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**Managing Wetlands:
Integrating Natural And Human Processes According To Law.**

D.E. Fisher¹ and C.A. Sullivan²

Abstract

Wetlands perform functions that are both hydrological and ecosystemic. Both humans and the natural environment benefit from these. However, wetlands need to be managed sustainably to ensure that not only the present but also the future benefits continue to accrue. Sustainable management techniques will almost necessarily require a degree of legal involvement. Although the law can be used to control what humans do, it cannot control how the natural environment behaves. It can only control what humans do in relation to the natural environment. As human populations grow and water resources dwindle, this continuing dilemma will become increasingly severe.

To address this issue, the challenge is to construct a set of legal arrangements that successfully integrate both the natural and human processes relating to wetlands. For example:

- who has the power to control activities in relation to wetlands?
- how is an appropriate balance to be struck between the interests of humans, and those of the natural environment?
- how are the interests of the natural environment to be protected?
- what are the legal arrangements relating to water in wetlands?
- how is sustainability to be achieved?

This paper addresses these issues from the perspectives of the law, by using examples from international law and selected jurisdictions, and by suggesting, from a legal perspective, how integration of the natural and human processes can be achieved.

Key Words: Convention, Law, Wetlands, Jurisdiction, Legal Frameworks, sustainable development

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1. Introduction

Historically, the identification of wetlands as wetlands for the purposes of the law has emerged out of the subtleties of constitutional and statutory arrangements, explaining the concepts of land and of water. In West Bengal in India, for example, the expression “land” is defined to include any wetland and the expression “water body” is defined to include any land holding water.¹ In the United States, wetlands have been defined by regulations made under the federal Clean Water Act 1972 as :

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

It has subsequently been commented judicially that “this definition focuses on two essential indicia of wetlands: hydrology and vegetation”.²

In 1986 the Congress of the United States approved the Emergency Wetlands Resources Act 1986, which, due to its focus on soils, vegetation and hydrology, expanded and refined the definition in the earlier regulations under the 1972 Act. In all instances, however, the decision whether an area is a wetland is constrained by the law in two ways:

- There must be adequate scientific investigation and analysis
- There must be a degree of rationality brought to bear between the information, the assessment and the decision.³

In this paper, we review the legal arrangements – international, regional and national - relevant to wetlands.⁴ Some relate directly to wetlands, while others do so indirectly. We have been necessarily selective in the examples chosen. Accordingly we provide a cross-section of cases for consideration, illustrated by examples from a variety of countries⁵.

2. Sustainability as a principle of wetlands management

The values of sustainability increasingly being reflected in international environmental law emerged with the endorsement by the international community of the *Stockholm Declaration*

1972.⁶ focusing on environmental protection and developed in the direction of nature conservation by the *World Charter for Nature 1982*.⁷ Principle 3 of the 1972 Declaration is directed specifically at renewable resources. The need to safeguard and wisely manage wildlife and its habitat is the focus of principle 4 which concludes with the declaration that nature conservation must be incorporated into planning for economic development. The fundamental principle of the 1982 Charter is that nature shall be respected, and its essential processes shall not be impaired. According to principles 4 and 10(a) and (b) it is also expected that :

- Ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilised by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist.
- Living resources shall not be utilised in excess of their natural capacity for regeneration.
- The productivity of soils shall be maintained or enhanced through measures which safeguard their long-term fertility and the process of organic decomposition, and prevent erosion and other forms of degradation.

The Rio Declaration 1992⁸ moved the focus from the protection of the human environment according to the Stockholm Declaration 1972 and from the conservation of nature according to the World Charter for Nature 1982 towards sustainable development. The objective of sustainable development brings together the economic, social and the ecological values of nature, natural resources and the environment. Principle 1 of the Rio Declaration states:

Human beings are at the centre of concerns for sustainable development.

They are entitled to a healthy and productive life in harmony with nature.

This illustrates that the approach has become more anthropocentric, but protection of the environment and conservation of nature remain core values recognised by and included in the Rio Declaration which underpins much public policy today.

It cannot be doubted that wetlands, as part of nature and of the natural environment, fall within the scope of these various principles, with their conservation as the ethical foundation of the approach. In effect, therefore, the fundamental value driving the management of wetlands, as elements of nature, is their sustainable development, as indicated by these three legal instruments.

3. International wetlands management

(a) Introduction

The Ramsar Convention 1971 ⁹ is the only international agreement which focuses directly upon wetlands. However, wetlands can in appropriate circumstances be subsumed within the scope of international agreements directed at the management and regulation of particular components of the natural environment. On the assumption that the values of wetlands are a combination of the values associated with land, water, vegetation and soils, it is no surprise that multilateral international agreements have focussed on one or more of these related and interdependent sets of values. International arrangements tend to be a combination of statements of value, of principle, and of strategy which inform the range of more specific regulatory arrangements comprising sets of rights and duties that are protected and enforced through the legal system

How international arrangements impact on wetlands reflect the broad values and principles indicating how nature should be conserved, informing potentially enforceable legal arrangements. To illustrate this, two international agreements impacting upon nature will be examined, along with four international agreements that impact indirectly on wetland management and the Ramsar Convention itself specifically in relation to wetlands.

(b) Conservation of wetlands

The Convention on Biological Diversity of 1992 ¹⁰ provides the cornerstone of conservation policy in all of the signatory countries. Its precursor was the Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973 ¹¹. Two of the most important concepts underpinning the 1992 Convention are *biological diversity* and *ecosystem*, and the Convention is directed explicitly at the *conservation and sustainable use of all the components of biological diversity*. These are in addition protected by regulation of international trade in endangered species of wild fauna and flora.

