

SHARED NATURAL RESOURCES

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Third report on shared natural resources: transboundary groundwaters, by Mr. Chusei Yamada, Special Rapporteur

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Convention on the Continental Shelf (Geneva, 29 April 1958)	United Nations, <i>Treaty Series</i> , vol. 499, No. 7302, p. 311.
Convention on the High Seas (Geneva, 29 April 1958)	<i>Ibid.</i> , vol. 450, No. 6465, p. 11.
Convention on the Territorial Sea and the Contiguous Zone (Geneva, 29 April 1958)	<i>Ibid.</i> , vol. 516, No. 7477, p. 205.
United Nations Convention on the Law of the Sea (Montego Bay, 10 December 1982)	<i>Ibid.</i> , vol. 1833, No. 31363, p. 3.
Vienna Convention for the Protection of the Ozone Layer (Vienna, 22 March 1985)	<i>Ibid.</i> , vol. 1513, No. 26164, p. 293.
ASEAN Agreement on the Conservation of Nature and Natural Resources (Kuala Lumpur, 9 July 1985)	UNEP, <i>Selected Multilateral Treaties in the Field of the Environment</i> , vol. 2 (Cambridge, Grotius, 1991).
Convention on environmental impact assessment in a transboundary context (Espoo, 25 February 1991)	United Nations, <i>Treaty Series</i> , vol. 1989, No. 34028, p. 309.
Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 17 March 1992)	<i>Ibid.</i> , vol. 1936, No. 33207, p. 269. See also ILM, vol. 31, No. 6 (November 1992), p. 1312.
Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (London, 17 June 1999)	United Nations, <i>Treaty Series</i> , vol. 2331, No. A-33207, p. 2.
United Nations Framework Convention on Climate Change (New York, 9 May 1992)	<i>Ibid.</i> , vol. 1771, No. 30822, p. 107.
Convention on cooperation for the protection and sustainable use of the river Danube (Sofia, 29 June 1994)	<i>Official Journal of the European Union</i> , No. L 342 (12 December 1997), p. 19.
Convention on the Law of the Non-navigational Uses of International Watercourses (New York, 21 May 1997)	<i>Official Records of the General Assembly, Fifty-first Session, Supplement No. 49</i> , vol. III, resolution 51/229, annex.
Revised Protocol on Shared Watercourses in the Southern African Development Community (Windhoek, 7 August 2000)	ILM, vol. 40, No. 2 (March 2001), p. 321.
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Tripartite Interim Agreement Between the Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses (Johannesburg, 29 August 2002)	FAO legal database: faolex.fao.org.

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PART ONE

Introduction

1. At the fifty-sixth session of the International Law Commission in 2004, the Special Rapporteur presented his second report on shared natural resources¹ (providing a general framework and six preliminary draft articles on transboundary aquifers and aquifer systems. The Commission considered that report at its meetings, held on 12, 13 and 14 May 2004, respectively.² At its 2797th meeting, the Commission established an open-ended Working Group on transboundary groundwaters, which held three meetings to consider the draft articles proposed in the report. The Working Group also had two informal briefings by experts on groundwaters, organized by UNESCO³ and an informal meeting with members of the Water Resource Committee of the International Law Association. The Sixth Committee of the General Assembly of the United Nations considered the parts of the report of the Commission⁴ related to this topic on 5, 8 and 9 November 2004.⁵

2. The Special Rapporteur believes that the approach which he adopted in his second report on shared natural resources has received general support both in the Commission and in the General Assembly. Accordingly, in the present report, he proposes a complete set of draft articles

for a convention on the law of transboundary aquifers, taking into account comments and suggestions previously offered in the Commission and the Sixth Committee. In order to limit the length of the report, explanations of draft articles are concise. Important references to State practice and international instruments will be provided in the present report and further data will be made available to the members of the Commission at the time of deliberation on the report. The Special Rapporteur would like to reiterate that, although the proposals are presented in the form of draft articles of a convention, this does not prejudice their final form. In his view, a discussion on their final form should preferably be held once the substance has been more or less agreed upon.

3. In preparing the present report, the Special Rapporteur has continued to receive valuable support from the group of experts organized under the auspices of the UNESCO-International Hydrological Programme, in the framework of its Internationally Shared Aquifer Resources Management project, and from expert members of the Study Group on Shared Natural Resources, established by the Ministry of Foreign Affairs of Japan. Aware of the problem of the scarcity of State practice and legal instruments in this area, the Special Rapporteur is making an effort to collect such materials. Furthermore, the replies from Governments and relevant international organizations to the questionnaire prepared by the Commission⁶ will facilitate the preparation of the study of this topic.

¹ *Yearbook ... 2004*, vol. II (Part One), document A/CN.4/539 and Add.1.

² *Ibid.*, vol. I, 2797–2799th meetings.

³ The briefings were conducted by experts from ECE, UNESCO, FAO and the International Association of Hydrogeologists (IAH).

⁴ *Yearbook ... 2004*, vol. II (Part Two), paras. 26–28 and 73–142.

⁵ *Official Records of the General Assembly, Fifty-ninth Session, Sixth Committee*, 21st–23rd meetings and 25th meeting.

⁶ *Yearbook ... 2004*, vol. II (Part Two), paras. 26–28 and 81.

CHAPTER I

Preamble

4. The need to have an explicit reference to General Assembly resolution 1803 (XVII) of 14 December 1962 on permanent sovereignty over natural resources in the preamble to the draft articles was advocated particularly by those delegations that are of the opinion that water resources belong to the States in which they are located and are subject to the exclusive sovereignty of those

States. The Special Rapporteur recognizes the sensitivity of the question and is willing to include such a reference in the preamble. However, in accordance with the general practice of the Commission, he prefers to postpone the formulation of the preamble until after the substantive draft articles have been agreed upon and all factors to be incorporated in the preamble are known.

CHAPTER II

Scope

5. The proposed draft article on the scope of the draft convention reads as follows:

“Article 1. Scope of the present Convention

“The present Convention applies to:

“(a) Utilization of transboundary aquifers and aquifer systems;

“(b) Other activities that have or are likely to have an impact upon those aquifers and aquifer systems;

“(c) Measures of protection, preservation and management of those aquifers and aquifer systems.”

6. This draft article has been reformulated to take into account the suggestion to clarify further the three different categories of activities to be covered by the draft convention. It does not alter the substance proposed in the second report on shared natural resources. Thus, only

transboundary aquifers and aquifer systems are covered by the convention, and domestic aquifers and aquifer systems are excluded from its scope. Even if a domestic aquifer or aquifer system is linked to an international watercourse in the territory of a State where such an aquifer or aquifer system is located, it would fall outside the scope of the convention. However, it may well be covered by the Convention on the Law of the Non-navigational Uses of International Watercourses (hereinafter the 1997 Watercourses Convention). Subparagraph (a) of this article relates to the utilization of transboundary aquifers and aquifer systems by the aquifer States in which they are located, in the absence of an agreement that allows other States to do so. The activities and measures referred to in subparagraphs (b)–(c) may, in exceptional situations, be carried out by non-aquifer States and outside the territories of aquifer States. The extent of such exceptional situations is to be clarified in the relevant articles. The term “impact” used in subparagraph (b) should be construed as a wider concept than “harm”.

CHAPTER III

Definition

7. The proposed draft article on definition reads as follows:

“Article 2. Use of terms

“For the purposes of the present Convention:

“(a) ‘Aquifer’ means a permeable [water-bearing] geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation;

“(b) ‘Aquifer system’ means a series of more than two aquifers [, each associated with specific geological formations,] that are hydraulically connected;

“(c) ‘Transboundary aquifer’ or ‘transboundary aquifer system’ means, respectively, an aquifer or aquifer system, parts of which are situated in different States;

“(d) ‘Aquifer State’ means a State Party to the present Convention in whose territory any part of a transboundary aquifer or aquifer system is situated;

“(e) ‘Recharging aquifer’ means an aquifer that receives a non-negligible amount of contemporary water recharge;

“(f) ‘Non-recharging aquifer’ means an aquifer that receives a negligible amount of contemporary water recharge.”

8. The definition of an aquifer in subparagraph (a) has been reformulated to meet the concerns expressed. A precise description of the two elements of which an aquifer consists is offered. One element is the underground formation which functions as a container for water. The other element is the water contained therein and which is extractable. The term “rock formation” used in the second report on shared natural resources is susceptible to the

interpretation that the formation is made up of hard and solid rock. In order to clarify that the formation can consist not only of rock in common usage but also of other materials, the term “geological formation” has been opted for. A geological formation consists of naturally occurring materials, either consolidated or unconsolidated, such as rock, gravel and sand. The permeability of the underlying layer is less (lower) than that of the geological formation in the aquifer. A permeable geological formation has pores that permit liquids or gases to pass through. As we are currently dealing only with water and not with oil or gas, a modifier, “water-bearing”, is inserted before the words “geological formation”. However, the modifier could be suppressed as it is obvious from the context that no other resource than water is being dealt with. Furthermore, the definition is limited to the water contained in the saturated zone of the aquifer since only that water is extractable. The water above the saturated zone in the aquifer, like the water outside the aquifer, is in the form of vapour and cannot be extracted. The original formulation used in the second report, “capable of yielding exploitable quantities of water”,⁷ was intended to describe this situation. However, the Special Rapporteur has decided not to use the term “exploitable” as it invited controversy over the question whether it is exploitable technically or economically and whether it is exploitable at present or also in the future.

9. Subparagraphs (b)–(d) remain unchanged in substance. Previously, the legal fiction that an aquifer system also includes a single aquifer was employed for the sake of economy. It caused some confusion and accordingly an aquifer system is now defined as a series of more than two aquifers. The necessary corrections resulting from this change have been made in all the draft articles. In subparagraph (b), the expression “each associated with specific geological formations” has been inserted to indicate that

⁷ *Yearbook ... 2004* (see footnote 1 above), para. 16.

an aquifer system could consist of aquifers not only of the same geological formations but also of different geological formations. However, from a legal point of view, this phrase does not add or detract anything and could be suppressed. The view was expressed that the concept “transboundary” must be defined. At present, the term is always used in conjunction with aquifer in the proposed draft articles. Accordingly, the Special Rapporteur feels that the definition of “transboundary aquifer” and “transboundary aquifer system” in subparagraph (c) would suffice. If, however, the term “transboundary” were to be used in other contexts, such as transboundary harm, a definition would be required.

10. The definitions of recharging and non-recharging aquifers became necessary because, pursuant to draft article 5, different rules will apply to each category of aquifer. The water in a recharging aquifer is a renewable resource and the water in a non-recharging aquifer is a non-renewable resource. In reality, practically all aquifers may receive some recharge of water since absolutely impermeable underground layers may not exist. However, if such recharge is negligible from the point of view of the management of aquifers, the water in those aquifers must be treated as a non-renewable resource. An absolute criterion for negligibility does not exist since it would depend on the size of the aquifer and the quantity of the water contained therein. Furthermore, there should be no gap or overlap between recharging and non-recharging aquifers. Therefore, the Special Rapporteur has used the term “non-negligible” in subparagraph (e). Groundwater experts maintain that, in defining two categories of aquifers, recharge must be limited to natural recharge. The Special Rapporteur, however, feels that when an aquifer is capable of receiving artificial recharge, or is in fact receiving such recharge, that aquifer should be classified as a recharging aquifer for the purpose of implementation of the provisions of the draft convention.

CHAPTER IV

Bilateral and regional arrangements

11. The proposed draft article on bilateral and regional arrangements reads as follows:

“Article 3. Bilateral and regional arrangements

“1. For the purpose of managing a particular transboundary aquifer or aquifer system, aquifer States in whose territories such an aquifer or aquifer system is located are encouraged to enter into a bilateral or regional arrangement among themselves. Such arrangement may be entered into with respect to an entire aquifer or aquifer system or any part thereof or a particular project, programme or use except insofar as the arrangement adversely affects, to a significant extent, the use by one or more other aquifer States of the water in that aquifer or aquifer system, without their express consent. Any State in whose territory such an aquifer or aquifer system is located is entitled to participate in the negotiation and to become a party to arrangements

when such arrangements are likely to prejudice their positions *vis-à-vis* that aquifer or aquifer system.

“2. Parties to an arrangement referred to in paragraph 1 shall consider harmonizing such arrangement with the basic principles of the present Convention. Where those parties consider that adjustment in application of the provisions of the present Convention is required because of the characteristics and special uses of a particular aquifer or aquifer system, they shall consult with a view to negotiating in good faith for the purpose of concluding an arrangement beneficial to all the parties.

“3. In the absence of an agreement to the contrary, the present Convention applies to the aquifer or aquifer system referred to in paragraph 1 only to the extent that its provisions are compatible with those of the arrangement referred to in the same paragraph.”

12. The importance of bilateral or regional arrangements that take due account of the historical, political, social and economic characteristics of the region and of the specific conditions of the aquifer or aquifer system has been stressed by many members of the Commission as well as by delegations in the Sixth Committee. The Special Rapporteur recognizes its importance and proposes this new draft article. Paragraph 1 calls upon aquifer States to cooperate among themselves to enter into bilateral or regional arrangements for the purpose of managing a particular transboundary aquifer or aquifer system. The concept of reserving the matter to the group of aquifer States concerned with a particular aquifer is based on the principles set forth in articles 118 (Co-operation of States in the conservation and management of living resources) and 197 (Co-operation on a global or regional basis) of the United Nations Convention on the Law of the Sea. It also corresponds to the watercourse agreements provided for in article 3 of the 1997 Watercourses Convention. In the case of surface watercourses, numerous bilateral and regional agreements have been concluded. However, in the case of groundwaters, such international collective measures are still in an embryonic stage and the

framework for cooperation remains to be properly developed. Therefore, the Special Rapporteur has opted for the term “arrangement” instead of “agreement”. This paragraph also provides that the States concerned should have equal opportunity to participate in such arrangements.

