Principles of international water law: creating effective transboundary water resources management

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Abstract: This article summarises the principles of international water law related to transboundary water resources management and analyses to what extent these principles are incorporated in recent international conventions and treaties. The study reveals that principle of equitable and reasonable utilisation, obligation not to cause significant harm, principles of cooperation, information exchange, notification, consultation and peaceful settlement of disputes are widely acknowledged by modern international conventions, agreements and treaties. These principles could facilitate effective transboundary water resources management involving riparian countries of shared watercourses and hence, promote sustainable development around the world.

Keywords: cooperation; international water law principles; sustainable development; transboundary water resources management; water conventions.

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1 Introduction

Transboundary water conflicts are ubiquitous, both in the third world and in the rich industrial nations. Water conflicts in international watercourses around the world create serious political, economic, environmental and social instability regionally and internationally. The examples of transboundary water conflicts include Nile basin in Africa, Tigris and Euphrates in the Middle East, Aral Sea basin in Central Asia, Parana basin in South America and Ganges basin in Asia (Petrella, 2001). Promoting and

implementing integrated management through transboundary cooperation could control the state of the world water and reduce water conflicts among the nations (Rahaman and Varis, 2005).

For achieving sustainable water resources management, Chapter 18 of the Agenda 21, adopted by more than 178 Governments during the UN Conference on Environment and Development (UNCED) in 1992, suggested integrated water resources management (IWRM) and transboundary cooperation and cooperative management of the shared water resources (Articles 18.3, 18.4, 18.6–18.22, 18.10, 18.27 and 18.40). Agenda 21 stresses the need for transboundary water cooperation and agreements among the riparian countries for ensuring integrated management of the shared water resources (UNCED, 1992; Rahaman and Varis, 2008).

The Johannesburg Plan of Implementation, adopted in The World Summit on Sustainable Development (2002), also recognised integrated management of shared water resources through transboundary cooperation involving the riparian states as one of the key components for achieving sustainable development (WSSD, 2002). Effective transboundary water resources management promotes the achievement of the three key objectives of integrated water resources management and sustainable development:

1 the social equity

2 economic growth

3 environmental and ecological protection under the prevalence of good governance and public participation.

However, absence of effective and efficient management of transboundary water resources shared by two or more riparian countries always pose a difficult threat to achieve integrated and sustainable development of the shared watercourses as well as that of the riparian countries. This problem persists in most of the transboundary river basins, aquifers and lakes, where mechanisms and institutions to manage disputes over water resources are either absent or inadequate. The need for integrated transboundary water resources management is particularly urgent in the 263 international river basins, which are shared by two or more states, e.g. Brahmaputra, Jordan, La Plata, Niger, Okavango, Senegal, Volga, Volta river basins and in which nearly half of the territory and population of the world are located. Integrated planning for efficient watershed management is hampered by the difficulties of coordinating among riparian states with diverse and often conflicting needs (UNESCO and Green Cross International, 2003).

Even though, the international community is yet to agree on a uniform mechanism/ convention to manage transboundary water resources (Salman, 2007a, p.638), over the years, some customary and general principles of international law related to water have become the basis of major international conventions, treaties and agreements for transboundary water resources management.

This article has two specific objectives. Firstly, to summarise the principles of international water law dealing with transboundary water resources management. Secondly, to analyse to what extent these principles are incorporated into recent international conventions and treaties. To do so, it scrutinises the provisions of the Helsinki Rules on the Uses of the Waters of International Rivers (1966) (hereinafter Helsinki Rules), UN Convention on Non-Navigational Uses of International Watercourses (1997) (hereinafter UN Watercourses Convention) and Berlin Rules on Water Resources (2004) (hereinafter Berlin Rules).

Several studies scrutinise the general provisions of the Helsinki Rules and UN Watercourses Convention to explain the development of international water law (e.g. Birnie and Boyle, 2002; Eckstein, 2002; Salman and Uprety, 2002; Salman, 2007a). Unlike the previous studies, this study concentrates on the analysis of relevant provisions that incorporated the principles related to transboundary water resources management.

2 Theories and doctrines of international water law

The theoretical foundation of the principles of international water law related to transboundary water resources management evolves from different theories and doctrines. This section summarises three major ones:

1 theory of absolute territorial sovereignty

2 theory of absolute territorial integrity

3 theory of limited territorial sovereignty.

2.1 Theory of absolute territorial sovereignty

Every nation can utilise the waters of an international river flowing on its territory, as it likes, regardless of the consequences in other countries and without the duty to consult (Correia and Silva, 1999). According to this theory, the upstream states would be free to divert all the water from a shared watercourse without considering the need for downstream states (McCaffrey, 1996, p.549).

