *supra* note 3, at preambular paragraph 8.

[68] *Id.* at Article 2(4).

[69] *Id.* at Article 2(2).

[70] *Id.* at Article 2(3).

[71] *Id.* at Article 3(1) and (2).

interests. With respect to food safety, it refers to the work of the Codex Alimentarius Commission on food additives, veterinary drug and pesticide residues, contaminants, methods of analysis and sampling, and codes and guidelines of hygienic practice.[72] With respect to animal health and zoonoses, the agreement refers to work done by the International Office of Epizootics (IOE).[73] In view of plant health, the International Plant Protection Convention (IPPC) is mentioned.[74] "Harmonization" is defined in the SPS Agreement as the "establishment, recognition and application of common sanitary and phytosanitary measures by different Members."[75] Where international standards, guidelines, and recommendations exist, members must base their measures on them.[76] Furthermore, they are to promote their development and periodic review with respect to all aspects of sanitary and phytosanitary measures and, to that end, are to be active within the relevant international organizations.[77] Article 12(1) of the SPS Agreement further establishes a new Committee on Sanitary and Phytosanitary Measures, which is to monitor the process of international harmonization and coordinate efforts in this regard with the relevant international organizations.[78] Where national measures conform with the relevant standards, guidelines, and recommendations, they will be deemed necessary for protecting human, animal, or plant life and presumed to be consistent with the relevant provisions of the SPS Agreement and of GATT 1994.[79]

The SPS Agreement, therefore, strongly promotes the development of international standards, guidelines, and recommendations as a means of international risk management and clearly defines the options for linking its provisions to such harmonized standards. As far as LMOs are concerned, the three organizations referred to by the SPS Agreement have not yet produced standards, guidelines, or recommendations. However, discussions have taken place in this regard, especially in the Codex Alimentarius Commission. There are indications that the commission will address the issue of LMOs in the near

[72] *Id.* at Annex A, section 3(a). The Codex Alimentarius Commission was created in 1962 as a joint undertaking of the United Nations Food and Agriculture Organization and the World Health Organization.

[73] *Id.* at Annex A, section 3(b). The International Office of Epizootics was created in 1924 to facilitate trade in animals and animal products, both with a view to protecting the health of consumers and preventing the spread of diseases.

[74] *Id.* at Annex A, section 3(c). The International Plant Protection Convention is an international treaty from 1951, which obliges its signatories to take measures to ensure the safety of imports and exports of plants or plant products likely to contain pests or diseases, *see* <http://www.fao.org/Legal/default.htm>.

[75] *Id.* at Annex A, section 2.

[76] *Id.* at Article 3(1). There is, however, an express exception to this rule: Article 3(3). A member is free to set unilaterally higher standards, provided certain conditions are met. Members may introduce or maintain SPS Agreement measures that result in a higher level of protection than that achieved by the relevant international standards if there is scientific justification or if it is a consequence of a risk assessment.

[77] *Id.* at Article 3(4). [78] *Id.* at Article 3(5) and 12(4). [79] *Id.* at Article 3(2).

future.[80] Finally, it should be noted that the SPS Committee may identify appropriate standards, guidelines, and recommendations promulgated by other relevant international organizations open for membership to all members with respect to any matters not covered by the above-mentioned organizations.[81]

B. Recognition of Exporting State's Risk Policies

In the absence of international standards, the SPS Agreement in Article 4 envisages a recognition of standards of the exporting states.[82] According to Article 4(1), WTO members must accept measures taken by other members as equivalent, even if these measures differ from their own measures, provided that "the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection." Rules on access to information and consultations are added in this regard.[83] This process, whereby standards are mutually recognized, is based on the presumption that states are prepared to accommodate their public policy goals in those contained in the standards used by other states even if, from a technical point of view, the foreign standards do not precisely match their domestic standards. This approach obviously is based on the recognition of foreign risk management policies and implies that states have at least some confidence in each other's procedures. The statement, however, also implies that these provisions have little to offer in those cases where states have conflicting views on risk management policies. It is in this context that the issue of coordination of national risk policies arises.

C. Coordination of National Risk Policies

Due to potentially conflicting views among states, harmonization is difficult to achieve and states may be reluctant to recognize foreign standards as equivalent. In those cases, coordination of national risk policies pursuant to Article 5 becomes relevant. Article 5 defines a number of requirements for national SPS measures, including that states ensure that such measures are based on a risk assessment that conforms to the procedural and substantive requirements set out in the agreement and that provides a rational basis for the SPS measure contemplated by a state. On the other hand, the provision uses the notion of an "appropriate level of protection," as determined by the

[80] The Codex Alimentarius Commission has established an intergovernmental task force at its twenty-third session in June and July 1999 in order "to speed up the elaboration of standards for foods derived from biotechnology." The first meeting of the task force is scheduled for March 2000, and it is hoped that it will produce standards by the year 2003; *see* <http://www.who.int/fsf/Codex/GMO.htm>.

