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**THE ECOSYSTEM APPROACH: A COMPARISON OF
THE CAPACITY TO PROTECT ECOSYSTEMS UNDER
THE UNECE AND UN WATERCOURSE CONVENTIONS.**

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Abstract

The ecosystem approach is a vital tool to the protection of freshwater ecosystems and the variety of ecosystem services they provide. This paper examines the ecosystem approach under the law of freshwater resources. It discusses the implementation in the context of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes and the UN Convention on the Law of Non-Navigational Uses of International Watercourses. The principles of equitable and reasonable utilisation, sustainable development, intergenerational equity, and the precautionary principle, all inform the ecosystem approach and contribute to the protection of ecosystems under these conventions. While the UNECE Convention includes a greater variety of specific provisions for the protection of ecosystems the UN Convention still takes an ecosystem approach to the management of freshwater. The treaties can co-exist and supplement one another, as the UNECE Convention offers clarification to the interpretation of the broad obligations contained in the UN equivalent.

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I Introduction

Humans are ultimately dependent on ecosystems for their survival.¹ Bodies of freshwater and their surrounding ecosystems are vital to the maintenance of water and air quality, enabling the production of food, navigation, and other essential services.² With 55% of global GDP dependent on biodiversity and ecosystem services functioning at a high level, ecosystem loss will have a severe impact the world economy.³ Ecosystems are in turn dependent on freshwater quality for their continued health and existence. Freshwater has a cause and effect relationship with the organisms in its corresponding ecosystems and as a result, treaties should include ecological measures to reflect the interconnected nature of freshwater and ecological resources.⁴

Despite their essential nature our ecosystems are under imminent threat of collapse. A recent study by Swiss Re found that one fifth of the world's ecosystems are in danger of an ecological disaster.⁵ Due to the combined impacts of climate change, pollution, and mismanagement of natural resources freshwater ecosystems are now threatened by a severe loss of biodiversity.

Pollution of river basins could cause them to become uninhabitable by fish or other animal species. If these species die due to habitat loss other plants and animals that are dependent upon them for survival will also be impacted. In this way, the loss of just one species can upset the balance of the entire ecosystem. Such a chain of events could be triggered by anything from the effects of climate change, to deforestation, to chemical pollutants.⁶ This will not only impact on other neighbouring ecosystems but will also have flow on effects on the health and wellbeing of people around the globe.⁷

¹ Eric Bilber "Climate Change and Backlash" (2009) 17(3) N.Y.U. Envtl L.J. 1295 at 1297.

² Lee P. Breckenridge "Special Challenges of Transboundary Coordination in Restoring Freshwater Ecosystems" (2006) 19(1) Pacific McGeorge Global Bus. & Dev. L.J. 13 at 28.

³ Swiss Re Group "A fifth of countries worldwide at risk from ecosystem collapse as biodiversity declines, reveals pioneering Swiss Re index" (3 September 2020) [swissre.com <https://www.swissre.com/media/news-releases/nr-20200923-biodiversity-and-ecosystems-services.html>](https://www.swissre.com/media/news-releases/nr-20200923-biodiversity-and-ecosystems-services.html).

⁴ Mete Erdem "Ecosystem Approach to Environmental Protection in the Law of International Watercourses" (2013) 15(Special Edition) Dokuz Eylul Universitesi Hukuk Fakultesi Dergisi 1359 at 1359.

⁵ Swiss Re Group, above n 3.

⁶ Bilber, above n 1, at 1304.

⁷ The United Nations "United Nations Summit on Biodiversity" (30 September 2020) [un.org <https://www.un.org/pga/75/united-nations-summit-on>](https://www.un.org/pga/75/united-nations-summit-on)

Freshwater ecosystems are on the brink of reaching a critical tipping point from which they will be unable to recover.⁸ In order to counteract this, freshwater treaties should take an ecosystem based approach that treats freshwater and the ecosystems surrounding it as part of a cohesive unit. Such an approach would recognize that an impact on the quality of the water will affect the state of the ecosystem and vice versa.⁹

The development of an ecosystem based approach to freshwater management over the last 40 years has resulted in a trend of freshwater treaties requiring states to manage ecosystems on an ecological rather than economic basis.¹⁰ However, the ways in which this approach has been implemented are varied in scope and ambition, and there is still room for improvement.

This paper will examine the ecosystem approach and the principles and mechanisms that may be used to implement it. It will then analyse the elements, strengths, and weaknesses of the extent to which the ecosystem approach has been applied by the United Nations Economic Commission for Europe Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Watercourse Convention), and the United Nations Convention on the Law of Non-Navigational Uses of International Watercourses (UN Watercourse Convention). It will examine how these treaties could improve the implementation of the ecosystem approach through comparison to each other and other international environmental law treaties that have implemented the ecosystem approach. This paper will draw on the Great Lakes Water Quality Agreement (GLWQA) as an example of comprehensive incorporation of the ecosystem approach.¹¹

This paper will also draw on the implementation of the ecosystem approach under wider international environmental law. The United Nations Convention on Biological Diversity

[biodiversity/#:~:text=The%20United%20Nations%20Summit%20on,with%20and%20depend%20on%20bi](#)
[odiversity.>.](#)

⁸ Swiss Re Group, above n 3.

⁹ Michelle Lim “Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity Through Consistency in Law” (2017) 6(1) TEL 180 at 180.

¹⁰ Owen McIntyre “The Emergence of an Ecosystem Approach to the Protection of International Watercourses under International Law” (2004) 13(1) Rev. Eur. Comp. Int’l Env’tl. L. 1 at 2.

¹¹ Savitiri Jetoo & Gail Krantzberg “The Great Lakes Water Quality Protocol 2012: A Focus on the Effectiveness of the International Joint Commission” (2014) 11(2) The International Journal of Sustainability in Economic, Social, and Cultural Context, 1 at 9.

(CBD),¹² and the Convention on Wetlands of International Importance (Ramsar Convention) have both been driving forces in the development of the ecosystem approach.¹³ Comparison to these treaties will illustrate strengths and weakness in the implementation of the ecosystem approach under the UNECE Watercourse Convention and the UN Water Convention.

While both conventions implement components of the ecosystem approach into their text, the UNECE Convention incorporates a wider variety of specific provisions for the protection of ecosystems. However, this does not mean the approach of the UN Convention is weak, as the approaches of each convention ultimately complements and informs the implementation of the other.¹⁴

II The Ecosystem Approach

The term ecosystem refers to a complex integrated ecological unit that is comprised of both biological and non-living components each functioning as a part of the system as a whole.¹⁵ All the individual biological and non-living components are co-dependent on one another to an extent and exist in a fragile state of equilibrium. As ecosystems are such a fragile structure of chemical and physical interactions any disruption to this balance can have flow on effects for the entire ecosystem. Therefore, freshwater law should endeavour to promote ecosystem stability if it is to combat the imminent threat of ecological collapse.¹⁶

The ecosystem approach recognises that the current human uses of freshwater are an unsustainable drain on our freshwater ecosystems.¹⁷ It is a broad approach to freshwater management that treats watercourses as holistic units including both the watercourse

¹² Jutta Brunnee & Stephen J. Toope “Environmental Security and Freshwater Resources: Ecosystem Regime Building” (1997) 91(1) Am. J. Int’l L. 26 at 52-55.