This theory also known as the Harmon Doctrine, after the US Attorney General, Mr. Judson Harmon, who declared the absolute right of the USA to divert the Rio-Grande in 1895. He commented,

> "The fact that the Rio Grande lacks sufficient water to permit its use by the inhabitants of both countries does not entitle Mexico to impose restrictions on the USA which would hamper the development of the latter's territory or deprive its inhabitants of an advantage with which nature had endowed it and which is situated entirely within its territory. To admit such a principle would be completely contrary to the principle that USA exercises full sovereignty over its national territory" (Birnie and Boyle, 2002, p.332).

However, most modern experts dismiss this doctrine. Even the USA promptly retreated from the Harmon doctrine in treaties with Mexico (1906 Convention between the USA and Mexico concerning the equitable distribution of the waters of the Rio Grande for irrigation purposes) and Canada (1909 Treaty between the UK and the USA concerning boundary waters and questions arising along the boundary between Canada and the USA) that are consistent with the theory of limited territorial sovereignty which is discussed below. This theory has a little support in state practice and does not represent international law (Birnie and Boyle, 2002, p.301; Salman and Uprety, 2002, p.12).

2.2 Theory of absolute territorial integrity

This theory is based on the assertion that the lower riparian of an international river has the right to a full flow of water of natural quality and interference with the natural flow

by the upstream state require the consent of the downstream riparian. Therefore, the lower riparian has the right to claim the continued and uninterrupted flow of water from the territory of the upper riparian, 'no matter what the priority' (Barandat and Kaplan, 1998; Schroeder-Wildberg, 2002).

Often downstream states support this theory as it guarantees them the use of an international river in an unaltered condition. Like the Harmon doctrine, this theory has limited support in state practice, jurisprudence or the writings of commentators (Birnie and Boyle, 2002, p.302).

2.3 Theory of limited territorial sovereignty

This theory is based on the assertion that every state is free to use shared rivers flowing on its territory as long as such utilisation does not prejudice the rights and interests of the co-riparians. In this case, sovereignty over shared water is relative and qualified. The co-riparians have reciprocal rights and duties in the utilisation of the waters of their international watercourse and each is entitled to an equitable share of its benefits. This theory is also known as theory of sovereign equality and territorial integrity.

The advantage of this theory is that it simultaneously recognises the rights of both upstream and downstream countries as its guarantees the right of reasonable use by the upstream country in the framework of equitable use by all interested parties. Principles of equitable and reasonable utilisation and obligation not to cause significant harm are the part of the theory of limited territorial sovereignty (Schroeder-Wildberg, 2002, p.14). Only this theory has gained wide acceptance and formed the basis of modern international water law (Salman, 2007a, p.628).

3 Principles of international water law

Article 38 (1) of the 1946 Statute of the International Court of Justice (ICJ) is generally recognised as a statement of the sources of international law. Article 38 (1.a) requires the court to apply international conventions, whether general or particular, expressly recognised by the contesting states. Article 38 (1.b) requires the court to apply international customs as evidence of general practice accepted as law. Article 38 (1.c) requires the court to apply the general principles of law recognised by civilised nations. This section summarises some important customary and general principles of international law applicable to transboundary water resources management that are accepted globally and incorporated in modern international conventions, agreements and treaties.

3.1 Principle of equitable and reasonable utilisation

This use-oriented principle is a sub-set of the theory of limited territorial sovereignty. It entitles each basin state to a reasonable and equitable share of water resources for the beneficial uses within its own territory (Article IV of the Helsinki Rules 1966 and Article 5 of the UN Watercourses Convention, 1997).

Equitable and reasonable utilisation rests on a foundation of shared sovereignty, equality of rights and it does not necessarily mean equal share of waters. In determining equitable and reasonable share relevant factors, such as the geography of the basin,

hydrology of the basin, population dependent on the waters, economic and social needs, existing utilisation of waters, potential needs in future, climatic and ecological factors to a natural character and availability of other resources should be taken into account (Article V of the Helsinki Rules, Article 6 of the UN Watercourses Convention and Article 13 of the Berlin Rules). It entails a balance of interests that accommodates the needs and uses of each riparian state. This principle has substantial support in state practice, judicial decisions and international codifications (Birnie and Boyle, 2002, p.302).

The ICJ's 1997 decision concerning the Gabcikovo-Naymaros Project endorsed the theory of equitable and reasonable utilisation that was incorporated in Article 5 of the UN Watercourses Convention. This principle is incorporated in 1966 Helsinki Rules (Articles IV, V, VII, X, XXIX [4]), 1997 UN Watercourses Convention (Articles 5, 6, 7, 15, 16, 17, 19), 1995 SADC protocol on shared watercourse systems (Article 2), 2002 Sava River Basin Agreement (Articles 7–9), 1996 Mahakali River Treaty (Articles 3, 7, 8, 9), 1995 Mekong Agreement (Articles 4–6, 26), 2004 Berlin Rules (Articles 10.1, 12, 13, 14, 16) and 1992 UNECE Water Convention (Article 2.2c).