[81] SPS Agreement, *supra* note 3, at Annex A, section 3(d).

[82] So does the TBT Agreement, *supra* note 64, at Article 2(7).

[83] SPS Agreement, *supra* note 3, at Article 4(1).

state imposing the measure subject to some guidance provided by the SPS Agreement as a frame of reference. Both of these core elements are reviewed below.

(i) Risk assessment

The term "risk assessment" is defined in section 4 of Annex A to the SPS Agreement as including "the evaluation of the potential for adverse effects on human or animal health." Such an evaluation must take into account risk assessment techniques developed by relevant international organizations as well as a number of substantive criteria provided in Article 5 of the SPS Agreement.[84] The most prominent element surely is "available scientific evidence." However, it must be emphasized that a number of additional aspects are mentioned, including "relevant processes and production methods; relevant inspection, sampling, and testing methods; prevalence of specific diseases or pests; existence of pest- or disease-free areas; relevant ecological and environmental conditions; and quarantine or other treatment."[85]

In addition, when dealing with measures aimed at protecting animal or plant life and health, the following economic factors must also be taken into account: "[T]he potential damage in terms of loss of production or sales in the event of the entry, establishment or spread of a pest or disease; the costs of control or eradication in the territory of the importing Member; and the relative cost-effectiveness of alternative approaches to limiting risks."[86] As this list of factors serves to illustrate, risk assessment under the SPS Agreement is not solely a (natural) science-based exercise, aimed at ascertaining in an abstract way possible hazards resulting from a certain good. As the above-mentioned provisions demonstrate, "risk" is understood as a more complex concept, which includes the consideration of the type of good in question, but also includes circumstantial conditions that are relevant in view of potential impacts, including economic factors.[87] Further, it should be noted that risk assessment under the SPS Agreement also takes into account regional and local conditions, as specifically highlighted in Article 16.

[84] The WTO member does not necessarily have to conduct the risk assessment itself. It can use risk assessments carried out by international organizations or other members; *see WTO Appellate Body Report* on EC—Measures Concerning Meat and Meat Products (Hormones), WTO Doc. WT/DS26/AB/R, WT/DS48/AB/R, at para. 190; *see also* <http://www.wto.org/wto/dispute/distab.htm> [hereinafter Meat Hormones *Appellate Body Report*].

[85] SPS Agreement, *supra* note 3, Article 5(2).

[86] *Id.* at Article 5(3).

[87] Furthermore, there is nothing to indicate that the listing of factors that may be taken into consideration in a risk assessment pursuant to SPS Agreement, *supra* note 3, at Article 5, was intended to be a closed list. It is essential to bear in mind that the risk that is to be evaluated in a risk assessment under SPS Agreement Article 5(1) is not only risk ascertainable in a scientific laboratory operating under strictly controlled conditions but also risk in human societies as they actually exist; in other words, the actual potential for adverse effects on human health in the real world "where people live, work and die." *See* Meat Hormones *Appellate Body Report*, *supra* note 84, at para.187.

The risk assessment structure outlined above has been further elaborated upon by WTO panels and the Appellate Body, which have, *inter alia*, stated that risk assessment can either be quantitative or qualitative.[88] Moreover, a proper risk assessment need not establish a "minimum magnitude of risk."[89] A WTO member may determine therefore that the level of risk it is willing to accept is "zero risk."[90]

That said, the risk evaluated in a risk assessment must be an "ascertainable risk." Merely theoretical uncertainty does not amount to ascertainable risk. The existence of unknown or uncertain elements does not justify a deviation from the SPS risk assessment requirements. In addition, any risk assessment must be sufficiently specific. For example, a separate risk assessment must be conducted for each substance. A generic risk assessment for a class of substances is not enough. Similarly, any studies conducted as part of a risk assessment must be specific and address the particular kind of risk at issue.

(ii) Level of protection and further obligations

As noted earlier, the other key element of Article 5 of the SPS Agreement is the freedom of each party to determine the appropriate level of sanitary or phytosanitary protection. This means that the result of a risk assessment does not necessarily dictate specific SPS measures. In leaving the determination of the appropriate level to each member state, Article 5(4) of the SPS Agreement acknowledges each state's right to take protective measures as confirmed in Article 2(1) of the SPS Agreement and, more generally, in GATT Article XX. However, the exercise of this right is qualified in such a way as to accommodate trade principles. Article 5(6) of the SPS Agreement stipulates that states shall ensure that any SPS measures they take are not more trade-restrictive than required for achieving the appropriate level of protection, taking "into account technical and economic feasibility."

