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SUSTAINABLE UTILISATION OF INTERNATIONAL WATERCOURSES: A LEGAL OVERVIEW

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INTRODUCTION

Water is essential for the sustenance of human life (1). Historically, fresh water has been regarded as a renewable natural resource, aimed to serve and to be used by humanity (2). Yet recently, rapid increase in population, urbanisation, industrialisation, and

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(1) Article I of the 1967 European Water Charter, adopted by the Consultative Assembly of the Council of Europe (Recommendation. 493 (1967), and by the Committee of Ministers (Resolution (67) 10), for the text see Doc. A/CN.4/274, (1974) II/2 *YILC* 264, p. 342-3; Guiding Principle No. 1 of the Dublin Statement, in International Conference on Water and the Environment: Development Issues for the 21th Century, 26-31 January 1992, Dublin, Ireland, (UN ACC/ISGWR), p. 4, for the text also see (1992) 22 *Env'l Pol'y & L.* 54-5; McKeague P., Water and the Environment-Development Issues for the 21st Century, (1992) 22 *Env'l Pol'y & L.* 16, p. 16-7.

(2) McCaffrey S.C., The Evolution of the Law of Transboundary Rivers, paper submitted in the Conference on Transboundary Waters in the Middle East: Prospects for Regional Cooperation, held at Bilkent University of Ankara, Turkey, 2-3 September 1991, p. 1-2, (memo).

irrigation have dramatically accelerated demand for the use of water whose amount is finite and constant (3). Consequently, water withdrawals to the extent of over-exploitation deplete the water quantity, while pollution and misuse of water and land areas degrade the water quality (4). Water-related environmental problems as a result of uneven and unecological development, generally 'harm human health, reduce economic productivity, and leads to the loss of "amenities" ' (5). Sustainable development has been introduced to resolve environmental problems of depletion and degradation in fresh water resources that not only impair the quality of human life but also could ultimately threaten his continued existence. This paper examines the principle of "sustainable utilisation" as a substantive rule through which sustainable development can be achieved in the context of international watercourses law.

THE CONCEPT OF SUSTAINABLE DEVELOPMENT

The late 1960's marked the rise of environmental concerns about economic growth because of adverse effects of uneven development upon the environment, which called for a major revision of the traditional theory of economic development (6). The new way of economic thinking took the form of "anti-growth" in the hands of the Club of Rome, which argued that incompatibility between environment and development would allow to have either economic growth or improved environment, since the exhaustion of finite environmental resources was inescapable if the annual rates of consumption were to be maintained. The suggested solution to environmental protection simply lied in the idea of "zero growth" or "steady state economy" (7). However, the

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(3) Falkenmark, M., Water: the Finite Resource, (1990) 21 IUCN Bulletin 14-5.

(4) For particular problems of water see, The World Bank, *World Development Report 1992: Development and the Environment, World Development Indicators*, Oxford University Press, 1992 New York p. 45-50; *The World Environment 1972-1982: A Report by the UNEP*, Ed. by M.W. Holdgate, M. Kassas & G.F. White, Tycooly International Publishing Ltd., 1982 Dublin p. 124 et sec.; *World Resources 1988-89: A Report by the World Resources Institute and the Institute for Environment and Development*, in collaboration with the UNEP, Basic Books Inc. 1988 New York p. 127 et sec.;

(5) The World Bank World Development Report 1992, loc. cit., p. 44-5 and 98-100, "amenities" are described in the report as "the many other ways in which people benefit from the existence of an unspoiled environment".

(6) Beckerman W., "Economic Growth and the Environment: Whose Growth? Whose Environment? (1992)" 20 *World Development* 481.

(7) See, passim Meadows D. H., Meadows D. L., Randers J. and Behrens W., *The Limits to Growth*, Earth Island 1972 London, for the criticisms of the Club of Rome's report see Redclift M., *Sustainable Development: Exploring the Contradictions*, Routledge 1987 London p. 52-5, and see Beckerman, loc. cit., p. 483; The Club of Rome maintains its "global environmentalism" in the *"First Global Revolution: A Report by the Council of the Club of Rome"* by King A. and schneider B., Simon & Schuster 1991 London.

proposition of "environment versus development" had already been proven false in the 1971 UN Founex Seminar, where though no new conceptual ground was offered, an attempt to clarify the links between environment and development demonstrated that they were, in fact, compatible (8). Yet this approach that takes up development in the context of environment in order to reconcile environment with development, has found its expression in the term, "sustainable development". Although there is no universally accepted definition of sustainable development as a theoretical basis to bring it into operation (9), because "it comes to mean whatever suits the particular advocacy of the individual concerned" (10), there still remains a need for practical analysis and policy-making to identify its basic elements which can be drawn from international legal documents to be studied in international political economy.

To begin with "development", conventional economic thinking defines it as economic growth that implies increasing productive capacity of a nation. The well-known criterion of measuring economic growth is gross national product (GNP) which indicates an economic level of living standards (11). However, from the environmental point of view, modern economic development requires more than a single-purposed economic growth. It also entails the inclusion of a set of desirable social goals securing the rising quality of life (12). Progress in economic development necessarily depends on the use of environmental resources (13). Where the stock of all environmental and natural resource

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(8) The UN Seminar on Development and Environment, held at Founex, Switzerland, in June 1971; Biswas M. R. and Biswas A. K., Complementarity between Environment and Development Processes, (1984) 11 *Environmental Conservation* 35, p. 36; Holdgate M. W., Kassas M. and White G. F., *The World Environment 1972-1982: A Report by the UNEP*, Tycooly International Publishing Ltd., 1982 Dublin p. 7.

(9) Barbier E. B., The Concept of Sustainable Economic Development, (1987) 14 *Environmental Conservation* 101.

(10) Pearce D., Markandya A., and Barbier E. B., *Blueprint for a Green Economy*, Earthscan publication Ltd., 1989 London p. 1.

(11) Redclift, op. cit., p. 15; Alternatively, "it is conventional to begin with an increase in per capita real income as the best available overall index of economic development" quoted from Barbier E. B., The Concept of sustainable Economic Development, (1987) 14 *Env'l Conservation* 101.

(12) Pearce D., Barbier E. and Markandya A., *Sustainable Development: Economics and Environment in the Third World*, Earthscan Publications Ltd., 1990 London p. 2; Pearce et al, Blueprint , op. cit., p. 1 and 29-30.

(13) It is noteworthy that neo-classical economics values natural environmental resources as a commodity (see Pearce and others in Blue print for Green Economy, loc. cit., p. 51 et sec; also see Dasgupta P., *The Environment as a Commodity, in Economic Policy Towards the Environment*, Edited by D. Helm, Blackwell Publisher, 1991 Oxford p. 25-51), whereas the environmental moralists deny to treat the environment as a commodity. (see O'Riordan T., The Politics of Sustainability, in *Sustainable Environmental Management*, Ed. by Turner R. K., Westview Press, 1988 Boulder p. 29 et sec). Yet, the general tendency among economists is to forsake a unitary economic approch. (see Norgaard R., Environmental Economics: An Evolutionary Critique and a Plea for Pluralism, (1985) 12 *Journal of Environmental Economics* & Management 4 et sec) for an assessment of environmental economics see Redclift, op. cit., p. 37-41.

assets declines over time due to over-exploitation, environmental degradation occurs (14). Sustainability, a safeguard concept based on considerations of conservation and preservation, enables these assets to be utilised to ensure "human well-being", without their depletion or degradation in a long-lasting term (15).