13. Paragraph 2 tries to define the relationship between such bilateral and regional arrangements and the draft convention. The convention is deemed to be a framework convention and aquifer States are expected to respect the basic principles stipulated therein in formulating such arrangements. However, they are authorized to depart from these principles if the special characteristics of a particular aquifer require certain adjustments, but such departure should not result in inequitable outcomes among the States concerned. This paragraph is based upon article 3, paragraphs 2 and 5, of the 1997 Watercourses Convention.

14. Paragraph 3 specifies that bilateral and regional arrangements take priority, as *lex specialis*, over the draft convention.

CHAPTER V

Relation to other conventions

15. The proposed draft article on the relation to other conventions and international agreements reads as follows:

“Article 4. Relation to other conventions and international agreements

“1. When the States Parties to the present Convention are parties also to the Convention on the Law of the Non-navigational Uses of International Watercourses, the provisions of the latter concerning transboundary aquifers or aquifer systems apply only to the extent that they are compatible with those of the present Convention.

“2. The present Convention shall not alter the rights and obligations of the States Parties which arise from other agreements compatible with the present Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under the present Convention.”

16. As explained in the second report on shared natural resources, the draft convention is intended to cover all transboundary aquifers and aquifer systems regardless of whether or not they are related to surface waters.⁸ This would result in the dual applicability of the draft convention and the 1997 Watercourses Convention for those aquifers and aquifer systems that constitute, by virtue of their physical relationship, a unitary whole with systems of surface waters. Paragraph 1 addresses this situation. As long as the provisions of the two conventions are compatible, the problem of dual applicability would not arise. Should, however, a conflict between the two arise, the

provisions of the present draft convention would prevail, since the 1997 Convention was essentially designed to regulate surface waters. Thus, its relevance to groundwaters is rather peripheral. In the light of the fact that the 1997 Convention is most relevant and a sort of precursor to the draft convention, it has been specifically mentioned in this paragraph.

17. Paragraph 2 is intended to define the relationship between the draft convention and other conventions and international agreements that regulate matters other than groundwaters, but which may have some limited application in this area. An example is the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, concluded under the auspices of ECE. Another example is article 194 of the United Nations Convention on the Law of the Sea (Measures to prevent, reduce and control pollution of the marine environment) and, in particular, its paragraph 3 (a), concerning pollution of land-based sources. Many environmental agreements may also be relevant. If the provisions of the present draft convention and those of other conventions and international agreements are compatible, no problem would arise. If, on the other hand, there is a conflict between the draft convention and another convention or international agreement, it would not be appropriate to stipulate a general rule of priority such as the one set forth in paragraph 1. A decision of such priority would be possible only when the content of the relevant provisions are fully known. Accordingly, the Special Rapporteur has based this paragraph on article 311 (Relation to other conventions and international agreements), paragraph 2, of the United Nations Convention.

⁸ *Ibid.*, para. 14.

CHAPTER VI

Equitable and reasonable utilization

18. The proposed draft article on equitable and reasonable utilization reads as follows:

“Article 5. Equitable and reasonable utilization

“1. Aquifer States shall, in their respective territories, utilize a transboundary aquifer or aquifer system in a manner such that the benefits to be derived from such utilization shall accrue equitably to the aquifer States concerned.

“2. Aquifer States shall, in their respective territories, utilize a transboundary aquifer or aquifer system in a reasonable manner and, in particular:

“(a) With respect to a recharging transboundary aquifer or aquifer system, shall take into account the sustainability of such aquifer or aquifer system and shall not impair the utilization and functions of such aquifer or aquifer system;

“(b) With respect to a non-recharging transboundary aquifer or aquifer system, shall aim to maximize the long-term benefits derived from the use of the water contained therein. They are encouraged to establish a development plan for such aquifer or aquifer system, taking into account the agreed lifespan of such aquifer or aquifer system as well as future needs of and alternative water sources for the aquifer States.

“3. In the application of paragraphs 1 and 2, aquifer States concerned shall, when the need arises, enter into consultation in a spirit of cooperation.”

19. States have sovereign rights over the natural resources located within their jurisdiction and aquifer States are entitled to utilize aquifers and aquifer systems within their territories. It is needless to say that such rights should not be absolute and unlimited. However, the rights of aquifer States are expressed in this draft article in a positive form. The obligations of aquifer States are to be stipulated in articles 7 and after. The rights and obligations of aquifer States should not be confused and must be dealt with separately in different articles, though a proper balance between the rights and obligations must be maintained. The corresponding article 5 of the 1997 Watercourses Convention defines such rights of watercourse States as the right of “equitable utilization” *vis-à-vis* other watercourse States, on the one hand, and the right of “reasonable utilization” *vis-à-vis* watercourse resources, on the other hand. Those two principles are often cited in various international instruments dealing with shared and renewable natural resources. As explained in the second report on shared natural resources,⁹ the Special Rapporteur was not able at that time to propose a draft article, as he was not certain whether the principle of “equitable utilization” could be acceptable to those many aquifer States that opposed the concept of shared natural resources for groundwaters and whether the principle of “reasonable

utilization”, which is equivalent to “sustainable utilization”, could be applied to non-renewable water resources contained in many aquifers.

20. Both the principles of “equitable utilization” and “reasonable utilization” have been incorporated into draft article 5. The Special Rapporteur made the decision to include them in the light of the fact that they had not been objected to and had received some support during the discussions in the Commission and the Sixth Committee. The principle of “equitable utilization” provided for in paragraph 1 means the equitable allocation of benefits to be derived from aquifers among the aquifer States concerned. It is, in a sense, an abstract principle. Its implementation must be left to the States concerned and be realized through consultations in good faith among themselves, taking into account the relevant factors listed in article 6.

21. The principle of “reasonable utilization”, provided for in paragraph 2, relates to the proper management of groundwaters. For renewable natural resources, this principle is well established and is also expressed in other terms, such as “optimal utilization” and “sustainable utilization”. It means that the renewable natural resource must be kept at the level that would provide the maximum sustainable yield (MSY). For marine living resources, article 119, paragraph 1 (a), of the United Nations Convention on the Law of the Sea and almost all fishery agreements uphold the MSY principle. The size of a particular fish stock is kept at the level where the maximum annual catch is possible year after year. Such a level could be determined scientifically by studying the population dynamics of the fish stock. With regard to the renewable water resource of watercourses, no such precise description of this reasonable, optimal or sustainable utilization principle exists. However, it can be presumed that extraction of water is permitted up to the amount of water recharge to the watercourse so that the total quantity of the water in the watercourse remains stable.

22. Paragraph 2 (a) deals with a recharging aquifer. The water contained in a recharging aquifer is a renewable resource. However, it cannot be compared with the renewable water resource of surface watercourses. In most cases, the quantity of contemporary water recharge into an aquifer constitutes only a fraction of the main body of water therein, which has been kept there for hundreds and thousands of years. If a strict rule of sustainable utilization were imposed and the amount of extraction of water limited to that of the current water recharge, it would in reality deny aquifer States the right to utilize the valuable water resource, accumulated over the years, in the aquifer. Accordingly, as currently phrased, the paragraph provides that the aquifer be kept in a condition to maintain its function, but it does not impose a strict rule of sustainable use. Paragraph 2 (b) deals with a non-recharging aquifer. The water contained therein is a non-renewable resource. In this case, the principle of sustainable utilization does not apply since any extraction of water in such an aquifer depletes the resource and in the end destroys

⁹ *Ibid.*, para. 21.

the aquifer. However, the concept of reasonable utilization should still be viable. In the final analysis, it is for the aquifer States concerned to decide how to utilize this non-renewable resource. Aquifer States should establish a proper development plan for the benefit of both present and future generations.

23. The proposed draft article on factors relevant to equitable and reasonable utilization reads as follows:

“Article 6. Factors relevant to equitable and reasonable utilization

“1. Utilization of a transboundary aquifer or aquifer system in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including:

“(a) The natural condition of the aquifer or aquifer system;

“(b) The social and economic needs of the aquifer States concerned;

“(c) The population dependent on the aquifer or aquifer system in each aquifer State;

“(d) The effects of the utilization of the aquifer or aquifer system in one aquifer State on other aquifer States concerned;

“(e) The existing and potential utilization of the aquifer or aquifer system;

“(f) The development, protection and conservation of the aquifer or aquifer system and the costs of measures to be taken to that effect;

“(g) The availability of alternatives, of comparable value, to a particular existing and planned utilization of the aquifer or aquifer system.

“2. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is reasonable and equitable utilization, all relevant factors are to be considered together and conclusion reached on the basis of the whole.”

24. The rules of equitable and reasonable utilization in draft article 5 are general and flexible. The purpose of article 6 is to provide a list, not necessarily exhaustive, of relevant factors and circumstances which should be taken into account in the assessment of what constitutes equitable and reasonable utilization in a specific case. This article mirrors article 6 of the 1997 Watercourses Convention almost word for word. However, paragraph 1 (a) departs from it by referring to the “natural condition” of an aquifer and not listing the natural factors. The rationale behind this is that natural factors should be taken into account, not one by one, but as the characteristics of the aquifer. An indicative list of these natural factors is found in article 9 (data and information to be exchanged), paragraph 1, and in article 10 (parameters to be monitored), paragraph 1.

CHAPTER VII

Obligation not to cause harm

25. The proposed draft article on the obligation not to cause harm reads as follows:

“Article 7. Obligation not to cause harm

“1. Aquifer States shall, in utilizing a transboundary aquifer or aquifer system in their territories, take all appropriate measures to prevent the causing of significant harm to other aquifer States.

“2. Aquifer States shall, in undertaking other activities in their territories that have or are likely to have an impact on a transboundary aquifer or aquifer system, take all appropriate measures to prevent the causing of significant harm through that aquifer or aquifer system to other aquifer States.

“3. Where significant harm nevertheless is caused to another aquifer State, the aquifer States whose activities cause such harm shall, in the absence of agreement to such activities, take all appropriate measures, having due regard for the provisions of articles 5 and 6, in consultation with the affected State to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.”

26. Except for some editorial changes, the substance of the draft article remains unchanged from the one proposed

in the second report on shared natural resources. The debate continues on whether the threshold of “significant harm” is appropriate for the fragile natural resource of groundwaters. As fully explained in the Special Rapporteur’s summing up of the debate on his second report in the Commission¹⁰ and in view of the established position of the Commission on this subject, he continues to hold the view that it would be better to retain this threshold. With regard to paragraph 3 of the draft article, the delegation of an aquifer State considered that the treatment of liability in this paragraph was unacceptable. Another delegation pointed out that the issue of liability in relation to the question of compensation could be dealt with under the topic “international liability”. Article 7, paragraph 2, of the 1997 Watercourses Convention contains the same provision and was proposed by the Commission based on existing State practice.¹¹ The paragraph was not contested and was adopted by consensus in the General Assembly. The objective of the paragraph is to address the question of *ex post facto* prevention (prevention after the harm is caused). Compensation is only referred to as a question that may be discussed. The Special Rapporteur is in agreement with the view that it would be preferable to deal with the issue of liability in another forum.

¹⁰ *Ibid.*, vol. II (Part Two), para. 153.

¹¹ *Yearbook ... 1994*, vol. II (Part Two), p. 105, footnote 244.

CHAPTER VIII

Obligation to cooperate

27. The proposed draft articles on a general obligation to cooperate and on the exchange data and information read as follows:

“Article 8. General obligation to cooperate

“1. Aquifer States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain reasonable utilization and adequate protection of a transboundary aquifer or aquifer system.

“2. In determining the manner of such cooperation, aquifer States are encouraged to establish joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions.

“Article 9. Regular exchange of data and information

“1. Pursuant to article 8, aquifer States shall, on a regular basis, exchange readily available data and information on the condition of the transboundary aquifer or aquifer system, in particular that of a geological, hydrogeological, hydrological, meteorological and ecological nature and related to the hydrochemistry of the aquifer or aquifer system, as well as related forecasts.

“2. In the light of uncertainty about the nature and extent of some transboundary aquifer or aquifer systems, aquifer States shall employ their best efforts to collect and generate, in accordance with currently available practice and standards, individually or jointly and, where appropriate, together with or through international organizations, new data and information to identify the aquifer or aquifer systems more completely.

“3. If an aquifer State is requested by another aquifer State to provide data and information that is not readily available, it shall employ its best efforts to comply with the request, but may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.

“4. Aquifer States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner that facilitates its utilization by the other aquifer States to which it is communicated.”

28. Except for the change of “appropriate utilization” to “reasonable utilization” in draft article 8, paragraph 1, these two draft articles remain as they were in the second report on shared natural resources. It is presumed that these articles would be acceptable as they have attracted no comments. With respect to article 9, the data and information to be exchanged include not only raw statistics but also results of research and analysis.