The incorporation of terrestrial and aquatic ecosystems and marine ecosystems within the meaning of biological diversity in the 1992 Convention clearly includes not only wetlands themselves but also the ecological complexes of which wetlands are a part. Significantly, therefore, biodiversity is conserved by the Convention, not only in relation to the biological diversity of wetlands, but also in relation to the biological diversity of the ecological complexes of which wetlands are a part. Both *in-situ* conservation and *ex-situ* conservation

measures are required to implement the Convention. It is also expected that these approaches be built into relevant sectoral and cross-sectoral plans, programmes and policies.

(c) Direct wetlands management

It is the Ramsar Convention 1971¹² alone which deals specifically with wetlands. The principal mechanism for the conservation of wetlands is the designation of suitable wetlands for inclusion in the *List of Wetlands of International Importance*. The Convention, however, seeks the conservation of wetlands, whether included in the list or not. Article 3 (1) provides:

“Each contracting party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the list or not and provide adequately for their wardening”.

Article 3 (1) thus seeks to promote the conservation of wetlands included in the List and article 4 (1) seeks to promote the conservation of wetlands whether included in the List or not. The implication appears to be that listed wetlands are to be *conserved* while non-listed wetlands are to be *used wisely*.

It has, however, been noted that the guidelines for the implementation of the wise use concept indicate this:

*The wise use provisions apply to all wetlands and their support systems within the territory of a contracting party, both those wetlands designated for the list, and all other wetlands.*¹³

Further, a definition of *wise use* has been formally accepted by the parties. Namely:

*The wise use of wetlands is their sustainable utilisation for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem.*¹⁴

It has been suggested that the guidelines “*explicate the concept of wise use in terms of conservation and ‘sustainable development and sustainable utilisation of wetland resources’.*”¹⁵ The definition contains a reference to sustainable use as well as a reference to maintenance of the natural properties of the ecosystem. The relationship between the two is

“compatibility”: a test difficult to apply. What is contemplated, it would appear, is an accommodation between the functions of ecosystems that benefit humans on one hand and those that benefit ecosystems on the other hand. This, however, is the essence of conservation in any event, for conservation contains within it the need to accommodate these disparate functions and outcomes. This, of course, is the conundrum in determining how wetlands should be managed. It has also proved to be a conundrum for the legal arrangements supporting such a management system.

The Ramsar Convention itself provides for the conservation of wetlands. Wetlands are defined as areas of marsh, fen, peatland or water. What is missing is any reference to either the ecosystems of the wetlands or the wider environment of which the wetlands are a part. The evolution of later international arrangements has addressed both of these issues by incorporating, in their specific areas, an ecosystem approach and an integrated approach to the management of wetlands more generally. In this context, integrated means that all relevant values relating to wetlands, including the values associated with their environment, including the cultural environment, are addressed together. As a result, the Ramsar Convention, in conjunction with the ongoing evolving sets of guidelines and practices, provides a framework for the management of wetlands directed intrinsically at their *conservation* or their *ecologically sustainable development*, in the context not only of the areas comprising of the wetlands but also of the wider and more extensive areas comprising their physical, biological, hydrological, and, no doubt, even cultural environment.

(d) Indirect wetlands management

In addition to the direct mechanism of wetlands management provided by the Ramsar Convention, other international convention regimes can influence the management of wetlands context. Three examples of such indirect mechanisms are discussed below.

(i) World natural heritage

The Convention for the Protection of the World Cultural and Natural Heritage 1972, ¹⁶ in its application to nature is designed to protect natural heritage of outstanding universal value.

For this purpose natural heritage includes natural features consisting of physical and biological formations or groups of such formations which are of outstanding universal value from the aesthetic or scientific point of view. It is the duty of individual states to identify and delineate the natural heritage that is situated on their territory, but it must satisfy the criteria stated in the Convention. It is also the duty of the state to provide an appropriate legal framework to support the identification, protection, conservation, preservation and rehabilitation of eligible natural heritage sites. This means that once an area that is a wetland has been formally included in the world heritage list, it must be protected not only by the Convention, but also by the legal arrangements for its protection (such as establishment of national parks) effective within the state responsible for it. This enables the eligible wetland *and its environment* to be protected accordingly.

(ii) Combatting desertification

According to the Convention to Combat Desertification 1994,¹⁷ combatting desertification involves preventing or reducing land degradation, rehabilitating degraded land, or reclaiming desertified land. Land degradation involves the reduction or loss of soil resulting from land uses or from a process or combination of processes, including those relating to human activities and habitation patterns and causing soil erosion, soil deterioration or loss of natural vegetation. This Convention has two related objectives:

- To combat desertification and mitigate the effects of drought
- To contribute to the achievement of sustainable development in affected areas.

In addition it indicates how this combined objective is to be achieved :

- The implementation of long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land and
- The rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level.

While the focus is clearly anthropocentric, ecological values are not only relevant but also important. The concepts of *land* and of *land degradation* are critical. A typical process of

land degradation associated with desertification is the problem of soil erosion, caused by wind, water, or by an interaction of the two, usually resulting in long-term loss of natural vegetation. In this context, *land* can include rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands. A crucial relationship is that between land and water: not dissimilar to the concepts underpinning the Ramsar Convention, and subject to similar interpretations of the concept of *wetlands* as they may be contained in any of the abovementioned land types.