In the early 1970's, the Cocoyoc Declaration on Environment and Development employed the term, "sustainable development" (16), although Caldwell observes the early influence of the very same idea upon the 1968 Paris Biosphere Conference and the 1968 Washington Conference on Ecological Aspects of International Development, where the approach towards an ecologically sound economic development prevailed (17). More notably, development-related environmental problems were addressed by the 1972 UN Conference on the Human Environment, whence the essence of sustainable development emerged in relation to the "pollution of poverty" with which the Third world was confronted (18). However, Adams argues that although the Stockholm Declaration correctly grasped the idea that development did not need to be impaired by environmental protection, its principles to resolve this through "rationally planned integrated development" lacked in substance, and thus fell far from showing how to manage it in practical terms (19).

Besides, "ecodevelopment", a term inspired by the Stockholm Conference, which denotes ecologically sound development, has gained ground for a new approach based on the ecological value of the natural environment (20). In practice, the UNEP relied on the ecodevelopment concept as a planning basis for its initial works (21). In addition to this, ecodevelopment has been advocated to produce alternative policies to create a new form of society whose well-being can only be assured through ecologically sound man-

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(14) Pearce, Barbier & Markandya, Sustainable Development, op. cit., p. 2-3.

(15) Pearce D., The Sustainable Use of Natural Resources in Developing Countries, in *Sustainable Environmental Management*, Edited by Turner R. K., Westiew Press, 1988 Boulder p. 102 et sec.; Turner R.K., Sustainability, Resource Conservation and Pollution Control: An Overview, in the same book, p. 6 et sec.

(16) Redclift, op. cit., p. 32.

(17) Caldwell L.K., Political Aspects of Ecologically Sustainable Development, (1984) 11 *Environmental Conservation* 299.

(18) For an appraisal of the Stockholm Conference see Johnson D.M., International Law: Recent Developments and Canadian Contributions, in *Canadian Perspectives on International Law and Organization*, Edited by MacDonald, Morris & Johnson 1974 toronta p. 555 et sec.

(19) Adams W. M., *Green Development: Environment and Sustainability in the Third World*, Routledge, 1990 London p. 36-8.

(20) Redclift, op. cit., p. 34-6; Caldwell, op. cit., p. 299-300.

(21) See UNEP, *Review of Areas: Environment and Development, and Environmental Management*, UNEP Report No. 3, 1978 Nairobi.

agement by which the balance of the ecosystem is maintained over a prolonged time (22). Glaeser points out that the objective of ecodevelopment is "to pursue economic development that relies for the most part on indigenous human and natural resources, most of all the basic needs of the poor" (23). In oversimplified terms, the features of ecodevelopment are identified as basic needs, self-reliance and ecological sustainibility (24).

An ecology-oriented approach was also taken by the IUNC in its 1980 World Conservation Strategy, which laid down an international guideline for sustainable development through the conservation of living resources (25). Its goal was "the integration of conservation and development to ensure that modifications to the planet do indeed secure the survival and well-being of all people" (26). Moreover, the Strategy stated that although environmental modification was a natural and necessary part of development, only that which could achieved the social and economic objectives of development, should result from sustainable utilisation securing conservation in the development process (27). In order to attain sustainable development, the Strategy urged the achievement of three main objectives for the conservation of living resources, which were, namely, "the maintenance of essential ecological process and life support systems" (28), "the preservation of genetic diversity" (29), and "the sustainable utilisation of species and ecosystems" (30). Although no explicit definition of sustainable development was found in the Strategy, the introduction of the "sustainable utilisation" principle intended to pro-

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(22) Among others, Sachs, Glaeser, Farvar, Vyasulu, Dasman, see Adams, op. cit., p. 51-2 and Redclift, op. cit., p. 34-5.

(23) Glaeser B., *Ecodevelopment in Tanzania: An Empirical Contribution on Needs, Self-sufficiency and Environmentally Sound Agriculture on Peasant Farms*, Mouton 1984 Berlin p. 11, quoted from Adams, loc. cit., p. 54.

(24) Sachs I., Ecodevelopment: A Definition, (1979) 2/3 Ambio 8, 113, cited by Adams, loc. cit., p. 52; Dasmann R. F., Achieving the Sustainable Use of Species and Ecosystems, (1985) 12 *Landscape Planning* 211, p. 215, cited by Redclift, op. cit., p. 35.

(25) The International Union for Conservation of Nature and Natural Resources, *World Conservation Strategy: Living Resource Conservation for Sustainable Development*, IUCN, UNEP, WWF, 1980; also see Talbot L.M., The World's Conservation Strategy, (1980) 7 *Env'l Conservation* 259-68.

(26) Ibid., WCS section 1.12.

(27) Ibid., WCS section 1.6 and 12

(28) Ibid, WCS section 2

(29) Ibid., WCS section 3

(30) Ibid., WCS section 4

vide sustainability in the relationship between the productive capacities of living natural resources and their exploitation by human (31).

Unlike the World Conservation Strategy, in 1987 the World Commission on Environment and Development defined "sustainable development" in its report, Our Common Future, as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (32). Our Common Future explicitly embodies the concept of basic needs and the idea of environmental limits (33). Environmental limits are to be determined by social and political settings, in order to secure physical sustainability in economic development which gives rise to improvement in access to environmental resources and in the distribution of costs and benefits (34). Thus, sustainable development in this sense is to attain certain social and economic objectives. Our Common Future adapts the ecologically-based concept of sustainable development to the socio-economic context of international development in the spirit of the 1972 Stockholm Conference (35).

Briefly, the Brundtland report sets forth that environment and development are essentially linked in a complex system of a cause and effect (36). In this system, sustainable development, "providing lasting and secure livelihoods that minimise resource depletion, environmental degradation, cultural disruption, and social instability" (37), is the only way to ensure intergenerational equity as well as intragenerational equity. The aim of intragenerational fairness, is to distribute justice to the socially disadvantaged both

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(31) O'Riodan, The Politics of Sustainability, op. cit., p. 36-7.

(32) The World Commission on Environment and Development, *Our Common Future*, Oxford University Press, 1987 Oxford p. 43 (hereinafter our common future).

(33) *Our Common Future*, Ibid.

(34) *Our Common Future*, Ibid.; for contradictions arisen from "sustainable development" see, Lipschutz R. D., Wasn't the Future Wonderful. Resources, Environment, and the Emerging Myth of Global Sustainable Development, (1991) 2 *Colorado J Int'l Env'l L & Pol'y* 35-54; for the subsequent progress towards our common future also see Starke L., *Signs of Hope: Working Towards Our Common Future*, Oxford University Press, 1990 Oxford passim.

(35) Adams, op. cit., p. 58-9.

(36) *Our Common Future*, op. cit., p. 37 et sec.

(37) Barbier, The Concept of Sustainable Economic Development, op. cit., p. 109.

within any one country and between countries in the present generation (38). Furthermore, sustainable development secures equity between generations, leaving the future generation an inheritance of quality of life assets no less than the present generation inherited (39).

THE DEFINITION OF INTERNATIONAL WATERCOURSES

The term, "international watercourse", has become a prime concept for the application of international law relating to shared water resources. However, its definition is problematic because it deals with the delimitation of a geographic area over which states exercise their territorial sovereignty. Therefore, it is not suprising that there is as yet no generally agreed definition of the term in international law (40).

The International Law Commission (ILC) has recently attempted to define "international watercourses" in its Draft Articles on the Law of the Non-navigational Uses of International Watercourses, adopted as a whole by the Commission on the first reading of 1991 (41). However, it was by no means an easy task for the Commission to finalise the definition of international watercourses. That was already proven by the Commission's decision to defer defining the term until the seventh report of the special rapporteur, owing to the long lasting profound disagreements in the discussions taking place in the Commission and the Sixth Committee, resulting from conflicting political views of

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(38) Pearce, Barbier, Markandya, sustainable Development, op. cit., p. 11-14.