¹³ Owen McIntyre “The protection of Freshwater Ecosystems Revisited: Towards a Common Understanding of the ‘Ecosystems approach’ to the protection of Transboundary Water Resources” (2014) 23(1) Rev. Eur. Comp. & Int’l Env’tl. L. 88 at 90.

¹⁴ Attila Tanzi “Regional Integration and the Protection of the Environment: The UN/ECE Process on Water Law” (2000) 10 Italian Y.B. Int’l L. 71 at 106.

¹⁵ Erdem, above n 4, at 1360.

¹⁶ At 1361.

¹⁷ At 1363.

itself and the surrounding ecosystem. The aim of the approach is to incorporate ecological concerns into the realm of freshwater law.¹⁸

The ecosystem approach requires states to implement freshwater management systems that are broad in scope both in the sense that they encompass large areas of ecologically connected land and water but also in that they recognise the need to maintain “ecosystem integrity”. This means the ecosystem’s ability to regulate itself should be respected and maintained throughout freshwater law.¹⁹

The ecosystem approach also recognises the need for and value of input from an ecosystem’s indigenous communities in decision making processes. It seeks to rebuild and implement traditional approaches to ecosystem management.²⁰

A Sources of the Ecosystem Approach

While there is some uncertainty as to the precise legal or normative content of the ecosystem approach,²¹ it is still evolving, and some aspects of the approach are becoming more well defined.²²

The international law on biodiversity has developed an ecosystem approach which can also be applied to the regulation of freshwater. The CBD is an example of a biodiversity law instrument that includes a strong ecosystem based approach and has progressed the development of the ecosystem approach in the wider international environmental law context including freshwater law.²³ The CBD’s ecosystem approach requires states to prioritise conservation, while aiming to ensure the ongoing functionality of ecosystems. It requires sustainable use and that states take into account the limits of their ecosystems.²⁴

¹⁸ At 1359-1360.

¹⁹ McIntyre “The Emergence of an Ecosystem Approach to the Protection of International Watercourses under International Law”, above n 10, at 1.

²⁰ Ruby Moynihan “Inland Water Biodiversity: International Law on Protection of Transboundary Freshwater Ecosystems and Biodiversity” Michael Faure (ed) *Elgar Encyclopaedia of Environmental Law* (Edward Elgar Publishing, published online, 2016) 189 at 198.

²¹ Lim “Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity Through Consistency in Law”, above n 9, at 180.

²² Moynihan, above n 20, at 198.

²³ At 198.

²⁴ At 198.

The Ramsar Convention is another example of an international environmental treaty that takes an ecosystem approach. The Treaty focuses on the preservation of globally significant transboundary wetlands;²⁵ Specifically 'fundamental ecological functions of wetlands as regulators of water regimes and as habitats supporting a characteristic flora and fauna, especially waterfowl.'²⁶

While neither of these instruments falls directly within the realm of freshwater law, they have been highly influential in the evolution of the wider ecosystem approach. These instruments inform and overlap with how the ecosystem approach should be applied under more specific freshwater agreements.²⁷

The primary freshwater law instruments in which the ecosystem approach can be found are the UNECE Watercourse Convention and The UN Watercourse Convention. The UNECE Watercourse Convention takes a strong and well fleshed out approach to freshwater ecology.²⁸ Article 2 requires the parties to ensure the conservation and, where necessary, the restoration of ecosystems.²⁹ The UN Watercourse Convention incorporates a strong, if more vague, ecosystem approach.³⁰ Article 20 of the UN Watercourse Convention states that parties shall 'individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses.'³¹

Collectively these treaties have advanced the ecosystem approach in both the international and national spheres in a way that promotes the protection of transboundary

²⁵ At 196.

²⁶ Convention on Wetlands of International Importance Especially as Waterfowl Habitat 996 UNTS 245 (opened for signature 2 February 1971, entered into force 21 December 1975), preamble.

²⁷ McIntyre "The protection of Freshwater Ecosystems Revisited: Towards a Common Understanding of the 'Ecosystems approach' to the protection of Transboundary Water Resources", above n 13, at 89.

²⁸ Theodore Okonkwo "A Glimpse into International Regimes Governing the use of Transboundary Freshwater Resources" (2016) 52 J. L. Pol'y & Globalisation 10 at 15.

²⁹ United Nations Economic Commission for Europe Convention on the Protection and Use of Transboundary Watercourses and International Lakes 1936 UNTS 269 (opened for signature 18 March 1992, entered into force 6 October 1996), art 2.

³⁰ Okonkwo, above n 28, at 13.

³¹ United Nations Convention on the Law of Non-Navigational uses of International Watercourses 2999 UNTS A/51/869 (opened for signature 21 May 1997, entered into force 17 August 2014), art 20.

freshwater ecosystems and fosters a continuing trend toward further strengthening of the ecosystem approach.³²

Further guidance on the normative content and obligations under the ecosystem approach can be found in the variety of materials published by joint bodies and organisations established under these conventions. For example, the Ramsar Convention's Scientific and Technical Review Panel has published a variety of handbooks offering technical guidance to inform the obligations of parties under the Convention.³³ Handbook 10 contains guidance relating to water allocation and management. While Handbook 8 offers broader water related guidance and Handbook 9 relates to river basin management.

B Principles of Freshwater Law and the Ecosystem Approach

Alongside the various specific references they make to protecting and restoring ecosystems, freshwater treaties include a variety of principles that are useful in implementing and supporting the ecosystem approach.³⁴ Although it is unclear if these principles fall within the ecosystem approach itself, they have been described by McIntyre as being an:³⁵

... accumulated legal expression of environmental protection concerns by the international community, they indicate the issues which are likely to be identified and articulated as central in the environmental protection of international rivers.

Although these principles are somewhat declaratory in nature, they nevertheless inform the interpretation of freshwater law instruments, and by extent, the ecosystem approach those instruments contain.³⁶

The principles of equitable and reasonable utilisation, sustainable development, intergenerational equity, and the precautionary principle, all inform the ecosystem approach.³⁷ While it is unclear if they are truly part of the approach these principles are

³² McIntyre "The protection of Freshwater Ecosystems Revisited: Towards a Common Understanding of the 'Ecosystems approach' to the protection of Transboundary Water Resources", above n 13, at 89.

³³ Moynihan, above n 20, at 197.

³⁴ Brunnee & Toope, above n 12, at 42-43.

³⁵ Owen McIntyre "International Water Resources Law" (2008) 38(3) *Envtl. Pol'y. & L.* 131 at 131.

³⁶ At 131.