(iii) International watercourses

There are two international agreements dealing with international watercourses that may have a bearing on wetlands conservation. The first is the United Nations Convention on the Protection and Use of Transboundary Watercourses and International Lakes 1992¹⁸ promoted by the United Nations Economic Commission for Europe. This Convention is designed to ensure that transboundary waters are used with the aim of ecologically sound and rational water management, conservation of water resources and environmental protection. It seeks to prevent, control and reduce any significant transboundary effect on the environment, resulting from a change in the conditions of transboundary waters caused by human activity.

The second is the United Nations Convention on the Law of the Non-navigational Uses of International Watercourses 1997¹⁹. It is concerned less with the prevention of significant adverse transboundary environmental impacts and more with the equitable and reasonable use of international watercourses. In addition, this Convention adopts - at least by implication - an ecosystem approach to the management of international watercourses. This will provide protection for wetlands in some areas. Watercourse states shall individually, and where appropriate, jointly protect and preserve the ecosystems of international watercourses. Accordingly, where an international watercourse flows through wetlands or is otherwise hydrologically connected with them, then the wetlands cannot be ignored in determining how the watercourse should be used in an equitable and reasonable manner.

The common element of these more specific objectives is conservation - conservation of water resources and conservation of ecosystems. The fundamental principle is in the form of the obligation imposed upon watercourse states to use an international watercourse within

their territory in *an equitable and reasonable manner*. While it is human use of water resources that lies at the foundation of the Convention, conservation and protection of the water resources and the ecological values associated with them are, in the application of the law, relevant and significant. The application of *equitable and reasonable* use can thus be applied to any wetlands as the basis of any regional arrangements. In states which are signatories to the Convention on Biological Diversity 1992, the application of the two Conventions together may lead to strengthened environmental protection.

4. Regional wetlands management

(a) Africa and South-East Asia

There are in place around the world a number of regional arrangements of relevance to wetlands management. Some have effect within a broader natural resources framework. One dating from 1968 is the African Convention on the Conservation of Nature and Natural Resources, while more recently, in 1985, the Association of South East Asian Nations [ASEAN] formalised an agreement on the Conservation of Nature and Natural Resources.

The fundamental principle stated in the African Convention on the Conservation of Nature and Natural Resources 1968²⁰ is in the form of *an obligation to adopt the measures necessary to ensure conservation, utilisation and development of soil, water, flora and faunal resources in accordance with scientific principles, and with due regard to the best interests of the people*. The meaning of natural resources reflects this. Natural resources relate to renewable resources – soil, water, flora and fauna. The Convention goes on to deal with each of these four natural resources in its own context. Obligations are imposed in relation to each of these natural resources, and in relation to water, the obligation is to establish policies for conservation, utilisation and development of underground and surface water. Complementary obligations relate to a sufficient and continuous supply of water suitable for the population, the control of all water use and the prevention and control of water pollution.

For flora, complementary obligations in this Convention relate to taking into account the relevant social and economic needs, the importance of vegetation cover for the maintenance of the water balance of an area, the productivity of soils and the habitat requirements of fauna. Particular attention is directed to land clearing for cultivation and over-grazing by domestic and wild animals. In relation to faunal resources, the obligation is to ensure conservation,

wise use and development of faunal resources and their environment. It is accordingly this integrated set of obligations and management mechanisms relating to soil, water, flora and fauna that is the particularly distinguishing feature of this set of legal arrangements which clearly can be applied to wetlands systems.

The ASEAN Agreement on the Conservation of Nature and Natural Resources 1985²¹ imposes obligations in relation to genetic diversity and to the conservation of natural, terrestrial, fresh water and coastal or marine habitats. In the context of wetlands, two of the most important obligations relate to soil and water. Each of these obligations acknowledges the role of soil and the role of water in the functioning of natural ecosystems. More specifically there is an obligation to take all necessary measures to control erosion, especially where erosion may affect coastal or fresh water ecosystems leading to siltation of downstream areas such as lakes or vulnerable ecosystems such as coral reefs, or damage critical habitats of endangered or endemic species.

In relation to water, the obligation is to take all appropriate measures towards the conservation of underground and surface water resources. The obligation to regulate and control water utilisation is designed to achieve sufficient and continuous supply of water for the maintenance of natural life-supporting systems and aquatic fauna, and flora. Although wetlands are not specifically mentioned in this Agreement, they clearly fall within the scope or ambit of these obligations.

(b) European Union

Since 2000, members of the European Union have been required to implement the *Directive Establishing a Framework for Community Action in the Field of Water Policy*,²² commonly known as the *Water Framework Directive*. Across the very diverse regions of Europe, common principles are needed in order to coordinate member states' efforts to improve the protection of community waters. There is an obligation on member states to put together a programme of measures to achieve the objectives of the Directive. In particular these measures relate to the quantity and quality of water, to promote sustainable water use, to contribute to the control of transboundary water problems, to protect aquatic ecosystems, terrestrial ecosystems and wetlands directly depending on them, and to safeguard and develop potential uses of community waters.

Through the mechanism of integrated water resource management, the Directive adopts a river-basin approach to the management of waters and this includes inland surface waters, transitional waters, coastal waters and groundwater. Transitional waters are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by fresh water flows.

According to the Directive, there is an obligation to establish registers of areas where surface water and groundwater require protection and where habitats and species directly depending on water require conservation. As a result, the sustainable management of surface and underground water resources and the improvement and restoration of aquatic and terrestrial ecosystems have become key objectives for the management of water resources. One of the main challenges is to achieve the level of water quality required to certify the achievement of a '*good ecological status*'.