(39) In the international law context, Brown-Weiss elaborates the concept of intergenerational equity, see Brown-Weiss, *In Fairness to Future Generations: International Law, Common Patrimony and Intergenerational Equity*, Transnational Publishers, 1989 New York; Brown-Weiss, Intergenerational Equity in International law, (1987) 81 *Proceedings ASIL* 126; Brown-Weiss, The Planetary Trust: Conservation and Intergenerational Equity, (1984) 11 *Ecology L Q* 495; Brown-Weiss, Conservation and Equity between Generations, in *Contemporary Issues in International Law: Essays in Honour of Louis B. Sohn*, Edited by Buergenthal T., N. P. Engel Publisher 1984 Kelh p. 245-89; Brown-Weiss, International Law, Common Patrimony and Intergenerational Equity: Research in Progress, in *the Future of the International Law of the Environment*, Workshop, (1984) Acádemie de droit international p. 445-9; Brown-Weiss, Conflicts between Present and Future Generations over New Natural Resources, in *the Settlement of Disputes on New Natural Resources*, Workshop, (1983) Acádemie de droit international p. 177-95.

(40) Sahovic M. and Bishop W.W., The Authority of the State: Its Range with respect to Persons and Places, in *Manual of Public International Law*, Edited by M. Sorensen, MacMillan, St. Martin's Press 1968 New York p. 311, pp. 325;

(41) UN International Law Commission, Doc. A/CN. 4/L. 463/Add. 4, 8 July 1991, also see UNGA Report of the ILC on the Work of its Forty-third Session, Supplement No. 10 (A/46/10) 10 September 1991, p. 161.

states whose intention was to maintain the least restricted sovereignty over the waters within their territory (42). In his last report of 1991 devoted wholly to the use of terms including international watercourses, McCaffrey strongly suggested that the "system approach" in conformity with the hydrologic realities, was to be taken by the Commission in defining international watercourses (43), Accordingly, the Commission adopted "international watercourse" as "a system of surface and underground waters constituting by virtue of their physical relationship a unitary whole and flowing into a common terminus, parts of which are situated in different States." (44)

Firstly, "international watercourse" is considered as a crucial step forward in international law, since it differs from the term, "International Rivers" which was, traditionally, defined as rivers "which separate or traverse two or more states" (45). The traditional definition as such was rooted upon article 108 of the Final Act of the 1815 Congress of Vienna, shaped by the consideration of navigation as the principal and most exclusive way to use rivers in the 19th century (46). However, the subsequent rise of economic uses other than navigation has undermined the way to identify international rivers according to their navigational function, and called for a major revision of the single-purpose traditional definition (47), which would enable international law to apply to a

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(42) McCaffrey S. C., Second Report on the Law of the Non-Navigational Uses of International Watercourses, Doc. A/CN. 4/399 and Add. 1 and Add. 2, (1986) II/1 *YILC* 87, p. 99; see Report of the ILC on the Work of its 38th Session, Doc. A/41/10, (1986) II/2 *YILC* p. 62; McCaffrey S.C., An Update on the Contributions of the International Law Commission to International Environmental Law, (1985) 15 *Env'l L.* 667, p. 670-2; McCaffrey S.C., Remarks on the Non-Navigational Uses of International Watercourses, (1990) 84 *Proceedings ASIL* p. 230.

(43) McCaffrey S.C., Seventh Report on the Law of the Non-Navigational Uses of International Watercourses, Doc. A/CN. 4/436 and Corr. 1 to 3 (memo).

(44) UNGA, Report of the ILC on the Work of its Forty-third Session, Supplement No. 10 (A/46/10) 10 September 1991, p. 154 et sec.; McCaffrey S.C., The Law of International Watercourses-the ILC Completes its Draft Articles, (1922) 22 *Env'l Pol'y & L.* 66.

(45) Olmstead C.J., Introduction, in *The Law of International Drainage Basins*, Edited by Garretson A. H., Olmstead C.J., & Hayton R. D., Oceana Publications, Inc., 1967 p. 1; Whiteman M. M., *Digest of International law*, vol. 3, US Department of State Publication 7737, 1964 Washington DC. p. 872; Tunkin G. I. (Ed.), *International Law: A Textbook*, Eng. Trans., Progress Publishers, 1986 Moscow p. 409.

(46) Vitanyi B., *The International Regime of River Navigation*, Sijthoff & Noordhoff, 1979 Alpheen aan den Rijn p. 149 et sec; Bruhács J., The Problem of the Definition of an International Watercourse, in *Questions of International Law*, vol. 3, Edited by Bokor-Szego H., Martinus Nijhoff Publishers, 1986 Dordrecht 69, p. 70 et sec; Teclaff A. L., Fiat or Custom: The Checkered Development of International Water Law, (1991) 31 *Natural Resources J.* 45, p. 48-9; Glos E. G., *International Rivers: A Policy-Oriented Perspective*, University of Malaya 1961 Singapore p. 3-7.

(47) Godana B., *Africa's Shared Water Resources: Legal and Institutional Aspects of the Nile, Nigel, and Senegal River Systems*, Frances Pinter Ltd., 1985 London p. 25 et sec.

wide range of internationally significant rivers put to non-navigational uses. Despite the recognition of their economic function by the traditional definition, the question of how far the status of international rivers can be extended to their reaches remains to be addressed in the political context (48). The general tendency is that tributaries separating or traversing more than one state are subject to the same regime as that of the main river to which they are geographically attached (49), while the status of tributaries lying wholly within the territory of one single state still appears to be rather arguable (50). On the other hand, "international watercourse", as a unitary whole, represents a wider concept that includes not only international rivers and their tributaries as well as subtributaries within the territory of one state, but also the connected groundwater (51). The natural indivisible physical unity of river systems dates back to Smith, who suggests a river system "to be developed so as to render the greatest possible service to the whole human community which it serves, whether or not that community is divided into two or more political jurisdictions" (52). The essence of "physical unitary whole" stems from the hydrologic cycle which is regarded, from a hydrological standpoint, as a set of connected components forming a physical whole and treated as a system based on the interdependence and continuous movement of water in different forms (53). In this cycle, the function of watercourses in a catchment area is to carry the surface and subsurface waters to the sea (54). The physical fact that the waters are constantly in motion in watercourses reveals the principle of "cause-effect unity", that is, that a human interference with the water in one part of the watercourse may have an adverse effect on the other parts (55).

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(48) Sar C., *Uluslararası Nehirlerden Endüstriyel ve Tarımsal Amaçlarla Faydalanma Hakkı*, in Turkish (The Right to Utilise International Rivers for the Industriel and Agricultural Purposes), Ankara University, Faculty of Political Sciences, Publishing No. 303, "Sevinç" Publisher Co., 1970 Ankara p. 61-2.

(49) O'Connel D. P., *International Law*, vol. I, Stevens & Sons Ltd., 1970 London, p. 556-7; Lissitzyn J.O., *International Law Today and Tommorrow*, Oceana Publications, Inc., 1965 New York p. 15.

(50) Whiteman, Digest, op. cit., p. 872.

(51) The provisional working hypothesis, adopted by the ILC in 1980, see Report of the ILC on the Work of its 32nd Session, (1980) II/2 *YILC* 108.

(52) Smith H. E., *The Economic Uses of International Rivers*, P.S. King & Son, Ltd., 1931 London p. 151.

(53) Ward R. C., *Principles of Hydrology*, 2nd Ed., McGraw-Hill Book Co. (UK) 1975 London p. 1-4.

(54) Crickmay C. H., *The Work of the River: A Critical Study of the Central Aspects of Geomorphogeny*, the MacMillan Press Ltd., 1974 London p. 6.