3.2 Obligation not to cause significant harm

This principle is also a part of the theory of limited territorial sovereignty (Eckstein, 2002, p.82). According to this principle, no state in an international drainage basin are allowed to use the watercourses in their territory in a way that would cause significant harm to other basin states or to their environment, including harm to human health or safety, to the use of the waters for beneficial purposes or to the living organisms of the watercourse systems.

This principle is widely recognised by international water and environmental law (Khalid, 2004, p.11). However, question remains on the definition or extent of the word 'significant' and how to define 'harm' as a 'significant harm'.

This principle is incorporated in most modern international water conventions, treaties and agreements. It is now considered as part of the customary international law (Eckstein, 2002, pp.82–83). This principle is incorporated in 1966 Helsinki Rules (Articles V, X, XI, XXIX [2]), 1997 UN Watercourses Convention (Articles 7, 10, 12, 15, 16, 17, 19, 20, 21.2, 22, 26.2, 27, 28.1, 28.3), 1995 SADC protocol on shared watercourse systems (Article 2), 2002 Sava River Basin Agreement (Articles 2, 9), 1996 Mahakali River Treaty (Articles 7, 8, 9), 1995 Mekong Agreement (Articles 3, 7, 8), 2004 Berlin Rules (Articles 8, 10.2, 16) and 1992 UNECE Water Convention (Articles 2.1, 2.3, 2.4, 3). This principle is also acknowledged by modern international environmental conventions and declarations, e.g. 1972 Stockholm Declaration of the UN Conference on Human Environment (Principles 21, 22), 1992 Rio Declaration on Environment and Development (Principles 2, 4, 13, 24) and 1992 Convention on Biological Diversity (Article 3).

3.3 Principles of notification, consultation and negotiation

Every riparian state in an international watercourse is entitled to prior notice, consultation and negotiation in cases where the proposed use by another riparian of a share watercourse may cause serious harm to its rights or interest. These principles are generally accepted by international conventions, agreements and treaties. However,

naturally, most upstream countries often oppose this principle. It is interesting to note that during the negotiation process of the 1997 UN Watercourses Convention, these principles, which are included in Articles 11 to 18, were opposed by only three upstream riparian countries: Ethiopia (Nile basin), Rwanda (Nile basin) and Turkey (Tigris–Euphrates basin) (Birnie and Boyle, 2002, p.319).

Article 3 of the International Law Association's (ILA) Complementary rules applicable to international resources (adopted at the 62nd conference held at Seoul in 1986) states that

> "when a basin State proposes to undertake, or to permit the undertaking of, a project that may substantially affect the interests of any co-basin State, it shall give such State or States notice of the project. The notice shall include information, data and specifications adequate for assessment of the effects of the project" (Manner and Metsälampi, 1988).

These principles are incorporated in most modern international water conventions, treaties and agreements, e.g. 1966 Helsinki Rules (XXIX [2], XXIX [3], XXIX [4], XXX, XXXI), 1997 UN Watercourses Convention (Articles 3.5, 6.2, 11–19, 24.1, 26.2, 28, 30), 1960 Indus Waters Treaty (Articles VII [2], VIII), 1995 SADC protocol on shared watercourse systems (Articles 2.9, 2.10), 2002 Sava River Basin Agreement (Parts Three and Four, Article 22), 1996 Mahakali River Treaty (Articles 6, 9), 1995 Mekong Agreement (Articles 5, 10, 11, 24), 2004 Berlin Rules (Chapter XI, Articles 57, 58, 59, 60) and 1992 UNECE Water Convention (Article 10). These principles are also acknowledged by modern international environmental conventions and declarations, e.g. 1992 Rio Declaration on Environment and Development (Principles 18, 19) and 1992 Convention on Biological Diversity (Article 27.1).

3.4 Principles of cooperation and information exchange

It is a responsibility for each riparian state of an international watercourse to cooperate and exchange data and information regarding the state of the watercourse as well as present and future planned uses along the watercourse (Birnie and Boyle, 2002, p.322). These principles are recommended by 1966 Helsinki Rules (Articles XXIX, XXXI) while Articles 8 and 9 of the 1997 UN Watercourses Convention makes these an obligation.

These principles are incorporated in most modern international water conventions, treaties and agreements, e.g. 1966 Helsinki Rules (Articles XXIX [1], XXIX [2], XXXI), 1997 UN Watercourses Convention (Articles 5.2, 8, 9, 11, 12, 24.1, 25.1, 27, 28.3, 30), 1960 Indus Waters Treaty (Articles VI–VIII), 1995 SADC protocol on shared watercourse systems (Articles 2–5), 2002 Sava River Basin Agreement (Articles 3–4, 14–21), 1996 Mahakali River Treaty (Articles 6, 9, 10), 1995 Mekong Agreement (Preamble, Articles 1, 2, 6, 9, 11, 15, 18, 24, 30), 2004 Berlin Rules (Chapter XI, Articles 10, 11, 56, 64) and 1992 UNECE Water Convention (Articles 6, 9, 11, 12, 13, 15, 16). These principles are also acknowledged by modern international environmental conventions and declarations, e.g. 1972 Stockholm Declaration of the UN Conference on Human Environment (Principles 13, 22, 24), 1992 Rio Declaration on Environment and Development (Principles 7, 9, 12, 13, 17, 27), 1992 Convention on Biological Diversity (Articles 5, 17).