(c) North America

The North American Wetlands Conservation Act 1989 enacted by the Congress of the United States notes the need for wetlands to be managed co-operatively by Mexico, Canada and the United States. The North American Wetlands Conservation Council was established for this purpose and one of its functions is to recommend wetlands conservation projects for approval and for the provision of funds in support of these projects. In common with similar legislation of the United States, a wetlands conservation project involves two elements:

- The acquisition of a real property interest in land or waters
- The restoration, management or enhancement of wetlands ecosystems and other habitat for migratory birds and other fish and wildlife species from an operational basis.

It is, accordingly, the wetlands and the values of wetlands in both human and ecological terms that are the focus of these arrangements. In this sense the uses of the areas in respect of which the states acquire the necessary interests in the land or waters are planned, and then managed operationally, to ensure that these objectives are achieved. This is not a regulatory

system in the sense that the state tells its citizens what to do or what not to do. Rather it is a system whereby the state plans and decides what to do and then does it itself.

(d) Southern African Development Community

The whole of the Southern African region is very arid and faces conditions of water stress. Rapidly growing populations are exacerbating these conditions, and in response, the Southern African Development Community adopted the Revised Protocol on Shared Watercourses 2000.²³ This Protocol assumes the form that has become typical of contemporary international resource agreements: an objective, a statement of general principles, a number of procedural obligations, a number of substantive obligations and a set of institutional arrangements. Once again, the aim associated with the achievement of the overall objective of the Protocol is to advance the sustainable, equitable and reasonable utilisation of the shared watercourses in the Southern African Development Community Region. The way in which these shared watercourses are to be used equitably and reasonably reflects almost exactly the rules contained in the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses 1997,²⁴ but in some respects, this Protocol provides more detail.

For example, one of its principles is that the state parties recognise that the unity and coherence of each shared watercourse. The fundamental idea of a unitary whole is confirmed by the definition attributed to the term 'watercourse' which is described in law as 'a system of surface and groundwaters consisting by virtue of their physical relationship a unitary whole normally flowing into a common terminus such as the sea, lake or aquifer'. This definition indicates that an ecosystems approach to the management of the watercourse as a whole is adopted, with the ultimate objective of sustainable development. The principles also recognise the range of purposes for which water resources may be used, including agricultural, domestic, industrial, navigational and environmental uses. An environmental use is the use of water for the preservation and maintenance of ecosystems.

The Protocol establishes a complex institutional framework for its implementation. This framework comprises four Southern African Development Community Water Sector Organs together with the range of appropriate institutions which each of the states has undertaken to establish within its jurisdiction. The four community organisations are these:

- The Committee of Water Ministers
- The Committee of Water Senior Officials
- The Water Sector Co-ordinating Unit
- The Water Resources Technical Committee and its Sub-Committees.

The Committee of Water Ministers, with technical and administrative advice from the supporting units, has overall and ultimate responsibility for the implementation of the Protocol. On an operational basis, this is implemented within the territorial boundaries of the states, so the specific operational activities able or required to be undertaken are determined by the laws of the states. There is thus a need for appropriate and effective institutions to be established. Legal arrangements within the states are expected to reflect those in the Protocol, but this can only be achieved through a process of harmonisation of laws. This is not always easy or even possible. The substantive obligations in the Protocol relate to the protection and preservation of the ecosystem of the shared watercourse, the aquatic environment, and estuaries.

The Revised Water Protocol on Shared Water Resources 2000 provides the basis for all river basin plans in Southern Africa. This includes a number of major, and strategically important, rivers such as the Zambezi and the Orange, and globally important sites of biological importance, such as the Okovango delta region, one of the largest wetlands on Earth. Some of these examples are discussed in more detail below, but it is worthy of note that in many instances, the values of wetlands are conserved incidentally for the purpose of protecting biological diversity and particular endangered species.

The protection of biological diversity is the more specific objective of the Protocol on Wildlife Conservation and Law Enforcement in the Southern African Development Community 1999.²⁵ While the Revised Protocol on Shared Watercourses 2000 provides the basis for protection of wetlands, the Protocol on Wildlife Conservation similarly facilitates the conservation of wetlands but the latter does so only through the conservation of wildlife, particularly in a transboundary context. The arrangements for the conservation of wildlife have been described in this way:

The 1999 Protocol ... obliges the Member States to establish management programs for the conservation and sustainable use of wildlife, integrate such programs into national development plans, and assess and control activities which may significantly

*affect the conservation and sustainable use of wildlife so as to avoid and minimise negative impacts.*²⁶

In particular it contemplates the development of transfrontier conservation and management programmes and this has involved the establishment of Transfrontier Conservation Areas. The following examples are sourced from the analysis referred in note 25.

The Kavango Zambezi Transfrontier Conservation Area is “situated in the river basins of the Okavango and Zambezi Rivers” and covers more than 28 million hectares. A variety of arrangements have been put in place for its management. Within the transfrontier area, there are “36 national parks, game reserves, community conservancies and game management areas, for each of which specific conservation requirements have been set in the national law.” While this means the conservation status may vary across the area, the common principles of ecological connectivity are being implemented on a very large scale. At this stage, it is too early to say how successful these initiatives have been, and it is important to recognise that these areas also coincide with geographical areas under significant pressure from human development. Another example of this kind of initiative being implemented in this region is the Ai-Ais/Richtersveld Transfrontier Park in South Africa and Namibia. This particular conservation area is “connected by the Orange River to the Orange River Mouth Ramsar site, a transboundary wetland designated by both countries under the Ramsar Convention.”