(55) Teclaff L. A., Inroduction, to the International Law of the Hydrologic Cycle, (1991) 31 *Natural Resources J.* 7-9.

It follows that there is a legally relevant interdependence between various parts of the watercourse belonging to different states, irrespective of the political borders (56).

A "drainage basin" as a whole, is a physically interconnected system of waters including the surface waters within the watershed as well as underground water resources (57). By its very nature, it appears to function as an indivisible self-contained hydrologic unit (58). The physical interdependence of co-basin states requires the water system of a basin to be considered as an integrated whole in creating an appropriate basis for the formation of international law (59). It is the International Law Association whose 12 year-long work has fostered the perception of the legal unity of drainage basin, conceived as a geographical concept on the plane of international Law. The ILA's 1966 Helsinki Rules define "international drainage basin" as "a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into common terminus" (60). The far-reaching "drainage basin approach" represents a further step forward in the direction of the adoption of a holistic view in law and management of fresh water resources shared by more than one state, as it recognises the legal unity of a hydrographic system to a certain degree (61). The holistic conception of a drainage basin points to an ecologically sound areal unit for development and administration of water resources, through which their pollution can be prevented, controlled and reduced by a regulatory system (62).

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(56) Finland's reply to the ILC's questionnaire in Doc. A/CN. 4/294 and Add. 1, (1976) II/1 *YILC* p. 154-5.

(57) Management of International Water Resources: Institutional and Legal Aspects, Report of the Panel of Experts on the Legal and Institutional Aspects of International Water Resources Development, United Nations Department of Economic and Social Affairs, ST/ESA/5, (Natural Resources/Water Series No. 12, UN Publication Sales No. E. 75. II. A. 2) 1975 New York p. 7.

(58) Schwebel S. M., First Report on the Law of the Non-Navigational Uses of International Watercourses, Doc. A/CN. 4/320, (1979) II/1 *YILC* 143, p. 152.

(59) The United States reply to the ILC's Questionnaire in Doc. A/CN. 4/294, op. cit., p. 160.

(60) Article II of the 1966 Helsinki Rules, The International Law Association, Report of the 52nd Conference, held at Helsinki, in 1966, 1967 London p. 484-5.

(61) For a critical analysis of the "drainage basin approach" see, Bourne C.B., The Development of International Water Resources: The "Drainage Basin Approach", (1969) 47 *Canadian Bar Rev.* 62; also for an appraisal of the "holistic approach" to the "drainage basin concept" see, McCaffrey S., International Organizations and the Holistic Approach to Water Problems, (1991) 31 *Natural Resources J.* 139 p. 141-50.

(62) Dickstein H. L., International Lake and River Pollution Control: Questions of Method, (1973) 12 *Columbia J Trans'l L.* 487, p. 488; Parnall T. & Utton A. E., The Senegal Valley Authority: A Unique Experiment in International River Basin Planning, (1976) 51 *Indiana L J.* 235, p. 256; Teclaff L. A. & Teclaff E., Transboundary Toxic Pollution and the Drainage Basin Concept, (1985) 25 *Natural Resources J.* 589, p. 591, reprinted in *Transboundary Resources Law*, Edited by Utton A. E., & Teclaff L. A., Westview Press, 1987 p. 29; Teclaff L. A. & Teflaff E., International Control of Cross-Media Pollution- An Ecosystem Approach, (1987) 27 *Natural Resources J.* 21, reprinted in *Transboundary Resources Law*, Ibid., p. 298.

In comparison with the geographical concept of "international drainage basin", "international watercourses" as defined in the ILC's Draft Articles is a set back. The Commission consistently resisted to take the basin-oriented approach which requires the inclusion of the physical portion of land contained within the divortium acquarum of an international watercourse (63). It was due to the categorical rejection of upperbasin states to rely generally on the geographically areal unity of shared water resources as a ground for the foundation of legal rules in state practice, with the consideration of a least limited territorial sovereignty over the water resources and other interacting natural resources within its territory (64). In fact, the idea behind the adoption of the system approach was to put a strong emphasis on the waters and their use rather than on the physical land areas within the watershed (65). However, there remains an inconsistency with the holistic approach (and the ecosystem approach) on which the Commission has relied, since the water-covered areas and the adjoining land areas are hydrologically indispensable parts of the ecosystem of the same watercourse basin which must be managed together so that they can develop sustainably. Moreover, by the same token, another noteworthy shortcoming of the definition given by the Draft Articles is that the Commission's denial of transboundary confined groundwater for inclusion in the system of waters is inconsistent with its "unitary whole approach" (66), since there is normally some interchange, put it more accurately, hydrologic continuity between confined and unconfined -free- groundwater as interconnected parts of a single, unified system (67).

HISTORICAL DEVELOPMENT OF THE LAW RELATING TO INTERNATIONAL WATERCOURSES

The law of international watercourses has developed considerably during the past century. But before then, the absence of any clear rules in international law to govern international watercourses gave rise instead to the application of other well-settled principles such as the principle of territorial sovereignty. This principle was, for the first time, authoritatively averred in its absolute form by the US Attorney-General Harmon

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(63) Report of the ILC to the General Assembly on the Work of its 28th Session of 1976, Doc. A/31/10, (1976) II/2 *YILC* 152, p. 161; Sette-Camara J, Pollution of International Rivers, (1984/III) 186 *Recueil des cours* 117, p. 128-9.

(64) Wescoat J. L., Beyond the River Basin: The Changing Geography of International Water Problems and International Watercourses Law, (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 301 et sec.; McCaffrey, International Organizations and the Holistic Approach, op. cit., p. 150-7; Bruhács, The Problem of the Definition, op. cit., p. 75 et sec;

(65) Schwebel S. M., Third Report on the Law of the Non-Navigational Uses of International Watercourses, Doc. A/CN. 4/348, (1982) II/1 *YILC* 65, p. 69-70.

(66) Hayton R. D., Observations on the International Law Commission's Study of the Non-Navigational Uses of International Watercourses: Articles 1-4, (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 31, p. 38-40.

(67) Ward, Principles of Hydrology, op. cit., p. 186.

concerning the dispute with Mexico in 1895 over the diversion of the Rio Grande waters by the USA in its territory (68). The Harmon doctrine dictates that there is an absolute and exclusive jurisdiction and control vested in a state over the part of an international river within its territory. Thus a riparian state, as a result of its independence, has the right to use the whole extent of the waters within its territory as it pleases, irrespective of any adverse effect on the use and supply of the waters within other riparian states territory (69). Apart from the USA, the Harmon doctrine was occasionally advocated in state practice and in theory (70), but it never became a principle of international law (71). Indeed, even the USA was quick to switch its position to the theory of equitable utilisation (72). It still is not surprising to witness an upstream riparian state relying on the Harmon doctrine in state practice (73).

The antithesis of the theory of absolute territorial sovereignty is that of absolute territorial integrity of a riparian state, which requires states not to interfere with the natural course and condition of an international river if such an interference is in the detriment to the absolute territorial integrity of the remaining riparian states (74). It warrants the right of downstream states to demand unimpaired quality and quantity of natural flow of water, so that an upstream state must seek the consent of downstream state before interfering with the river (75). Although there are only few cases where downstream states invoke the theory (76), no dispute seems to have been solved through it in state practice. Nor is it significantly supported by the scholarly writings (77). It stands to rea-

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(68) Moore J. B., *A Digest of International Law*, vol. 1, US Government Printing Office, 1906 Washington DC p. 654.

(69) Austin J., Canadian-United States Practice and Theory Respecting the International Law Rivers: A Study of the History and the Harmon Doctrine, (1959) 37 *Canadian Bar Rev.* 393-443; Sar, *Uluslararası Nehirlerden*, op. cit., p. 105-6; Lipper, *Equitable Utilization, in the Law of International Drainage Basins*, Garretson, Hayton & Olmstead, Oceana Publications, Inc., 1967 New York p. 21-1.