In providing member states with some leeway in determining appropriate risk levels, Article 5(4) of the SPS Agreement also refers to the "objective of minimizing negative trade effects." Furthermore, Article 5(5) contains an intricate concept of non-discrimination, whereby a member is required to "avoid arbitrary or unjustifiable distinctions in the levels it considers to be appropriate in different situations, if such distinctions result in discrimination or a disguised restriction on international trade." This provision, in fact, amounts to a duty on states to ensure some consistency in SPS-related areas of national policy that may have an impact on trade.

[88] *See* Joost Pauwelyn, *The WTO Agreement on Sanitary and Phytosanitary (SPS) Measures as Applied in the First Three SPS Disputes. EC—Hormones, Australia—Salmon and Japan—Varietals*, 2 J. Int'l Econ. L. 646 (1999).

[89] Meat Hormones *Appellate Body Report*, *supra* note 84, at para. 186.

[90] *WTO Appellate Body Report on* Australia—Measures Affecting Importation of Salmon, WTO Doc. WT/DS18/AB/R, at para. 125.

A procedure such as the one just outlined for the SPS Agreement disciplines national risk policy approaches in the absence of harmonized international risk approaches and where the recognition of foreign standards is not feasible.

(iii) Precautionary action

Without explicitly referring to the precautionary principle, Article 5(7) of the SPS Agreement addresses the question of precaution in some detail.[91] It states, that "[i]n cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members."[92]

In addition to authorizing states to take "provisional" measures in the face of insufficient scientific evidence, Article 5(7) clarifies what will trigger the right to take measures in the absence of certainty, namely, the "available pertinent information." While, in all other respects, Article 5(7) resembles other formulations of the precautionary principle, most notably, those contained in the ninth recital of the preamble to the CBD, this latter wording is more specific than the notion of a "threat of significant reduction or loss of biodiversity" that is used in the CBD preamble. The reference to "available pertinent information" in Article 5(7) of the SPS Agreement clarifies that there must be a reliance on some actual information as opposed to general concerns or questions in order to justify measures.

In regard to a state's ability to take provisional measures, Article 5(7) of the SPS Agreement sets out additional requirements. It imposes an obligation on members "to seek to obtain the additional information necessary for a more objective assessment of risk" and furthermore requires them to "review the sanitary or phytosanitary measure accordingly within a reasonable period of time." Taken together, these two obligations clarify that the authority to impose provisional measures does not amount to a *carte blanche* for trade-

[91] In the *Meat Hormones* case, the Appellate Body in some detail discussed the issue of the precautionary principle with regard to the SPS Agreement, Meat Hormones *Appellate Body Report*, *supra* note 84, at para. 120 *et seq.* It concluded, that "the precautionary principle . . . finds reflection in Art. 5.7 of the SPS Agreement . . . [and] that there is no need to assume that Article 5.7 exhausts the relevance of a precautionary principle. It is reflected also in the sixth paragraph of the preamble and in Art. 3.3." *Id*, para. 124. However, those remarks have to be seen in the context of the particular case. In this regard, it has to be highlighted that the EC explicitly made it clear that it was not invoking Article 5(7), *id.* para. 120. From a general point of view, Article 5(7) is the key provision of the SPS Agreement relating to the precautionary principle. The other provisions referred to by the Appellate Body underline its importance and may be taken into account in its interpretation. Their significance, however, is due to the particularities of the case and the EC's explicit non-invocation of Article 5(7).

[92] For a detailed analysis of the structure of the provision as compared to Article 10(6) and 11(8) of the Biosafety Protocol, see Table 1 in this article and accompanying text.

restrictive measures but rather is truly provisional in nature, requiring a member state to keep the measure at hand under constant review.

Finally, it should be noted that these four requirements of Article 5(7) are cumulative in nature. Whenever one of the requirements is not met, the measure will be found to be inconsistent with the SPS Agreement.[93]

D. Settlement of Disputes

In addition to the substantive rules surveyed earlier in the text, the SPS Agreement contains a number of provisions related to disputes that may arise under it. First, Article 5(8) of the SPS Agreement entitles a member that has reason to believe that an SPS measure actually or potentially constrains its exports to request an explanation of the reasons for the measure. Should dispute settlement be needed to resolve a disagreement regarding an SPS measure, Article 11(2) of the SPS Agreement stipulates that a panel that is established in a dispute involving scientific and technical issues should seek advice from experts chosen by the panel in consultation with the parties.[94] Furthermore, Article 11(3) provides that nothing in the agreement prevents members from having resort to dispute settlement procedures under other international agreements, including the right to resort to the good offices or dispute settlement mechanisms of other international organizations or those that have been established under any international agreement. This provision shows that the SPS Agreement does not only promote the elaboration and application of international standards, guidelines and recommendations of other international institutions but furthermore envisages that other dispute settlement procedures and mechanisms may be used.