The Orange river is the major water supply system for the state of South Africa, providing as it does, water for Johannesburg, described as the engine of economic growth in Africa. This crucial river system is under immense pressure from agriculture, industry, and, particularly, urbanisation. The lower reaches, flowing through very arid zones and parts of the Namibian desert, are often stressed, both in terms of quantity and quality. Concern has been expressed whether the objectives of the Ramsar Convention can be achieved under these development pressures. In contrast, the upper reaches of the Orange River, or Senqu as it is known in Lesotho, contain very large areas of wetlands of great diversity of type. These support local livelihoods and deliver water to the Lesotho Highlands Water Scheme, where a large proportion of the river water is transferred, by mutual agreement of the states involved, to South Africa. Strategically, this is a vital way for South Africa, a very water stressed country, to gain some security of future water supplies. In Lesotho, this exchange is overseen by the Lesotho Highlands Development Authority. This institution has the duty of promoting

economic development, including the implementation of integrated water resource management within the basin. Work is currently ongoing to develop a system of payments for the ecosystem services generated by these wetlands. This has the potential to provide crucial funding to support ecologically sensitive economic development in these wetlands based upland areas.

5. River basin wetlands management

(a) Zambezi

The arrangements for managing the Zambezi river system set out in the Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System 1987²⁸ are detailed and therefore require the establishment of specific institutional structures to support their implementation. Structurally these arrangements comprise :

- The acquisition of information
- Its assessment and analysis
- Planning studies based on these
- The adoption of an action plan
- The implementation of the action plan through a series of projects.

Prior to the formulation of the action plan for this basin, a diagnostic study identifies a number of problems relating to the environmentally sound management of the river basin. These include soil erosion and inadequate soil and water conservation and flood plain management. These need to be addressed to avoid degradation of the natural resources base. The need for adequate and scientifically based information permeates the action plan for the Zambezi. The implementation mechanisms include environmental assessment, environmental management and environmental legislation. Interestingly the function of environmental assessment involves the gradual development and operation of a basin-wide unified monitoring system for water and water-related environment, covering water quantity and quality, pollution, siltation, water consumption, water supply and sanitation, hydroelectric power plants, major irrigation schemes, human health, forestry, soil conservation, desertification, and wildlife conservation.

One of the projects contemplated by the Agreement examines the issue of inter-basin transfer of water (including water demands for sustainable development) to locations outside the river basin, and the impact this will have on the Zambezi river system itself. The Agreement also creates details for supporting institutional and financial arrangements. The overall responsibility for the action plan lies with the Zambezi Inter-governmental Monitoring and Co-ordinating Committee. The Committee is supported by the Zambezi River Basin Coordination Unit whose function is to ensure from a technical perspective the harmonious, coordinated and integrated evolution of each of the components of the action plan. Many of these institutional arrangements from this Zambezi plan have become integral to the arrangements established for the Southern African Development Community as a whole.

(b) Okavango

The Okavango basin covers a wide area of southern Africa, stretching across Botswana, Namibia, and incorporating parts of the Kalahari. The Permanent Okavango River Basin Water Commission was established by the Agreement on the Established of a Permanent Okavango River Basin Commission 1994²⁹, which acknowledged the concepts of environmentally sound natural resource management, sustainable development and the equitable utilisation of shared watercourse systems. Although the function of the Commission is essentially advisory, its activities perhaps can be summarised as technical in the sense of undertaking the necessary scientific and economic investigations and analysis and political in the sense of formulating policy and measures for implementation of policy. The scope of its activities range from the prevention of water pollution and controlling invasive vegetation in the river basin, to the identification of criteria to be adopted in the conservation, equitable allocation and sustainable utilisation of water resources. The notion of sustainable development clearly underpins the approach to be taken by the Commission. While it is relatively easy to state objectives and principles, appropriate institutional arrangements are needed to make things happen, and efforts have been made to establish these to support the sustainable management of the Okavango basin.

(c) Amazon

The Amazon Declaration 1989³⁰ builds on the arrangements in the Treaty for Amazonian Cooperation 1978,³¹ but additionally acknowledges the common interest in achieving the sustainable development of the Amazon region. In addition, the rational use of its natural

resources is designed for the benefit of present and future generations. The Declaration recognises the three elements of sustainable development: cultural or social, economic and ecological. It clearly states:

“Conscious of the importance of protecting the cultural, economic and ecological heritage of our Amazon regions, and of the necessity of using this potential to promote the economic and social development of our peoples, we reiterate that our Amazon heritage must be preserved through the rational use of the resources of the region so that present and future generations may benefit from this legacy of nature”.

Once again, although wetlands are not specifically identified, they clearly come within the scope of this agreement. The Amazon region as a whole includes some very large areas of wetlands and flooded forests (*varzea*).

(d) Mekong

Similar to the arrangements for the Amazon region, the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin 1995³² is concerned essentially with the sustainable development, utilisation, management and conservation of the water and related resources of the Mekong river basin. One of the specific obligations is to protect the environment, natural resources, aquatic life and conditions and ecological balance of the basin from pollution or other harmful effects resulting from any development plans or uses of water and related resources in the basin. These arrangements are supported by the Mekong River Commission comprising a Council of Ministerial Representatives, a Joint Committee of Senior Departmental Officers and a Secretariat. Again, the three values comprising sustainable development – social, economic and ecological – are acknowledged and indirectly incorporated in the agreement, which encompasses the extensive wetland areas of many types found across the basin. In spite of this Agreement being in place, there is evidence that river degradation is occurring. The capacity of the Mekong River Commission to implement this Agreement is perhaps limited because China and Myanmar are not parties to the Agreement.

