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Global Waters' Defenders: Scientists, NGOs, and the Establishment of Integrated Water Resource Management

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Global Waters' Defenders: Scientists, NGOs, and the Establishment of Integrated Water Resource Management

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Research Master History:

Politics Culture and National Identities from 1789 to the present

Prof. dr. Dario Fazzi

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Introduction

In the cafeteria of the Delft Institute for Water Education (IHE), Professor of Knowledge and Capacity Management for the Water Sector, Guy Alaerts, recounts his return to the Netherlands in 1986 after many years of living and working abroad. He recalls that along the Delftsche Vliet, where he settled, birds had disappeared entirely. Due to the severe pollution of the canals, it was sometimes barely possible to go outside because of the stench. The deterioration of environmental quality was visible to the naked eye. According to Alaerts, the widespread use of pesticides in the Netherlands during the 1960s, partly driven by the dominant position of agriculture, contributed significantly to this environmental decline. This, in turn, led to increasing public complaints and growing social unrest. In his view, the 1960s and 1970s were clearly marked by the absence of an integrated approach to water management in the Netherlands. At the same time, there was an evident ambition to achieve improvement. Already in the 1970s, the first legislation on wastewater treatment and conservation of nature was introduced. However, the effects of these investments only became visible over time.¹

Alaerts's account is illustrative not only of developments in the Netherlands, but also of broader global patterns in water management during this period. From the late 1960s and early 1970s onward, numerous efforts were undertaken to regulate natural resources and to limit the impact of human activities at the international level. Water management emerged as one of the key areas of concern. Nevertheless, tangible results remained limited for a considerable time, due in part to competing economic and political priorities, as well as to a lack of knowledge and technical expertise.

This changed during the International Conference on Water and the Environment (ICWE), held in Dublin from 26 to 31 January 1992. Approximately 500 participants attended the conference, including government-appointed experts from 100 countries and representatives of 80 international, intergovernmental, and non-governmental organizations. The participants concluded that the global supply of freshwater was in a critical condition and called for a fundamentally new approach to the management,

¹ Semi Structured Interview Guy Alaerts, November 19, 2025.

assessment, and development of freshwater resources. The conference served as a preparatory meeting for the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. Governments were urged to translate the recommendations of the Dublin Conference report into concrete action programs for water management and sustainable development.² The conference report contained recommendations for measures at the local, national, and international levels, based on four guiding principles. These so-called Dublin Principles continue to influence thinking on water management to this day.³

Moreover, the Dublin Statement on Water and Sustainable Development, adopted during the conference, marked a significant step toward global recognition of the need for Integrated Water Resources Management (IWRM). IWRM aims to promote the coordinated development and management of water, land, and related resources to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.⁴ Before the emergence of IWRM, international water management was generally characterized by a fragmented, sectoral approach in which different users and various functions were managed in isolation from one another. This resulted in conflicts, inefficiencies, resource depletion, and negative environmental impacts, as the interdependence between water, land, and ecosystems was largely overlooked, and water was often treated as an inexhaustible resource. The 1992 Dublin Conference was the moment when this impasse was overcome through the adoption of IWRM. Yet it remains insufficiently understood why this conference succeeded where earlier initiatives had failed.

Accordingly, this study is guided by the following research question: Why did the Dublin Conference of 1992 become a turning point in international water management, and what roles did government-appointed experts and the network of international organizations and NGOs play in the development and dissemination of Integrated Water Resources Management (IWRM)?

² E. Gorre-Dale, 'The Dublin Statement on Water and Sustainable Development', *Environmental Conservation* 19:2 (1992) 181.

³ M.M. Rahaman, O. Varis, T. Kajander, 'EU Water Framework Directive vs. Integrated Water Resources Management: The Seven Mismatches', *Water Resources Development* 20:4 (2004) 565-575, there 566.

⁴ M. Kelly-Quinn, et al., 'Dublin Ireland: a city addressing challenging water supply, management, and governance issues', *Ecology and society* 19:4 (2014) 1-13, 8.

The research seeks to explain how and why Dublin marked a pivotal moment in international water governance and how IWRM emerged as a globally endorsed framework. The study has three main objectives. First, the research examines why the Dublin Conference of 1992 provided the conditions for IWRM to emerge as a dominant framework in international water governance. Second, it analyzes the role of Dutch government-appointed experts – one of the most active and influential scientific delegations in Dublin – in negotiating, shaping, and legitimizing IWRM during the preparatory process and the conference itself. Third, it investigates how international organizations and NGOs contributed to the dissemination and institutionalization of IWRM at the Dublin conference.

This study contributes to the scholarly literature in three ways. First, to date there is no study that focuses specifically on the Dublin Conference itself. As such, this thesis adds to and extends the existing literature on international environmental governance by addressing an important but underexplored event.