CHAPTER IX

Monitoring

29. A new draft article on monitoring is proposed and reads as follows:

“Article 10. Monitoring

“For the purpose of being well acquainted with the conditions of a transboundary aquifer or aquifer system:

“1. Aquifer States shall agree on harmonized standards and methodology for monitoring a transboundary aquifer or aquifer system. They shall identify key parameters that they will monitor based on an agreed conceptual model of the aquifer or aquifer system. These parameters shall include extent, geometry, flow path, hydrostatic pressure distribution, quantities of flow and hydrochemistry of the aquifer or aquifer system.

“2. Aquifer States shall undertake to monitor such parameters referred to in paragraph 1 and shall, wherever possible, carry out these monitoring activities jointly among themselves and in collaboration with the competent international organizations. Where, however, monitoring activities are not carried out jointly, aquifer States shall exchange the monitored data.”

30. There is an increasing practice to provide for the monitoring of the management of groundwaters. Arrangements have been established for aquifers, such as the Nubian Sandstone Aquifer System, the Carpathians in Eastern Europe, the Danube River Basin, the Sava River Basin in the Balkans and the Lake Victoria Basin. ECE has also included provisions on monitoring in its *Charter on ground-water management*¹² as well as in its Guidelines on Monitoring and Assessment of Transboundary Groundwaters.¹³ The purpose of monitoring is to gain basic knowledge of the specific aquifer, which offers an essential basis for proper management of that aquifer. In order to make the monitored data compatible and easily usable by other aquifer States concerned, the key parameters to be monitored must be selected on the basis of a conceptual model of the aquifer, agreed upon by the States concerned. The conceptual model provides information on the characteristics of the aquifer and its functioning. It includes a thorough hydrogeological evaluation of the various types of geological materials present in the aquifer. It also includes the illustration of the aquifer and its regional flow, the formulation of the water balance, the identification of recharge and discharge data, and the determination of the aquifer boundaries and its permeability and storage.

¹² United Nations publication, Sales No. E.89.II.E.21.

¹³ MP.WAT/2000/9, annex.

CHAPTER X

Relationship between different kinds of utilization

31. The proposed draft article on the relationship between different kinds of utilization of aquifers remains unchanged from the second report on shared natural resources, except for some editorial corrections, and reads as follows:

“Article 11. Relationship between different kinds of utilization

“1. In the absence of agreement or custom to the contrary, no utilization of a transboundary aquifer or aquifer system enjoys inherent priority over other utilization.

“2. In the event of a conflict between utilization of a transboundary aquifer or aquifer system, it shall be resolved with special regard being given to the requirements of vital human needs.”

CHAPTER XI

Protection, preservation and management

32. Four draft articles are proposed for part III, entitled “Protection, preservation and management”. Three draft articles on protection and preservation of aquifers precede an article on management. Protection and preservation of an aquifer are prerequisites for the equitable and reasonable utilization of such an aquifer. The proposed three draft articles read as follows:

“Article 12. Protection and preservation of ecosystems

“Aquifer States shall protect and preserve ecosystems within a transboundary aquifer or aquifer system. They shall also ensure adequate quality and sufficient quantity of discharge water to protect and preserve outside ecosystems dependent on the aquifer or aquifer system.

“Article 13. Protection of recharge and discharge zones

“1. Aquifer States shall identify recharge zones of a transboundary aquifer or aquifer system and, within these zones, shall take special measures to minimize detrimental impacts on the recharge process and also take all measures to prevent pollutants from entering the aquifer or aquifer system.

“2. Aquifer States shall identify discharge zones of a transboundary aquifer or aquifer system and, within these zones, shall take special measures to minimize detrimental impacts on the discharge process.

“3. When such recharge or discharge zones are located in the territories of States other than aquifer States, aquifer States should seek the cooperation of the former States to protect these zones.

“Article 14. Prevention, reduction and control of pollution

“Aquifer States shall, individually and, where appropriate, jointly, prevent, reduce and control the pollution of a transboundary aquifer or aquifer system that may cause significant harm to other aquifer States or to their environment. In the light of uncertainty

about the nature and extent of some transboundary aquifers or aquifer systems, aquifer States are encouraged to take a precautionary approach.”

33. These three draft articles should not be construed as environmental protection provisions. The objectives of the articles are not to protect and preserve aquifers for the sake of aquifers, but to protect and preserve them so that humankind can utilize the precious water resources contained therein. Article 12 obliges aquifer States to protect and preserve ecosystems inside aquifers as well as ecosystems outside aquifers, dependent on the aquifers. The term “ecosystem” is more precise than the concept “environment surrounding aquifers”. Article 13 deals with the protection and preservation of recharge and discharge zones of aquifers. These zones are outside the aquifers as defined in article 2 (a). However, preventive measures are still required in order not to pollute aquifers or impair their normal function. Where there are artificial facilities for recharge or discharge, such facilities will also be covered by this article. When a recharge or discharge zone is located outside the territories of aquifer States and in non-aquifer States, it would be difficult to place any obligation on such non-aquifer States as they do not benefit from the aquifers. Thus, article 13, paragraph 3, requests their voluntary cooperation. Article 14 deals with the problem of pollution of aquifers. It is conceivable that an aquifer State could pollute a transboundary aquifer, but not cause significant harm to other aquifer States or their environment. This could occur where the pollution remains in the original State over a long period of time, or where other States are not presently utilizing the aquifer and where their environment is not reliant on it. This situation might be covered to some extent by the expression “the pollution ... that may cause ...”. As a lengthy process is often required to discover pollution and to determine its causal link, as well as to remove it, groundwater scientists strongly favour the application of the precautionary principle. While the Special Rapporteur is sympathetic to this position, he is of the view that the precautionary principle has not yet developed as a rule of general international law. Accordingly, in this article, he has adopted the term “precautionary approach”.

34. The proposed draft article on management reads as follows:

“Article 15. Management

“Aquifer States shall undertake to establish plans and implement these plans for the proper management of a transboundary aquifer or aquifer system in accordance with the provisions of the present Convention. They shall, at the request by any of them, enter into consultations concerning the management of a transboundary aquifer or aquifer system, which may include the establishment of a joint management mechanism.”

35. Draft article 15 recognizes the importance of cooperation by aquifer States in managing transboundary aquifers with a view to ensuring their protection and preservation as provided for in articles 12–14 and to maximizing the benefits to the aquifer States through equitable and reasonable utilization of the aquifers. This article simply offers the modalities and mechanisms of such management. The outcome of the consultations is left in the hands of the aquifer States concerned.

CHAPTER XII

Activities affecting other States

36. Two draft articles are proposed for part IV on activities affecting other States. They read as follows:

“Article 16. Assessment of potential effects of activities

“When an aquifer State has reasonable grounds for believing that a particular planned activity in its territory may cause adverse effects on a transboundary aquifer or aquifer system, it shall, as far as practicable, assess the potential effects of such activity.”

“Article 17. Planned activities

“1. Before an aquifer State implements or permits the implementation of planned activities which may have a significant adverse effect upon other aquifer States, it shall provide those States with timely notification thereof. Such notification shall be accompanied by available technical data and information, including any environmental impact assessment, in order to enable the notified States to evaluate the possible effects of the planned activities.

“2. If the notifying State and the notified States disagree on the effect of the planned activities, they shall enter into consultations and, if necessary, negotiations with a view to arriving at an equitable resolution of the situation. They may utilize an independent fact-finding body which may be able to make

an impartial assessment of the effect of the planned activities.”

37. The 1997 Watercourses Convention contains nine articles on planned measures which may have a significant adverse effect upon other watercourse States, setting out detailed procedures to be followed by States concerned. In the case of surface waters, there have been innumerable activities and resulting disputes among States and such detailed procedures are required. Although the Commission has not yet had a focused discussion on this issue, the Special Rapporteur felt that a provision containing a much simpler arrangement for groundwaters was generally preferred. Accordingly, he has decided to set aside most of the procedural requirements contained in the 1997 Convention. Draft article 16 is based upon article 11 of that Convention. Article 17, paragraph 1, is extracted from article 12 of that Convention and article 17, paragraph 2, incorporates elements from its article 17, paragraph 1, and article 33, paragraph 3 (fact-finding body). In essence, these articles are designed to emphasize the importance of cooperation between States in order to avoid disputes arising from planned activities. As long as an aquifer State fulfils the obligation to inform and hold consultations with the would-be affected States, nothing in the draft prevents the aquifer State from proceeding with the planned activities without the consent of the affected States. It can implement its planned activities at its own risk, though the issue of liability may arise.

CHAPTER XIII

Miscellaneous provisions

38. Four draft articles are proposed for part V, entitled “Miscellaneous provisions”. The first of them is article 18 on scientific and technical assistance to developing States, which reads as follows:

“Article 18. Scientific and technical assistance to developing States

“States shall, directly or through competent international organizations, provide scientific, educational, technical and other assistance to developing States for the protection and management of a transboundary aquifer or aquifer system. Such assistance shall include, *inter alia*:

“(a) Training of their scientific and technical personnel;

“(b) Facilitating their participation in relevant international programmes;

“(c) Supplying them with necessary equipment and facilities;

“(d) Enhancing their capacity to manufacture such equipment;

“(e) Providing advice on and developing facilities for research, monitoring, educational and other programmes;

“(f) Minimizing the effects of major activities affecting transboundary aquifers or aquifer systems;

“(g) Preparing environmental impact assessments.”

39. As explained in the first report on shared natural resources,¹⁴ the science relating to groundwaters is relatively young. Although the science has advanced to a certain extent in Europe, little is known about aquifers and the precious water resources stored in them in the developing world. For proper management of these resources, it is vital for the developing aquifer States to receive scientific and technical assistance. Draft article 18 finds its roots in article 202 (Scientific and technical assistance to developing States) of the United Nations Convention on the Law of the Sea.

40. The proposed draft article on emergency situations reads as follows:

“Article 19. Emergency situations

“1. An aquifer State shall, without delay and by the most expeditious means available, notify other potentially affected States and competent international organizations of any emergency situation originating within its territory that causes, or poses an imminent threat of causing, serious harm to other States and that results suddenly from natural causes or from human conduct.

“2. An aquifer State within whose territory an emergency situation originates shall, in cooperation with potentially affected States and, where appropriate, competent international organizations, immediately take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate harmful effects of the emergency situation.

“3. Where water is critical to alleviate an emergency situation, aquifer States may derogate from the provisions of the articles in parts II to IV of the present Convention to the extent necessary to alleviate the emergency situation.”

¹⁴ *Yearbook ... 2003*, vol. II (Part One), document A/CN.4/533 and Add.1, p. 112, para. 22.

41. Article 28 of the 1997 Watercourses Convention encompasses provisions on emergency situations. Many catastrophic accidents relating to watercourses occur as a result of natural causes, such as floods, landslides, breaking up of ice or earthquakes, or of human causes, such as industrial accidents or the collapse of dams. The Special Rapporteur initially did not think that an article on emergency situations was required because he could not foresee similar catastrophes affecting groundwaters. He changed his mind in view of the devastating tsunami disaster along the coast of the Indian Ocean, which resulted from a great earthquake that occurred off Banda Aceh, Indonesia, in December 2004. Although no definite studies have yet been published, a great number of aquifers must have been negatively affected. Owing to the destruction of the discharge processes, salinization of aquifers might have occurred. In consultation with groundwater experts, this draft article was prepared to cope with such situations.

42. Two additional draft articles are proposed. One is on the protection of aquifers and their installations in time of armed conflict and the other is on data and information vital to national defence or security. Both articles are self-explanatory and read as follows:

“Article 20. Protection in time of armed conflict

“Transboundary aquifers or aquifer systems and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.

“Article 21. Data and information vital to national defence or security

“Nothing in the present Convention obliges an aquifer State to provide data or information vital to its national defence or security. Nevertheless, that State shall cooperate in good faith with other aquifer States with a view to providing as much information as possible under the circumstances.”

CHAPTER XIV

Final clauses

43. Draft provisions on final clauses have been prepared. Draft article 22 relates to signature, article 23 relates to ratification, article 24 relates to entry into force and article 25 relates to authentic texts. These are followed by

a usual testimonium clause. These articles need not be presented here. However, for ease of reference, all draft articles, including the final clauses, are reproduced in the annex to the present report.

PART TWO

Introduction

Part two of the present report sets out provisions of legal instruments relevant to some of the draft articles for a convention on the law of transboundary aquifers proposed by the Special Rapporteur in part one. The extracts are taken not only from treaties but also from non-binding instruments such as declarations and resolutions of intergovernmental organizations as well as codification proposals of non-governmental organizations. The relevant provisions of the 1997 Watercourses Convention are not quoted here, as they are readily available.