(e) Danube

A very interesting example from Europe is the Danube basin. As in many other cases, the Convention on Cooperation for the Protection and Sustainable Use of the Danube 1994³³ is

directed ultimately at the sustainable development and environmental protection of the Danube river. This is stated to encompass sustainable and equitable water management, conservation, improvement and rational use of surface water and groundwater. The wide-ranging nature of sustainable development and environmental protection defined in this way is complemented by the range of purposes to which the water resources may be put. In this transboundary agreement, each contracting party is required to establish, on the basis of a harmonised methodology, domestic water balances, as well as the general water balance of the Danube river basin. For this purpose, water balance is stated to mean this:

The relationship characterising the natural water household of an entire river basin as to its components (precipitation, evaporation, surface and underground run-off). In addition a component of current man-made effects originating from water use and influencing water quantity is included.

These detailed arrangements are implemented by the institutional structures created by the Convention including in particular the International Commission for Protection of the Danube River.

While the Convention includes wetlands within its scope, the arrangements in place for the management of the lower Danube river forms directly on wetlands. These take the form of a Declaration rather than an agreement: namely, the Declaration on the Cooperation for the Creation of a Lower Danube Green Corridor 2000³⁴. The Declaration thus informs how states are expected to behave rather than mandates how they must behave. The lower Danube river and its floodplains comprise wetlands that form ‘*a unique natural area, whose ecological, scenic and scientific significance is of international importance*’. The Declaration further recognises the importance of a healthy floodplain and wetlands, not only for the maintenance of water quality and environmental health in the Danube River and Black Sea, but also as a basis for creating economic development and local livelihoods.

There is little doubt that the ultimate objective of the Declaration of 2000 is the protection and restoration of the Danube flood plain and its wetlands. As the Declaration states, there are 773,166 hectares of existing protected areas, with a further 160,662 hectares of proposed new protected areas. In addition, there are 223,608 hectares which have been proposed for restoration to the status of natural floodplain. The Declaration includes the expectation that

the four states will take “*concerted action to create a Lower Danube Green Corridor that will expand the cooperation, coordination and consultation between the Republic of Bulgaria, the Republic of Moldova, Romania and Ukraine aiming at Danube River floodplain and wetland protection and restoration*”. According to one group of commentators these arrangements so far have been successful. Namely “by early 2008 the goal of one million hectares of protected wetlands was achieved and more than 50,000 hectares had been restored (roughly one quarter of the goal).”³⁵

(f) Conclusion

This example of the Danube is an interesting one. In particular, it demonstrates that much can be achieved, even in a framework of expectations, rather than in one of legally binding obligations. It can be argued, however, that this approach is only likely to be successful, where local populations place a high value on the retention of wetlands and their ecosystem services. It is interesting to note that there are many initiatives across the Danube basin, where wetlands, meanders and other hydrological features are being re-established as part of the arrangements required by the Water Framework Directive of the European Union already discussed. It is also notable that the implementation of integrated water resource management part of that framework has acknowledged the concept of ‘*room for the river*’, as part of national and international flood prevention strategies. Such a policy protects and even promotes wetlands and floodplains, as an important part of ‘soft infrastructure’ which can provide absorption capacities in the event of high river flows. This is a recurrent problem in many large European rivers which have seen many large flood events over the last ten years.

6. National wetlands management

In addition to the international arrangements relating to wetlands conservation, national laws within each state have a role to play. There are many similarities among states in terms of how their environmental laws have evolved and what issues are considered important. In this section, we consider national legislation which has the potential to impact on wetlands.

(a) South Africa

The Constitution of South Africa states rather than merely implies an environmental right. According to the Constitution, everyone has the right to an environment that is not harmful to their health or wellbeing and the right to have the environment protected. It contemplates

measures to prevent pollution and ecological degradation, to promote conservation, and to secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development. The attitude of the courts in South Africa is clear :

Pure economic principles will no longer determine, in an unbridled fashion, whether a development is acceptable. Development, which may be regarded as economically and financially sound, will, in future, be balanced by its environmental impact, taking coherent cognisance of the principle of intergenerational equity and sustainable use of resources in order to arrive at an integrated management of the environment, sustainable development and socio-economic concerns. By elevating the environment to a fundamental justiciable human right, South Africa has irreversibly embarked on a road which will lead to the goal of attaining a protected environment by an integrated approach, which takes into consideration, *inter alia* social-economic concerns and principles.³⁶

What has emerged in South Africa is a protectable environmental right in the context of the achievement of sustainable development. This is one of the reasons why the legal arrangements in South Africa are considered to be well advanced and why specific protection of wetlands is given a place of importance in national environmental policy.

(b) India

India similarly provides interesting insights into ways wetlands can be managed within a national legal system. As in South Africa, the apex of the national legal system is the Constitution, and a number of judicial decisions on the environment have found inspiration in the Constitution. The Constitution of India enables any person to go to the Supreme Court of India to seek a remedy for an infringement of the fundamental rights set out in the Constitution. While there is no right as such in relation to the environment, one of the directive principles of state policy requires the state to endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country. Consistently, there is a fundamental duty imposed upon every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife. The Supreme Court of India has on a number of

occasions reacted positively to these arrangements. In a decision concerning sources of water and the need for their conservation, the Supreme Court relied not only upon the provisions of the Constitution, but also upon the responsibility acknowledged by international law to protect the environment and upon the principle of sustainable development recognised by international law. The Supreme Court acknowledged, in this case, “the need for environmental protection and conservation of national resources” and concluded:

*The environmental protection and conservation of natural resources has been given a status of a fundamental right and brought under Article 21 of the Constitution of India.*³⁷

While the acknowledgement of such a fundamental right is not unique to India, it is by no means common practice. The acknowledgement of the existence of this fundamental right by the Supreme Court of India has influenced the way in which the judiciary in India has responded to environmental issues.