3.5 Peaceful settlement of disputes

This principle advocates that all states in an international watercourse should seek a settlement of the disputes by peaceful means, in case states concerned cannot reach agreement by negotiation.

Most modern international water conventions, treaties and agreements incorporated this principle, e.g. 1966 Helsinki Rules (Articles XXVI–XXXVII), 1997 UN Watercourses Convention (Article 33), 1960 Indus Waters Treaty (Article IX, Annexure F, G), 1995 SADC protocol on shared watercourse systems (Article 7), 2002 Sava River Basin Agreement (Articles 1, 22–24, Annex II), 1996 Mahakali River Treaty (Articles 9, 11), 1995 Mekong Agreement (Articles 18.C, 24.F, 34, 35), 2004 Berlin Rules (Articles 72–73) and 1992 UNECE Water Convention (Article 22, Annex IV). This principle is also acknowledged by modern international environmental conventions and declarations, e.g. 1992 Rio Declaration on Environment and Development (Principle 26) and 1992 Convention on Biological Diversity (Article 27, Annex II).

4 Analysis of the international water law

The process of evolution and codification of international water law related to navigational purposes commenced with the adoption of the Act of the Congress of Vienna in 1815 (Salman and Uprety, 2002, p.8). From a global point of view, the 1868 Mannheim Convention on navigation on the Rhine among Belgium, France, Germany and The Netherlands is one of the major multilateral treaties related to water (Hughes, 1992, p.84). This convention adopted the recommendations of the 1815 Congress of Vienna and 1831 Convention of Mainz. The key principles of this convention were the obligation of the member states to maintain the Rhine river waterway and ensuring freedom of navigation along the Rhine (CCNR, 2007). The Convention and Statute on the Régime of Navigable Waterways of International Concern, widely known as Barcelona Convention, was adopted at Barcelona on 20th April 1921.

These early conventions, however, dealt with navigational uses of transboundary watercourses. Subsequent rapid industrialisation and increased demands for water resources propelled innovation in the law that is applicable to the non-navigational water uses, such as flood control, hydropower development, water quality management and water allocation (Biswas, 1999, p.437). As a consequence, non-navigational rules have become eminent in subsequent state practice and water conventions. For a detail analysis of the evolution of international water law, see Salman and Uprety (2002, pp.8–31). This section scrutinises the Helsinki Rules (1966), UN Watercourses Convention (1997) and Berlin Rules (2004) in order to find out to what extent principles related to transboundary water resources are incorporated in modern international conventions.

4.1 The Helsinki rules on the uses of the waters of international rivers (1966)

The ILA adopted the Helsinki Rules on the Uses of the Waters of International Rivers at the 52nd conference, held at Helsinki in August 1966. This document is widely known as the Helsinki Rules and, over the years, it has become widely acknowledged as bases for negotiation among riparian states over shared waters (Birnie and Boyle, 2002;

Eckstein, 2002). 1966 Helsinki Rules are predominantly relevant for non-navigational uses of transboundary waters, even though Articles XII–XX also address the navigational uses.

Article II defines '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 a common terminus.

Article IV ascertains the principle of equitable and reasonable utilisation of the water resources of the international drainage basin by stating, "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". Articles V, VII, X, XXIX (4) also recommend this principle.

Article V defines the relevant factors that should be considered in determining the reasonable and equitable share of water resources in an international drainage basin. These factors include but are not limited to (Article V, paragraph II) :

- The geography of the basin, including the extent of the drainage area in the territory of each basin state.
- The hydrology of the basin, including the contribution of water by each basin state.
- The climate affecting the basin.
- The past utilisation of the waters of the basin, including in particular existing utilisation.
- The economic and social needs of each basin state.
- The population dependent on the waters of the basin in each basin state.
- The comparative costs of alternative means of satisfying the economic and social needs of each basin state.
- The availability of other resources.
- The avoidance of unnecessary waste in the utilisation of waters of the basin.
- The practicability of compensation to one or more of the co-basin states as a means of adjusting conflicts among uses.
- The degree to which the needs of a basin state may be satisfied, without causing substantial injury to a co-basin state.

The inclusion of the term 'without causing substantial injury' in Article V (II) demonstrates the adoption of the principle 'not to cause significant harm'. Articles X, XI, XXIX (2) also endorse this principle. Articles IX–XI provide provisions for controlling pollution of an international drainage basin on the basis of the principle of equitable utilisation. It is interesting to note that the paragraph 1(a) of the Article X uses the principle of 'not to cause significant harm' in controlling pollution. It mentions,

> "Consistent with the principle of equitable utilization of the waters of an international drainage basin, a State must prevent any new form of water pollution or any increase in the degree of existing water pollution in an international drainage basin which would cause substantial injury in the territory of a co-basin State".