More broadly, this thesis engages with existing scholarship on international environmental governance. Erika Bsumek, David Kinkela, and Mark Lawrence (2013) argue that the gap between the global scale of environmental challenges and the limited capacity of existing governance mechanisms has been a defining feature of international politics since the end of the Cold War and the acceleration of globalization. They demonstrate that although contemporary environmental problems may appear unprecedented in scale and urgency, they are not new. Nation-states have long negotiated international agreements to manage migratory wildlife, regulate the use of rivers and other shared waters, control resources beyond their borders, impose their standards of appropriate environmental use on others, and draw on expertise developed elsewhere to address domestic environmental concerns.⁵ Building on this perspective, scholar Stephen Macekura (2015) connects three major developments of the twentieth century, decolonization, environmentalism, and the United States efforts to promote economic development in the third World. He shows how environmental NGOs pushed the United States government, World Bank, and the United Nations to reconsider development strategies between the 1960 to the 1990s. Macekura's work

⁵ E.M. Bsumek, D. Kinkela, M.A. Lawrence, *Nation-States and the Global Environment, New Approaches to International Environmental History* (Oxford 2013).

offers a new history of sustainability and demonstrates how environmental activists reshaped global development policy.⁶ Moreover, Ruth Morgan (2024) examines how climate change has structured the international order since the 1950s, tracing its emergence as an international problem and the diplomatic efforts of states, scientists, and NGOs to address it. By situating climate change alongside international history, Morgan explains the origins of debates surrounding this environmental emergency, the responses of political leaders, and the persistent obstacles to establishing an effective international regime to confront the climate crisis.⁷

A separate body of literature focuses more directly on water management. Several authors focus on the relationship between the Dublin Principles and IWRM, emphasizing their meaning and practical application. For instance, Miguel Solanes and Fernando Gonzáles-Villarreal (1999) argue that the Dublin Principles encapsulate the core of modern water management, and they explore how these principles relate to integrated water management and national water legislation.⁸ Additionally, Moriarty, Visscher, Bury, and Postma (2000) emphasize that the practical application of the Dublin Principles is often complex and context dependent. They consider IWRM to be an internationally recognized approach for sustainable water management, but they point out ambiguities regarding its precise meaning and application. In their article, they propose a method through which water supply and sanitation (WSS) projects can gradually implement IWRM principles, based on the 1992 Dublin Principles.⁹

Furthermore, scholars have examined the broader development of transboundary water management. Meredith Giordano and Aaron Wolf (2003) argue that significant steps have been taken internationally toward cooperation, with the Dublin and Rio Conferences serving as important milestones. Over the past ten years, various treaties, declarations, and legal guidelines have been adopted concerning the

⁶ S.J. Macekura, *Of Limits and Growth: The Rise of Global Sustainable Development in the Twentieth Century* (Cambridge 2015).

⁷ R.A. Morgan, *Climate Change and International History: Negotiating Science, Global Change, and Environmental Justice* (London 2024).

⁸ M. Solanes, F. Gonzalez-Villarreal, 'The Dublin Principles for Water as Reflected in a Comparative Assessment of Institutional and Legal Arrangements for Integrated Water Resources Management', *Tac background papers* 3 (1999) 6.

⁹ P.B. Moriarty et al., 'The Dublin principles revisited for WSS', in J. Pickford, *Water, Sanitation and hygiene – Challenges of the Millennium: Proceedings of the 26th WEDC International Conference* (Dhaka 2000) 393-395, there 392.

management of international waters, and new institutions have been established within river basins. However, many basins still lack a shared management structure, and existing structures often fall short in meeting essential conditions for sustainable management.¹⁰ Astrit Biswas (2004) also assessed the impact of international water conferences since the 1977 UN Water Conference. She questions whether conferences like Dublin and Rio have actually influenced practical water management and raises concerns about the effectiveness of such large-scale events.¹¹ Moreover, Muhammad Rahaman, Olli Varis, and Tommi Kajander (2004) compared the outcomes of three major international conferences on integrated water management: the Dublin Conference in 1992, the Second World Water Forum in The Hague in 2001, the International Conference on Freshwater in Bonn in 2001, and the World Summit on Sustainable Development in Johannesburg. They found that while European Union countries often support IWRM principles internationally, the EU Water Framework Directive (WFD) diverges from them on several points, particularly regarding issues like gender, poverty reduction, community participation, and cross-sector collaboration. This raises the question of how international IWRM guidelines are reflected in EU water policy and whether different approaches are needed for developed and developing countries.¹² Muhammad Misanur Rahaman and Olli Varis (2005) also examined the development of the IWRM concept in international conferences over the past thirty years. They discuss the prospects of IWRM in addressing the current water crisis and identify seven key challenges to its implementation.¹³

Nevertheless, Mike Muller (2015) sees the emergence of the water-food-energy nexus as a pragmatic response to the Dublin paradigm that dominated after Rio. According to him, the emphasis was too much on the environment, participation, and water as an economic good, while social and development goals were neglected. Although it led to the creation of new global institutions, tangible results in development

¹⁰ M.A. Giordano, A.T. Wolf, 'Sharing waters: Post-Rio international water management', *Natural Resources Forum* (2003) 163-171, there 163.