CHAPTER XV

Article 2. Use of terms

A. Article 2, paragraph 11, of directive 2000/60/EC of the European Parliament and of the Council of the European Union of 23 October 2000 establishing a framework for Community action in the field of water policy:

“Aquifer” means a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater.¹⁵

B. UNCC, Report and recommendations made by the Panel of Commissioners concerning the third instalment of “F4” claims:

aquifer: Natural water-bearing geological formation found below the surface of the earth.¹⁶

C. Article I, paragraph 1, of the Bellagio Draft Treaty on transboundary groundwaters:

“Aquifer” means a subsurface waterbearing geologic formation from which significant quantities of water may be extracted.¹⁷

D. Article 3, paragraph 2, of the International Law Association Berlin Rules on Water Resources:

“Aquifer” means a subsurface layer or layers of geological strata of sufficient porosity and permeability to allow either a flow of or the withdrawal of usable quantities of groundwater.¹⁸

E. Article 1, paragraph 2 (a), of directive 80/68/EEC of the Council of the European Communities of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances;¹⁹ article 2, paragraph 3, of the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes; and article 2, paragraph 2, of directive 2000/60/EC of the European Parliament and of the Council of the European Union of 23 October 2000 establishing a framework for Community action in the field of water policy:²⁰

“Groundwater” means all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

F. Article 3, paragraph 11, of the Berlin Rules on Water Resources:

“Groundwater” means water beneath the surface of the ground located in a saturated zone and in direct contact with the ground or soil.²¹

¹⁵ *Official Journal of the European Communities*, No. L 327 (22 December 2000), p. 9.

¹⁶ S/AC.26/2003/31, glossary, p. 55.

¹⁷ Hayton and Utton, “Transboundary groundwaters: the Bellagio draft treaty”, p. 677.

¹⁸ International Law Association, *Report of the Seventy-First Conference held in Berlin, 16–21 August 2004*, p. 344.

¹⁹ *Official Journal of the European Communities*, No. L 20 (26 January 1980), p. 43.

²⁰ See footnote 15 above.

²¹ International Law Association, *op. cit.*, p. 345.

CHAPTER XVI

Article 3, paragraph 1. Bilateral and regional arrangements

A. Article 118 (Co-operation of States in the conservation and management of living resources) of the United Nations Convention on the Law of the Sea:

States shall co-operate with each other in the conservation and management of living resources in the areas of the high seas. States whose nationals exploit identical living resources, or different living resources in the same area, shall enter into negotiations with a view to taking the measures necessary for the conservation of the living resources concerned. They shall, as appropriate, co-operate to establish subregional or regional fisheries organizations to this end.

B. Article 197 of the Sea (Co-operation on a global or regional basis) of the United Nations Convention on the Law of the Sea:

States shall co-operate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.

CHAPTER XVII

Article 3, paragraph 2. Bilateral and regional arrangements (adjustment)

Article 311 (Relation to other conventions and international agreements), paragraph 3, of the United Nations Convention on the Law of the Sea:

Two or more States Parties may conclude agreements modifying or suspending the operation of provisions of this Convention, applicable

solely to the relations between them, provided that such agreements do not relate to a provision derogation from which is incompatible with the effective execution of the object and purpose of this Convention, and provided further that such agreements shall not affect the application of the basic principles embodied herein, and that the provisions of such agreements do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention.

CHAPTER XVIII

Article 3, paragraph 3. Bilateral and regional arrangements (*lex specialis*)

Article 55 (*Lex specialis*) of the draft articles on responsibility of States for internationally wrongful acts, adopted by the Commission at its fifty-third session, in 2001:

These articles do not apply where and to the extent that the conditions for the existence of an internationally wrongful act or the content

or implementation of the international responsibility of a State are governed by special rules of international law.²²

²² *Yearbook ... 2001*, vol. II (Part Two), p. 30.

CHAPTER XIX

Article 4, paragraph 1. Relation to the 1997 Watercourses Convention

Article 311 (Relation to other conventions and international agreements), paragraph 1, of the United Nations Convention on the Law of the Sea :

This Convention shall prevail, as between States Parties, over the Geneva Conventions on the Law of the Sea of 29 April 1958.

CHAPTER XX

Article 4, paragraph 2. Relation to other conventions and international agreements

Article 311 (Relation to other conventions and international agreements), paragraph 2, of the United Nations Convention on the Law of the Sea :

This Convention shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention.

CHAPTER XXI

Article 5, paragraph 1. Equitable utilization

A. Article 2 of the Agreement between the Federal Republic of Nigeria and the Republic of Niger concerning the equitable sharing in the development, conservation and use of their common water resources (Maiduguri, 18 July 1990):

Each Contracting Party is entitled, within its territory, to an equitable share in the development, conservation and use of the water resources in the shared river basins.²³

B. Article 19 (Shared resources), paragraph 1, of the ASEAN Agreement on the Conservation of Nature and Natural Resources:

Contracting Parties that share natural resources shall co-operate concerning their conservation and harmonious utilization, taking into account the sovereignty, rights and interests of the Contracting Parties concerned in accordance with generally accepted principles of international law.

C. Article 2 (General provisions), paragraph 2, of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

The Parties shall, in particular, take all appropriate measures:

...

(c) To ensure that transboundary waters are used in a reasonable and equitable way, taking into particular account their transboundary character, in the case of activities which cause or are likely to cause transboundary impact.

²³ Burchi and Mechlem, *Groundwater in international law: compilation of treaties and other legal instruments*, p. 263.

D. Article 4, paragraph 1, of the Agreement between the Government of the People's Republic of China and the Government of Mongolia on the Protection and Utilization of Transboundary Waters (Ulan Bator, 29 April 1994):

The Two Contracting Parties should jointly protect the ecological system of the transboundary waters and develop and utilize transboundary waters in a way that should not be detrimental to the other side. Any development and utilization of transboundary waters should follow the principle of fairness and equability without impeding any reasonable use of transboundary waters.²⁴

E. Article 3 (General principles) of the Revised Protocol on Shared Watercourses in the Southern African Development Community:

For the purposes of this Protocol the following general principles shall apply:

...

7. a) Watercourse States shall in their respective territories utilise a shared watercourse in an equitable and reasonable manner. In particular, a shared watercourse shall be used and developed by Watercourse States with a view to attain optimal and sustainable utilisation thereof and benefits therefrom, taking into account the interests of the Watercourse States concerned, consistent with adequate protection of the watercourse for the benefit of current and future generations.

b) Watercourse States shall participate in the use, development and protection of a shared watercourse in an equitable and reasonable manner. Such participation, includes both the right to utilise the watercourse and the duty to co-operate in the protection and development thereof, as provided in this Protocol.

²⁴ Fuentes, "The utilization of international groundwater in general international law", p. 193.

F. Principle 1 of the UNEP Principles of conduct in the field of the environment for the guidance of States in the conservation and harmonious utilization of natural resources shared by two or more States:

It is necessary for States to co-operate in the field of the environment concerning the conservation and harmonious utilization of natural resources shared by two or more States. Accordingly, it is necessary that consistent with the concept of equitable utilization of shared natural resources, States co-operate with a view to controlling, preventing, reducing or eliminating adverse environmental effects which may result from the utilization of such resources. Such co-operation is to take place on an equal footing and taking into account the sovereignty, rights and interests of the States concerned.²⁵

G. Article II (General purposes), paragraph 1, of the Bellagio Draft Treaty on transboundary groundwaters :

The Parties recognize their common interest and responsibility in ensuring the reasonable and equitable development and management of groundwaters in the border region for the well being of their Peoples.²⁶

H. Article 42 (Transboundary aquifers), paragraph 4, of the Berlin Rules on Water Resources:

Basin States shall cooperate according to the procedures in Chapter XI to set drawdown rates in order to assure the equitable utilization of the waters of an aquifer referred in paragraph 1, having due regard for the obligation not to cause significant harm to other basin States and to the obligation to protect the aquifer.²⁷

²⁵ UNEP, *Environmental Law: Guidelines and Principles*, No. 2, *Shared Natural Resources*, p. 2.

²⁶ Hayton and Utton, loc. cit., p. 682.

²⁷ International Law Association, op. cit., p. 389.

CHAPTER XXII

Article 5, paragraph 2. Reasonable utilization

A. Article 8 (Water) of the ASEAN Agreement on the Conservation of Nature and Natural Resources :

1. The Contracting Parties shall, in view of the role of water in the functioning of natural ecosystems, take all appropriate measures towards the conservation of their underground and surface water resources.

2. They shall, to that effect, in particular, endeavour to:

...

(b) regulate and control water utilization with a view to achieving sufficient and continuous supply of water for, *inter alia*, the maintenance of natural life supporting systems and aquatic fauna and flora.

B. Article 2 (Objectives and principles of cooperation), paragraph 1, of the Convention on cooperation for the protection and sustainable use of the river Danube:

The Contracting Parties shall strive at achieving the goals of a sustainable and equitable water management, including the conservation, improvement and the rational use of surface waters and groundwater in the catchment area as far as possible. Moreover the Contracting Parties shall make all efforts to control the hazards originating from accidents involving substances hazardous to water, floods and ice-hazards of the Danube River. Moreover they shall endeavour to contribute to reducing the pollution loads of the Black Sea from sources in the catchment area.

C. Article 15 (Water uses) of the Agreement on cooperation for the protection and sustainable use of the waters of

the Spanish-Portuguese hydrographic basins (Albufeira, 30 November 1998):

1. The Parties recognize each other's right to the sustainable use of the water resources of the Spanish-Portuguese hydrographic basins and their obligation to protect them and to implement, in their respective territories, measures to prevent, eliminate, mitigate and control transborder impacts.

2. The use of the water resources of the Spanish-Portuguese hydrographic basins referred to in the preceding paragraph shall be carried out in a manner consistent with their unity, with the exceptions laid down in this Agreement.²⁸

D. Article 3 of the Agreement between Poland and the Union of Soviet Socialist Republics concerning the use of water resources in frontier waters (Warsaw, 17 July 1964):

The purpose of this Agreement is to ensure co-operation between the Contracting Parties in economic, scientific and technical activities relating to the use of water resources in frontier waters, including in particular:

...

(7) The protection of surface and ground waters against depletion and pollution.²⁹

²⁸ United Nations, *Treaty Series*, vol. 2099, No. 36496, pp. 353–354.

²⁹ *Ibid.*, vol. 552, No. 8054, p. 190.

E. Article 9 (Limitations) of the Arrangement on the Protection, Utilization, and Recharge of the Franco-Swiss Genevese Aquifer:

1. Based on the dimensions and capacity of the artificial recharge installation to be constructed, the French authorities and public collectivities shall ensure that the aggregate of water extractions by the users located within their territory shall not exceed 5,000,000 cubic metres per annum, inclusive of a free allocation of 2,000,000 cubic metres. In case of necessity, derogations to this 5,000,000 cubic metres limit may be agreed to by the Commission upon consultation with the operator.

2. In exceptional circumstances and in order to be able to satisfy their own needs, the Swiss users may request the French users, through the Commission, to forfeit part or whole of their free allocation in their favour. Upon acceptance by the French users, the effective water volumes allocations shall be paid for by the Swiss users at the cubic metre production cost obtained from similar French waterworks, payment conditions being specified at the time of the request.³⁰

F. Principle 3 (Renewable resources) of the Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration):

³⁰ Unofficial English translation (September 1977) at <http://www.internationalwaterlaw.org/documents/regionaldocs/franko-swiss-aquifer.html>.

The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved.³¹

G. Principle 5 (Non-renewable resources) of the Stockholm Declaration :

The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind.³²

H. Section IV (Groundwater allocation) of the *Charter on ground-water management*:

An appropriate policy should be adopted for preferential allocation of ground water, giving appropriate weight to competitive uses and balancing short-term demands with long-term objectives in the interest of present and future generations. In allocating ground-water resources, account should be taken of the amount of ground water in reserve and of the rate of its replenishment. Allocation of high-quality ground water only to uses demanding high-quality water, in particular for human and animal consumption, should be encouraged. More emphasis should be given to the nature conservation value provided by ground-water resources, in particular where nature protection areas are vulnerable to changes in ground-water conditions.³³

³¹ *Report of the United Nations Conference on the Human Environment, Stockholm, 5–16 June 1972* (United Nations publication, Sales No. E.73.II.A.14 and corrigendum), part one, chap. I, p. 4.

³² *Ibid.*

³³ United Nations publication (see footnote 12 above), p. 2.

CHAPTER XXIII

Article 6. Factors relevant to equitable and reasonable utilization

A. Article 5 of the Agreement between the Federal Republic of Nigeria and the Republic of Niger concerning the equitable sharing in the development, conservation and use of their common water resources:

1. In determining the equitable share to which each Contracting Party is entitled pursuant to Article 2, the following factors shall be taken into account:

- (a) the climate of the region, and its influence on rainfall patterns;
- (b) rainfall patterns, and their influence on surface hydrology, and related hydro-geology;
- (c) surface hydrology and related hydro-geology;
- (d) existing uses of the waters;
- (e) reasonable planned water development requirements;
- (f) the economic and social development needs of the Contracting Parties;
- (g) the dependence of local populations on the waters in question for their own livelihood and welfare;
- (h) the availability of alternative sources of water to satisfy competing water demands;
- (i) the practicability of compensations either in cash or in kind one or the other Contracting Party as a means of adjusting competing water demands;
- (j) maintaining an acceptable environmental balance in and around a particular body of water;
- (k) the avoidance of unnecessary waste in the utilization of waters, with due regard for the technological and financial capabilities of each Contracting Party;

(l) the proportion in which each Contracting Party contributes to the water balance of the basin.

2. Each factor is to be given the weight warranted by the circumstances peculiar to each individual river basin, or group of basins, and all factors so weighted are to be considered together and a determination arrived at on the basis of the whole.³⁴

B. Article 13 (Determining an equitable and reasonable use) of the Berlin Rules on Water Resources:

1. Equitable and reasonable use within the meaning of Article 12 is to be determined through consideration of all relevant factors in each particular case.