Article XI binds the responsible state to cease wrongful conduct and compensate the injured co-basin state for the injury, in case of the violation of the rule stated in paragraph 1(a) of Article X. Thus, any kind of human conduct that causes water pollution falls in the boundary of the 'not to cause significant harm' principle. However, controversy remains, as the term 'substantial injury' is not clearly defined. In addition, 'injury' does not always necessarily equate with 'harm' and 'substantial' does not always equate with 'significant'.

Articles XXVI–XXXVII of the Helsinki Rules deal with the procedures for the prevention and settlement of the disputes. The key objective is to prevent or settle the disputes by peaceful means (Article XXVII). Paragraph 1 of the Article XXIX recommends each basin state to furnish relevant available information to the other basin states concerning the waters of a drainage basin within its territory. Paragraph 2 of Article XXIX asserts that:

> "A State, regardless of its location in a drainage basin, should in particular furnish to any other basin State, the interests of which may be substantially affected, notice of any proposed construction or installation which would alter the regime of the basin in a way… and the notice should include such essential facts as will permit the recipient to make an assessment of the probable effect of the proposed alteration".

Articles XXX and XXXI recommend to settle the disputes by negotiation and by forming a joint agency to formulate plans and recommendations for the most efficient use of the waters of an international drainage basin.

Article XXXII recommends states to request mediation of a third party, of an international organisation or of a qualified person, if necessary. Articles XXXIII–XXXVII deal with the guidelines for disputes settlement and arbitration mechanisms, in case the states concerned have not been able to resolve their disputes through negotiation or have been unable to agree on the measures described in Articles XXXI and XXXII. This reveals that the 1966 Helsinki Rules endorse the principles of cooperation, information sharing, consultation, notification, negotiation and peaceful settlement of disputes.

The Helsinki Rules were later supplemented by the ILA's subsequent resolutions, e.g. the 1982 Montreal Rules on Pollution and the 1986 Seoul Complementary Rules. Recently, the Helsinki Rules and subsequent resolutions have been revised by the ILA's 2004 Berlin Rules. While the Helsinki Rules are relatively important in the development of international water law, it is worth mentioning that they were drafted by the ILA, a professional organisation, and hold no official status internationally (Biswas, 1999, p.438). The work of ILA has always been regarded as inspirational and not as hard and fast rules for state conduct (Eckstein, 2002). But although they are unofficial we should accord them great value because subsequent modern bilateral and regional treaties have tended to adopt the guidelines provided by the Helsinki Rules. Over the years, these guidelines have played a significant role in the development and codification of international water law (Eckstein, 2002, p.83).

Nevertheless, despite their soundness and applicability, the Helsinki Rules and their supplementary declarations have enjoyed a little recognition as official codification of international water law. To overcome this indefiniteness, in 1970, the UN General Assembly commissioned the International Law Commission (ILC) to draft a set of articles to govern non-navigational uses of transboundary waters. Operating under the

UN, the work of ILC is highly regarded as an official codification of international water law. After 21 years of extensive work, in 1991, the ILC prepared the draft text of the UN Watercourses Convention (Biswas, 1999, p.438).

4.2 UN convention on non-navigational uses of international watercourses (1997)

After considerable discussion during 1991–1997 on the ILC's draft, on 21st May 1997, the UN General Assembly adopted the Convention on Non-Navigational Uses of International Watercourses, widely known as the UN Watercourses Convention. This Convention codified the principles of sharing international watercourses building on the 1966 Helsinki Rules (UNDP, 2006, p.218).

Upon the request by Turkey, the General Assembly of the United Nations called for a vote on the resolution 51/229 adopting the UN Watercourses Convention. Out of 133 nations, 103 nations votes in favour (including Bangladesh, Finland, Jordan, Syria, USA, Mexico Slovakia and Nepal), 27 nations abstained (including Egypt, Ethiopia, India, Israel, Rwanda and France) and three nations votes against the Water Convention (Burundi, China and Turkey) (IWLP, 2008).

According to Article 36(1) of the Convention 35 instruments of ratification, approval, acceptance or accession are necessary to bring the Convention into force. The Convention was open for signature from 21 May 1997 until 20 May 2000 (Article 34). States or regional economic integration organisations, however, may continue to ratify, accept, approve or accede to the Convention indefinitely (Article 36). As of 9 January 2008, only 16 countries ratified or consented to be bound (acceptance, approval or accession) by the UN Watercourses Convention (cf. Table 1). For an in depth analysis of the reasons for the reluctance of states to become parties to Convention, see Salman (2007b).