E. Transparency

WTO members are required to notify other countries "at an early stage" of any new or changed sanitary and phytosanitary measure. This procedure acts as an early warning system when national SPS regulations would be liable to restrict trade. In addition, member governments have to set up offices (so called "enquiry points") that are designated to respond to requests for more information on new or existing measures.[95] The manner in which members apply their food safety and animal or plant health regulations is similarly subject to scrutiny.[96]

[93] *See WTO Appellate Body Report on* Japan—Measures Affecting Agricultural Products, WTO Doc. WT/DS76/AB/R, at para. 89; *see also* <http://www.wto.org/wto/dispute/distab.htm> [hereinafter Agricultural Products *Appellate Body Report*].

[94] In all three WTO cases concerning the SPS Agreement, the panels have sought the advice of scientific and technical experts.

[95] SPS Agreement, *supra* note 3, at Article 7 and Annex B.

[96] OECD, Food Safety and Quality: Trade Considerations 55 (1999).

The systematic communication of information and the exchange of experiences among the WTO's member governments that are envisaged by the SPS Agreement provide a basis for improved and coordinated national standards, guidelines, and recommendations. The increased transparency also protects the interests of consumers, not only those of trading partners, from hidden protectionism through unnecessary technical requirements.

3. Summary: The Trade Order and the Need for Harmonization of Risk Policies

In sum, the international trade order, while not intended to deal with risks as such, is very much concerned with different national approaches to risk and with the potentially resulting trade restrictions and disputes. As a general rule, GATT 1994 endorses the sovereign right of states to adopt their own risk policies and thus exempts attendant trade measures from its general disciplines. However, GATT Article XX attaches some conditions to this exemption, which relate to the legitimacy of policy objectives, the requirement of non-discrimination, and the requirement to choose the least trade-restrictive option. Against the backdrop of this highly complex subject matter, and the considerable potential for conflict over SPS measures, the SPS Agreement constitutes an elaborate attempt to reconcile legitimate measures to protect human, animal, and plant life with trade interests. At the same time, it demonstrates an awareness of the limitations of such a case-by-case approach. In view of the growing demand for risk control and regulation, the SPS Agreement highlights the need for states to harmonize their approaches and to define standards in competent international organizations.

IV. CONFLICT AND COHERENCE BETWEEN THE BIOSAFETY PROTOCOL AND TRADE RULES

Thus far, this article has surveyed the key features of two distinct regimes: the new Biosafety Protocol and the trade regime set out in the GATT/WTO and SPS Agreements. Particular attention has been paid to these regimes' provisions on risk assessment and risk management. As will have become apparent, while distinct, the two regimes intersect in several crucial respects. The trade implications of the Biosafety Protocol are obvious and played a predominant role throughout the negotiations. Yet, aside from the general observations of political commentators,[97] there is little in the way of legal analysis of the trade and environment issues raised by the protocol. In order to more precisely define the legal relationship between the Biosafety Protocol and the trade regime, one must first compare the protocol's rules with those

[97] See, for example, Aaron Cosbey and Stas Burgiel, *The Cartagena Protocol on Biosafety: An Analysis of Results,* An International Institute for Sustainable Development Briefing Note, *see* <http://iisd.ca/pdf/biosafety.pdf>.

of the trade agreements and then consider their interplay. In particular, it is worth considering how the protocol itself addresses its relationship to, and potential conflicts with, the trade regime and whether states have in fact arrived at the mutually supportive relationship between environmental and trade rules that is envisaged in the preamble to the Biosafety Protocol.

1. The Potential for Conflict: Trade Issues Raised by the Biosafety Protocol and Relevant Trade Provisions

In view of potential conflicts between the protocol and trade rules, the most crucial question certainly is whether a prohibition of imports of LMOs as expressly mentioned by Article 10(3)(b) and implicitly envisaged by Article11(4) and (6) of the protocol will conform to the SPS Agreement. However, before commenting on this apparent case of overlap between the protocol and the trade order, other, less blatant (and thus less visible) cases of potential conflict must be analyzed. In this respect, the protocol's general risk management obligation and the AIA procedure *as such*—that is, even in the case of eventual permission of the import—could already be in conflict with international trade rules. Finally, it must be clarified whether the SPS Agreement will be applicable to all cases of LMO transfer or whether other norms of international trade law will come into play in cases of conflict.