(70) Berber F. J., *Rivers in International Law*, Stevens & Sons, 1959 London p. 14-9; Godana, Africa's, op. cit., p. 32 et sec.

(71) McCaffrey, Second Repord on the Law of the Non-Navigational Uses of International Watercourses, Doc. A/CN. 4/399 and Add. 1 and Add. 2, (1986) II/1 *YILC 87* p. 105 et sec.

(72) Ibid.

(73) Godana, Africa's, op. cit., p. 38; Bakr I., The First Shot in the Water War, *Al-Ahram Weekly*, 20-26 August 1992, p. 5.

(74) Lipper, Equitable Utilization, op. cit., p. 18-20.

(75) Ibid.

(76) For the Spain's claim against France in the Lake Lanoux case of 1957, see Lauterpacht H., *International Law Reports*, (1957) vol. 23 Butterworths, 1961 London p. 101-42; MacChesney B., Judicial Decisions: The Lake Lanoux Case (France-Spain), (1959) 53 *AJIL* 156-71; Laylin J. G. & Bianchi R. L., The Role of Adjudication in International River Disputes: The Lake Lanoux Case, (1959) 53 *AJIL* 30-49.

(77) Berber, International Rivers, op. cit., p. 19-22.

son that its application practically vests the rights in lower riparian states without imposing corresponding obligations (78).

Either theory takes into account each riparian's advantageous position in comparison to the others but neither of them yields an equitable outcome for all riparians. In response to this inequity, the theory of equitable and reasonable utilisation has been put forward to reconcile these extreme theories and has received substantial support in international law. In its 1966 Helsinki rules, the International Law Association (ILA) formulated the theory which dictates that "Each basin state is entitled, within its territory, to a reasonable and equitable share in beneficial uses of the waters of an international drainage basin" (79). The gist of equitable utilisation essentially lies in equality of right that is not equal apportionment, but rather suggests equal right to make use of the water according to the social and economic needs of co-basin states (80). Through equitable utilisation, it is meant to produce the maximum benefit with the minimum detriment to each basin state (81). Yet the theory does not provide a precise formulation applicable to all watercourses for the achievement of this aim (82). In order to clarify its practical ambiguity, a number of relevant factors have been suggested to determine what equitable and reasonable utilisation is (83). More recently, the theory of equitable and reasonable utilisation has been elaborated with the overwhelming support of states by the ILC in its work on the law of the non-navigational uses of international watercourses, in which the theory takes a new shape incorporating equitable utilisation to equitable participation, unlike the early forms of "equitable apportionment" or "equitable share" (84). Furthermore, the Commission seemed to have explored another fundamental character of international watercourses as a shared natural resource to be treated under the theory accordingly (85). However, the initial special conceptual reference to "the international watercourse system as a shared natural resource", conceived within the scope of the theory, was dropped due to the strong opposition of states, which took the view that the concept

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(78) Godana, Africa's, op. cit., p. 39.

(79) The International Law Association, *Report of the 52nd Conference*, held at Helsinki, in 1966, 1967 London p. 486.

(80) Lipper Equitable Utilization, op. cit., p. 44-6.

(81) The ILA's comment on article IV of the Helsinki Rules, see *Report of the 52nd Conference*, op. cit., p. 487; The Commentary on article 5 of the Draft Articles on the Law of the Non-Navigational Uses of International Watercourses and Commentaries thereto, Provisionally Adopted on First Reading by the International Law Commission at its Forty-Third Session, Restricted Distribution, p. 29, (hereinafter the ILC' Draft Articles).

(82) Lipper, Equitable Utilization, op. cit., p. 41.

(83) Article V of the 1966 Helsinki Rules and Article 6 of the ILC's Draft Articles.

(84) Article 5 of the ILC's Draft Articles, op. cit., p. 28 et sec; Schwebel S. M., Third Report on the Law of the Non-Navigational Uses of International Watercourses, Doc. A/CN. 4/348, (1982) II/1 *YILC* 65 p. 75 et sec.

(85) Schwebel, Second Report, op. cit., p. 180.

of shared natural resources was new and incomplete, and thereby could raise uncertain legal implications in state practice (86). But the Commission has taken full advantage, throughout the Draft Articles, of the shared Natural resources principle which is said to have given rise to obligations to co-operate in the treatment of such resources in state practice (87). Yet this theory is still open to the question of how international water resources are to be environmentally treated in order to attain the goal of sustainable development, which requires more than simply balancing the interests of the states concerned with the allocation of the waters (88).

The community approach, based on the co-operation between co-basin states as a result of their interdependence with a view to accomplishing the most beneficial development of drainage basins for all, is the constructive element of the theory of community of interests in water (89). The early formation of the theory of community of interests rests on the natural law-based idea of "water common to all" (90). In 1921, the Permanent Court of International Justice endorsed the theory in deciding the case of territorial jurisdiction of the International Commission of the River Oder. In reliance on the theory, the Court ruled that "community of interests" provided the equal and joint utilisation of the whole course of a river by all riparian states, excluding of any preferential privilege of any one riparian in relation to the others, at least with respect to navigation (91). In modern state practice, the theory takes a rather distinct shape of "joint" or "common management" consistent with hydrologic and environmental realities which reveal the need for the principle of optimal utilisation to develop or make use of international watercourses sustainably (92). In doing so, a basin is regarded as a hydrographical unity of common economic importance to the co-basin states and managed as an integrated whole in the most efficient way which requires an appropriate institutional framework. As one scholar puts it, it is "the basin or hydrologic system approach to watercourse management" that begins to gain pre-eminence in modern state practice (93).

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(86) Schwebel, Third Report, op. cit., p. 73-4; Evensen J., Second Report on the Law of the Non-Navigational Uses of International Watercourses, Doc. A/CN. 4/381, (1984) II/1 *YILC* 101, p. 110;

(87) McCaffrey Prelimanry Report, Doc. A/CN. 4/393, (1985) II/1 *YILC* 87 p. 94-5; McCaffrey, Second Report, op. cit., p. 102-3; McCaffrey S. C., The Work of the International Law Commission Relating to the Environment, (1983) 11 *Ecology* L Q 189, p. 195-200.

(88) Handl G., Balancing Interests and International Liability for the Pollution of International Watercourses: Customary Principles of Law Revised, (1975) 13 *Canadian* YIL 156-94.

(89) Lipper Equitable Utilization, op. cit., p. 38 et sec.;

(90) Sar, Uluslararası Nehirlerden, op. cit., p. 47 et sec.

(91) Green L. C., *International Law through the Cases*, 3rd Ed., Stevens & Sons Ltd., 1970 London p. 351 pp. 355.

(92) Birnie P. & Boyle A. E., *Internationmental Law*, Clarendon Press, 1992 Oxford p. 222.

(93) Boyle, ibid.

SUBSTANTIVE RULES AND SUSTAINABLE UTILISATION

Since the establishment of the Harmon doctrine, international law relating to shared fresh water resources has evolved in the direction of the "community of states" based on their physical interdependency, as a result of the awareness of hydrologic realities. An observation of this fact points to the formation of substantive rules and principles accompanied by procedural rules imposing restrictions on the states sovereignty in international customary law, by which international watercourses are governed in the absence of a global arrangement. In determining the rights and obligations of watercourse states, there is decisive authority for the existence of the "principle of equitable and reasonable utilisation" as a general rule of international customary law (94). Yet it is undeniable that there is enormous difficulty in the formulation of this principle (95). The 1966 Helsinki rules state that "each basin state is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin" (96). The aim of this article is to reconcile the absolute right to use the waters with the right to demand continued flow of the waters, vested in the co-basin states (97). Furthermore, the Helsinki rules provide all the relevant factors required to determine what equitable and reasonable utilisation is in a particular case (98). Nevertheless, the question of what are "equity" and "reasonableness" still needs to be identified in general ınternational law (99). Notably, the subsequent attempt to balance the sovereign right of a state to make use of the natural resources within its own territory with the corollary obligation not to cause damage to the environment of other states, made by article 21 of the 1972 Stockholm Declaration on the Human Environment, evidences the reconciliation of national interests with those of the international community (100).