Table 1 Parties of the United Nations Watercourses Convention (1997)

Country	*Ratification*	*Approval*	*Acceptance*	*Accession*
Finland			23 January 1998	
Syria	2 April 1998			
Norway	30 September 1998			
South Africa	26 October 1998			
Lebanon				25 May 1999
Jordan	22 June 1999			
Hungary		26 January 2000		
Sweden				15 June 2000
Netherlands			9 January 2001	
Iraq				9 July 2001
Namibia	29 August 2001			
Qatar				28 February 2002
Portugal	22 June 2005			
Libya				14 June 2005
Germany	15 January 2007			
Uzbekistan				4 September 2007

Source: IWLP (2008).

Even though this Convention is not in force yet, it contains the general customary principles of international water law that have been developed by the work of international judicial bodies and scholars of relevant field (Khalid, 2004). The following section briefly analyses the scopes of the relevant articles of the UN Watercourses Convention in relation to the principles of the international water law.

According to the Article 1(1), the scope of the Convention applies to non-navigational uses of international watercourses and their waters. The navigational uses are out of the scope of the Convention except insofar non-navigational uses affect navigation or are affected by navigation (Article 1, paragraph 2). Article 2 of the convention defines 'international watercourse' as a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus, parts of which are situated in different states.

Article 5 adopts the theory of equitable and reasonable utilisation:

> "Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse".

Article 5(2) requires watercourse states to participate and cooperate in the use, development and protection of the watercourse in an equitable and reasonable manner.

Article 6(1) mentions that all relevant factors and circumstances should be taken into account in determining equitable and reasonable utilisation. These factors include:

- Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character.
- Social and economic needs of the watercourse states concerned.
- Population dependent on the watercourse in each watercourse state.
- Effects of the use or uses of the watercourses in one watercourse state on other watercourse states.
- Existing and potential uses of the watercourse.
- Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect.
- The availability of alternatives, of comparable value, to a particular planned or existing use.

In the application of Articles 5 and 6(1), Article 6(2) requires states to enter into consultations in a spirit of cooperation. However, Biswas (1999, p.439) notes that none of these factors mentioned in Article 6(1) can be defined precisely as they are broad and general. Accordingly, these can be defined and quantified in a variety of different ways.

Preamble and Article 24(2) highlight the need to manage international watercourse by promoting the rational and optimal utilisation, protection and control of the watercourse. Article 7 of the convention approves the principle of the obligation not to cause significant harm in its paragraph 1: "Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States". Article 7(2) obliges all states to comply the

provisions of Articles 5 and 6 to eliminate or mitigate significant harm on another watercourse state. Article 10 states that any conflict among uses of an international watercourse shall be resolved with reference to Articles 5–7. Articles 12, 15, 16, 17 and 19 forbid implementation of any planned measures on an international watercourse that are inconsistent with the provisions of Articles 5 and 7. Article 27 calls for taking appropriate measures to prevent or mitigate conditions that may be harmful to other watercourse states, whether resulting from natural causes or human conduct, such as flood, siltation, erosion, water-borne disease and drought. In the Working Group of the UN Watercourses Convention, Bangladesh voted in favour for of the Articles 5–7 whereas India abstained (Schroeder-Wildberg, 2002, p.33).

The principles of cooperation and information exchange are endorsed by the UN Watercourses Convention. Article 8(1) advocates the general obligation to cooperate for the optimal utilisation and adequate protection of the international watercourses. Article 8(2) encourages the riparian countries to establish joint mechanisms or commissions to facilitate cooperation. Article 9 obliges the watercourse states to exchange the data and information on the state of the watercourse particularly that of a hydrological, meteorological and ecological nature and related to the water quality as well as related forecasts. Article 24(1) endorses the idea of joint management mechanism of the international watercourse. Article 25(1) stipulates, "Watercourse States shall cooperate, where appropriate, to respond to needs or opportunities for regulation of the flow of the waters of an international watercourse".

Part III of the UN Watercourses Convention (Article 11–19), Articles 24(1), 26(2), 27, 28 and 30 incorporate the principles of cooperation, information exchange, notification, consultation and negotiation. Articles 11–19 describe the detailed procedures for the information exchange, notifications, consultations and negotiations on any planned measure in an international watercourse. Article 11 stresses: "Watercourse States shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse". Article 12 makes notification of the planned measure in an international watercourse obligatory and states,

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

Article 24(1) stipulates, "Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism". Article 26(2) requires states to enter into consultation in case any installations, facilities and other works related to an international watercourse causes or poses to cause significant adverse effects to watercourse states. In case of emergency situation that causes, or poses a threat of causing, serious harm to watercourse states, Article 28(2) requires all watercourse states to notify other states by the most expeditious means. Paragraphs 3 and 4 of the Article 28 call for cooperation among all potentially affected states to prevent, mitigate and eliminate harmful effects of the emergency situations and to develop contingency plan for responding to emergencies. In the absence of direct contacts among the watercourse

states, Article 30 recommends cooperation, data and information sharing, notification, consultations and negotiations through any indirect procedure accepted by the states concerned. Thus, these articles endorse the principles of cooperation, information exchange, consultation, notification and negotiation.