³⁷ Brunnee & Toope, above n 12, at 28.

ecosystem oriented and can assist to impose limits on a state's ability to harm or exploit its ecosystem.³⁸ This paper will discuss treaty implementation of these principles in the context of their contribution to the overall ability of the treaty in question to protect and replenish ecosystems.

Equitable and reasonable utilisation requires a holistic approach that focuses on both the protection and allocation of water.³⁹ Not only does this principle require that states utilise and allocate transboundary water in a way that is fair within the specific context of their riparian ecosystems, it also requires that the uses are reasonable and proportionate taking into account potential ecological harms. In an ecosystem context this could conceivably mean the allocation or use of water in a way that is not reasonably likely to harm ecosystems. For example, under this principle, states undertaking new uses of freshwater must prove that the use is a reasonable and equitable one that is not likely to cause transboundary harm. The fulfilment of obligations under this principle is an ongoing process that balances the competing interests of riparian states. This principle prohibits harm above a certain contextual threshold due to changing water levels, quality, or pollution.⁴⁰ Given the fragile nature of many freshwater ecosystems, states should be expected to utilise their freshwater resources in a way that will not harm transboundary ecosystems.

The development of an ecosystem approach can be guided by treaty implementation of the precautionary principle.⁴¹ The role of this principle is to help determine due diligence requirements for states in their duty to prevent significant transboundary harm.⁴² Where the available information indicates, or is uncertain, as to the potential for significant transboundary harm, this principle requires that states take action to pre-emptively protect freshwater environments from transboundary harm, especially where the impacts are unknown.⁴³ The precautionary principle is based upon two premises. Firstly ecosystems, especially freshwater ecosystems, are highly susceptible to the negative impacts of human activity, which can easily disrupt critical ecosystem balances. Secondly, current

³⁸ At 29.

³⁹ Rene Lefeber "The Law of International Watercourses, Non-Navigational Uses; The United Nations Convention on the Law of International Watercourses, a Framework for Sharing" (2004) 17(1) LJIL 218 at 223.

⁴⁰ At 224.

⁴¹ Brunnee & Toope, above n 12, at 42.

⁴² McIntyre "International Water Resources Law" above n 35, at 133.

⁴³ Arie Trouwborst "The Precautionary Principle and the Ecosystem Approach in International Law: Differences Similarities and Linkages" (2009) 18(1) Rev. Eur. Comp. & Int'l Envtl. L. 26 at 27.

scientific understanding about human impacts on ecosystems is extremely limited and the full extent of an impact can be nearly impossible to predict.⁴⁴ As a result, a precautionary approach should be taken to freshwater ecosystems to minimise unintended and unpredictable harms.

The principle of intergenerational equity rests upon the premise that each generation has an equal right to the Earth and its natural environment. Therefore, natural and freshwater resources must be used in such a way as to ensure the Earth can be passed on to the next generation in as good a condition as it was when the previous generation received it.⁴⁵ As ecosystems are essential for the continued health of the Earth and its biodiversity, the principle of intergenerational equity indirectly requires that states manage ecosystems in such a way as to ensure they do not degrade to the point they will become unusable for future generations.⁴⁶

In order to manage ecosystems in a holistic manner that recognises their interconnected nature it is important to ensure freshwater resources are managed and allocated in an equitable and sustainable way.⁴⁷ The concept of sustainable development is similar to that of intergenerational equity. The World Commission on Environment and Development defined sustainable development as ‘Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.’⁴⁸ In order to be sustainable, states must recognise that development is limited by the capacity of our ecosystems to cope with the current levels of human exploitation. Development must therefore be pursued in a way that does not compromise the stability of ecosystems or their ability to self-regulate.⁴⁹

⁴⁴ At 27.

⁴⁵ Edith Brown Weiss “Climate Change, Intergenerational Equity, and International law” (2009) 9(3) *Vt. J. Envtl. L.* 615 at 616.

⁴⁶ Brunnee & Toope, above n 12, at 50.

⁴⁷ Brels, S., Coates, D., and Loures, F. (2008). *Transboundary water resources management: the role of international watercourse agreements in implementation of the CBD*. CBD Technical Series no. 40, Secretariat of the Convention on Biological Diversity, Montreal, Canada, at 5.

⁴⁸ *Report of the World Commission on Environment and Development* annexed to UN Doc A/42/427 (2 August 1987) Ch 2 part IV.

⁴⁹ At chapters 1-2.

C Transboundary Environmental Impact Assessment

Transboundary environmental impact assessments (TEIAs) are reports on the likely or possible transboundary environmental impacts of an activity.⁵⁰ The ‘source state’ or state from which the potential impact originates should carry out the assessment and distribute the results to the relevant stakeholders. This includes states as well as individuals or non-state actors that may be impacted by the potential harm.⁵¹ The precise process of TEIAs is complex and unsettled.⁵² However, they include elements of consultation and public participation, research and information sharing, along with administrative and institutional coordination.⁵³

In the *Pulp Mills* case the International Court of Justice (ICJ) found that if a state had not carried out an environmental impact assessment where there is a significant risk of transboundary harm, they would have failed to meet their due diligence obligations.⁵⁴ Under an ecosystem approach treaties and states should require TEIAs to be carried out for all proposed uses of freshwater that have the potential to cause significant harm to transboundary freshwater ecosystems. Because human understanding of ecosystem interaction is incomplete, the fact that TEIAs require states to take preventative action in the absence of concrete scientific evidence is particularly effective in the implementation of an ecosystem approach.⁵⁵

D Ecosystem Services

Closely related to the ecosystem approach is the concept of ecosystem services. This refers to the range of resources and services that are provided by ecosystems and the economic benefit they provide.⁵⁶ Ecosystem services provide a variety of commodities such as food, water and wood. In addition, they provide flood control, as well as

⁵⁰ Angela Z. Cassar & Carl E. Bruch “Transboundary Environmental Impact Assessment in International watercourse Management” (2003) 12(1) NYU Env'tl LJ 169 at 173.

⁵¹ At 178.

⁵² At 179.

⁵³ At 179.

⁵⁴ *Case Concerning Pulp Mills and the River Uruguay* (Argentina v Uruguay) (Judgement) [2010] ICJ Rep 14 para 82-83.

⁵⁵ Stephen McCaffrey *The Law of International Watercourses* (3rd ed, Oxford University Press, Oxford, 2019) at 513.