The elaboration of the principle of equitable and reasonable utilisation in the ILC's Draft Articles enriches its scope and content with the concept of "equitable participation", whereby it is aimed to secure the co-operation between watercourse states (101). The first sentence of paragraph (1) of article 5 of the Draft Articles requires states

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(94) Bourne C. B., The International Law Commission's Draft Articles on the Law of International Watercourses: Principles and Planned Measures, (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 65 p. 82-3; Schwebel, Third Report, op. cit., p. 74-85; McCaffrey, Second Report, op. cit., p. 103-33.

(95) Lipper, Equitable Utilization, op. cit., p. 41.

(96) Article IV of the 1966 Helsinki Rules, the ILA Report of the 52nd Conference, op. cit., p. 486.

(97) The ILA's comment on article IV, ibid.

(98) Article V of the 1966 Helsinki Rules, ibid., p. 488.

(99) Birnie & Boyle, op. cit., p. 124; Schachter O., *International Law in Theory and Practice*, Martinus Nijhoff Publishers, 1991 Dordrecht, chapter iv p. 49 et sec.; Chemillier-Gendreau M., *Equity in International Law: Acheivements and Prospects*, UNESCO, Martinus Nijhoff Publishers, 1991 Paris chapter 12 p. 271 et sec.

(100) Sohn L. B., The Stockholm Declaration on the Human Environment, (1973) 14 *Harvard ILJ* 423 p. 485 et sec.

(101) Schwebel, Third Report, op. cit., p. 75-87.

to "utilise an international watercourse in an equitable and reasonable manner" which will be determined by taking the account of the relevant factors and circumstances in each individual case, given in article 6 (102). The watercourse state's right to utilise an international watercourse in an equitable and reasonable manner is conditioned by the correlative obligation not to exceed its right to do so (103).

Moreover, the ILC's Draft Articles formulate another well-established principle of the harmless use of territory rooted in the old Roman maxim, 'sic utere tuo ut alienum non laedas', as well as the rule of the sovereign equality of states" in the form of "obligation not to cause appreciable harm to other watercourse states", in conjunction with the principle of equitable and reasonable utilisation (104). Like the latter to which its purport is to incorporate, this obligation embodied in article 7 is derived from the state practice (105). Although they do work together in many cases, their application raises profound contradiction between them in certain circumstances wherein there is an insufficiency in the quantity and quality of water, that may fall short of satisfying the socioeconomic needs of the interested states equitably and reasonably. In this regard, the ILC takes the view that the watercourse state's right to use the water resources of an international watercourse is limited by the duty not to cause appreciable harm to the interests of another watercourse state, so that if utilisation of the international watercourse causes other watercourse states an appreciable harm, it is not considered equitable (106). In other words, the principle of "no appreciable harm" takes precedence in the case in which it is incompatible with that of "equitable and reasonable". The practical outcome of the adoption of the "no appreciable harm" principle's supremacy is the creation of a "prior appropriation system" by which overriding existing uses could preclude equitable share of benefits (107). In such a situation, the ILC calls for some adjustments and accommodations to be based on equity in order to preserve each watercourse's states equality of right, preferably achieved through specific agreements (108).

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(102) Draft Report of the International Law Commission on the Work of its 43rd Session, The Law of the Non-Navigational Uses of International Watercourses, Text of Draft Articles as a Whole Adopted by the Commission of First Reading, Doc. A/CN. 4/L. 463/Add. 4, Limited Distribution, 8 July 1991, p. 3-4.

(103) The ILC's Commentary on article 5 of the Draft Articles, op. cit., 28-9.

(104) The ILC Doc. A/CN. 4/L. 463/Add. 4, op. cit., p. 5.

(105) Schwebel, Third Report, op. cit., p. 91-103; McCaffrey, Second Report, op. cit., p. 133-4; Bourne, Principles and Planned Measures, op. cit., p. 83-9, also see W. G. Lammer's Comments on Bourne's paper, (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 103.

(106) McCaffrey, The Evolution of the Law of Transboundary Rivers, op. cit., p. 16-7; McCaffrey S. C., The Law of International Watercourses: Some Recent Developments and Unanswered Questions, (1989) 17 *Denver JIL & Pol'y* 505 p. 508-10; Bourne, Principles and Planned Measures, loc. cit., p. 79 et sec.; also see G. Handl's comments, "General Principles and Planned Measures" Progressive or Retrogressive Development of International Law" (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 123 p. 129 et sec.

(107) See (1984) II/2 *YILC* 82 p. 97; Bourne, Principles and Planned Measures, loc. cit., p. 77.

(108) The ILC's comment on article 7 of the Draft Articles, op. cit., p. 52

On the contrary, the ILA gave primacy to the principle of equitable utilisation in its Helsinki rules of 1966 (109). Besides, McCaffrey, special rapporteur, proposed to the ILC three alternative solutions in order to overcome practical difficulties arising from the inconsistency between the two principles. His suggestions were either the replacement of "appreciable harm to the rights or interests of" with "injury to", or the adoption of the deprivation of an equitable share of uses and the benefits as the prohibited harm, or the maintenance of the exception proposed by Schwebel in his third report (110). However, he failed to convince the ILC, which chose to keep them as they stood (111).

One would expect that equitable utilisation could also come into conflict with the obligation to prevent, reduce and control pollution of international watercourses as a special form of that of no appreciable harm in the pollution context (112). Nonetheless, in this case, the ILC took the view, proposed by McCaffrey, that any polluting use that causes appreciable harm to other watercourse states and their environment was per se inequitable and unreasonable (113). Thus there remains the threshold of appreciable harm to be addressed as a qualification standard of tolerance for permissibility of polluting uses, which determines the status of the obligation, namely liability thereof. While Schwebel put "appreciable" as more in quantity than is denoted by "perceptible", but less in quantity than "serious or substantial", McCaffrey described it as "significant" i. e. not trivial or inconsequential, but less than "substantial". McCaffrey seems to have conceived "substantial" as similar to "serious". On the other hand, he used "harm" in a factual sense (114). It is also noteworthy that the draft article 21 is seriously questionable in qualifying the obligation whether it imposes a standard of due diligence or one of strict liability. Despite its wording, which suggests the strict liability, McCaffrey appears to have favoured due dilligence, which is seemingly supported by the wording of the obligation to protect and preserve the marine environment in article 23 (115).

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(109) McCaffrey, The Evolution of the Law of Transboundary Rivers, op. cit., p. 17-8; Birnie & Boyle, op. cit., p. 228.

(110) McCaffrey, Second Report, op. cit., p. 133-4.

(111) Report of the ILC on the Work of its 38th Session, Doc. A/41/10, (1986) II/2 *YILC* 60 p. 63.

(112) Article 21 of the ILC's Draft Articles, op. cit., p. 136.

(113) McCaffrey S. C., Fourth Report on the Law of the Non-Navigational Uses of International Watercourses, UNGA ILC Doc. A/CN. 4/412 Add. 2, 9 May 1988, p. 14-5; also see (1988) II/2 *YILC* 22 p. 26-31.