¹¹ A.K. Biswas, 'From Mar del Plata to Kyoto: an analysis of global water policy dialogue', *Global Environmental Change* 14 (2004) 81-88, there 81.

¹² M.M. Rahaman, O. Varis, T. Kajander, 'EU Water Framework Directive vs. Integrated Water Resources Management: The Seven Mismatches', *Water Resources Development* 20:4 (2004) 565-575, there 573-574.

¹³ M.M. Rahaman, O. Varis, 'Integrated water resources management: evolution, prospects and future challenges', *Sustainability: Science, Practice & Policy* 1:1 (2005) 15-21, there 15.

and environmental protection were lacking. Muller argues that this nexus thinking offers a broader, context-driven approach, with locally integrated policies supported by international assistance.¹⁴ Although these studies provide valuable insights, the Dublin Conference and the policies that emerged from it have received little attention in academic literature. This thesis intervenes by focusing on Dublin and its preliminary meetings as a site of negotiation rather than an end result.

Furthermore, this research contributes to the literature by adopting both a bottom-up and a top-down approach. It examines decisions made at the top that filter downward, as well as experiences and initiatives emerging from grassroots movements. Rather than focusing solely on linear policy adoption, the study emphasizes the negotiation, adaptation, and reinterpretation of water policy within an international context. On the one hand, it investigates the role of government-appointed experts; on the other hand, it analyzes the influence of transnational organizations.

The study also contributes to the literature by employing a diverse range of sources and methods. It makes use of semi-structured interviews conducted with two experts appointed by the Dutch government who participated in the Dublin Conference and its preparatory processes. Oral history is increasingly recognized as an important approach for studying the past.¹⁵ It places individual subjectivity and lived experience, often absent from written sources, at the heart of the analyses. When approached critically and reflexively, oral history offers a robust framework for understanding how individuals make sense of events and experiences, while remaining attentive to power relations, emotional dimensions, and ethical considerations.¹⁶ The semi-structured interview involves a combination of closed and open-ended questions, while the interview process is closely monitored using a prepared interview protocol and question guide. The questions are formulated to encourage interviewees to expand on their thoughts and reflections. Semi-structured interviews are particularly valuable because they provide the researcher with direct access to participants' own accounts. They can reveal both shared perspectives and points of agreement among participants, as well as

¹⁴ M. Muller, 'The 'Nexus' As a Step Back towards a More Coherent Water Resource Management Paradigm', *Water Alternatives* 8:1 (2015) 675-694, there 674-675, 698.

¹⁵ L. Abrams, *Oral history theory* (New York 2016).

¹⁶ K. Haynes, 'Other lives in accounting: Critical reflections on oral history methodology in action', *Critical Perspectives on Accounting* 21:3 (2010) 221-231, there 230.

differing viewpoints on a central theme. Thanks to their flexibility and relative spontaneity, semi-structured interviews can not only confirm or challenge existing knowledge but also bring entirely new information or topics to light.¹⁷

In addition, several original archival sources are consulted. These include reports and records of conferences and international treaties preceding Dublin, documents from the Dublin Conference itself, preparatory reports for the conference, and expert accounts of the Dublin Conference. Furthermore, the International Institute for Social History (IISG) provides access to the archives of Greenpeace International to investigate the role of NGOs in the Dublin Conference. Documentation is also consulted regarding the role of UN bodies and agencies during the conference.

These sources form the foundation for a methodological approach grounded in diplomatic history, which includes the analysis of treaties, reports, agreements, and other formal documents. This approach allows for the study of formal decision-making processes and power relations between states and international organizations. At the same time, methods from social history are employed to examine how grassroots organizations, such as Greenpeace, influenced international discourses and negotiations. This perspective highlights the ways in which such organizations have shaped and contributed to international environmental governance. Finally, personal testimonies are incorporated, giving the narrative a more individual and experiential dimension, particularly through interviews. These provide insight into the motivations, experiences, and perceptions of those involved. Taken together, this constitutes a complex and multi-faceted methodological approach. These methods are particularly suitable because they align with the research question, which examines the subject both from a top-down perspective, focusing on government-appointed experts, and from a bottom-up perspective, emphasizing the role of international organizations and NGOs.

This research covers the period from the emergence of international water management in the late 1960s and early 1970s up to the Dublin Conference in 1992. It examines how governmental appointed scientists and organizations positioned themselves before and during the conference. The study follows a chronological structure, providing a

¹⁷ P. Karatsareas, 'Semi-Structured Interviews', in: R. Kircher, L. Zipp, *Research Methods in Language Attitudes* (Cambridge 2022) 99-101.

comprehensive analysis of events, decisions, and key moments that culminated in the formulation of IWRM as a global water policy paradigm.