⁵⁶ J. B. Ruhl “In Defence of Ecosystem Services” (2015) 32(1) Pace Env'tl J. Rev. 306 at 307.

educational and recreational benefits. Ecosystems also cycle the nutrients in our soil and enable many of the primary industries.⁵⁷

However, as they are typically free, and often taken for granted, it is difficult to put a monetary value on the role of freshwater in many of these services.⁵⁸ As human infrastructure and economies are so reliant on ecosystem services to function, it has been argued that these services must be valued in order to accurately undertake a cost benefit analysis of how to sustainably use ecosystems or determine alternatives to their use.⁵⁹ While controversial, the concept of ecosystem services adds a much needed monetary incentive to the sustainable use of ecosystems.⁶⁰ By quantifying the monetary benefits ecosystems provide to society and incorporating them more directly into the economy, states are incentivised to protect these ecosystems and the direct benefit they provide to human wellbeing.⁶¹ Adding a monetary value to ecosystem services also provides the benefit of disincentivising ecosystem destruction, as destruction of ecosystem services can give rise to state responsibility.⁶²

III The Ecosystem Approach and the UNECE Watercourse Convention

The UNECE Watercourse Convention is a broad framework convention that requires the parties to enter into bilateral or multilateral agreements under the convention. States are then able to pursue the goals of the convention within their specific river basin contexts. To this end states are also obligated to establish joint bodies and programmes for the purpose of monitoring water conditions and preventing transboundary harm.⁶³ The Convention primarily focuses on cooperative protection and sustainable management of transboundary freshwater resources. The Convention requires periodic coordinated assessment by riparian states on the conditions of their transboundary waters. Parties must also assess the effectiveness of the policies, measures, and institutions they have taken to implement their obligations under the Convention.⁶⁴

⁵⁷ At 309.

⁵⁸ James Salzman “Valuing ecosystem services” (1997) 24(4) Ecology L. Q. 887 at 888.

⁵⁹ Ruhl, above n 56, at 311.

⁶⁰ Salzman, above n 58, at 889.

⁶¹ Moynihan, above n 20, at 195.

⁶² McCaffrey, above n 55, at 509.

⁶³ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, art 9.

⁶⁴ Okonkwo, above n 28, at 15.

The obligation to protect ecosystems is contained in Article 2 of the UNECE Watercourse Convention. Article 2 sets out the obligation to conserve, and where necessary, restore ecosystems.⁶⁵ Article 3 specifically promotes the application of the ecosystem approach and sustainable water resource management.⁶⁶ It also requires the implementation of administrative, economic, technical, and financial measures to prevent individual cases of ecological harm.⁶⁷

Article 2 of the Convention also contains an obligation to manage freshwater resources in an equitable and reasonable manner. This includes the obligation to take into account the unique context of the transboundary ecosystem in which there is likely to be a detrimental impact.⁶⁸

The Convention includes an obligation to take measures, as far as possible, to ensure that environmental impact assessments are carried out where there is a significant risk of transboundary harm.⁶⁹ Parties to the Convention are required to set up joint commissions or institutions which shall participate in the implementation of environmental impact assessments, in accordance with appropriate international regulations.⁷⁰

Parties must also take all appropriate measures to ensure that freshwater resources are managed in such a way that the needs of the present generation are met without compromising the ability of future generations to meet their own needs.⁷¹

Under the UNECE Convention states should follow the precautionary principle when implementing their obligations. The Convention expands on the precautionary principle by specifying that parties must avoid potential transboundary impacts as a result of the release of hazardous substances. Action must be taken even when scientific research has not yet proved a causal link between the substances in question and the potential transboundary impact.⁷²

⁶⁵ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, art 2.2(d).

⁶⁶ Article 3.1(i).

⁶⁷ Article 3.

⁶⁸ Article 2.2(c).

⁶⁹ Article 3.1(h).

⁷⁰ Article 9.2(j).

⁷¹ Article 2.5(c).

⁷² Article 2.5(a).

The UNECE Watercourse Convention also recognises the holistic interconnected nature of ecosystems in its definition of what constitutes a transboundary impact. The Convention includes flora, fauna, soil, air, water, climate, and landscape within the scope of a transboundary impact.⁷³ This means that many of the Convention's other provisions relating to TEIAs, the creation of joint bodies, and cooperation are informed by an ecosystem approach.⁷⁴

One of the great strengths of the UNECE Watercourse Convention is the fact that as a framework convention. The obligations and principles contained within the convention can be tailored to the unique circumstances of a specific transboundary ecosystem through multilateral or bilateral agreements and the creation of joint bodies or commissions.⁷⁵ These specific river basin agreements and commissions must still implement ecosystem oriented measures, but the specifics of these provisions may take into account the needs of the ecosystem in its environmental, geographical, and political context.

The role of joint bodies or commissions under the UNECE Water Convention includes the following:⁷⁶

- a) To compile and evaluate data in order to identify sources of pollution that have the potential to cause transboundary impact.
- b) To elaborate on joint monitoring programmes concerning water quality and quantity.
- c) To create inventories of and exchange information on pollution sources.
- d) To elaborate on emissions limits for wastewater and evaluate the effectiveness of control programmes.
- e) To establish warning and alarm procedures.

⁷³ McIntyre "The Emergence of an Ecosystem Approach to the Protection of International Watercourses under International Law", above n 10, at 2.

⁷⁴ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, arts 2 and 9.

⁷⁵ Articles 2 and 9.

⁷⁶ Article 9.

- f) To serve as a forum for the exchange of information on existing and planned uses of water and related installations that are likely to cause transboundary impact.
- g) To promote cooperation and exchange of information on the best available technology as well as to encourage cooperation in scientific research programmes.
- h) To participate in the implementation of environmental impact assessment relating to transboundary waters, in accordance with appropriate international regulations.

Article 10 of the Convention requires that the parties consult with one another on the basis of good faith, and that this consultation be carried out through a joint commission, where one exists.⁷⁷ The broad mandate of joint bodies under the UNECE Convention means that they are well placed to assist states with their implementation of the ecosystem approach.

The gathering, collation, and inter-state exchange of information on potential sources of pollution as well as on other uses of water that are likely to cause transboundary impacts,⁷⁸ and the implementation of TEIA procedures, are all essential to effective implementation of the ecosystem approach.⁷⁹

Article 11 further elaborates on the obligation to carry out joint monitoring and assessment. It requires that riparian states implement joint programmes for the monitoring of transboundary water conditions and potential transboundary impacts.⁸⁰ More specifically it requires states to set pollution parameters which they must regularly monitor. States must also monitor the effectiveness of measures they have implemented to prevent control and reduce transboundary impact.⁸¹

Article 13 deals with exchange of information between riparian states. While the obligation to exchange information and data is qualified by the fact that this data be reasonably available, it is still a useful provision for the implementation and development

⁷⁷ Article 10.

⁷⁸ Ludwig A. Teclaff "The River Basin Concept and Global Climate Change" (1991) 8(2) *Pace Env'tl L. Rev* 355 at 384.

⁷⁹ Cassar & Bruch, above n 50, at 173.

⁸⁰ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, art 11.