2. Relevant factors to be considered include, but are not limited to:

- (a) Geographic, hydrographic, hydrological, hydrogeological, climatic, ecological, and other natural features;
- (b) The social and economic needs of the basin States concerned;
- (c) The population dependent on the waters of the international drainage basin in each basin State;
- (d) The effects of the use or uses of the waters of the international drainage basin in one basin State upon other basin States;
- (e) Existing and potential uses of the waters of the international drainage basin;
- (f) Conservation, protection, development, and economy of use of the water resources of the international drainage basin and the costs of measures taken to achieve these purposes;

³⁴ Burchi and Mechlem, pp. 264–265.

- (g) The availability of alternatives, of comparable value, to the particular planned or existing use;
- (h) The sustainability of proposed or existing uses; and
- (i) The minimization of environmental harm.

3. The weight of each factor is to be determined by its importance in comparison with other relevant factors. In determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.³⁵

³⁵ International Law Association, *op. cit.*, pp. 362–363.

CHAPTER XXIV

Article 7. Obligation not to cause harm

A. Article 9 (No harm rule) of the Framework Agreement on the Sava River Basin:

The Parties shall, in utilizing waters of the Sava River Basin in their territories, cooperate and take all appropriate measures to prevent causing significant harm to other Party(ies).

B. Article 15 (Prevention of significant harm to neighbours) of the Protocol for Sustainable Development of Lake Victoria Basin:

1. A Partner State shall, when utilizing the resources of the Basin in its jurisdiction, take all appropriate measures to prevent significant environmental harm to other Partner States.

2. A Partner State shall, in utilizing the natural resources of the Basin take into account the vital economic, social and cultural interest of other Partner States.

C. Article 7 (Responsibility and liability) of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

The Parties shall support appropriate international efforts to elaborate rules, criteria and procedures in the field of responsibility and liability.

D. Article 3 (Prevention) of the draft articles on prevention of transboundary harm from hazardous activities, adopted by the Commission at its fifty-third session, in 2001:

The State of origin shall take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof.³⁶

E. Article 42 (Transboundary aquifers) of the Berlin Rules on Water Resources:

4. Basin States shall cooperate according to the procedures in Chapter XI to set drawdown rates in order to assure the equitable utilization of the waters of an aquifer referred in paragraph 1, having due regard for the obligation not to cause significant harm to other basin States and to the obligation to protect the aquifer.

...

6. Basin States sharing an aquifer referred to in paragraph 1 shall refrain from and prevent acts or omissions within their territory that cause significant harm to another basin State, having due regard to the right of each basin State to make equitable and reasonable use of the waters.³⁷

³⁶ *Yearbook ... 2001*, vol. II (Part Two), p. 146.

³⁷ International Law Association, *op. cit.*, p. 389.

CHAPTER XXV

Article 8. General obligation to cooperate

A. Article 3 (General principles), paragraph 5, of the Revised Protocol on Shared Watercourses in the Southern African Development Community:

State Parties undertake to pursue and establish close co-operation with regard to the study and execution of all projects likely to have an effect on the regime of the shared watercourse.

B. Article 2 (General provisions), paragraph 6, of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

The Riparian Parties shall cooperate on the basis of equality and reciprocity, in particular through bilateral and multilateral agreements, in order to develop harmonized policies, programmes and strategies covering the relevant catchment areas, or parts thereof, aimed at the prevention, control and reduction of transboundary impact and aimed at the protection of the environment of transboundary waters or the environment influenced by such waters, including the marine environment.

C. Article VI (Water quality protection), paragraph 1, of the Bellagio Draft Treaty on transboundary groundwaters:

The Parties undertake cooperatively to protect and to improve, insofar as practicable, the quality of transboundary aquifers and their waters in conjunction with their programs for surface water quality control, and to avoid appreciable harm in or to the territories of the Parties.³⁸

D. Article 11 (Cooperation) of the Berlin Rules on Water Resources:

Basin States shall cooperate in good faith in the management of waters of an international drainage basin for the mutual benefit of the participating States.³⁹

³⁸ Hayton and Utton, *loc. cit.*, p. 691.

³⁹ International Law Association, *op. cit.*, p. 360.

CHAPTER XXVI

Article 9. Regular exchange of data and information

A. Article 18 (Co-operative activities) of the ASEAN Agreement on the Conservation of Nature and Natural Resources:

1. The Contracting Parties shall co-operate together and with the competent international organizations, with a view to co-ordinating their activities in the field of conservation of nature and management of natural resources and assisting each other in fulfilling their obligations under this Agreement.

2. To that effect, they shall endeavour:

- (a) to collaborate in monitoring activities;
- (b) to the greatest extent possible, co-ordinate their research activities;
- (c) to use comparable or standardized research techniques and procedures with a view to obtaining comparable data;
- (d) to exchange appropriate scientific and technical data, information and experience, on a regular basis;
- (e) whenever appropriate, to consult and assist each other with regard to measures for the implementation of this Agreement.

3. In applying the principles of co-operation and co-ordination set forth above, the Contracting Parties shall forward to the Secretariat:

- (a) information of assistance in the monitoring of the biological status of the natural living resources of the Region;
- (b) information, including reports and publications of a scientific, administrative or legal nature, and in particular information on:
 - measures taken by the Parties in pursuance of the provisions of this Agreement;
 - the status of species included in Appendix 1;
 - any other matter to which the Conference of the Parties may give special priority.

B. Article 3 of the Agreement between the Federal Republic of Nigeria and the Republic of Niger concerning the equitable sharing in the development, conservation and use of their common water resources:

1. The Contracting Parties undertake to collect, process and provide at regular intervals the Nigeria-Niger Joint Commission for Co-operation with all the data and information which, in the opinion of the Commission, are needed to arrive at equitable sharing determinations, and to monitor the continued viability thereof.

2. At the request of the Commission, the Contracting Parties shall:

- (a) install in their territory the required measuring equipment, and protect such equipment from interference; and
- (b) permit and facilitate inspections by the Commission of such equipment.⁴⁰

C. Article 3 (General principles), paragraph 6, of the Revised Protocol on Shared Watercourses in the Southern African Development Community:

State Parties shall exchange available information and data regarding the hydrological, hydrogeological, water quality, meteorological and environmental condition of shared watercourses.

D. Article 6 (Exchange of information) of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

The Parties shall provide for the widest exchange of information, as early as possible, on issues covered by the provisions of this Convention.

E. Article 13 (Exchange of information between riparian parties) of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

1. The Riparian Parties shall, within the framework of relevant agreements or other arrangements according to article 9 of this Convention, exchange reasonably available data, *inter alia*, on:

- (a) Environmental conditions of transboundary waters;
- (b) Experience gained in the application and operation of best available technology and results of research and development;
- (c) Emission and monitoring data;
- (d) Measures taken and planned to be taken to prevent, control and reduce transboundary impact;
- (e) Permits or regulations for waste-water discharges issued by the competent authority or appropriate body.

2. In order to harmonize emission limits, the Riparian Parties shall undertake the exchange of information on their national regulations.

3. If a Riparian Party is requested by another Riparian Party to provide data or information that is not available, the former shall endeavour to comply with the request but may condition its compliance upon the payment, by the requesting Party, of reasonable charges for collecting and, where appropriate, processing such data or information.

4. For the purposes of the implementation of this Convention, the Riparian Parties shall facilitate the exchange of best available technology, particularly through the promotion of: the commercial exchange of available technology; direct industrial contacts and cooperation, including joint ventures; the exchange of information and experience; and the provision of technical assistance. The Riparian Parties shall also undertake joint training programmes and the organization of relevant seminars and meetings.

F. Article 42 (Transboundary aquifers), paragraph 3, of the Berlin Rules on Water Resources:

In managing the waters of an aquifer referred to in paragraph 1, basin States shall consult and exchange information and data at the request of any one of them and shall cooperate in the collection and analyzing additional needed information pertinent to the obligations under these Rules.⁴¹

⁴⁰ Burchi and Mechlem, pp. 263–264.

⁴¹ International Law Association, *op. cit.*, p. 389.

CHAPTER XXVII

Article 10. Monitoring

A. Article 204 (Monitoring of the risks or effects of pollution) of the United Nations Convention on the Law of the Sea:

1. States shall, consistent with the rights of other States, endeavour, as far as practicable, directly or through the competent international organizations, to observe, measure, evaluate and analyse, by recognized scientific methods, the risks or effects of pollution of the marine environment.

2. In particular, States shall keep under surveillance the effects of any activities which they permit or in which they engage in order to determine whether these activities are likely to pollute the marine environment.

B. Article 4 (Monitoring) of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

The Parties shall establish programmes for monitoring the conditions of transboundary waters.

C. Article 11 (Joint monitoring and assessment), paragraph 1, of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

In the framework of general cooperation mentioned in article 9 of this Convention, or specific arrangements, the Riparian Parties shall establish and implement joint programmes for monitoring the conditions of transboundary waters, including floods and ice drifts, as well as transboundary impact.

D. Article 9 (Monitoring programmes) of the Convention on cooperation for the protection and sustainable use of the river Danube:

On the basis of their domestic activities, the Contracting Parties shall cooperate in the field of monitoring and assessment.

1. For this aim, they shall:

- harmonise or make comparable their monitoring and assessment methods as applied on their domestic levels, in particular in the field of river quality, emission control, flood forecast and water balance, with a view to achieving comparable results to be introduced into the joint monitoring and assessment activities;
- develop concerted or joint monitoring systems applying stationary or mobile measurement devices, communication and data processing facilities;
- elaborate and implement joint programmes for monitoring the riverine conditions in the Danube catchment area concerning both water quality and quantity, sediments and riverine ecosystems, as a basis for the assessment of transboundary impacts such as transboundary pollution and changes of the riverine regimes as well as of water balances, floods and ice-hazards;
- develop joint or harmonised methods for monitoring and assessment of waste water discharges including processing, evaluation and documentation of data taking into account the branch-specific approach of emission limitation (Annex II, Part 1);
- elaborate inventories on relevant point sources including the pollutants discharged (emission inventories) and estimate the water pollution from non-point sources taking into account Annex II, Part 2; review these documents according to the actual state.

2. In particular they shall agree upon monitoring points, river quality characteristics and pollution parameters regularly to be evaluated for the Danube River with a sufficient frequency taking into account the ecological and hydrological character of the watercourse concerned as well as typical emissions of pollutants discharged within the respective catchment area.

3. The Contracting Parties shall establish, on the basis of a harmonised methodology, domestic water balances, as well as the general water balance of the Danube River Basin. As an input for this purpose the Contracting Parties to the extent necessary shall provide connecting data which are sufficiently comparable through the application of the harmonised methodology. On the same data base water balances can also be compiled for the main tributaries of Danube River.

4. They shall periodically assess the quality conditions of Danube River and the progress made by their measures taken aiming at the prevention, control and reduction of transboundary impacts. The results will be presented to the public by appropriate publications.

E. Article 11 (Research, development and monitoring) of the Stockholm Convention on Persistent Organic Pollutants:

1. The Parties shall, within their capabilities, at the national and international levels, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants, including on their:

- (a) Sources and releases into the environment;
- (b) Presence, levels and trends in humans and the environment;
- (c) Environmental transport, fate and transformation;
- (d) Effects on human health and the environment;
- (e) Socio-economic and cultural impacts;
- (f) Release reduction and/or elimination; and

(g) Harmonized methodologies for making inventories of generating sources and analytical techniques for the measurement of releases.

2. In undertaking action under paragraph 1, the Parties shall, within their capabilities:

(a) Support and further develop, as appropriate, international programmes, networks and organizations aimed at defining, conducting, assessing and financing research, data collection and monitoring, taking into account the need to minimize duplication of effort;

(b) Support national and international efforts to strengthen national scientific and technical research capabilities, particularly in developing countries and countries with economies in transition, and to promote access to, and the exchange of, data and analyses;

(c) Take into account the concerns and needs, particularly in the field of financial and technical resources, of developing countries and countries with economies in transition and cooperate in improving their capability to participate in the efforts referred to in subparagraphs (a) and (b);

(d) Undertake research work geared towards alleviating the effects of persistent organic pollutants on reproductive health;

(e) Make the results of their research, development and monitoring activities referred to in this paragraph accessible to the public on a timely and regular basis; and

(f) Encourage and/or undertake cooperation with regard to storage and maintenance of information generated from research, development and monitoring.

F. Article 2 of the Agreement between the Government of the People's Republic of China and the Government of Mongolia on the Protection and Utilization of Transboundary Waters:

For the purpose of protection and equitable and rational use of transboundary waters, the Two Contracting Parties may conduct cooperation in the following fields:

1. Investigation and survey of dynamics, resources and quality of boundary waters;
2. Examination and measurement of changes of the boundary lake and river basins;
3. Investigation, protection and development of transboundary waters and aquatic animal and plant resources;
4. Monitoring and reduction of pollution to the transboundary waters; and
5. Maintenance and rational use of water conservation projects and flood-prevention facilities involving transboundary waters.⁴²

G. Article 3 of the Agreement between the Government of the People's Republic of China and the Government of Mongolia on the Protection and Utilization of Transboundary Waters:

For the implementation of the cooperation provided for in Article 2 of this Agreement, the Two Parties may conduct the following activities:

1. Monitoring of the quality, dynamics and resources of the transboundary waters and changes of the boundary rivers and lakes and their basins at stations, posts or locations designated by the Two Parties;

⁴² Transboundary freshwater dispute database available on the following websites: faolex.fao.org or ocid.nacse.org.