To address the central research question of how IWRM came to be established at Dublin in 1992, the analysis begins by contextualizing the background of the Dublin Conference. This includes an exploration of the rise and transformation of environmental negotiations from the early twentieth century up to the Dublin Conference, highlighting key milestones that contributed to the growing recognition of water management as a global challenge. The study examines the emergence of government involvement in environmental politics, and how international actors began to coordinate efforts to address pressing environmental issues, including freshwater resources. Attention is also given to the role of scientific environmental groups and organizations, which began to shape the discourse around water governance. This research relies on secondary academic literature, which provides a framework for understanding the broader context in which the Dublin Conference emerged. In addition to this, key treaties, agreements, and conference documents are discussed to trace how global commitments and frameworks began to take shape in the preceding decades. These foundational documents reveal the political and institutional shifts that paved the way for a more integrated approach to water management that would emerge at the Dublin Conference in 1992.

The second part of the research examines the Dublin Conference itself. Here, the study pays particular attention to the direct contributions of Dutch government-appointed experts, who played a crucial role in the development, promotion, and institutionalization of IWRM. The research examines their involvement not only during the conference but also throughout its extensive preparation process. This includes the analysis of conference texts, preparatory meeting documents, and the results of semi-structured interviews with two Dutch experts who were actively involved in the event. These primary sources provide valuable insights into the specific contributions made by these experts, as well as their strategic influence in shaping the discussions and outcomes of the conference. Furthermore, the analysis of conference-related literature, including publications authored by these experts that specifically address or relate to the Dublin Conference, helps to illuminate the broader intellectual and political currents that shaped the development of IWRM. The research explores how these

experts worked in collaboration with international actors, including governmental bodies, UN agencies, and other scientific experts, to promote IWRM as an integrated approach to water governance.

In the final phase, the study investigates the influence and involvement of international organizations and NGOs at the Dublin conference. This section draws upon semi-structured interviews with the Dutch experts to capture their perspectives on the roles played by these actors in shaping the water governance agenda. Through these interviews, the study explores also the relationships between government representatives, scientific experts, and non-governmental organizations during the conference. Additionally, the research analyzes key conference reports, documents produced by UN bodies and agencies, and archival material from major environmental NGOs such as Greenpeace International. These sources offer insights into how NGOs, despite their limited formal role at the conference, exerted influence through lobbying efforts, reports, and advocacy strategies that shaped the overall water governance framework. The research is further enriched by the inclusion of secondary literature that provides additional context and analysis on the role of international organizations and NGOs in global water governance during this period. This literature supplements the primary data, offering a more comprehensive understanding of how the Dublin Conference represented a broader shift in the way water management issues were addressed at the international level. By examining the contributions of government experts, the strategic roles of international organizations and NGOs, and the broader political and environmental context of the time, this multi-faceted approach provides a nuanced understanding of how and why IWRM emerged as a central concept of water governance at the 1992 Dublin Conference.

The first chapter provides a concise international history of water governance. It examines the rise of international oversight of water resources and efforts to regulate environmental resources and the impact of human activities at the global level. In doing so, it explores the development and transformation of environmental negotiations from the early twentieth century up to the Dublin Conference, with particular attention to the growing role of governments, the emergence of environmental policy, and the influence of scientific environmental groups and organizations. It also analyzes how these processes were negotiated, the successes that were achieved, and why many initiatives

remained only partially effective. The second chapter focuses on the specific role and contributions of Dutch experts who participated in the Dublin Conference on behalf of the Dutch government. It examines both the preparatory phase and the negotiations during the conference itself, with particular emphasis on the emergence and negotiation of Integrated Water Resources Management (IWRM) as a concept and policy strategy and reflects on the outcomes of the conference. Finally, the third chapter addresses the role of international organizations and NGOs as actors in transnational environmental activism during and around the 1992 Dublin Conference. By analyzing the preparatory processes, the institutional dynamics within the UN system, and NGO involvement, this chapter demonstrates how these actors helped shape the debate on water management and influenced the outcomes of the conference.

Chapter 1

Early International Water Governance Regimes' Successes and Setbacks

1.1 Introduction

While the international management of such natural resources as forests and fossil fuels became an issue of international affairs from the late nineteenth century onward, the governance of water bodies climbed the international agenda only from the second half of the twentieth century.¹⁸ Within the context of a rapidly industrializing world, it became increasingly clear that global waters were a crucial resource, upon which economic development, public health, and food security depended. The combination of a series of accidents and the coalescence of societal environmentalist concerns, gave water issues a renewed prominence, and international organizations, scientists, and governments started to explore new ways to safeguard rapidly deteriorating global water resources. Besides rules for the protection and the organization of the seas, several international agreements, and conferences mushroomed, laying the groundwork for broader water governance cooperation. Yet implementation often remained fragmented and ineffective. This chapter examines the development of early international water policy and the factors that limited its effectiveness, including political divisions, economic interests, and weak institutions.