⁸¹ Article 11.

of measures to protect ecosystems.⁸² States must exchange information on the environmental conditions of their transboundary waterways, emissions and monitoring, experience gained in technology and results of research, along with any permits issued for waste-water discharge.⁸³

A Guidance Instruments under the UNECE Watercourse Convention

The UNECE Watercourse convention is supported by a variety of non-binding soft law instruments that make up the wider UNECE water regime. Among these are a variety of guidelines to assist states in the implementation of the UNECE Watercourse convention.⁸⁴ The UNECE Guide to Implementing the Water Convention (Guide) was published for the purpose of acting as a commentary that government officials can use to implement the obligations contained in the UNECE Convention. The Guide can then be used to help create legal or institutional platforms that are required by or can assist with the implementation of the convention. The Guide also provides a variety of advice for parties to the convention.⁸⁵

The Guide reaffirms the Conventions primary purpose as a normative framework which riparian states can use to carry out the cooperative collective action necessary to protect freshwater and its ecosystems.⁸⁶ The holistic approach taken by the UNECE Convention is also elaborated on as taking the relationship between the water cycle, land, flora, and fauna into account.⁸⁷ The Guide sets out substantive content for the maintenance and restoration of ecosystems as required by Article 2 of the UNECE Convention.⁸⁸

⁸² Richard K. Paisley & Taylor W. Henshaw “If You Can’t Measure it You Can’t Manage it: Transboundary Waters: Good Governance and Data & Information Sharing & Exchange” (2014) 24(1) *Int’l & Comp. L. Review* 203 at 246.

⁸³ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, art 13.

⁸⁴ Ruby Moynihan & Bjørn-Oliver Magsig “The Rising Role of Regional Approaches in International Water Law: Lessons from the UNECE Water Regime and Himalayan Asia for Strengthening Transboundary Water Cooperation” (2014) 23(1) *RECIEL* 43 at 46.

⁸⁵ *United Nations Economic Commission for Europe Convention on the Protection and use of Transboundary Watercourses and International Lakes Guide to Implementing the Water Convention* ECE/MP.WAT/39 (September 2013) at preamble.

⁸⁶ At 3.

⁸⁷ At 5.

⁸⁸ At 26.

The UNECE has also published a variety of guidelines for implementing more specific aspects of the Convention. The Guidelines on the Ecosystem Approach to Water Management are a compilation of proposed measures, programmes, and practices for the practical application of the ecosystem approach to water management. They are intended to ensure the application of a holistic approach to ecosystem management and set out minimum requirements to comply with the provisions of the Convention.⁸⁹

The UNECE Guidelines on the Ecosystem Approach (Guidelines) shed light on the meaning of an ecosystem under the Convention. The Guidelines provide that the entire catchment area should be considered when implementing ecosystem-based water management. However, these catchments do not exist as a monolith, rather they are a network of smaller ecosystems. The Guidelines note that these individual ecosystems will have differing needs when it comes to their management. They recognise the need to substantially broaden the scope of management to exploring the connections and interactions in a given ecosystem.⁹⁰

The Guidelines also recommend the implementation of ecosystem objectives. The aim of these is to safeguard the stability of the aquatic environment. States should monitor the condition of a variety of species throughout their aquatic ecosystem for the purpose of painting a reasonably representative picture of ecosystem conditions. Specific ecosystem objectives can then be developed on the basis of this information.⁹¹

The Guidelines also provide assistance on the best practice for carrying out ecosystem assessments. EIA should be catchment wide,⁹² and cover the implementation of programmes for monitoring and surveillance, data management and presentation, modelling and forecasting, and economic assessments.⁹³

The Guidelines also add to the substantive content of the requirement to conduct environmental impact assessment (EIA) under the Convention, particularly in circumstances of likely transboundary harm. The Guidelines tailor the EIA process to an ecosystem approach by including factors such as the ability of the ecosystem to tolerate

⁸⁹ *United Nations Economic Commission for Europe Guidelines on Implementing the Ecosystem Approach* ECE/ENVWA/31 (December 1993) at 1.

⁹⁰ At 1.

⁹¹ At 2.

⁹² At 7.

⁹³ At 3-5.

future activity, the risk to the integrity of the ecosystem, and scoping of the potential effects of having multiple economic projects running within the same ecosystem.⁹⁴

The UNECE regime also contains guidance on the implementation of ecosystem services. The UNECE Recommendations on Payments for Ecosystem Services in Integrated Water Resources Management (Recommendations) were adopted by the parties as part of their ongoing efforts to further the implementation of the ecosystem approach. The Recommendations make specific reference to the role ascribing monetary value to ecosystem services plays in the sustainable use and protection of ecosystems.⁹⁵

The objectives of the Recommendations provide that issues of water management in a given basin should be identified and listed. Parties should then examine what was done in the past to address these problems. If past efforts to address issues have failed, the reasons for the failure should be identified. Parties should then attempt to discover how these water management issues can be addressed. If it is found that ecosystem services could contribute to solving water management problems, parties should identify geographical features of the ecosystem. These include water bodies, forests, wetlands, grasslands, agriculture, and urban areas.⁹⁶ The variety of biophysical relationships in these areas should then be identified along with the ecosystem services they provide.

The Recommendations also note that it is important to account for the impact of differing uses of ecosystem services over time. In light of this the Recommendations call for real-time data and mechanisms to predict the effects of changes in their use.⁹⁷ The Recommendations then elaborate on how to value the services provided by freshwater ecosystems,⁹⁸ and devise payment schemes for these services.⁹⁹

⁹⁴ At 6.

⁹⁵ *United Nations Economic Commission for Europe Convention on the Protection and use of Transboundary Watercourses and International Lakes Recommendations on Payments for Ecosystem Services in Integrated Water Resources Management* ECE/MP.WAT/22 (August 2007) at preface.

⁹⁶ At 4.

⁹⁷ At 5.

⁹⁸ At 7.

⁹⁹ At 8.

IV The Ecosystem Approach in the UN Watercourse Convention

The UN Watercourse Convention, like the UNECE Convention, is a wide framework convention on the management and protection of transboundary watercourses.¹⁰⁰ One of the main goals of the Convention is to cope with "the problems affecting many international watercourses resulting from, among other things, increasing demands and pollution."¹⁰¹ While the UN Watercourse Convention does not have as many provisions for dealing specifically with ecosystems it does have a strong ecosystem approach through a variety of related principles.¹⁰²

Article 20 of the Convention provides that "Watercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses."¹⁰³ While this article may seem vague in comparison to the provisions in the UNECE Convention it is a broad and fair reaching obligation.¹⁰⁴ As this is an unqualified obligation, states are required to protect their transboundary ecosystems from threats such as pollution and habitat destruction even if these harms are caused by economically beneficial activities that states may otherwise be reluctant to cease. When read in light of the ecosystem obligations contained in Article 20, the geographical scope of the Conventions other provisions includes all a watercourses ecosystems, and the land areas with which they are interconnected.¹⁰⁵

Article 22 requires that states take all necessary measures to prevent the introduction of a species that has the potential to have detrimental effects on transboundary ecosystems.¹⁰⁶ States are prohibited from introducing new sources of pollution under Article 21 and must reduce and control any existing pollution that has the potential to cause transboundary harm.¹⁰⁷ Upon request, states are required to enter into consultations

¹⁰⁰ Okonkwo, above n 28, at 13.

¹⁰¹ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, preamble.

¹⁰² At Okonkwo, above n 28, at 14.