2. Technological exchanges including exchanges of technical materials, information and maps within the framework of the cooperation;

3. Joint investigation and survey by delegations and experts; and

4. Establishment of joint research and experiment centers or groups.⁴³

H. Article VIII (Comprehensive management plans) of the Bellagio Draft Treaty on transboundary groundwaters:

1. For each declared Transboundary Groundwater Conservation Area, the Commission shall prepare a Comprehensive Management Plan for the rational development, use, protection and control of the waters in the Transboundary Groundwater Conservation Area.

2. A Comprehensive Management Plan may:

- (a) prescribe measures to prevent, eliminate or mitigate degradation of transboundary groundwater quality, and for that purpose may:

...

- (4) propose a scheme for monitoring water quality conditions including the placement and operation of test wells and for remedial actions where required, including pretreatment and effluent discharge limitations and charges.⁴⁴

I. Article 17 (The right of access to water), paragraph 4, of the Berlin Rules on Water Resources:

States shall monitor and review periodically, through a participatory and transparent process, the realization of the right of access to water.⁴⁵

⁴³ *Ibid.*

⁴⁴ Hayton and Utton, loc. cit., pp. 695–696.

⁴⁵ International Law Association, *op. cit.*, p. 365.

CHAPTER XXVIII

Article 11. Relationship between different kinds of utilization

A. Article 6 of the Agreement between the Federal Republic of Nigeria and the Republic of Niger concerning the Equitable Sharing in the Development, Conservation and Use of their Common Water Resources:

A water use existing at the time an equitable sharing determination is made shall take precedence over a future use, provided the existing use is beneficial to both Contracting Parties and reasonable under the circumstances.⁴⁶

B. Article 7 of the Agreement between the Federal Republic of Nigeria and the Republic of Niger concerning the Equitable Sharing in the Development, Conservation and Use of their Common Water Resources:

A water use existing at the time an equitable sharing determination is made shall take precedence over a competing existing use which came into being later in time, provided that:

- (a) the use prior in time is beneficial to both Contracting Parties and reasonable under the circumstances; and

- (b) the weighting of the factors under Article 5 does not warrant accommodation of the later use, in whole or in part.⁴⁷

⁴⁶ Burchi and Mechlem, p. 265.

⁴⁷ *Ibid.*

C. Article 3 (Definitions) of the Berlin Rules on Water Resources:

For the purposes of these Articles, these terms have the following meanings:

...

20. "Vital human needs" means waters used for immediate human survival, including drinking, cooking, and sanitary needs, as well as water needed for the immediate sustenance of a household.⁴⁸

D. Article 14 (Preferences among uses) of the Berlin Rules on Water Resources:

1. In determining an equitable and reasonable use, States shall first allocate waters to satisfy vital human needs.

2. No other use or category of uses shall have an inherent preference over any other use or category of uses.⁴⁹

⁴⁸ International Law Association, *op. cit.*, pp. 344–345.

⁴⁹ *Ibid.*, p. 363.

CHAPTER XXIX

Article 14. Prevention, reduction and control of pollution**A. Article 8 (Water), paragraph 1, of the ASEAN Agreement on the Conservation of Nature and Natural Resources:**

The Contracting Parties shall, in view of the role of water in the functioning of natural ecosystems, take all appropriate measures towards the conservation of their underground and surface water resources.

B. Article 11 (Pollution) of the ASEAN Agreement on the Conservation of Nature and Natural Resources:

The Contracting Parties, recognizing the adverse effect that polluting discharges or emissions may have on natural processes and the functioning of natural ecosystems as well as on each of the individual ecosystem components, especially animal and plants species, shall endeavour to prevent, reduce and control such discharges, emissions or applications in particular by:

(a) submitting activities likely to cause pollution of the air, soil, freshwater, or the marine environment, to controls which shall take into consideration both the cumulative effects of the pollutants concerned and the self-purificating aptitude of the recipient natural environment;

(b) making such controls conditional on, *inter alia*, appropriate treatment of polluting emissions; and

(c) establishing national environmental quality monitoring programmes, particular attention being paid to the effects of pollution on natural ecosystems, and co-operation in such programmes for the Region as a whole.

C. Article 20 (Transfrontier environmental effects) of the ASEAN Agreement on the Conservation of Nature and Natural Resources:

1. Contracting Parties have in accordance with generally accepted principles of international law the responsibility of ensuring that activities under their jurisdiction or control do not cause damage to the environment or the natural resources under the jurisdiction of other Contracting Parties or of areas beyond the limits of national jurisdiction.

2. In order to fulfil this responsibility, Contracting Parties shall avoid to the maximum extent possible and reduce to the minimum extent possible adverse environmental effects of activities under their jurisdiction or control, including effects on natural resources, beyond the limits of their national jurisdiction.

D. Article 2 (General provisions), paragraph 2, of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

The Parties shall, in particular, take all appropriate measures:

...

(b) To ensure that transboundary waters are used with the aim of ecologically sound and rational water management, conservation of water resources and environmental protection;

...

(d) To ensure conservation and, where necessary, restoration of ecosystems.

E. Article 3 (Prevention, control and reduction), paragraph 1, of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

To prevent, control and reduce transboundary impact, the Parties shall develop, adopt, implement and, as far as possible, render compatible relevant legal, administrative, economic, financial and technical measures, in order to ensure, *inter alia*, that:

...

(k) Additional specific measures are taken to prevent the pollution of groundwaters

F. Article 2 (Objectives and principles of cooperation) of the Convention on cooperation for the protection and sustainable use of the river Danube:

3. To this end the Contracting Parties, taking into account the urgency of water pollution abatement measures and of rational, sustainable water use, shall set priorities as appropriate and shall strengthen, harmonise and coordinate measures taken and planned to be taken at the domestic and international level throughout the Danube Basin aiming at sustainable development and environmental protection of the Danube River. This objective in particular is directed to ensure the sustainable use of water resources for municipal, industrial and agricultural purposes as well as the conservation and restoration of ecosystems and to cover also other requirements occurring as to public health.

...

5. Water management cooperation shall be oriented on sustainable water management, that means on the criteria of a stable, environmentally sound development, which are at the same time directed to:

- maintain the overall quality of life;
- maintain continuing access to natural resources;
- avoid lasting environmental damage and protect ecosystems;
- exercise preventive approach.

G. Article 6 (Specific water resources protection measures) of the Convention on cooperation for the protection and sustainable use of the river Danube:

The Contracting Parties shall take appropriate measures aiming at the prevention or reduction of transboundary impacts and at a sustainable and equitable use of water resources as well as at the conservation of ecological resources, especially:

(a) enumerate groundwater resources subject to a long-term protection as well as protection zones valuable for existing or future drinking water supply purposes;

(b) prevent the pollution of groundwater resources, especially those in a long-term perspective reserved for drinking water supply, in particular caused by nitrates, plant protection agents and pesticides as well as other hazardous substances;

(c) minimise by preventive and control measures the risks of accidental pollution;

(d) take into account possible influences on the water quality resulting from planned activities and ongoing measures pursuant to Article 3, paragraph 2;

(e) evaluate the importance of different biotope elements for the riverine ecology and propose measures for improving the aquatic and littoral ecological conditions.

H. Article 14 (Prevention and control of pollution) of the Agreement on cooperation for the protection and sustainable use of the waters of the Spanish-Portuguese hydrographic basins:

1. The Parties shall coordinate procedures for the prevention and control of pollution produced by limited or extensive emissions and shall adopt in their territory all measures deemed necessary to protect the transborder waters in accordance with Community law, in particular by establishing ceilings for emissions and quality targets for the surrounding environment.

2. Where relevant, the Parties shall coordinate the measures necessary to prevent, eliminate, mitigate and control the pollution from terrestrial sources of estuaries and adjacent territorial and marine waters in accordance with the jurisdictional competence of each State.⁵⁰

I. Article 4 (Specific provisions) of the Revised Protocol on Shared Watercourses in the Southern African Development Community:

2. Environmental protection and preservation

(a) Protection and preservation of ecosystems

State Parties shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of a shared watercourse.

(b) Prevention, reduction and control of pollution

(i) State Parties shall, individually and, where appropriate, jointly, prevent, reduce and control the pollution and environmental degradation of a shared watercourse that may cause significant harm to other Watercourse States or to their environment, including harm to human health or safety, to the use of the waters for any beneficial purpose or to the living resources of the watercourse.

(ii) Watercourse States shall take steps to harmonise their policies and legislation in this connection.

(iii) State Parties shall, at the request of any one or more of them, consult with a view to arriving at mutually agreeable measures and methods to prevent, reduce and control pollution of a shared watercourse, such as:

(aa) setting joint water quality objectives and criteria;

(bb) establishing techniques and practices to address pollution from point and non-point sources;

(cc) establishing lists of substances the introduction of which, into the waters of a shared watercourse, is to be prohibited, limited, investigated or monitored.

(c) Introduction of alien or new species

State Parties shall take all measures necessary to prevent the introduction of species, alien or new, into a shared watercourse which may have effects detrimental to the ecosystems of the watercourse resulting in significant harm to other Watercourse States.

J. Article 6 (Protection of the environment) of the Tripartite Interim Agreement Between the Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses:

1. The Parties shall, individually and, where appropriate, jointly, protect and preserve the aquatic environment of the Incomati and Maputo watercourses, taking into account generally accepted international rules and standards.

2. The Parties shall, individually and, where appropriate, jointly, take all measures to protect and preserve the ecosystems of the Incomati and Maputo watercourses.

3. The Parties shall take all measures necessary to prevent the introduction of species, alien or new, into the Incomati and Maputo watercourses, which may have effects detrimental to the ecosystems of the watercourses resulting in significant harm to other Parties.

K. Article VI (Water quality protection) of the Bellagio Draft Treaty on transboundary groundwaters:

1. The Parties undertake cooperatively to protect and to improve, insofar as practicable, the quality of transboundary aquifers and their waters in conjunction with their programs for surface water quality control, and to avoid appreciable harm in or to the territories of the Parties.

2. The Governments shall promptly inform the Commission of any actual or planned, significantly polluting discharge into transboundary groundwaters or recharge areas, or of other activity with the potential for significant leaching into transboundary groundwaters.

3. The Commission shall without delay consider the gravity of any situation indicating significant groundwater contamination, or the threat thereof, in any part of the border region in accordance with the provisions of Article VII.⁵¹

L. Section II (Ground-water strategies) of the *Charter on ground-water management*:

1. As groundwater should be recognized as a natural resource with economic and ecological value, ground-water strategies should aim at the sustainable use of ground water and preservation of its quality. These strategies should be flexible so as to respond to changing conditions and various regional and local situations.

2. Ground-water pollution is interrelated with the pollution of other environmental media (surface water, soils, atmosphere). Ground-water protection planning should be incorporated into general environmental protection planning.

3. Protection measures aimed at prevention of ground-water pollution and over-use should be the basic tools for ground-water management. Such protection measures include, *inter alia*, monitoring of ground waters, development of aquifer vulnerability maps, regulations for industry and waste disposal sites paying due account to ground-water protection considerations, geo-ecological assessment of the impact of industrial and agricultural activities on ground waters, and zoning of ground-water protection areas.⁵²

M. Article 22 (Ecological integrity) of the Berlin Rules on Water Resources:

States shall take all appropriate measures to protect the ecological integrity necessary to sustain ecosystems dependent on particular waters.⁵³

N. Article 41 (Protecting aquifers) of the Berlin Rules on Water Resources:

1. States shall take all appropriate measures to prevent, insofar as possible, any pollution of, and the degradation of the hydraulic integrity of, aquifers.

2. States in fulfilling their obligation to prevent pollution of an aquifer shall take special care to prevent, eliminate, reduce, or control:

(a) The direct or indirect discharge of pollutants, whether from point or non-point sources;

(b) The injection of water that is polluted or would otherwise degrade an aquifer;

(c) Saline water intrusion; or

(d) Any other source of pollution.

3. States shall take all appropriate measures to abate the effects of the pollution of aquifers.

4. States shall integrate aquifers into their programs of general environmental protection, including but not limited to:

(a) The management of other waters;

(b) Land use planning and management; and

(c) Other programs of general environmental protection.

5. States shall specially protect sites where groundwater is withdrawn from or recharged to an aquifer.⁵⁴

⁵¹ Hayton and Utton, *loc. cit.*, p. 691.

⁵² United Nations publication (see footnote 12 above), p. 1.

⁵³ International Law Association, *op. cit.*, p. 372.

⁵⁴ *Ibid.*, p. 389.

⁵⁰ United Nations, *Treaty Series* (see footnote 28 above), p. 353.

CHAPTER XXX

Article 15. Management

A. Article 4 (Specific provisions) of the Revised Protocol on Shared Watercourses in the Southern African Development Community:

3. Management of shared watercourses

(a) Management

Watercourse States shall, at the request of any of them, enter into consultations concerning the management of a shared watercourse, which may include the establishment of a joint management mechanism.