1.2 Water Policy in the Age of Development

One of the earliest efforts to regulate international waters multilaterally came in 1911, when the Institute of International Law (IIL) established through the Madrid Declaration that nations should not undertake activities that could harm other riparian states within a shared river basin.¹⁹ After World War I, water began to gain a more prominent place on

¹⁸ I. Tyrrell, *Crisis of the Wasteful Nation, Empire and Conservation in Theodore Roosevelt's America* (Chicago 2019) 35-36.

¹⁹ Institute of International Law, International Regulation Regarding the Use of International Watercourses For Purposes other than Navigation, Declaration of Madrid, 1911. M.A. Salman, 'The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law', *Water Resources Development* 23:4 (2007) 625-640, there 628.

the international agenda, particularly in relation to navigation and hydropower. This was partly due to initiatives led by the League of Nations. The first international water treaty, the Convention on the Regime of Navigable Waterways of International Concern, was signed in Barcelona in 1921.²⁰ This treaty set minimum standards for navigation and obliged states not to take measures that could harm the navigability of waterways across states. Although it was signed by forty countries, its impact remained limited because it offered no global perspective and failed to reconcile differing approaches to freedom of navigation.²¹ Subsequently, in 1923, a treaty on non-navigable waters was concluded in Geneva.²² The focus, this time, was more on use than on access. This treaty, indeed, recognized the right of riparian states to develop hydropower within their own territory, provided it was consistent with international law. For the first time, an international treaty was therefore trying to regulate water management without referring to navigation, a theme that had been dominating throughout the 19th century.²³

This did not happen by accident. The 1920s, indeed, witnessed a rising scientific interest in water management and a progressive professionalization of hydrology and water studies and sciences.²⁴ During the same period, the first professional international scientific water organizations and associations emerged. The International Association of Hydrological Sciences (IAHS), for instance, was founded in 1922, followed by the International Commission on Large Dams (ICOLD) in 1928 and the International Association for Hydraulic Research (IAHR) in 1935.²⁵ In the United States, the administration of Franklin Delano Roosevelt helped to sustain these efforts by linking water control to the measures of the New Deal. A series of federally funded public works contributed to aiding state and local institutions to manage water

²⁰ League of Nations, Convention and Statute on the Regime of Navigable Waterways of International Concern, Treaty Series, Vol. VII, Barcelona, April 20, 1921.

²¹ J. Newton, 'A brief history of global water governance', in: A. Rieu-Clarke, A. Allan, S. Hendry, *Routledge Handbook of Water Law and Policy* (London and New York 2017) 353-354.

²² League of Nations, Convention Relating to the Development of Hydraulic Power Affecting More than One State, and Protocol and Signature, Treaty Series XXXVI, Geneva, December 9, 1923.

²³ M.A. Salman, 'The Helsinki Rules', 626.

²⁴ C. James, I. Dooge, 'The Emergence of Scientific Hydrology in the Twentieth Century', *Advances in Water Science* 10:3 (1999) 202-214, there 203-204. N.C. Grover, *Contributions to the hydrology of the United States*, 1925.

²⁵ R.G. Varady, K. Meehan, E. McGovern, 'Charting the emergence of 'global water initiatives' in world governance', *Physics and Chemistry of the Earth* 34 (2009) 150-155, there 152.

resources, prevent floods, and establish hydropower and irrigation projects, therefore further centralizing water management.²⁶

Throughout the interwar years, the focus of water management was mostly on maximizing societal purposes, through the production of hydropower or the consolidation of irrigation systems.²⁷ From the 1950s onward, however, discourses and cultures of water management started to change.²⁸ The awareness that was growing among scientists intercepted an emerging environmental movement. Of course, as environmental historian Chad Montrie has shown, water issues had been a priority for early conservationists, environmentalists, and those communities of workers that were mostly exposed to the consequences of water contamination and degradation.²⁹ Yet, from the 1950s onward, a growing constituency started to place a particular emphasis on the overall impact of human and industrial activities on environmental health and ecology, bringing a renewed attention to the interconnected nature of water pollution.³⁰ This change of perspective substantiated in many ways: the proliferation of scientific reports on water management; the publication of popular studies on global water resources; and, most importantly, the progressive institutionalization of international cooperations on water issues, mostly led by the newly established organization of the United Nations (UN).³¹

²⁶ R.A. Shanley, 'Franklin D. Roosevelt and Water Pollution Control Policy', *Presidential Studies Quarterly*, 18:2 (1988) 319-330, there 319. D.J. Pisani, *Water and American Government: The Reclamation Bureau, National Water Policy, and the West, 1902-1935* (Berkeley, Los Angeles & London 2002) 151.

²⁷ See for example J. Cohn, M. Evenden, M. Landry, 'Water powers: the Second World War and the mobilization of hydroelectricity in Canada, the United States, and Germany', *Journal of Global History* 15:1 (2020) 123-147. P.N. Lehmann, 'Infinite Power to Change the World: Hydroelectricity and Engineered Climate Change in the Atlantropa Project', *The American Historical Review* 121:1 (2016) 70-100.