(114) Schwebel, Third Report, op. cit., p. 98-100; McCaffrey, Fourth Report, loc. cit., p. 6; Sachariew K., The Definition of Thresholds of Tolerance for Transboundary Environmental Injury under International Law: Development and Present Status, (1990) 37 *Netherlands I L Rev*. 193-206.

(115) McCaffrey, Fourth Report, loc. cit., p. 2-10 and 15; Bourne, Principles and Planned Measures, op. cit., p. 81-2; Birnie & Boyle, op. cit., p. 231-2.

More importantly, the ILC takes a far-reaching holistic approach to the environmental unity of international watercourses, by introducing a general obligation to protect and preserve the ecosystem of international watercourses (116). In its commentary, it refers to article 192 of the 1982 UN Law of the Sea Convention which lays down the similar general obligation to protect and preserve the marine environment (117). Besides, the obligation to take all measures necessary to protect and preserve the marine environment in article 23 of the Draft Articles, corresponds with article 207 of the 1982 UN Law of the Sea Convention, which imposes the obligation to prevent, reduce and control pollution of the marine environment from land-based sources (118).

Although "the environment of watercourses" -including ecology as well as ecosystems- was put forward during discussions taking place in the ILC in 1988 instead of "the ecosystem of international watercourses", the ILC used its preference for the term, "ecosystem" so as not to cover the entire environment beyond that of international watercourses (119). The ecosystem approach taken by the ILC connotes "an ecological unit consisting of living and non-living components that are interdependent and function as a community" (120). This seems to represent a narrow definition consistent with the given definition of international watercourses, limited to the watercovered area of an international watercourse basin (121). It becomes clear that "an interference with the ecosystem may impair its ability to function as a life-support system and may irreversibly disturb the equilibrium of fresh water ecosystems rendering them incapable of supporting human and other forms of life" (122). Thus protection and preservation of aquatic ecosystems as life support systems are essential to sustain economic development of international watercourses.

Maintaining the balance of the ecosystem of international watercourses has an impact on human ecosystems and their internal economic systems. Therefore, the consis-

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(116) Article 20 of the ILC Draft Articles, op. cit., p. 123.

(117) For the text see, *A Handbook on the New Law of the Sea*, vol. 2, Edited by Dupuy R-J. & Vignes D., Martinus Nijhoff Publishers, 1991 Dordrecht p. 1493.

(118) Ibid, p. 1496-7.

(119) McCaffrey, Fourth Report, op. cit., p. 20-2; the ILC's commentary on article 20 of the Draft Articles, op. cit., p. 123-4.

(120) Ibid., p. 124-5; Teclaff, International Control of Cross Media Pollution-An Ecosystem Approach, op. cit., p. 289 et sec.;

(121) Okidi O. C., "Preservation and Protection" under the 1991 ILC Draft Articles on the Law of International Watercourses, (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 143 p. 147; Nanda V. P., Draft articles on Protection and Preservation of Ecosystems, Harmful Conditions and Emergency Situations, and Protection of Water Installations, (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 175 p. 177-80; Sohn L. B., Articles 20-25 and 29, (1992) 3 *Colorado J Int'l Env'l L & Pol'y* 215 p. 215-6.

(122) The ILC's commentary on article 20 of the Draft Articles, op. cit., p. 124.

tency of secioeconomic development with the natural law governing ecosystem maintenance of watercourse basins is a fundamental condition for sustainability (123). It follows from this that physical sustainability can only be secured in a situation in which access to natural and environmental assets of renewable fresh water resources does not decrease over time (124). Otherwise, non-sustainable utilisation will reduce the availability of the resources (125). Hence, sustainable utilisation, based on the conservationist approach to the replenishable use of renewable resources, becomes a prior condition for sustainable development -if not a sufficient one (126).

Although in the 1960's, sustainable utilisation was referred in the context of nature conservation and wildlife management (127), it was internationally acknowledged among the main objectives of living resource conservation by the 1980 World Conservation Strategy, which placed "sustainable utilisation of species and ecosystem", as life support systems (128). The Strategy listed twelve priority requirements, based on ecological principles, to achieve utilisation of such resources at sustainable level (129). The 1982 World Charter for Nature adopted by the UN General Assembly, states the concept of "optimum sustainable productivity" for the management of ecosystems and organisms, as well as the land, marine and atmospheric resources (130). Furthermore, the same principle of "optimum sustainable yield" was accepted in the exploitation of living natural resources and ecosystems by the Experts Group on Environmental Law of the WCED in the Legal Principles for environmental Protection and Sustainable Development in 1986 (131). However, in distinguishing transboundary natural resources from the international natural resources, the Experts Group subjected the former to the principle of equitable and reasonable utilisation, while recognising the need to attain, main-

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(123) Turner R.K., Sustainability, Resource Conservation and Pollution Control: An Overview, in *Sustainable Environmental Management*, Westview Press, 1988 Boulder p. 8.

(124) *Our Common Future*, op. cit., p. 43; Pearce, Barbier, & Markandy, Sustainable Development , op. cit., p. 3.

(125) Pearce D., The Sustainable Use of Natural Resources in Developing Countries, in *Sustainable Environmental Management*, Wesview Press, 1988 Boulder p. 106.

(126) O'Riordan T., The Politics of Sustainability, in *Sustainable Environmental Management*, Wesview Press, 1988 Boulder p. 30.

(127) Ibid., p. 35.

(128) The WCS, op. cit., p. vi.

(129) Ibid, section 7.

(130) For the text see Kiss A. & Shelton D., *International Environmental Law*, Transnational Publishers, Inc., 1991 Ardsley-on-Hudson p. 437.

(131) Munro R. D. & Lammers J. G. (Ed.), *Environmental Protection and Sustainable Development: Legal Principles and Recommendations*, Adopted by the Experts Group on Environmental Law of the World Commission on Environment and Development, June 1976, Graham & Trotman / Martinus Nijhoff, 1987 London p. 45.

tain, or restore the optimum sustainable yield, in the case of harvested living resources (132).

In the ILC's Draft Articles, the second sentence of paragraph 1 of article 5 also seeks to attain "optimal utilisation and benefits" in connection with the principle of equitable utilisation (133), and in addition to which paragraph 2 of article 26 refers to "rational and optimal utilisation" in terms of management of international watercourses (134). Nevertheless, the ILC's interpretation of optimal utilisation in the commentary demonstrates that optimal utilisation in effect has no distinction from equitable utilisation, but reinforces the idea of equitable sharing (135). On the other hand, optimal utilisation, which aims at the most economically beneficial use to each watercourse state but does not necessarily mean the most equitable use (136), requires the community approach to common management of international watercourses under the theory of community of interests in water (137).

In the modern sense, optimum utilisation was elaborated by the 1982 UN Law of the Sea Convention in its article 62 (1), which imposes a duty on the coastal state to promote the objective of optimum utilisation of the living resources in the exclusive economic zone (EEZ), determining its capacity to harvest them (138). The corresponding article 61 (1) requires the coastal state to determine the allowable catch of the living resources in its EEZ. By doing so, the maintenance of the living resources in the EEZ is ensured against over-exploitation through proper conservation and management measures which can allow to produce "the maximum sustainable yield" by taking the account of environmental and economic factors (139). Notably, article 61 brings about a positive mechanism whereby the coastal state must take measures not only to maintain, but also

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(132) Ibid., p. 72.

(133) The ILC's Draft Articles, op. cit., p. 28.

(134) Ibid., p. 161.

(135) Ibid. p. 29; the 1966 Helsinki Rules, op. cit., p. 487.