A. Trade Concerns raised by the Protocol: Internal Measures and Non-Discrimination

Beyond the issue of import restrictions, the Biosafety Protocol's provisions, when scrutinized in more detail, raise a whole range of additional questions. In particular, measures taken by states to implement their risk management obligations under Article 16 may raise questions concerning the national treatment of imported products vis-à-vis like domestic products.[98] The national treatment principle is highly relevant because it does not only prohibit discrimination based on origin but also prohibits certain neutral measures that have a discriminatory effect. The definition of a "like product" is a rather complex issue in WTO law.[99] As far as LMOs are concerned, the question arises as to whether the notion of like products is confined to other LMOs or will also cover similar non-modified organisms. In the latter case, domestic regulation and its treatment of LMOs of foreign origin would have to withstand a non-discrimination test in relation to the treatment of domestic non-modified organisms. This test would put such regulatory systems under considerable pressure.

[98] In regard to obligations under Article 16 of the Biosafety Protocol, *supra* note 3. For details of national treatment under GATT Article III, *see* note 56 and accompanying text.

[99] *See,* for example, Japan—Tariff on Import of Spruce-Pine-Fir (SPF) Dimension Lumber, 19 July 1989, GATT BISD (36th Supp.) at 167 (1990); Spain—Tariff Treatment of Unroasted Coffee, 11 June 1981, GATT BISD (28th Supp.) at 102 (1982).

B. Other Trade-Related Aspects: The AIA Procedure as Such

A further trade issue may be raised by the AIA procedure as such, irrespective of its outcome in individual cases. Arguably, the very requirements of notification and importing state consent already constitute trade restrictions. Certainly, the option of requiring the exporter or notifier to carry out a risk assessment or to cover its cost, which is provided to the importing state by Article 15(2) and (3) of the Biosafety Protocol, gives rise to potential trade concerns.

The SPS Agreement does not explicitly provide for an AIA-type procedure, although it does include provisions that appear to parallel some of its elements. The agreement is based on the understanding that states will translate their public policy concerns into standards and regulations that clearly set out requirements for the importation of products and that are implemented through border controls. However, Article 8 and Annex C of the SPS Agreement, which deal with "control, inspection and approval procedures," do provide for a type of case-by-case assessment for imports. Annex C, section 1, even envisages a "system . . . which prohibits or restricts access to [the importing member's] domestic markets based on the absence of an approval." The SPS rules specifically focus on the "approval of the use of food additives or the establishment of tolerances for contaminants in food, beverages or feedstuffs." In addition, the SPS Agreement refers to a notification (Annex B) and certain fees (Annex C, section 1(f)), which are also relevant in the context of the protocol's AIA mechanism. It thus appears that there is some commonality between a number of elements of the protocol's AIA mechanism and certain provisions of the SPS Agreement. None of those provisions, however, appears to directly cover the protocol's AIA mechanism.

C. The Applicability of the SPS Agreement vis-a-vis Other Trade Agreements

In addition to the different trade concerns raised by the protocol's provisions, the question of which set of trade rules these provisions may interact with has to be considered. The most important question in this regard is whether the SPS Agreement will apply to biosafety-related trade concerns. If not, other WTO rules, the TBT Agreement, or the general provisions of Article XX of GATT would have to be considered.

As has been seen, the SPS Agreement is applicable to SPS measures—a term that is precisely defined by reference to the interests to be protected and the kind of risks covered.[100] As far as the protected interests are concerned, the SPS Agreement, refers to human, animal, and plant health and life. The Biosafety Protocol contains much more comprehensive language and focuses

[100] *See* section III.2 in this article.

on the adverse effects on biodiversity conservation, sustainable use, and risks to human health. Yet although the wording in the two instruments differs, it is difficult to imagine cases in practice where the two regimes would ultimately differ with respect to subject matter to be protected.

In regard to the risks covered, the SPS Agreement is far more precise than the Biosafety Protocol. To the extent that the SPS Agreement covers risks posed by additives, contaminants, toxins, or disease-causing organisms in foods, beverages, or feedstuffs, these risks quite clearly coincide with the category of potential risks associated with LMO FFPs under the Biosafety Protocol.

The other categories of risks as defined in Annex A of the SPS Agreement pertain to pests and diseases. Potential risks associated with LMOs as covered by the Biosafety Protocol may involve an impact, which could be qualified as "pest" or "disease" in a number of cases, depending on the biological properties of the LMOs and assuming a generous interpretation of the terms "pest" and "disease." This will have to be ascertained on a case-by-case basis. A more expansive interpretation of the terms of the SPS Agreement would be preferable in view of the fact that, within the WTO legal order, the SPS Agreement seems to be best suited to deal with this kind of case.