²⁸ D.J. Pisani, *Water and American Government*, 284.

²⁹ C. Montrie, *The Myth of Silent Spring. Rethinking the Origins of American Environmentalism* (Berkeley 2019).

³⁰ R.A. Morgan, *Climate Change and International History*, 67. The global scientific community initiated the International Geophysical Year (IGY) of 1957-1958, during which scientists from around the world explored outer space, the polar regions, and the oceans, and shared their findings to promote global knowledge development. K. Dodds, 'The International Geophysical Year and the Antarctic Treaty System', in: A. Howkins, P. Roberts, *The Cambridge History of The Polar Regions* (Cambridge 2023) 536.

³¹ H.F. Seidel, A. S. Johnson, D.O. Dencker, 'A Statistical Analysis of Water Works Data for 1950', *Journal AWWA* 45:12 (1953) 1309-1333. C. Wichman, D. Wietelman, 'A Short History of Water Resources Research at Resources for the Future', *Resources* 201 (2019). J.V. Krutilla, O. Eckstein, *Multiple Purpose River Developments; Studies in Applied Economic Analysis* (Baltimore 1958).

United Nations, Conference on the Law of the Sea, Geneva, February 24 - April 27, 1958. J. Bartram et al., 'Global Monitoring of Water Supply and Sanitation: History, Methods and Future Challenges', *International Journal of environmental research and public health* 11:8 (2014) 8137-8165, there 8139. J. Newton, 'A brief history', 354.

These steps into the building of an international water governance mirrored the development of multilateral environmental management. A breakthrough in this regard came through the International Law Association (ILA), which in 1956 and 1958, with the Dubrovnik Declaration and the New York Resolution, introduced the principle of equitable and reasonable use of water among riparian states.³² In 1959, the UN General Assembly adopted a resolution requesting the International Law Commission to study the legal regime of international waters to improve their management.³³ These efforts culminated in the 1966 Helsinki Conference, where the Helsinki Rules of the Uses of the Waters of International Rivers were adopted.³⁴ These rules established the principle of “equitable use,” which has since guided ILA's work on international waterways.³⁵ Although the Helsinki Rules, like other provisions from the IIL and ILA, were not formally or legally binding, they carried significant authority.³⁶

From the late 1960s onward, thus the consensus seemed to be that the governance of natural and especially watery resources required new ideas, collaborations, and institutions.³⁷ Several new international organizations were thus established, such as the International Council of Scientific Unions, the UN, and the World Meteorological Organization (WMO), reflecting renewed confidence in international cooperation and progress.³⁸ They supported governments in coordinating responses to environmental problems and provided both a scientific basis and a diplomatic infrastructure to address global challenges.³⁹ Organizations were also established to institutionalize international nature conservation, such as the International Union for the Conservation of Nature (IUCN) and the World Wildlife Fund (WWF), which emerged as prominent non-governmental organizations. The proliferation of international agencies addressing environmental issues also affected the

³² International Law Association, Report of the Forty-Seventh Conference, Dubrovnik 1956. International Law Association, Resolution on the Use of the Waters of International Rivers, Report of the 48th Conference, New York 1958. M.A. Salman, ‘The Helsinki Rules’, 628.

³³ P.K. Menton, ‘Water Resources Development of International Rivers With Special Reference to the Developing World’, *The International Lawyer* 9:3 (1975) 441-464, there 446-447.

³⁴ J. Gupta, ‘Global Water Governance’, in: R. Falkner, *The Handbook of Global Climate and Environment Policy* (Chichester 2013) 21.

³⁵ J. Newton, ‘A brief history’, 354.

³⁶ M.A. Salman, ‘The Helsinki Rules’, 630.

³⁷ S.J. Macekura, *Of Limits and Growth*, 39.

³⁸ R.A. Morgan, *Climate Change and International History*, 4-5.

³⁹ *Ibid* 247-252.

management of water resources. These organizations contributed to policymaking, to the development of international guidelines, and to the creation of transnational networks for knowledge exchange.⁴⁰

Despite the proliferation of consultative and regulatory agencies, however, one of the main regulatory principles guiding international politics on natural resources at that time remained the concept of “development.” States increasingly defined themselves not through colonial relations but via a linear path of industrialization, urbanization, and mass consumption as means to overcome underdevelopment. Development thinkers primarily viewed nature as a resource to be made productive through technology and institutions, raising concerns among conservationists. Despite early calls for a balance between economic growth and environmental protection, economic development remained the priority for many countries in the early 1960s.⁴¹ Rapid growth in industrialized states led to large-scale water projects, including dams, hydropower plants, irrigation systems, river diversions, and wetland reclamation.⁴² This, in turn, encouraged environmentally focused NGOs to collaborate more closely with international institutions and development banks, increasing the influence of non-state actors on government agencies and development policy.