B. Article 10 (Forecasts—reserved water volumes), paragraph 1, of the Arrangement on the Protection, Utilization, and Recharge of the Franco-Swiss Genevieve Aquifer:

In order to ensure the rational management of the recharge installation, at the beginning of the year each user or group of users shall announce to the Commission their estimated volume of extractions from the aquifer for the next twelve months. Such forecasts are designated as “reserved water volume”.⁵⁵

C. Article 2 (Objectives and principles of cooperation), paragraph 2, of the Convention on cooperation for the protection and sustainable use of the river Danube:

The Contracting Parties pursuant to the provisions of this Convention shall cooperate on fundamental water management issues and take all appropriate legal, administrative and technical measures, to at least maintain and improve the current environmental and water quality conditions of the Danube River and of the waters in its catchment area and to prevent and reduce as far as possible adverse impacts and changes occurring or likely to be caused.

D. Article 6 (Targets and target dates), paragraph 5, of the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes:

In order to promote the achievement of the targets referred to in paragraph 2 of this article, the Parties shall each:

(a) Establish national or local arrangements for coordination between their competent authorities;

(b) Develop water-management plans in transboundary, national and/or local contexts, preferably on the basis of catchment areas or groundwater aquifers. In doing so, they shall make appropriate practical and/or other provisions for public participation, within a transparent and fair framework, and shall ensure that due account is taken of the outcome of the public participation. Such plans may be incorporated in other relevant plans, programmes or documents which are being drawn up for other purposes, provided that they enable the public to see clearly the proposals for achieving the targets referred to in this article and the respective target dates;

(c) Establish and maintain a legal and institutional framework for monitoring and enforcing standards for the quality of drinking water;

(d) Establish and maintain arrangements, including, where appropriate, legal and institutional arrangements, for monitoring, promoting the achievement of and, where necessary, enforcing the other standards and levels of performance for which targets referred to in paragraph 2 of this article are set.

E. Article VII (Water), paragraph 3, of the African Convention on the Conservation of Nature and Natural Resources, as amended:

⁵⁵ See footnote 30 above.

Where surface or underground water resources and related ecosystems, including wetlands, are transboundary to two or more of the Parties, the latter shall act in consultation, and if the need arises, set up inter-State Commissions for their rational management and equitable utilization and to resolve disputes arising from the use of these resources, and for the cooperative development, management and conservation thereof.

F. Section VI (Competence) of the *Charter on ground-water management*:

1. Water authorities or co-ordinating bodies should have the competence to integrate all aspects of water management and should be rendered competent to arbitrate among the various competing demands, and diverging interests regarding ground-water abstraction and use, both short- and long-term. The authority or body should collaborate with other authorities, competent for public health, land-use planning, soils' management, waste management, etc. Legislation should provide administrative mechanisms for emergency cases and should empower the competent authorities to act immediately against damage.

2. The territorial competence of such authorities with respect to ground-water management should not necessarily be limited to either administrative boundaries or catchment areas but should allow for encompassing, as appropriate, management of aquifers in their entirety. The work of these authorities should be supported and facilitated by providing them with the resources necessary for the proper discharge of their functions.

3. Regulations, within the framework of legislation mentioned above, should define the actions to be taken by competent authorities in case of accidental pollution or other emergencies impacting on ground water.⁵⁶

G. Principle No. 1 (Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment) of the Dublin Statement on water and the environment:

Since water sustains life, effective management of water resources demands a holistic approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer.⁵⁷

H. Article 38 (Precautionary management of aquifers) of the Berlin Rules on Water Resources:

States, in accordance with the precautionary approach, shall take early action and develop long-term plans to ensure the sustainable use of groundwater and of the aquifers in which the groundwater is contained.⁵⁸

I. Article VII (Water) of the African Convention on the Conservation of Nature and Natural Resources:

1. The Parties shall manage their water resources so as to maintain them at the highest possible quantitative and qualitative levels. They shall, to that effect, take measures designed to:

(a) maintain water-based essential ecological processes as well as to protect human health against pollutants and water-borne diseases;

⁵⁶ See footnote 12 above.

⁵⁷ *International Conference on Water and the Environment—Development issues for the 21st century: The Dublin Statement*, Dublin, 26–31 January 1992 (A/CONF.151/PC/112), annex I, p. 9.

⁵⁸ *International Law Association, op. cit.*, p. 385.

(b) prevent damage that could affect human health or natural resource in another State by the discharge of pollutants; and

(c) prevent excessive abstraction, to the benefit of downstream communities and States.

2. The Parties shall establish and implement policies for the planning, conservation, management, utilization and development of underground and surface water, as well as the harvesting and use of rain water, and shall endeavour to guarantee for their populations a sufficient and continuous supply of suitable water, taking appropriate measures with due regard to:

(a) the study of water cycles and the investigation of each catchment area;

(b) the integrated management of water resources;

(c) the conservation of forested and other catchment areas and the coordination and planning of water resources development projects;

(d) the inventory and management of all water resources, including the administration and control of all water utilization, and

(e) the prevention and control of water pollution through, *inter alia*, the establishment of effluent and water quality standards.

CHAPTER XXXI

Article 17. Planned activities

A. Article 2 (General provisions), paragraph 2, of the Convention on environmental impact assessment in a transboundary context:

Each Party shall take the necessary legal, administrative or other measures to implement the provisions of this Convention, including, with respect to proposed activities listed in Appendix I that are likely to cause significant adverse transboundary impact, the establishment of an environmental impact assessment procedure that permits public participation and preparation of the environmental impact assessment documentation described in Appendix II.

B. Appendix I, paragraph 12, to the Convention on environmental impact assessment in a transboundary context:

Groundwater abstraction activities in cases where the annual volume of water to be abstracted amounts to 10 million cubic metres or more.

C. Annex III (Transboundary impact) to the Tripartite Interim Agreement Between the Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses:

The projects and activities referred to in Article 13(1) of the Agreement are the following:

...

(g) groundwater abstraction facilities, regardless of the use or destination of the water, above 3.5 million m³ per year;

D. Article 31 (The impact assessment process) of the Berlin Rules on Water Resources:

1. Assessment of the impacts of any program, project, or activity shall include, among others:

...

(i) Where appropriate, an outline for monitoring and management programs and plans for post-project analysis.⁵⁹

E. Article 39 (Duty to acquire information) of the Berlin Rules on Water Resources:

In order to comply with this Chapter, States shall take all appropriate steps to acquire the information necessary to manage groundwater and aquifers efficiently and effectively, including:

(a) Monitoring groundwater levels, pressures, and quality;

(b) Developing aquifer vulnerability maps;

(c) Assessing the impacts on groundwater and aquifers of industrial, agricultural, and other activities; and

(d) Any other measures appropriate to the circumstances of the aquifer.⁶⁰

⁵⁹ *Ibid.*, p. 380.

⁶⁰ *Ibid.*, p. 386.

CHAPTER XXXII

Article 18. Scientific and technical assistance to developing States

A. Article 202 (Scientific and technical assistance to developing States) of the United Nations Convention on the Law of the Sea:

States shall, directly or through competent international organizations:

(a) promote programmes of scientific, educational, technical and other assistance to developing States for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution. Such assistance shall include, *inter alia*:

(i) training of their scientific and technical personnel;

(ii) facilitating their participation in relevant international programmes;

(iii) supplying them with necessary equipment and facilities;

(iv) enhancing their capacity to manufacture such equipment;

(v) advice on and developing facilities for research, monitoring, educational and other programmes;

(b) provide appropriate assistance, especially to developing States, for the minimization of the effects of major incidents which may cause serious pollution of the marine environment;

(c) provide appropriate assistance, especially to developing States, concerning the preparation of environmental assessments.

B. Article 12 (Technical assistance) of the Stockholm Convention on Persistent Organic Pollutants:

1. The Parties recognize that rendering of timely and appropriate technical assistance in response to requests from developing country Parties and Parties with economies in transition is essential to the successful implementation of this Convention.

2. The Parties shall cooperate to provide timely and appropriate technical assistance to developing country Parties and Parties with economies in transition, to assist them, taking into account their particular needs, to develop and strengthen their capacity to implement their obligations under this Convention.

3. In this regard, technical assistance to be provided by developed country Parties, and other Parties in accordance with their capabilities, shall include, as appropriate and as mutually agreed, technical assistance for capacity-building relating to implementation of the obligations under this Convention. Further guidance in this regard shall be provided by the Conference of the Parties.

4. The Parties shall establish, as appropriate, arrangements for the purpose of providing technical assistance and promoting the transfer of technology to developing country Parties and Parties with economies in transition relating to the implementation of this Convention. These arrangements shall include regional and subregional centres for capacity-building and transfer of technology to assist developing country Parties and Parties with economies in transition to fulfil their obligations under this Convention. Further guidance in this regard shall be provided by the Conference of the Parties.

5. The Parties shall, in the context of this Article, take full account of the specific needs and special situation of least developed countries and small island developing states in their actions with regard to technical assistance.

C. Article 5 (Research and systematic observation) of the United Nations Framework Convention on Climate Change:

In carrying out their commitments under Article 4, paragraph 1 (g), the Parties shall:

(a) Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;

(b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and

(c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above.

D. Article 6 (Education, training and public awareness) of the United Nations Framework Convention on Climate Change:

In carrying out their commitments under Article 4, paragraph 1 (i), the Parties shall:

(a) Promote and facilitate at the national and, as appropriate, sub-regional and regional levels, and in accordance with national laws and regulations, and within their respective capacities:

(i) the development and implementation of educational and public awareness programmes on climate change and its effects;

(ii) public access to information on climate change and its effects;

(iii) public participation in addressing climate change and its effects and developing adequate responses; and

(iv) training of scientific, technical and managerial personnel.

(b) Cooperate in and promote, at the international level, and, where appropriate, using existing bodies:

(i) the development and exchange of educational and public awareness material on climate change and its effects; and

(ii) the development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field, in particular for developing countries.

E. Article 4 (Co-operation in the legal, scientific and technical fields) of the Vienna Convention for the Protection of the Ozone Layer:

1. The Parties shall facilitate and encourage the exchange of scientific, technical, socio-economic, commercial and legal information relevant to this Convention as further elaborated in annex II. Such information shall be supplied to bodies agreed upon by the Parties. Any such body receiving information regarded as confidential by the supplying Party shall ensure that such information is not disclosed and shall aggregate it to protect its confidentiality before it is made available to all Parties.

2. The Parties shall co-operate, consistent with their national laws, regulations and practices and taking into account in particular the needs of the developing countries, in promoting, directly or through competent international bodies, the development and transfer of technology and knowledge. Such co-operation shall be carried out particularly through:

(a) Facilitation of the acquisition of alternative technologies by other Parties;

(b) Provision of information on alternative technologies and equipment, and supply of special manuals or guides to them;

(c) The supply of necessary equipment and facilities for research and systematic observations;

(d) Appropriate training of scientific and technical personnel.

F. Annex II (Information exchange) to the Vienna Convention for the Protection of the Ozone Layer:

1. The Parties to the Convention recognize that the collection and sharing of information is an important means of implementing the objectives of this Convention and of assuring that any actions that may be taken are appropriate and equitable. Therefore, Parties shall exchange scientific, technical, socio-economic, business, commercial and legal information.

2. The Parties to the Convention, in deciding what information is to be collected and exchanged, should take into account the usefulness of the information and the costs of obtaining it. The Parties further recognize that co-operation under this annex has to be consistent with national laws, regulations and practices regarding patents, trade secrets, and protection of confidential and proprietary information.

3. *Scientific information*

This includes information on:

(a) Planned and ongoing research, both governmental and private, to facilitate the coordination of research programmes so as to make the most effective use of available national and international resources;

(b) The emission data needed for research;

(c) Scientific results published in peer-reviewed literature on the understanding of the physics and chemistry of the Earth's atmosphere and of its susceptibility to change, in particular on the state of the ozone layer and effects on human health, environment and climate which would result from changes on all time-scales in either the total column content or the vertical distribution of ozone;

(d) The assessment of research results and the recommendations for future research.

4. *Technical information*

This includes information on:

(a) The availability and cost of chemical substitutes and of alternative technologies to reduce the emissions of ozone-modifying substances and related planned and ongoing research;

(b) The limitations and any risks involved in using chemical or other substitutes and alternative technologies.

5. *Socio-economic and commercial information on the substances referred to in annex I*

This includes information on:

(a) Production and production capacity;

(b) Use and use patterns;

(c) Imports/exports;

(d) The costs, risks and benefits of human activities which may indirectly modify the ozone layer and of the impacts of regulatory actions taken or being considered to control these activities.

6. *Legal information*

This includes information on:

(a) National laws, administrative measures and legal research relevant to the protection of the ozone layer;

(b) International agreements, including bilateral agreements relevant to the protection of the ozone layer;

(c) Methods and terms of licensing and availability of patents relevant to the protection of the ozone layer.

CHAPTER XXXIII

Article 19. Emergency situations

Article 13 (Environmental emergencies) of the Framework Convention for the Protection of the Marine Environment of the Caspian Sea:

1. The Contracting Parties shall take all appropriate measures and cooperate to protect human beings and the marine environment against consequences of natural or man-made emergencies. To this end, preventive, preparedness and response measures, including restoration measures, shall be applied.

2. For the purpose of undertaking preventive measures and setting up preparedness measures, the Contracting Party of origin shall identify hazardous activities within its jurisdiction, capable of causing environmental emergencies, and shall ensure that other Contracting Parties are

notified of any such proposed or existing activities. The Contracting Parties shall agree to carry out environmental impact assessment of hazardous activities, and to implement risk-reducing measures.