Articles 20–22 attribute the protection and preservation of watercourse ecosystems on the basis of the doctrine not to cause significant harm. Article 21 necessitates the preservation and protection of the watercourse ecosystems. Paragraph 2 of the Article 21 entails watercourse states to individually and/or jointly prevent, reduce and control the pollution of the international watercourse that may cause significant harm to other watercourse states, or to their environment, including harm to human health, to the use of any beneficial uses of the waters or to the living resources of the watercourse. Article 22 recommends all states to prevent the introduction of alien or new species that may cause significant harm to ecosystem and other watercourse states. Thus, Articles 21 and 22 widen the scope of the 'not to cause significant harm' principle that is adopted in Article 7(1) of the Convention, to preserve watercourse ecosystems as well as human health. It also recommends watercourse states to take steps to harmonise their policies for preserving watercourse ecosystems.

Article 33 of the Convention provides detailed provisions for settlement of disputes. Article 33(1) states that in the absence of agreement, all states shall settle the disputes by peaceful means in accordance with the provisions of Article 33. China and India both objected this article pointing to the compulsory provisions regarding the disputes settlement. India asserted that "[a]ny procedures for peaceful settlement of disputes should leave the procedure to the parties" (Eckstein, 2002, p.84).

Although the Convention is not in force yet, the principles adopted by the Convention have become norms of international legal practice and contribute towards progressive development and codification of international water law (cf. Birnie and Boyle, 2002; Eckstein, 2002, p.89; Salman and Uprety, 2002; Giordano and Wolf, 2003, p.167). Even prior to its adoption, the ILC's draft articles has significantly influenced number of international agreements and regional treaties, such as 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, the 1995 SADC Protocol on Shared Watercourse Systems (revised in 2000), the 1995 Mekong river basin agreement (Eckstein, 2002). The ICJ has also referred this Convention in the 1997 Gabcikovo-Nagymaros case which is described in subsection 4.3.

4.3 Gabcikovo-nagymaros case

ICJ's decision of 25th September 1997 on the case, concerning the Gabcikovo-Nagymaros project (ICJ, 1997) is a good example of the international applicability of the doctrine of equitable utilisation and obligation not to cause significant harm. This case shows that an international watercourse is constrained in part by the limits of equitable use, in part by evolving environmental obligations and in part by considerations of sustainable development (Birnie and Boyle, 2002, p.316).

The ICJ was presented with a controversy between Hungary and Czechoslovakia over a 1977 bilateral treaty on the Danube river regulating the development of a series of installations for improving the hydro-power generation, the environment and navigation, flood and ice control on the Danube river. The main feature of the 1977 Hungary–Czechoslovakia treaty was the development of hydroelectric power and navigation, with projects to be carried out in each country at its own expense. The dispute

arose when Hungary unilaterally suspended the work (13th May 1989) on its portion causing Czechoslovakia (now Slovakia) in turn to unilaterally implement 'Variant C', one of the Czech/Slovak alternatives for developing the relevant section of the Danube. Variant C created a major decrease in the flow of Danube River downstream in Hungary (paragraph 65 of ICJ, 1997). Both countries had undergone dramatic political changes. Hungary determined that the project was environmentally unsound and attempted to unilaterally terminate the 1977 Treaty. On the other hand, Czechoslovakia/Slovakia argued that the project was environmentally sound, and that if any environmental issues arose, they could be adequately addressed within the 1977 treaty.

The ICJ deliberated the case for four years, and decided in 1997 that both Hungary and Czechoslovakia/Slovakia had committed internationally wrongful acts and both parties are under an obligation to pay compensation (paragraph 152). The ICJ required that the settlement of accounts for the construction of the works must be resolved in accordance with the 1977 Treaty and related instruments (paragraph 154). The ICJ decided the case on general international treaty law, but referred to Article 5 (paragraph 2) of the UN Watercourses Convention that focuses equitable and reasonable utilisation of water resources in paragraph 147. The decision reads,

> "Re-establishment of the joint régime will also reflect in an optimal way the concept of common utilization of shared water resources for the achievement of the several objectives mentioned in the Treaty, in concordance with Article 5, paragraph 2, of the Convention on the Law of the Non-Navigational Uses of International Watercourses".

The court concluded that by implementing Variant C, Czechoslovakia/Slovakia violated the basic right of Hungary to the equitable and reasonable share of the Danube river water (Stec and Eckstein, 1997, p.45). ICJ decision held that (paragraph 85):

> "Czechoslovakia, by unilaterally assuming control of a shared resource, and thereby depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube – with the continuing effects of the diversion of these waters on the ecology of the riparian area of the Szigetköz – failed to respect the proportionality which is required by international law".