1.3 The 1972 Stockholm Conference and the Consolidation of International Environmental Governance

By the late 1960s, environmental awareness, at least in the West, was growing, fueled by scientific warnings about pollution, radioactive fallout, population growth, a series of accidents, and the depletion of natural resources.⁴³ This growing concern contributed to the rise of environmental NGOs, supported by an environmentalist movement that was growing both in the United States and in Europe.⁴⁴ Many governments began to experience the environmental consequences of rising and accelerating human activities

⁴⁰ S.J. Macekura, *Of Limits and Growth*, 118-19.

⁴¹ *Ibid* 18-22.

⁴² J. Newton, ‘A brief history’, 354.

⁴³ See for example K.C. Clarke, J.J. Hemphill, ‘The Santa Barbara Oil Spill: A Retrospective’, *Yearbook of the Association of Pacific Coast Geographers* 64 (2002) 157-162. B. Wittenstein, *The Day the River Caught Fire: How the Cuyahoga River Exploded and Ignited the Earth Day movement* (New York 2023). T. Higuchi, *Radioactive fallout: the politics of risk, and the making of a global environmental crisis, 1954-1963* (Georgetown 2011).

⁴⁴ S.J. Macekura, *Of Limits and Growth*, 88-90.

firsthand; and started raising these issues at the UN General Assembly too.⁴⁵ To address these challenges, the UN General Assembly decided to convene a United Nations Conference on the Human Environment, which took place in Stockholm from June 5 to 16, 1972.⁴⁶ At this conference, representatives from 114 countries, sixteen intergovernmental organizations, and over 250 NGOs discussed a wide range of global environmental problems, with special attention to the environmental impacts of development, including water pollution.⁴⁷ Due to its size and mission, the Stockholm Conference is usually considered as one of the best-organized and most influential UN gatherings ever.⁴⁸ It raised global environmental awareness, recognized the environment as both a national and international concern, promoted legal and institutional frameworks, and served as a model for future UN conferences. Perhaps most importantly, for the first time civil society played an active role at an UN summit.⁴⁹

Although the conference undeniably contributed to placing environmental issues on the international agenda, its specific recommendations for the protection of freshwater resources were relatively selective and vague. In terms of water management, it focused mainly on general guidelines to safeguard water quality and protect the environment from large-scale water development projects. It further stressed the importance of reducing marine pollution caused by industrial development.⁵⁰

Following the conference's recommendations, however, a few important steps into water protection were taken. For instance, the Convention on the Preservation of Marine Pollution by Dumping of Wastes and Other Matter, known as the London Convention, was adopted. It aimed to prevent marine pollution and protect human

⁴⁵ J.R. McNeil, P. Engelke, *The Great Acceleration: An Environmental History of the Anthropocene since 1945* (Cambridge 2014). R.A. Morgan, *Climate Change and International History*, 9-13.

⁴⁶ S.J. Macekura, *Of Limits and Growth*, 91-94. D. Zierler, 'Going Global after Vietnam: The End of Agent Orange and the Rise of an International Environmental Regime', in: E.M. Bsumek, D. Kinkela, M.A. Lawrence, *Nation-States and the Global Environment: New Approaches to International Environmental History* (Oxford 2013) 108.

⁴⁷ D. Kinkela, 'The Paradox of US Pesticide Policy during the Age of Ecology', in: E.M. Bsumek, D. Kinkela, M.A. Lawrence, *Nation-States and the Global Environment: New Approaches to International Environmental History* (Oxford 2013) 120.

⁴⁸ D.A. Wirth, 'The Rio Declaration on Environment and Development: Two Steps Forward and One Back, or Vice Versa', *Georgia Law Review* 29:3 (1995) 599-653, there 601.

⁴⁹ J. Newton, 'A brief history', 355.

⁵⁰ W. Scheumann, A. Klaphake, *Freshwater Resources and Transboundary Rivers on the International Agenda: From UNCED to Rio+10* (Bonn 2001) 6.

health, marine resources, biodiversity, and environmental quality.⁵¹ Similarly, the Stockholm Conference pushed intergovernmental organizations to launch their own initiatives to promote better environmental and water management. UNESCO, for example, introduced the International Hydrological Decade (1965-1975) to systematically collect knowledge on hydrological systems, which led to the establishment of the International Hydrological Program (IHP) in 1975.⁵² In addition, on February 3, 1971, representatives of eighteen countries signed the Ramsar Convention, which focused on the protection, conservation, and sustainable use of wetlands on a global scale, particularly as habitats for waterfowl.⁵³

From a political point of view, the Stockholm Conference exposed several tensions. Developing countries, including Brazil, criticized conservation proposals as obstacles to economic growth and stressed their right to self-determination, development and decolonization.⁵⁴ Through action in the Group of 77 (G77), founded in 1964, they joined forces to defend their common economic interests. The Western orientation of the conference reinforced their distrust of the environmental agenda, highlighting the challenges of reconciling environmental protection within economic development goals.⁵⁵

From a societal point of view, the Stockholm Conference marked a broadening and strengthening of the global environmentalist movement, driven by a new generation of activists, particularly in the United States and in Europe. Sometimes tensions arose between well-established organizations such as the IUCN and the WWF on the one hand, which worked closely together with governments and focused on traditional conservation, and, on the other hand, newer and more radical groups that emphasized local mobilization and criticized modernization, development, and industrial technology, like Friends of the Earth (FoE) and Greenpeace. For these groups, Stockholm was above all a starting point for addressing broader issues such as North–

⁵¹ J.M. Pacheco Castillo, D. Seybold, D. Santillo, 'The London Regime's Adaptability and Impact', *The International Journal of Marine and Coastal Law* 39 (2024) 440-451, there 441.