The SPS Agreement, therefore, arguably covers a considerable part of the protocol's subject matter. The following discussion will therefore revisit the key provisions of the Biosafety Protocol with a view to exploring more fully their overlap with the SPS rules.

2. Trade Compatibility of the Biosafety Protocol's Risk Assessment Procedure?

As has been mentioned above, with respect to the potential for conflict, the case of a prohibition of imports of LMOs under the protocol is of particular relevance. A conflict occurs when an action taken under the protocol runs counter to obligations under the SPS Agreement. As has been seen, one of the core obligations under the SPS Agreement is to base SPS measures on a risk assessment.[101] A conflict would thus not arise in this regard if the risk assessment under the protocol complied with the requirements of the SPS Agreement.

Obviously, the Biosafety Protocol's risk assessment mechanism fits well into the overall structure of the SPS Agreement. It responds to the requirement of an assessment of risks as stated in Article 5(1) and 5(3) of the SPS Agreement and the related SPS rule that measures, in general, must be based on scientific principles and scientific evidence (Articles 2(1) and 2(2)).[102] In

[101] SPS Agreement, *supra* note 3, at Article 5(1); *see also* section III.2.C.i in this article.

[102] In the *Meat Hormones* case, the panel and the Appellate Body found that there is a close relationship between Article 2(2) and 5(1) of the SPS Agreement. In the view of the Appellate Body, those two articles should be read together. Meat Hormones *Appellate Body Report*, *supra*

this context, it should also be noted that the SPS Agreement leaves ample room for the consideration of regional and local conditions and allows for economic aspects to be taken into account.[103] The SPS Agreement therefore covers a number of the issues that the Biosafety Protocol's rules on import decisions and, in particular, on risk assessment require states to consider.

In sum, the risk assessment provisions of the Biosafety Protocol appear to be in harmony with the SPS Agreement and appear to respond to its aim to arrive at internationally agreed approaches to particular risks.

3. Trade Compatibility of Precautionary Action under the Biosafety Protocol?

The foregoing considerations indicate that a state will probably not face many trade difficulties when acting on the basis of a risk assessment that relies on at least some scientific evidence regarding a risk associated with a LMO and its potential uses. However, it remains to be seen whether a state can safely undertake measures in the case of a lack of scientific evidence. As has been seen, this scenario may well arise, because modern biotechnology is a new phenomenon and there is as yet little evidence about its potential impacts on the environment and human, animal, and plant life and health. Due to this situation, the Biosafety Protocol gives unprecedented authority to states to take precautionary measures in this situation.[104] A conflict could arise, however, between such authority under the protocol and member states' obligations under the SPS Agreement.

As far as the very specific expression of the precautionary approach in the risk assessment provisions of Annex III of the Biosafety Protocol is concerned,[105] trade concerns are unlikely to arise because the SPS Agreement's provisions do not contain specific language concerning the interpretation of scientific results in the context of a risk assessment.

On a more general level, the Biosafety Protocol contains important provisions for the implementation of the precautionary principle in the context of import decisions within the general AIA procedure (namely Article 10(6)) and, with a similar wording, within the special procedure applicable to LMO FFPs (Article 11(8)). As far as the precautionary principle is concerned, both provisions parallel the basic structure of Article 5(7) of the SPS Agreement and describe a situation of uncertainty and consequential state action. However, as Table 1 and the following discussion illustrate, the approaches of the Biosafety Protocol and the SPS Agreement differ considerably in how they circumscribe the basis and parameters of any precautionary measures taken by an importing state.

note 84, at para. 180, confirmed by Agricultural Products *Appellate Body Report*, *supra* note 93, at para. 76.

[103] *See* section III.2.C.i in this article.

[104] *See* section II.3.B in this article.

[105] Biosafety Protocol, *supra* note 1, at Annex III, section 4.

Table 1 *Comparison of the Concepts of Precautionary Action under the Biosafety Protocol and the SPS Agreement*

Type of uncertainty	**Article 10(6) and 11(8) of the Biosafety Protocol:** "Lack of scientific certainty due to insufficient relevant scientific information and knowledge . . ."	**Article 5(7) of the SPS Agreement, first sentence:** "In cases, where relevant scientific evidence is insufficient . . ."
Basis for action/ Qualification of uncertainty	*(continued)* ". . . regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the party of import, taking also into account risks to human health . . ."	". . . on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members . . ."
Consequential state action	*(continued)* ". . . shall not prevent that party from taking a decision, as appropriate, with regard to the import of the living modified organism in question as referred to in paragraph 3 above, in order to avoid or minimize such potential adverse effects."	"[A] Member may . . . provisionally adopt sanitary or phytosanitary measures . . ."
Accompanying obligations		**second sentence:** "In such circumstances, members shall seek to obtain the additional information necessary for a more objective assessment of risk . . ."
Review of decisions	**Article 12(1):** "A party of import may, at any time, in light of new scientific information . . . review and change a decision . . . **(2)** A party of export or a notifier may request the party of import to review a decision it has made in respect of it under Article 10 where the party of export or the notifier considers that: **(a)** A change in circumstances has occurred that may influence the outcome of the risk assessment . . .	*(continued)* ". . . and review the sanitary or phytosanitary measure accordingly . . ."