¹⁰³ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 20.

¹⁰⁴ Stephen McCaffrey "The Convention Enters into Force" (2014) 44(4) *Envtl. Pol'y & L* 351 at 354.

¹⁰⁵ Ruby Moynihan, Bjørn-Oliver Magsig & Alistair Rieu-Clarke *UN Watercourses Convention: User's Guide* (eBook ed, IHP-HELP Centre for Water Law, Policy and Science, 2012) at 79.

¹⁰⁶ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 22.

¹⁰⁷ Article 21.

regarding the maintenance of international watercourses. This may include the establishment of joint commissions.¹⁰⁸ Where appropriate the Convention requires states to cooperate with one another to respond to needs or opportunities to regulate the flow of an international watercourse.¹⁰⁹ States must also cooperate with each other to protect their aquatic environment.¹¹⁰

While not mentioned explicitly, these articles take a precautionary approach to the prevention of transboundary harm. Both the obligation to prevent the pollution of international watercourses and the introduction of alien or invasive species require action where their may be detrimental effects or significant harm. As a result, states should exercise caution when interacting with their respective watercourses.¹¹¹

Article 5 deals with equitable and reasonable utilisation. Under this provision states must act toward attaining optimal and sustainable utilisation of their international watercourses.¹¹² Article 6 provides a list of factors relevant to the application of equitable and reasonable utilisation. These include geographic, hydrographic, hydrological, climatic, ecological, conservational, protection, development and economy of uses of the watercourse.¹¹³ Although all non-navigational uses of water should be given equal priority under this principle it does give special recognition to the importance of ecosystems and their need for protection.¹¹⁴

While there is no provision which focuses solely upon sustainable development, the principle is included within the Convention's definition of management. The Convention also uses the phrase sustainable utilisation in its preamble and as a component of the principle of equitable and reasonable utilisation. While this is not a very specific reference, sustainable use of resources does make up a major contribution to the integrity of ecosystems.¹¹⁵ Sustainable utilisation also implies some notion of intergenerational

¹⁰⁸ Article 24.

¹⁰⁹ Article 25.

¹¹⁰ Moynihan, Magsig & Rieu-Clarke, above n 105, at 165.

¹¹¹ At 181.

¹¹² United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 5.

¹¹³ Article 6.

¹¹⁴ Erdem, above n 4, at 1383.

¹¹⁵ Michelle Lim "Is Water Different from Biodiversity: Governance Criteria for the Effective Management of Transboundary Resources" (2014) 23(1) Rev. Eur. Comp. & Int'l Envtl. L. 96 at 102.

equity, as in order for a resource to be managed sustainably it must be left in a state that is usable for future generations.¹¹⁶

The UN Water Convention does not specifically require that states undertake EIA. However, they are obligated to share the results of any EIA before undertaking any planned measures which may have a significant effect on other transboundary states.¹¹⁷

V A Comparative Analysis of the Ecosystem Approach Under the UNECE and the UN Watercourse Conventions

Upon first glance there appears to be a wide disparity in the degree of detail in the implementation of the ecosystem approach between the two treaties. The UNECE Convention contains far more specific detail and further elaborates on the ecosystem approach through the wide variety of supplementary materials published by the UNECE. However, this does not mean that the ecosystem approach under the UN Convention is less effective. While both treaties are broadly supplementary in nature, the UNECE Convention adds greater clarity to the obligations contained in the UN Convention, although there are still some differences between the two.¹¹⁸

One weakness shared by both conventions is that neither of them defines the term ecosystem. As one of the key components of the ecosystem approach is development and implementation of mechanisms and processes that recognise the multifaceted and interconnected nature of ecosystems, these treaties should expressly outline what is meant by an ecosystem.¹¹⁹ This is supported by the fact that states are often highly reluctant to treat their freshwater ecosystems or biodiversity as part of the pool of resources all states ultimately share.¹²⁰ A strong definition that includes the variety of components that make up ecosystems would reinforce the notion of our shared dependence on them, regardless of borders or sovereignty.

¹¹⁶ Tuula Honkonen “Water Security and Climate Change: The Need for Adaptive Governance” (2017) 20 Potchefstroom ELEC L. J. 1 at 9.

¹¹⁷ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 12.

¹¹⁸ McCaffrey “The Convention Enters into Force” above n 104, at 356.

¹¹⁹ McIntyre “The Emergence of an Ecosystem Approach to the Protection of International Watercourses under International Law”, above n 10, at 1.

¹²⁰ Moynihan, above n 20, at 200.

In the case of the UNECE Convention the Guidelines do add clarity to what is meant by ecosystem under the Convention. However, as freshwater is a vital component of all ecosystems in some capacity, these treaties should include the complex interactions that make up ecosystems within their definition of watercourses.¹²¹ A potential definition of the term ecosystem could be modelled on the CBD which defines ecosystems as a “dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.”¹²² This could be further improved upon by including the relationship between freshwater and biodiversity within the meaning of ecosystem.¹²³ Such a definition would explicitly state that water ecosystems and biodiversity are inseparable from one another. This would help to make ecosystems a consideration throughout all aspects of the conventions. Due to the fragility of ecosystem integrity, an activity carried out at a national level that may initially have no transboundary impact could still potentially have a transboundary impact years later.¹²⁴ By comparison the GLWQA’s definition of ecosystem incorporates a wide variety of the aforementioned components. Article 1 defines the Great Lakes ecosystem as:¹²⁵

...The interacting components of air, land, water and living organisms, including humans, and all of the streams, rivers, lakes, and other bodies of water, including groundwater, that are in the drainage basin of the Great Lakes and the St. Lawrence River at the international boundary or upstream from the point at which this river becomes the international boundary between Canada and the United States.

While the GLWQA definition accurately captures the complexity of freshwater ecosystems, it does not take into account the fact that freshwater ecosystems do not stop at the border but intersect with other transboundary ecosystems. A hypothetical definition of freshwater ecosystems would need to account for this to truly reflect their interconnected nature.

¹²¹ Robert W. Adler “Freshwater: Sustaining use by Protecting Ecosystems” (2009) 39(4) *Envtl. L. Rep. News & Analysis* 10309 at 10309.

¹²² Convention on Biological Diversity 1760 UNTS 79 (opened for signature 5 June 1992, entered into force 29 December 1993), art 2.

¹²³ Lim “Is Water Different from Biodiversity: Governance Criteria for the Effective Management of Transboundary Resources”, above n 115, at 97.

¹²⁴ M. A. Davis “Don’t Judge Species on their Origin” (2011) 474 *Nature* 153 at 153.

¹²⁵ Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality (signed September 7 2012, entered into force February 12 2013), art 1.