The ICJ also decided (paragraph 152):

> "Hungary is entitled to compensation for the damage sustained as a result of the diversion of the Danube, since Czechoslovakia, by putting into operation Variant C, and Slovakia, in maintaining it in service, deprived Hungary of its rightful part in the shared water resources, and exploited those resources essentially for their own benefit."

The ICJ endorsed the theory of equitable and reasonable utilisation that is incorporated in Article 5 of the 1997 UN Watercourses Convention. This is evidence that 1997 UN Watercourses Convention is strengthening the modern development of international law and legal practices, despite its status is not being in force (cf. Stec and Eckstein, 1997, p.45; Eckstein, 2002; Khalid, 2004).

4.4 The Berlin rules on water resources (2004)

On 21 August 2004, the Berlin Rules on water resources were approved in ILA's 71st conference held in Berlin. Unlike the Helsinki Rules and UN Watercourses Convention,

the Berlin Rules include not only the development of important bodies of international environmental law, but also international human rights law and the humanitarian rights law relating to the war and armed conflict (Salman, 2007a, p.635).

Chapter II (Articles 4–9) addresses the principles of international law governing the management of all waters. Articles 5 and 6 recognise the need for conjunctive and integrated management of water resources. Article 5 recommends states to manage surface waters, groundwater and other sources of water conjunctively. Article 6 recommends states to integrate appropriately the management of waters with the management of other resources. Article 8 requires states to take all appropriate measures to prevent or minimise environmental harm.

Chapter III (Articles 10–16) deals with internationally shared waters. Article 10 ascertains that basin states have the right to participate in the management of waters of international drainage basin in an equitable reasonable and sustainable manner. Article 12 mentions:

> "Basin States shall in their respective territories manage the waters of an international drainage basin in an equitable manner having due regard for the obligation not to cause significant harm to other basin States" (p.7).

Salman (2007a, p.636) observe that the Helsinki Rules and UN Watercourses Convention emphasise the right of each basin state to reasonable and equitable share. On the other hand, Berlin Rules obliges each basin state in international drainage basin to manage water in equitable and reasonable manner.

Article 13(2) provides the list the relevant factors that should be considered in determining the equitable and reasonable use referred in Article 12. In addition to the factors listed in Article 6(1) of the UN Watercourses Convention, Berlin Rules include two new factors to be considered, i.e. the sustainability of proposed or existing uses and the minimisation of environmental harm. Article 14 (1) explicitly mentions that in determining equitable and reasonable use, allocation of waters to satisfy vital human needs should receive the first preference over the other uses of water. Article 16 requires states to refrain from and prevent acts within their territory that causes significant harm to another basin state.

Article 11 requires basin states to cooperate in good faith for in the management of waters of an international drainage basin. Chapter XI deals with international cooperation and administration. Article 56 requires basin states to exchange relevant and available information on the quantity and quality of waters. Article 64 recommends basin states to establish basin wide commission or joint agency to ensure the equitable and sustainable use of waters and the prevention of harm. Articles 57, 58, 59 and 60 acknowledge that each basin state is entitled to receive prior notice, consultation and negotiation in cases where the proposed programme, plan, project or activity may cause significant effect to its rights or interest. Chapter XIV (Articles 72–73) provides detail provisions for the peaceful settlement of international water disputes as well as guidelines for arbitration and litigation.

It should be noted that although the ILA is influential, their proposals, these rules have no force unless:

1 the UN adopts them in a convention of some sort

2 the IJC uses the rules in a ruling

3 a transboundary water sharing agreement is adopted them somewhere in the world.

5 Conclusions

If properly managed water serves as a tool for sustainable development, peace building and preventive diplomacy. Water can have an overreaching value capable of uniting conflicting interests and promoting consensus building among countries and societies. In order to incorporate all social, political, economic, environmental, physical and cultural characteristics of an international watercourse, water should be managed based on hydro-geographical boundaries and thus not only on administrative and political boundaries (Rahaman and Varis, 2005). Both the Rio Earth Summit (1992) and World Summit on Sustainable Development (2002) explicitly recognised that integrated transboundary water resources management is a necessary tool for achieving sustainable development (UNCED, 1992; WSSD, 2002; Rahaman and Varis, 2008). However, absence of detail legal and institutional framework along with effective dispute resolution mechanisms and guidelines for cooperative management involving the riparian countries, have become the major obstacles for achieving effective management of transboundary water resources (UNEP, 2002).

The study summarised in this article reveals that the principle of equitable and reasonable utilisation, obligation not to cause significant harm, principles of cooperation, information exchange, notification, consultation and peaceful settlement of disputes are widely acknowledged by modern international water conventions, agreements and treaties. These principles form the basis of the 1966 Helsinki Rules on the Uses of the Waters of International Rivers, 1997 UN Convention on Non-Navigational Uses of International Watercourses and 2004 Berlin Rules on Water Resources. These internationally accepted principles could serve as the guiding principles and provide a framework for further dialogue among the riparian states of shared watercourses for creating effective transboundary water resources management and hence, promoting sustainable development.

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