(136) Lammers J. G., *Pollution of International Watercourses: A Search for Subtantive Rules and Principles of Law*, Martinus Nijhoff Publishers, 1984 The Hague p. 371; Moemond III J. O. & Shirly E., A Survey of International Law of Rivers, (1988) 16 *Denver J I L & Pol'y* 139 p. 153; Also for the evolution of the principle of "optimum utilisation" see, Hafner G., The Application of the Optimum Utilization Principle to the Euphrates and Tigris Drainage Basin, paper submitted in the Conference on Transboundary Waters in the Middle East: Prospects for Regional Co-operation, held at Bilkent University of Ankara, Turkey, 2-3 September 1991.

(137) Lipper, Equitable Utilization, op. cit., p. 38; Birnie & Boyle, op. cit., p. 322-4; Hafner, loc. cit., p. 26.

(138) Dupuy & Vignes, A Handbook, op. cit., p. 1443.

(139) Ibid., p. 1442.

to restore populations of harvested species in certain circumstances in order to sustain the living resources. The objective of optimum utilisation, then, is to gain the maximum sustainable yield, in other words, to utilise the living resources to an extent that harvests are not in excess of sustainable yield, so that, consistent with sustainable utilisation, it serves to conserve the living resources. Thus sustainable utilisation becomes an "enabling" mechanism for conservation of the living resources, by which the UN Law of the Sea Convention aims to achieve sustainable development, in order to meet the need for food of the world's expanding population as a whole, in terms of the present and future generations (140).

Notwithstanding the trend in international law to move forward in the direction of sustainable development as a key concept for development and environment (141), the legal formation of the principle of sustainable utilisation for sustainable development is far from being unambigous and vague. There is a substantial effort on the part of international law to formulate safeguard principles which may somewhat amount to a basis for the sustainable utilisation of renewable natural resources, in an attempt to overcome the deficiency of the equitable utilisation principle with respect to environmental degradation. In this respect, precautionary environmental policy has gained a significant ground in international law for prevention of transboundary environmental harm (142). The precautionary principle imposes on a watercourse state a due diligence obligation to abstain from using international watercourses in a way likely to cause appreciable harm to other watercourse states (143). Under this obligation, states are required to take preventive or

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(140) O'Riordan, The Politics of Sustainability, op. cit., p. 37; Dupuy & Vignes, A Handbook, op. cit., p. 1082-7 and 1117-26.

(141) It is worth noting that the UN Economic Commission for Europe (ECE) adopted "Second Draft Convention on the Protection and Use of Transboundary Watercourses and International Lakes" at its 4th special session in May 1991, which defined in its article 3 (5a) "the principle of sustainable water use" as the use "by virtue of which, inter alia, the ecosystem approach shall be applied, so that the water is used in such a manner that needs of the present generation are met without compromising the ability of future generations to meet their own needs." see UN ECE Senior Advisers to ECE Governments on Environmental and Water Problems, Working Party on Water Problems, 5th Session, ENVWA/WP. 3/R. 19/Rev. 1, Restricted, 21 May 1991 p. 1, However, the phrase, "the principle of sustainable water use" was subsequently dropped by the amendments to the second draft convention in the draft report of the 5th special session, though its substance was maintained, see UN ECE Senior Advisers to ECE Governments on Environmental and Water Problems, Working Party on Water Problems, 5th Session, ENVWA/WP. 3/CRP. 9/Add. 3, Restricted, 16 October 1991 annex.

(142) See the Bergen Ministerial Declaration on Sustainable Development in the ECE Region, annexed to the Report of the ECE on the Bergen Conference, UNGA the Preparatory Committee for the UNCED, Doc. A/CONF. 151/PC/10, 1 August 1990, (1990) 1 *YIEL* 429.

(143) Handl G., Environmental Security and Global Change: The Challenge to International Law, (1990) 1 *YIEL* 3 p. 21, reprinted in *Environmental Protection and International Law*, Edited by Lang W., Neuhold H., & Zamanek K., Graham & Trotman/Martinus Nijhoff, 1991 London p. 59-87.

precautionary measures in cases in which there is a foreseeable risk of harm which may have potentially severe consequences (144). The precautionary principle essentially associates with environmental impact assessment prior to the required measures to be taken, and also with the procedural obligations of prior consultation and information exchange (145). Yet it is still doubtful whether it is a generally agreed principle of international law (146).

Finally, it is noteworthy that the 1992 Dublin Conference on Water and the Environment recognises the need for the development, management and utilisation of water resources in harmony with environmental conservation and the concept of sustainability, towards which it takes an ecological approach inherent in the holistic approach to ensure environmental protection and conservation of fresh water resources (147). Pursuant to the Dublin Statement, the 1992 UN Conference on Environment and Development (UNCED) adopts the "sustainable" use of water resources, which is described among its main objectives as "maintaining the hydrological, biological and chemical functions of ecosystems" and "adapting human activities to the limits of nature's carrying capacity" (148). Thus it states that the success of sustainable development in fresh water resources necessarily depends on "integrated water resources planning and management" taking place in watercourse basins at the global, regional, national and local level (149).

CONCLUDING REMARKS

(i) Sustainable development is blended with the interdisciplinary nature of the water-related environmental and development problems which requires an appropriate legal framework to overcome depletion and degradation in finite fresh water resources. Sustainable utilisation is a promising legal norm potentially capable of amounting to an adequate basis for the application of sustainable development. A significant trend has es-

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(144) Birnie & Boyle, op. cit., p. 95-6.

(145) Handl, Environmental Security, op. cit., 21-2; Birnie & Boyle, loc. cit., p. 96-8.

(146) Handl, ibid., p. 22; Birnie & Boyle, ibid., p. 98.

(147) The Dublin Statement and Report of the International Conference on Water and the Environment: Development Issues for the 21st Century, 26-31 January 1992, Dublin, Ireland, (UN ACC/ISG-WR) p. 1-55; also see McKeague P., Water and the Environment-Development Issues for the 21th Century, (1992) 22 *Env'l Pol'y* 16-21.

(148) *Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources*, Report of the Secretary General of the Conference, the UNCED Doc. A/CONF. 151/PC/100/Add. 22, see in *Agenda 21 & the UNCED Proceedings*, vol. I, Robinson N. A., Hassan P., & Burhenne-Guilmin F., IUCN, Oceana Publications, Inc., 1992 p. 513 pp. 515-6.

(149) Ibid., p. 518 et sec.

tablished towards the recognition of sustainable utilisation as a principle governing exploitation of renewable natural resources in international law as well as international political economics. However, the limited international practice provides little to clarify its ambiguous normative character and uncertain legal implications, so that it is fair to say that sustainable utilisation is not yet a principle of international law.

(ii) An "international watercourse" conceptualised by the ILC in its Draft Articles, confines the application of the legal regime of sustainable development to watercovered areas only. The exclusion of inseparable adjoining land areas of international watercourse basins is inconsistent with the holistic approach taken by the ILC in the draft article 20 which expressly requires watercourse states to protect and preserve the ecosystems of international watercourses. Sustainable development can be attained only if an international watercourse basin is treated as a whole environmental unit (150).

(iii) The principle of equitable and reasonable utilisation does not provide an adequate legal basis for enabling sustainable development to be accomplished, since it is designed to balance interests of watercourse states in terms of intragenerational fairness (151). But sustainable utilisation, as being conservationist, is the most appropriate manner to secure intergenerational equity as well as intragenerational equity.

(iv) Sustainable development can only be achieved through an integrated water resources planning and management based on sustainable utilisation schemes, for which an international institutional framework ought to be established by means of international law (152).

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(150) See passim, Newson M., Land, *Water and Development: River Basin Systems and their Sustainable Management*, Routledge, 1992 London.

(151) See Handl, supra note. 88.

(152) Birnie & Boyle, op. cit., p. 4; also see passim Palmer G., New Ways to Make International Environmental Law, (1992) 86 *AJIL* 259-83.