A Reasonable and Equitable Utilisation under the Conventions

Both treaties incorporate the principle of reasonable and equitable utilisation into their ecosystem approach. However, under the UN Convention some forms of significant harm to ecosystems may be tolerated where it would be equitable or reasonable to do so.¹²⁶ Under this implementation of reasonable and equitable utilisation the decision of whether to preserve an ecosystem will be weighed against the other needs of the watercourse state such as their societal, economic, or development needs. For many states, the preservation of ecosystems may be economically unviable or too great a set back to their ability to develop.¹²⁷ This is somewhat at odds with the duty to protect ecosystems under Article 20 of the UN Convention. While the list of factors relevant to equitable and reasonable utilisation in Article 6 of the UN Convention includes hydrographic, hydrological, climatic, and ecological factors, all of which are components of an ecosystem.¹²⁸ Some of the Special Rapporteurs of the International Law Commission on the topic of international watercourses supported the position that the principle of equitable and reasonable utilisation should be applied to the management of watercourses except in cases where there would be significant harm to ecosystems.¹²⁹ While it is unfeasible to completely subject the principle of reasonable and equitable utilisation to the needs of ecosystems, it is a significant weakness in the Convention's ecosystem approach to have the duty to prevent significant harm to ecosystems subordinated to the principle of equitable and reasonable use.

By contrast, the principle of equitable and reasonable utilisation does not enjoy the same central position within the UNECE Convention that it does within the UN Treaty.¹³⁰ Equitable and reasonable utilisation is one of the few principles that the UN Convention has developed in more detail than its UNECE counterpart. This is not necessarily a weakness in the UNECE Convention, as the principle of reasonable and equitable utilisation has the potential to dilute the ecosystem approach in both conventions. There is a significant risk that in the application of any holistic environmental principle, such as

¹²⁶ Moynihan, Magsig & Rieu-Clarke, above n 105, at 100.

¹²⁷ Albert E Utton & John Utton, "Adequate Stream Flows" in Slavko Bogdanovic (ed), *International Law of Water Resources – Contribution of the International Law Association (1954-2000)* (Kluwer Law International, The Hague, 2001) 387 at 405.

¹²⁸ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 6.

¹²⁹ Charles B. Bourne "The Primacy of the Principle of Equitable Realisation in the 1997 Watercourses Convention" (1997) 35 Can. Y.B. Int'l L. 215 at 218.

¹³⁰ At 226.

the ecosystem approach, the protection of biodiversity will be sacrificed so as not to jeopardize the economic or development concerns of a state.¹³¹

B Comparison of the Strength of Provisions Incorporating the Ecosystem Approach

Article 20 of the UN Convention requires states to protect and preserve their ecosystems.¹³² In contrast Article 2 of the UNECE Convention requires that states take all appropriate measures to protect ecosystems and even to restore them where necessary.¹³³ The obligation contained in the UN Convention is one of conduct rather than result.¹³⁴ By contrast the syntax of the equivalent provision in the UNECE Convention, that parties take all appropriate measures to ensure the conservation of ecosystems, seems to imply a stronger obligation. The use of the word ‘ensure’ implies an obligation to achieve results rather than simply to take action towards the protection of ecosystems. In addition, the requirement to restore ecosystems where necessary is absent in the UN Convention. Given that many ecosystems are dependent on other closely related ecosystems for their continued stability, the obligation to restore ecosystems is a powerful component of the ecosystem approach under the UNECE Convention.

The equivalent provision in the GLWQA potentially imposes an even stronger obligation to restore ecosystems. The purpose of the GLWQA is stated as being to ‘to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem.’¹³⁵ Similar to the UNECE Convention, the GLWQA also requires that the parties actively restore the ecosystem rather than simply protecting or maintaining it. This provision is even stronger under the GLWQA as it is not qualified by only being required where necessary.

The GLWQA also provides for the creation of specific lake ecosystem objectives for each of the Great Lakes and their connecting river systems. These objectives are specific long

¹³¹ Lim “Is Water Different from Biodiversity: Governance Criteria for the Effective Management of Transboundary Resources”, above n 115, at 103.

¹³² United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 20.

¹³³ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, art 2.

¹³⁴ Bourne, above n 129, at 226.

¹³⁵ Owen McIntyre “The Emergence of an Ecosystem Approach to the Protection of International Watercourses under International Law”, above n 10, at 3.

term or interim goals that are necessary for the meeting of general objectives under the Agreement. These objectives can be numeric or narrative in nature.¹³⁶ The parties must then implement these objectives through their domestic programmes. In addition, the parties are required to periodically review the lake ecosystem objectives and revise them if appropriate.¹³⁷ The implementation of specific indicators or goals and ongoing monitoring on the progress of states towards achieving these goals is essential for the effective management of transboundary resources, such as ecosystems.¹³⁸ It is therefore an especially strong component of the GLWQA's ecosystem approach as it enables the parties to continue to assess the condition of their freshwater ecosystems as they change over time. While the UN and UNECE conventions both contain requirements of monitoring, neither requires the implementation of specific goals. This is a missed opportunity given the volatility of ecosystem integrity.

One of the strengths of the UN Convention is the requirement that states take all necessary measures to prevent the introduction of new or alien species.¹³⁹ By comparison the UNECE Convention has no specific provision relating to the introduction of alien species. However, the inclusion of the precautionary approach in the UNECE Convention arguably encapsulates this requirement. Under the precautionary approach states should not introduce a new species to a river basin ecosystem where there is any indication that the introduction of the species may cause transboundary harm, or there is uncertainty as to the impact of the introduction of a species.¹⁴⁰ Both implementations of the requirement not to introduce alien species are limited to circumstances where the introduction is likely to cause transboundary impact,¹⁴¹ or in the case of the UN Convention, significant transboundary impact.¹⁴² The threshold requirements of these provisions do not accurately accommodate for the complexity of interactions between organisms in an ecosystem, as the effects of introducing a new species may not be well understood until the species is well established in the ecosystem. For example, the initial results of

¹³⁶ Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality, above n 125, art 3.

¹³⁷ Article 3.

¹³⁸ Lim "Is Water Different from Biodiversity: Governance Criteria for the Effective Management of Transboundary Resources", above n 115, at 103.

¹³⁹ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 22.

¹⁴⁰ Trouwborst, above n 43, at 27.

¹⁴¹ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, art 2.

¹⁴² Moynihan, Magsig & Rieu-Clarke, above n 105, at 182.

research into the impact of a species may suggest that its introduction will be harmless to the stability of an ecosystem. However, consequences of the introduction of this species may still be felt in related ecosystems as the effects on an ecosystem may be delayed or completely unpredictable.

While Article 22 of the UN Convention does contribute significantly to its ecosystem approach, the requirement that the introduction of a species cause significant harm is a severe limitation on the effectiveness of this provision.