(c) China

Water resources in China are managed in accordance with three separate laws: the law on water and soil conservation, the law on prevention and control of water pollution, and the water law.³⁸ Each of these three laws, separately but together, move in the direction of sustainable development. Although much of the responsibility for achieving these objectives rests with a range of government agencies, a number of duties are imposed upon units of production and individuals in ways that are potentially enforceable – usually through administrative or criminal sanctions

According to the water law, water resources in China are owned by the state. Accordingly, the law itself states:

This law is enacted for the purposes of rationally developing, utilising, conserving and protecting water resources, preventing and controlling water disasters, bringing about sustainable utilisation of water resources and meeting the need of national economic and social development.

The focus of the law on prevention and control of water pollution is pollution. This law is enacted for the purposes of preventing and controlling water pollution, protecting and improving the environment, safeguarding human health, and ensuring the effective utilisation of water resources.

In relation to Chinese wetlands however, it is the law on water and soil conservation that is perhaps the most relevant, by protecting water and soil resources and by controlling and preventing soil erosion. The juxtaposition of water and soil resources in this law is significant in the wetlands context, and the relationship between water and soil conservation is important in the wider framework of sustainable development. In appropriate circumstances, a wetland may fall within the scope of this law, just as it may fall within the scope of the laws on prevention and control of water pollution and water.

7. Wetlands management and the judiciary

(a) New Zealand

The complexity of wetlands management from the legal perspective is well illustrated by a case from New Zealand.³⁹ This demonstrates how wetlands can be legally protected through ‘indirect legislation’. In 1985 the Court of Appeal of New Zealand was faced with a proposal to drain about 172 hectares of the Whangamarino Swamp to enable the drained land to be used for grazing purposes. At that time, the area of undeveloped wetlands within the swamp was between 7,000 and 7,700 hectares. The application was to dam and divert a stream by stop banks and channels under the Water and Soil Conservation Act 1967 (New Zealand). The Court of Appeal was concerned with the methodology of decision-making rather than with the merits of the decision.

The notion of water as a national asset played an important part in the judgement, along with the importance of conservation and wise use as essential elements of the legislation. While farmers have the ordinary rights of landowners to use their land in its natural state, the effect of the 1967 Act was that they have no right to divert the natural water that is on the land. The Court of Appeal affirmed very clearly that the legislation did not provide “for the perpetual preservation of wetlands or ecosystems”. However, “a real degree of protection” could “be granted to wetlands or ecosystems in deciding water right applications”⁴⁰ through the implementation of the 1967 Act.

(b) West Bengal

In India, all of the values, including economic values, of wetland benefits have played an important role in the decision to support wetlands conservation. Since 1992 the High Court of West Bengal has been invited on a number of occasions to protect the East Kolkata Wetlands – a large area lying east of the city of Calcutta now called Kolkata. In one case⁴¹ the court reviewed the extensive range of functions performed by these wetlands – for the benefit both of nature and of humans – before identifying the issue for the court. The court noted that India was a party to the Ramsar Convention and accordingly was “obliged to promote the conservation of wetlands habitat in her territory”⁴². As a result, the court concluded that:

“Wetland acts as a benefactor to the society and there cannot be any manner of doubt in regard thereto and as such encroachment thereof would be detrimental to the society which the Law Courts cannot permit. This benefit to society cannot be weighed on mathematical nicety... and it cannot be measured”.⁴³

The resulting order of the court was an injunction restraining any further reclamation of the wetlands. It is interesting to note that in this case the deciding factor seemed to be based on the anthropocentric view associated with the economic benefits accruing from the wetlands. There is no doubt that anthropocentric perspectives often take precedence. But this example illustrates how even this approach can have a positive impact on wetlands conservation.

(c) European Union

As we have seen, the Water Framework Directive does not deal directly with wetlands. Nor does the Directive on the Conservation of Wild Birds 1979.⁴⁴ However, wetlands that are the habitat of protected birds are capable of protection under this Directive. There is an obligation to take measures to maintain the population of protected species (for example, by establishing special protection areas) and to take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds, in so far as these disturbances would be significant having regard to the objectives of the Directive. This applies to the species requiring special conservation measures as it does to other species.

In the context of wetlands, these issues have been addressed on four occasions by the Court of Justice of the European Communities. In one case Germany was proposing to reduce the area of a special protection area.⁴⁵ In the second case it was alleged that Spain had failed to classify an area as a special protection area in breach of its obligation to do so.⁴⁶ In the third, the United Kingdom proposed to exclude an area suitable for development for economic

reasons from the adjacent area proposed as a special protection area.⁴⁷ In the fourth, it was alleged that France had not classified, as a special protection area, an area large enough to satisfy its obligations.⁴⁸ The issue confronting the court in these cases was essentially the methodology required to be adopted by the member state in question in determining whether and how it should discharge its obligations under the Directive. In particular, the issue was whether the scope of decision-making included economic considerations as well as ecological considerations. The answer depended upon the structure of the Directive, the relationship between its various provisions, and how these related to the site specific locations under consideration. Priority was given to the “ecological imperative” underlying the Directive.

8. Conclusion

This paper has provided a global overview of the responses of the international community and of nation states to the challenges of wetlands management and how they may be protected and conserved within the law. The examples are far from exhaustive. But they provide a cross section of perspectives on how different approaches to wetlands protection can be put in place. They also demonstrate the complexities of the issues in question, while at the same time highlighting the need for sound science to support meaningful policy and legislation.