Table 1 *cont.*

Review of decisions	**(b)** Additional relevant scientific or technical information has become available."	
Time frame of review	**Article 12(3)**: "The party of import shall respond in writing to such a request within ninety days . . ."	*(continued)* ". . . within a reasonable period of time."

As seen in Table 1, all three provisions share a common entry point into the precautionary approach. Aside from differences in wording, all three refer to a situation of uncertainty, which can be defined as a lack of evidence or certainty. The Biosafety Protocol's language in this regard seems to be stricter than that used in the SPS Agreement.

More important from a practical point of view is the second element of the provisions that is highlighted in Table 1. This element specifies the nature of the justification that a state is to provide if, in the absence of scientific evidence, it decides to take precautionary measures. The SPS Agreement in this regard focuses on "pertinent information" and points to possible sources, such as international organizations and the measures of other states. It thus defines a sort of minimum of evidence required to take precautionary action. The Biosafety Protocol adopts a different approach in referring to a "lack of . . . certainty . . . regarding the *extent* of the possible adverse effect."[106] Thus, precautionary action will only be authorized if the lack of certainty concerns the "extent" of the adverse effect. The provision thereby implies that all other aspects and especially the source or origin of the adverse effect have to be certain. As has already been suggested, the notion of "extent" seems ill suited, because in the case of the risks associated with LMOs, it is uncertain regarding the if and how, rather than the extent, of the risk, that is likely to be primarily at stake.[107]

Important differences also exist between the two agreements in view of the follow-up of a precautionary measure. Once a member has adopted measures under Article 5(7) of the SPS Agreement, that agreement establishes a provisional scenario that is linked to the obligation of a member to seek further information. This obligation to seek further information is an integral element of the precautionary concept in the SPS Agreement. The Biosafety Protocol does not impose a comparable continuing obligation on a state party if it has adopted a precautionary measure under Article 10(6) or 11(8).

[106] Biosafety Protocol, *supra* note 1, at Article 10(6) and 11(8) [emphasis added].
[107] *See* section II.3.B in this article.

However, it does address the possible revision of decisions on transboundary movements more generally. According to Article 12(1) of the Biosafety Protocol, a decision may be reviewed and changed upon the initiative of the importing state. In addition, Article 12(2) provides that a party of export or a notifier may request the review of a decision taken under Article 10 in the case of changed circumstances or where additional scientific or technical evidence has become available.[108]

The Biosafety Protocol, therefore, seems to be more limited regarding the basis for precautionary action in so far as it refers specifically to "extent." On the other hand, it relies on an exporting party or a notifier to produce new evidence for a review of decisions rather than obliging an importing party to seek further information as is true for the SPS Agreement. However, such review of a decision, when applied for by the exporting party or notifier, is subject to a stricter time frame under the Biosafety Protocol.

4. Resolving a Potential Conflict of Rules: The Relationship Provisions

As we have seen, both the Biosafety Protocol and the SPS Agreement broadly overlap in their application to transboundary transfers of LMOs and even provide for similar instruments. However, some aspects of the precautionary principle and the AIA procedure under the protocol may depart from the structures of the SPS Agreement in a way that cannot be cured by interpretation but that may, rather, produce a manifest conflict of provisions. In regard to the trade implications and the effectiveness of the WTO dispute settlement, a potential dispute is likely to be tabled under the SPS Agreement, given the absence of an exclusionary provision on dispute settlement in the Biosafety Protocol.[109]

A panel or the Appellate Body, when interpreting the provisions and eventually concluding that a conflict exists, will apply the general rules of public international law on the law of treaties.[110] According to these general rules, a conflict in which the respective parties belong to both instruments will most likely be resolved in favour of the Biosafety Protocol, as it is the more specific (*lex specialis*) and the most recent agreement (*lex posterior*). In the case of a non-party to the protocol, the SPS Agreement will prevail.[111]

[108] *See* section II.2.C in this article.

[109] *See* note 25 and accompanying text; dispute settlement under the protocol would take place pursuant to the relevant provisions of the CBD, *supra* note 1. Where applicable, arguably, a complaining state would have to use the review procedures under the Biosafety Protocol prior to initiating WTO dispute settlement proceedings in the case of both parties being also parties to the Biosafety Protocol.