C Environmental Impact Assessment: The Need for Specific Biodiversity Guidelines

The UNECE Guide to Implementing the Water Convention lays out a variety of minimum requirements for the implementation of EIA under the Convention.¹⁴³ This process includes the incorporation of specific EIA procedures into national legislation and the requirement to notify and consult with relevant riparian states about the potential transboundary impacts of an activity.¹⁴⁴ By comparison the UN Convention has no equivalent set of guidelines. To adequately protect ecosystems both treaties would benefit from the creation of guidelines directly incorporating the ecosystem approach into EIA. Such guidelines could be modelled on the decision of the CBD Conference of the Parties (COP) on the incorporation of biodiversity related issues into EIA.¹⁴⁵ The COP outlines a general process for conducting EIA and includes specific guidelines on how to tailor the usual EIA process for impacts on biodiversity.¹⁴⁶ In its decision the COP references the fact that the ecosystem approach is an appropriate framework from within which to create EIA processes that properly account for ecological issues.¹⁴⁷ Guidelines modelled on the COP decision would require EIA involving the determination of the varying functions of different organisms and their relationships within the ecosystem in question as well as the values of ecosystem services they may provide.¹⁴⁸ This is something which is not

¹⁴³ *UNECE Convention on the Protection and use of Transboundary Watercourses and International Lakes Guide to Implementing the Water Convention*, above n 85, at 54.

¹⁴⁴ At 54.

¹⁴⁵ Conference of the Parties to the Convention on Biological Diversity “Identification, Monitoring, Indicators and Assessments” (19 April 2002) Convention on Biological Diversity <<https://www.cbd.int/decision/cop/?id=7181a>> at annex I.

¹⁴⁶ At 1.

¹⁴⁷ At annex I.

¹⁴⁸ At annex I, 1. 5.

required under the obligation to conduct EIA currently found in the UN or UNECE Convention.

D The Creation of Joint Commissions under the Conventions

Joint commissions can fulfil a variety of function in the governance of ecosystems. The primary difference between the two conventions is that the UNECE Convention requires the establishment of joint bodies or commissions,¹⁴⁹ while the UN Convention only provides that states may consider the establishment of joint mechanisms or commissions as they deem necessary.¹⁵⁰ Given that the establishment of joint bodies is highly predictive of treaty success, their establishment will contribute greatly to the protection of ecosystems.¹⁵¹ These bodies can fulfil a variety of functions, such as making decisions in the face of environmental uncertainties and acting as the custodians of information shared between parties. They can also propose new plans or mechanisms for dealing with issues as they arise or resolving disputes that may occur between parties to the Convention.¹⁵² The incorporation of the ecosystem approach through joint bodies under the UNECE Convention is stronger than that of the UN Convention. This is because of the more well-defined role joint bodies play under the UNECE regime. This is a major weakness in the UN Convention given the major role a joint body or commission can play in the implementation of the ecosystem approach.¹⁵³

While not established under either convention, one example of an effective joint body is the International Joint Commission (IJC) established under the GLWQA. It is charged with the task of analysing and collating the data obtained by the governments of the parties to the Treaty, along with gathering data related to the ecosystem objectives established under the Agreement.¹⁵⁴ The IJC also undertakes environmental monitoring

¹⁴⁹ UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 29, art 9.

¹⁵⁰ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, arts 8, 24, 33.

¹⁵¹ Mark Giordano, Alena Drieschova, James A. Duncan, Yoshiko Sayama, Lucia De Stefano, Aaron T. Wolf “A Review of the Evolution and State of Transboundary Freshwater Treaties” (2014) 14 245 at 259.

¹⁵² Lucia De Stefano, James Duncan, Shlomi Dinar, Kerstin Stahl, Kenneth M. Strzepek, Aaron T. Wolf “Climate Change and the Institutional Resilience of International River Basins” (2012) 49(1) JPR 193 at 197.

¹⁵³ Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality, above n 125, art 3.

¹⁵⁴ Article 7.

of ecosystem indicators established under the Treaty and shares this information with the parties. Joint bodies that are capable of gathering, storing and making decisions based on information related to the health of ecosystems are essential to good implementation of the ecosystem approach.¹⁵⁵

Furthermore, the IJC seeks to foster cooperation with and involve a variety of non-state actors including indigenous communities, watershed management agencies, and the general public.¹⁵⁶ These functions, particularly that of involving indigenous communities, are essential to good implementation of the ecosystem approach.

The broad mandate of the IJC enables it to tackle the wide variety of issues facing the Great Lakes ecosystem. The fact that it is able to conduct research on the condition of the ecosystem and suggest new measures for implementation by the parties means that the IJC is well equipped to tackle new issues that may arise, such as the introduction of new species or changing conditions, such as differences in water or pollution level.¹⁵⁷

E Ecosystem Services under the UNECE and UN Watercourses Conventions

While neither convention contains a specific provision pertaining to the implementation of ecosystem services, the Recommendations do provide guidance on how ecosystem services should be implemented under the Convention.¹⁵⁸ In contrast the lack of reference to ecosystem services in the UN Convention is a weakness in its ecosystem approach. Given the wide but still vague scope of Article 20 of the UN Convention it is a weakness of the Convention to not have included a requirement to implement ecosystem services.

¹⁵⁵ Teclaff, above n 78, at 384.

¹⁵⁶ Jetoo & Krantzberg, above n 11, at 8.

¹⁵⁷ At 9.

¹⁵⁸ *UNECE Convention on the Protection and use of Transboundary Watercourses and International Lakes Recommendations on Payments for Ecosystem Services in Integrated Water Resources Management*, above n 95, at preface.

VI Conclusion

Both the UN and the UNECE Watercourse conventions take strong ecosystem-oriented approaches to freshwater. Each treaty includes a variety of references to the principles of reasonable and equitable utilisation, the precautionary approach, sustainable development, and intergenerational equity in some capacity. Parties to both treaties are also required to consult with one another, conduct EIA, and exchange information on the state of their ecosystems. All of these are essential components of the ecosystem approach.¹⁵⁹

However, the UNECE Convention includes a greater variety of ecosystem related provisions along with more specific and substantive rules. In addition, the UNECE Convention is supported by a variety of guidelines and recommendations to assist states with the implementation of its provisions, and to further elaborate on how to incorporate an ecosystem approach into multilateral or bilateral treaties created under the Convention. In contrast, the UN Watercourse Convention only contains one specific reference to ecosystems in Article 20.¹⁶⁰

Despite this, the stronger provisions contained in the UNECE Convention do not weaken the UN Convention. Both treaties share an ecosystem approach as one of their core objectives, and while the provisions in the UN Convention are more vague, they also fill some of the gaps in the UNECE Convention, such as its less realised approach to reasonable and equitable utilisation.¹⁶¹ Ultimately the two regimes complement one another, with the UNECE Treaty offering clarification to the interpretation of obligations contained in the UN equivalent.¹⁶² However, they are not perfect. Both treaties could be strengthened by the inclusion of ecosystems within their respective definitions of watercourse, and the addition of more biodiversity-centric soft law instruments adding greater detail to the EIA process.

¹⁵⁹ Brunnee & Toope, above n 12, at 41.

¹⁶⁰ United Nations Convention on the Law of Non-Navigational uses of International Watercourses, above n 31, art 20.

¹⁶¹ McCaffrey “The Convention Enters into Force”, above n 104, at 356.

¹⁶² Tanzi, above n 14, at 106.

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