The international and national legal arrangements for managing natural resources and their environment (including wetlands) have increasingly moved in the direction of their sustainable development. However, these arrangements are neither consistent nor coherent across the various natural resources. Significantly, the move towards sustainable development has incorporated increasingly an ecosystems approach to the management of water resources in the wider context of a river basin or watershed focus. One of the features of these evolving arrangements is the importance of appropriate institutional arrangements, including legal arrangements. There is a need for a greater harmonisation of national legal arrangements in accordance with the emerging principles of international law, although this is neither easy nor practicable. The nature of international law predicates that it is to a large extent based upon principles and strategies together with sets of obligations cast in relatively general terms. These arrangements inform the normative structure of national legal arrangements. It is the effectiveness of these legal arrangements at national and indeed local levels that determines the adequacy of the system as a whole, and the degree to which society can be successful in protecting wetlands for future generations.

References

- 1 East Kolkata Wetlands (Conservation and Management) Act 2006, s2(d) and (k).
- 2 United States v Larkins (1987) 657 Federal Supplement 76 at 80.
- 3 National Wildlife Federation v Hanson (1985) 623 Federal Supplement 1539
- 4 For a detailed review of these legal arrangements see Fisher, D.E.,
“Managing wetlands sustainably as ecosystems : the contribution of the law” (2010)
(in preparation).
- 5 Examples from the United States have not been included because they have been
widely discussed elsewhere.
- 6 (1972) 11 International Legal Materials 1416.
- 7 (1983) 22 International Legal Materials 455.
- 8 (1992) 31 International Legal Materials 874.
- 9 (1972) 11 International Legal Materials 963.
- 10 (1992) 31 International Legal Materials 818.
- 11 (1973) 12 International Legal Materials 1055
- 12 (1972) 11 International Legal Materials 963.
- 13 Farrier, D and Tucker, L. “Wise use of wetlands under the Ramsar Convention:
a challenge for meaningful implementation of international law” (2000) 12 Journal of
Environmental Law 21 at 25
- 14 Ibid at 24
- 15 Ibid at 30
- 16 (1972) 11 International Legal Materials 1358
- 17 (1994) 33 International Legal Materials 1328
- 18 (1992) 31 International Legal Materials 1312
- 19 (1998) 36 International Legal Materials 700
- 20 (1976) 1001 United Nations Treaty Series 3

- 21 See Koh, KL (ed), Selected ASEAN Documents on the Environment (1996, National University of Singapore, Singapore) at 28 to 47.
- 22 Official Journal of the European Communities Number L327 of 22.12.2000
- 23 (2001) 40 International Legal Materials 321
- 24 See Note 19
- 25 See Erens, S, Verschuuren J. and Bastmeijer K, “Adaptation to climate change to save biodiversity : Lessons learned from Africa and European experiences” in Richardson B, Le Boutillier, Y. McLeod-Kilmurray H. and Wood S. (eds), Climate Law and Developing Countries : Legal and Policy Challenges for the World Economy (2009, Edward Elgar Publishers, Cheltenham), at 221 to 224.

- 26 Ibid, at 222
- 27 Ibid, at 222
- 28 (1988) International Legal Materials 1109. The agreement is between Botswana, Mozambique, Tanzania, Zambia and Zimbabwe.
- 29 (1997) Treaties Concerning the Non-navigational Uses of International Watercourses Africa (1997, Food and Agriculture Organisation, Rome), at 142 to 145. The agreement is between Angola, Botswana and Namibia.
- 30 (1989) 29 International Legal Materials 1303.
- 31 (1978) 17 International Legal Materials 1045. The parties are Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam and Venezuela.
- 32 (1995) 34 International Legal Materials 864. The parties are Cambodia, Laos, Thailand and Vietnam.
- 33 (1994) 5 Yearbook of International Law, doc 5
- 34 <http://www.internationalwaterlaw.org/documents/regionaldocs/lower-danube-green-corridor.html> The parties are Bulgaria, Moldova, Romania and Ukraine.
- 35 See Erens, S. Verschuuren J. and Bastmeijer, K. “ Adaptation to climate change to save biodiversity : lessons learned from Africa and European experiences “in Richardson, B.

Le Bouthillier, Y. McLeod-Kilmurray J. and Wood S. (eds) Climate Law and Developing Countries : Legal and Policy challenges for the world economy, (2009, Edward Elgar Publishers, Cheltenham), at 220

36 See Kotze L and Paterson A, “South Africa” in Kotze and Paterson (eds), The role of the judiciary in environmental governance (2008, Kluwer Law International, London) at 574 and 575

37 Intellectual forums Tirupathi v State of Andhra Pradesh (2006) 2 Supreme Court Journal 293, at 322.

38 See Law of the People’s Republic of China on Water and Soil Conservation, Law of the People’s Republic of China on Prevention and control of Water Pollution and Water Law of the People’s Republic of China (2004, Law Press China, Beijing).

39 Auckland Acclimitisation Society v Commissioner of Crown Lands (1985) 11 New Zealand Town Planning Appeals 33.

40 Ibid, at 36

41 People United for Better Living in Calcutta v State of West Bengal (1992) All India Reports 1993 Calcutta 215

42 Ibid, at para 20

43 Ibid, at para 40

44 Official Journal of the European Communities Number L 103 of 25.4.79

- 45 Commission v Germany [1991] European Court Reports I - 883
- 46 Commission v Spain [1993] European Court Reports I – 4221
- 47 R v Secretary of State, ex parte Royal Society for the Protection of Birds [1997]
Queens Bench Reports 206
- 48 Commission v France [1999] 2 Common Market Law Reports 723