3. The Contracting Parties shall cooperate for the setting up of early warning systems for industrial accidents and environmental emergencies. In the event of an environmental emergency, or imminent threat thereof, the Contracting Party of origin shall ensure that the Contracting Parties likely to be affected, are, without delay, notified at appropriate levels.

4. The Contracting Parties shall take all appropriate measures to establish and maintain adequate emergency preparedness measures, including measures to ensure that adequate equipment and qualified personnel are readily available, to respond to environmental emergencies.

Annex

DRAFT CONVENTION ON THE LAW OF TRANSBOUNDARY AQUIFERS

PART I

INTRODUCTION

Article 1. Scope of the present Convention

The present Convention applies to:

- (a) Utilization of transboundary aquifers and aquifer systems;
- (b) Other activities that have or are likely to have an impact upon those aquifers and aquifer systems;
- (c) Measures of protection, preservation and management of those aquifers and aquifer systems.

Article 2. Use of terms

For the purposes of the present Convention:

- (a) “Aquifer” means a permeable [water-bearing] geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation;
- (b) “Aquifer system” means a series of more than two aquifers [, each associated with specific geological formations,] that are hydraulically connected;
- (c) “Transboundary aquifer” or “transboundary aquifer system” means, respectively, an aquifer or aquifer system, parts of which are situated in different States;
- (d) “Aquifer State” means a State Party to the present Convention in whose territory any part of a transboundary aquifer or aquifer system is situated;
- (e) “Recharging aquifer” means an aquifer that receives a non-negligible amount of contemporary water recharge;
- (f) “Non-recharging aquifer” means an aquifer that receives a negligible amount of contemporary water recharge.

Article 3. Bilateral and regional arrangements

1. For the purpose of managing a particular transboundary aquifer or aquifer system, aquifer States in whose territories such an aquifer or aquifer system is located are encouraged to enter into a bilateral or regional arrangement among themselves. Such arrangement may be entered into with respect to an entire aquifer or aquifer system or any part thereof or a particular project, programme or use except insofar as the arrangement adversely affects, to a significant extent, the use by one or more other aquifer

States of the water in that aquifer or aquifer system, without their express consent. Any State in whose territory such an aquifer or aquifer system is located is entitled to participate in the negotiation and to become a party to arrangements when such arrangements are likely to prejudice their positions *vis-à-vis* that aquifer or aquifer system.

2. Parties to an arrangement referred to in paragraph 1 shall consider harmonizing such arrangement with the basic principles of the present Convention. Where those parties consider that adjustment in application of the provisions of the present Convention is required because of the characteristics and special uses of a particular aquifer or aquifer system, they shall consult with a view to negotiating in good faith for the purpose of concluding an arrangement beneficial to all the parties.

3. In the absence of an agreement to the contrary, the present Convention applies to the aquifer or aquifer system referred to in paragraph 1 only to the extent that its provisions are compatible with those of the arrangement referred to in the same paragraph.

Article 4. Relation to other conventions and international agreements

1. When the States Parties to the present Convention are parties also to the Convention on the Law of the Non-navigational Uses of International Watercourses, the provisions of the latter concerning transboundary aquifers or aquifer systems apply only to the extent that they are compatible with those of the present Convention.

2. The present Convention shall not alter the rights and obligations of the States Parties which arise from other agreements compatible with the present Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under the present Convention.

PART II

GENERAL PRINCIPLES

Article 5 [Article 3].^a Equitable and reasonable utilization

1. Aquifer States shall, in their respective territories, utilize a transboundary aquifer or aquifer system in a manner such that the benefits to be derived from such utilization shall accrue equitably to the aquifer States concerned.

^a Article numbers in brackets are those given in the second report on shared natural resources (*Yearbook ... 2004*, vol. II (Part One), document A/CN.4/539 and Add. 1).

2. Aquifer States shall, in their respective territories, utilize a transboundary aquifer or aquifer system in a reasonable manner and, in particular:

(a) With respect to a recharging transboundary aquifer or aquifer system, shall take into account the sustainability of such aquifer or aquifer system and shall not impair the utilization and functions of such aquifer or aquifer system;

(b) With respect to a non-recharging transboundary aquifer or aquifer system, shall aim to maximize the long-term benefits derived from the use of the water contained therein. They are encouraged to establish a development plan for such aquifer or aquifer system, taking into account the agreed lifespan of such aquifer or aquifer system as well as future needs of and alternative water sources for the aquifer States.

3. In the application of paragraphs 1 and 2, aquifer States concerned shall, when the need arises, enter into consultation in a spirit of cooperation.

Article 6. Factors relevant to equitable and reasonable utilization

1. Utilization of a transboundary aquifer or aquifer system in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including:

(a) The natural condition of the aquifer or aquifer system;

(b) The social and economic needs of the aquifer States concerned;

(c) The population dependent on the aquifer or aquifer system in each aquifer State;

(d) The effects of the utilization of the aquifer or aquifer system in one aquifer State on other aquifer States concerned;

(e) The existing and potential utilization of the aquifer or aquifer system;

(f) The development, protection and conservation of the aquifer or aquifer system and the costs of measures to be taken to that effect;

(g) The availability of alternatives, of comparable value, to a particular existing and planned utilization of the aquifer or aquifer system.

2. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is reasonable and equitable utilization, all relevant factors are to be considered together and conclusion reached on the basis of the whole.

Article 7 [Article 4]. Obligation not to cause harm

1. Aquifer States shall, in utilizing a transboundary aquifer or aquifer system in their territories, take all appropriate measures to prevent the causing of significant harm to other aquifer States.

2. Aquifer States shall, in undertaking other activities in their territories that have or are likely to have an impact on a transboundary aquifer or aquifer system, take all appropriate measures to prevent the causing of significant harm through that aquifer or aquifer system to other aquifer States.

3. Where significant harm nevertheless is caused to another aquifer State, the aquifer States whose activities cause such harm shall, in the absence of agreement to such activities, take all appropriate measures, having due regard for the provisions of articles 5 and 6, in consultation with the affected State to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

Article 8 [Article 5]. General obligation to cooperate

1. Aquifer States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain reasonable utilization and adequate protection of a transboundary aquifer or aquifer system.

2. In determining the manner of such cooperation, aquifer States are encouraged to establish joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions.

Article 9 [Article 6]. Regular exchange of data and information

1. Pursuant to article 8, aquifer States shall, on a regular basis, exchange readily available data and information on the condition of the transboundary aquifer or aquifer system, in particular that of a geological, hydrogeological, hydrological, meteorological and ecological nature and related to the hydrochemistry of the aquifer or aquifer system, as well as related forecasts.

2. In the light of uncertainty about the nature and extent of some transboundary aquifer or aquifer systems, aquifer States shall employ their best efforts to collect and generate, in accordance with currently available practice and standards, individually or jointly and, where appropriate, together with or through international organizations, new data and information to identify the aquifer or aquifer systems more completely.

3. If an aquifer State is requested by another aquifer State to provide data and information that is not readily available, it shall employ its best efforts to comply with the request, but may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.

4. Aquifer States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner that facilitates its utilization by the other aquifer States to which it is communicated.

Article 10. Monitoring

For the purpose of being well acquainted with the conditions of a transboundary aquifer or aquifer system:

1. Aquifer States shall agree on harmonized standards and methodology for monitoring a transboundary aquifer or aquifer system. They shall identify key parameters that they will monitor based on an agreed conceptual model of the aquifer or aquifer system. These parameters shall include extent, geometry, flow path, hydrostatic pressure distribution, quantities of flow and hydrochemistry of the aquifer or aquifer system.

2. Aquifer States shall undertake to monitor such parameters referred to in paragraph 1 and shall, wherever possible, carry out these monitoring activities jointly among themselves and in collaboration with the competent international organizations. Where, however, monitoring activities are not carried out jointly, aquifer States shall exchange the monitored data.

Article 11 [Article 7]. Relationship between different kinds of utilization

1. In the absence of agreement or custom to the contrary, no utilization of a transboundary aquifer or aquifer system enjoys inherent priority over other utilization.

2. In the event of a conflict between utilization of a transboundary aquifer or aquifer system, it shall be resolved with special regard being given to the requirements of vital human needs.

PART III

PROTECTION, PRESERVATION AND MANAGEMENT

Article 12. Protection and preservation of ecosystems

Aquifer States shall protect and preserve ecosystems within a transboundary aquifer or aquifer system. They shall also ensure adequate quality and sufficient quantity of discharge water to protect and preserve outside ecosystems dependent on the aquifer or aquifer system.

Article 13. Protection of recharge and discharge zones

1. Aquifer States shall identify recharge zones of a transboundary aquifer or aquifer system and, within these zones, shall take special measures to minimize detrimental impacts on the recharge process and also take all measures to prevent pollutants from entering the aquifer or aquifer system.

2. Aquifer States shall identify discharge zones of a transboundary aquifer or aquifer system and, within these zones, shall take special measures to minimize detrimental impacts on the discharge process.

3. When such recharge or discharge zones are located in the territories of States other than aquifer States, aquifer States should seek the cooperation of the former States to protect these zones.

Article 14. Prevention, reduction and control of pollution

Aquifer States shall, individually and, where appropriate, jointly, prevent, reduce and control the pollution of a transboundary aquifer or aquifer system that may cause significant harm to other aquifer States or to their environment. In the light of uncertainty about the nature and extent of some transboundary aquifers or aquifer systems, aquifer States are encouraged to take a precautionary approach.

Article 15. Management

Aquifer States shall undertake to establish plans and implement these plans for the proper management of a transboundary aquifer or aquifer system in accordance with the provisions of the present Convention. They shall, at the request by any of them, enter into consultations concerning the management of a transboundary aquifer or aquifer system, which may include the establishment of a joint management mechanism.

PART IV

ACTIVITIES AFFECTING OTHER STATES

Article 16. Assessment of potential effects of activities

When an aquifer State has reasonable grounds for believing that a particular planned activity in its territory may cause adverse effects on a transboundary aquifer or aquifer system, it shall, as far as practicable, assess the potential effects of such activity.

Article 17. Planned activities

1. Before an aquifer State implements or permits the implementation of planned activities which may have a significant adverse effect upon other aquifer States, it shall provide those States with timely notification thereof. Such notification shall be accompanied by available technical data and information, including any environmental impact assessment, in order to enable the notified States to evaluate the possible effects of the planned activities.

2. If the notifying State and the notified States disagree on the effect of the planned activities, they shall enter into consultations and, if necessary, negotiations with a view to arriving at an equitable resolution of the situation. They may utilize an independent fact-finding body which may be able to make an impartial assessment of the effect of the planned activities.

PART V

MISCELLANEOUS PROVISIONS

Article 18. Scientific and technical assistance to developing States

States shall, directly or through competent international organizations, provide scientific, educational, technical and other assistance to developing States for the

protection and management of a transboundary aquifer or aquifer system. Such assistance shall include, *inter alia*:

- (a) Training of their scientific and technical personnel;
- (b) Facilitating their participation in relevant international programmes;
- (c) Supplying them with necessary equipment and facilities;
- (d) Enhancing their capacity to manufacture such equipment;
- (e) Providing advice on and developing facilities for research, monitoring, educational and other programmes;
- (f) Minimizing the effects of major activities affecting transboundary aquifers or aquifer systems;
- (g) Preparing environmental impact assessments.

Article 19. Emergency situations

1. An aquifer State shall, without delay and by the most expeditious means available, notify other potentially affected States and competent international organizations of any emergency situation originating within its territory that causes, or poses an imminent threat of causing, serious harm to other States and that results suddenly from natural causes or from human conduct.

2. An aquifer State within whose territory an emergency situation originates shall, in cooperation with potentially affected States and, where appropriate, competent international organizations, immediately take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate harmful effects of the emergency situation.

3. Where water is critical to alleviate an emergency situation, aquifer States may derogate from the provisions of the articles in parts II to IV of the present Convention to the extent necessary to alleviate the emergency situation.

Article 20. Protection in time of armed conflict

Transboundary aquifers or aquifer systems and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.

Article 21. Data and information vital to national defence or security

Nothing in the present Convention obliges an aquifer State to provide data or information vital to its national defence or security. Nevertheless, that State shall cooperate in good faith with other aquifer States with a view to providing as much information as possible under the circumstances.

PART VI

FINAL CLAUSES

Article 22. Signature

The present Convention shall be open for signature by all States from ... until ... at United Nations Headquarters in New York.

Article 23. Ratification, acceptance, approval or accession

The present Convention is subject to ratification, acceptance, approval or accession by States. The instruments of ratification, acceptance, approval or accession shall be deposited with the Secretary-General of the United Nations.

Article 24. Entry into force

1. The present Convention shall enter into force on the ... day following the date of deposit of the ... instrument of ratification, acceptance, approval or accession with the Secretary-General of the United Nations.

2. For each State that ratifies, accepts or approves the Convention or accedes thereto after the deposit of the ... instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the ... day after the deposit by such State of its instrument of ratification, acceptance, approval or accession.

Article 25. Authentic texts

The original of the present Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF, the undersigned plenipotentiaries, being duly authorized thereto, have signed this Convention.

DONE at New York, this ____ day of _____ two thousand _____.