[110] According to the Article 3(2) of the DSU, general rules of public international law on the law of treaties will be applied in WTO dispute settlement. They are mainly contained in the Vienna Convention on the Law of Treaties, 23 May 1969 (entered into force 27 January 1980); reprinted in 8 ILM 679 (1969) [hereinafter VCLT].

[111] *See* VCLT, *supra* note 110, at Article 30(3) and (4); Wolfram Carl, *Treaties, Conflicts between*, *in* Encyclopedia of Public International Law, 467 at 469, 470 (Rudolf Bernhardt et al., eds., Vol. 7, 1984).

The Biosafety Protocol in its preamble specifically addresses the relationship with other agreements.[112] Recital 9 of the preamble to the Biosafety Protocol recognizes that "trade and environment agreements should be mutually supportive with a view to achieving sustainable development." This preambular statement, however, does not seem to be particularly helpful in resolving potential conflicts as it does not contain specific guidance on how such conflict may be resolved. Two further recitals in the preamble also address this subject matter but do not provide any further clarification: Recital 10 emphasizes that the Biosafety Protocol "shall not be interpreted as implying a change in the rights and obligations of a party under any existing international agreements."[113] Recital 11 goes on to note the parties' understanding that recital 10 is not "intended to subordinate this [Biosafety] Protocol to other international agreements." Clearly, the second paragraph is intended to offset the implications of the former. While this may be appealing from a political perspective, these heavily debated provisions will be of limited help in the event of a dispute over conflicting provisions in the Biosafety Protocol and the SPS Agreement. As a result, in the case of a conflict between the two instruments, states and a dispute settlement forum will have to rely on the ordinary rules of treaty interpretation.

V. CONCLUSIONS

The Biosafety Protocol can be considered an important achievement. Given the different interests of the states involved, its adoption alone can be regarded as an important success. Its real value, however, is that it provides a common basis for regulating transboundary movements of LMOs. It will enable states to exercise control upon movements of LMOs in view of their potential risks, even in the absence of national legislation on this subject. The AIA procedure represents an innovative mechanism for risk assessment prior to the transboundary movement of an LMO. Furthermore, the status, which the protocol attributes to precautionary action can be considered as important progress.

However, the protocol raises a number of trade issues, which ultimately may provoke trade conflicts. Apparently, little has been done to properly

[112] In drafting these statements in the preamble, the negotiators relied on similar statements in the PIC Convention, *supra* note 7. However, the final text departs considerably from the wording of the PIC Convention.

[113] Much has been made of the location of this clause in the preamble rather than in the operative text of the protocol. It should be noted in this regard, that according to the VCLT, *supra* note 111, at Article 31(2): "*The* context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes." While the eleventh preambular recital thus has an important legal effect, this effect arises through the interpretation of the protocol. Thus, the eleventh recital does not resolve the ultimate question of which agreement shall prevail in a case where a conflict of provisions cannot be cured by interpretation.

design the protocol in a way to accommodate those concerns. States thus may be reluctant to fully take advantage of the authority provided for under the protocol. This is regrettable, especially because the SPS Agreement strongly promotes an international harmonization of risk policies and provides for the means to take into account standards as developed in the framework of other international regimes.

The potential for inter-linkage between the SPS Agreement and the protocol apparently was not fully explored during the negotiations for the protocol. As a consequence, it is difficult to predict whether conflicts will in fact arise between the two instruments. A comparison between the two instruments does not yield clear-cut conclusions as to obviously conflicting provisions. However, the many legal uncertainties and the resultant dangers of being drawn into a trade dispute under the dispute settlement mechanism of the WTO may considerably discourage states from fully relying on the protocol for purposes of regulating transboundary transfers of LMOs.

It is worth mentioning, however, that there are opportunities to minimize those uncertainties at the implementation stage. Both treaty systems could give more guidance in view of a mutually supportive implementation of their provisions. The Biosafety Protocol's new institutions might find ways to guide implementation in a way that provides for more legal certainty. In addition, the SPS Council could clarify some of the points at issue, including the scope of application of the agreement. In addition, the World Health Organization could make important contributions to resolving conflicts in this area if it were to adopt an agreed approach to human health issues and LMOs in foods.

The provisions contained in the Biosafety Protocol on its relationship to other international agreements are not helpful from the point of view of legal clarity, and neither were the discussions that occurred in this regard during the negotiations. What is clear, however, once one looks beyond the rhetoric, is that an opportunity was missed to provide for "mutual supportiveness in achieving sustainable development." Preambular paragraph 9 thus remains an unfulfilled prophecy.