⁵² J. Gupta, 'Global Water Governance', 21.

⁵³ R.C. Gardner, R. Caddell, E. Okuno, *Wetlands and International Environmental Law: The Evolution and Impact of the Ramsar Convention* (Cheltenham 2025) 4-5.

⁵⁴ S. Garfield, 'The Brazilian Amazon and the Transnational Environment, 1940-1990', in: E.M. Bsumek, D. Kinkela, M.A. Lawrence, *Nation-States and the Global Environment: New Approaches to International Environmental History* (Oxford 2013) 228-229.

⁵⁵ R.A. Morgan, *Climate Change and International History*, 60-67.

South inequality, the atrocities of the Vietnam War, and the danger of nuclear energy.⁵⁶ In sum, the consolidation of international environmental governance suffered from Cold War fractures and from geopolitical divisions since its inception.

Despite these tensions, however, the Stockholm Conference acted as a booster for the proliferation of a plethora of environmentalist organizations and initiatives. In the aftermath of the conference, the Club of Rome, a group of scientists and entrepreneurs warning of the consequences of unchecked growth and resource depletion, published the widely circulated report *The Limits of Growth* (1972).⁵⁷ Simultaneously, a broader transnational environmental movement emerged, particularly among affluent populations in the Global North. Greenpeace, for example, underwent a major transformation in its focus, philosophy, and membership, shifting from an anti-nuclear group with an environmental emphasis to a biocentric organization that challenged the prevailing idea of human supremacy on Earth and embraced direct-action campaigns.⁵⁸ Such a varied movement built on earlier impulses such as the publication of Rachel Carson's *Silent Spring* (1962), which exposed the environmental damage caused by pesticides; the authority-critical and anti-militarist hippy movement of the 1960s; and the postwar aversion to nuclear war. It drew on the success and popularity of the first Earth Day, the establishment of the U.S. Environmental Protection Agency (EPA), and the rise of new environmental legislation, and institutionalization across the globe, which was embodied by the creation of the UN Environment Programme (UNEP) in 1972.⁵⁹

This global wake-up call led to new environmental legislation, the creation of environmental agencies, and a doubling of international environmental organizations. However, this moment coincided with a broader crisis of the international order, the collapse of the monetary Bretton Woods system and the 1973 oil crisis, which increasingly intertwined environmental, economic, and political issues.⁶⁰ Cold War tensions and the threat of nuclear conflict fostered interest in climate science and

⁵⁶ S.J. Macekura, *Of Limits and Growth*, 91-94.

⁵⁷ P. Hjorth, K. Madani, 'Adaptive Water Management: On the Need for Using the Post-WWII Science in Water Governance', *Water Resources Management* 37 (2023) 2247-2270, there 2251.

⁵⁸ F. Zelko, *Make It a Green Peace!: The Rise of Countercultural Environmentalism* (Oxford 2013) 7-8.

⁵⁹ S. Garfield, 'The Brazilian Amazon', 236. J.B. Flippen, *Nixon and the Environment* (Albuquerque 2012).

⁶⁰ R.A. Morgan, *Climate Change and International History*, 69-71.

discourses of global warming began to take shape on a global scale.⁶¹ Yet, cooperation remained difficult due to unequal resource distribution, growing assertions of sovereignty, and the prioritization of economic growth, factors that often undermined international environmental agreements.⁶²

1.4 The 1977 World Conference on Water Resources

In 1971, the UN Committee on Natural Resources discussed the idea of holding an international water conference, which led to the adoption of Resolution 3513 by the UN General Assembly in 1975. The initiative did not originate from governmental circles but from private conversations among three senior UN officials, Vladimir Baum, Enzo Fano and Alagappa Alagappan, who developed the proposal and gained international support for it.⁶³ The conference aimed to prepare countries at national, regional, and international levels to prevent a global water crisis by the year 2000, ensuring adequate and high-quality water for a growing and increasingly urbanized world population. The preparations, however, were fraught with difficulties. UN Secretary-General Kurt Waldheim showed little interest in water issues and initially appointed an inexperienced Assistant Secretary-General who stalled the organization. It was not until May 1976 that Waldheim appointed Yahia Abdel Mageed, then Sudanese Minister of Irrigation and Hydropower Development, as the new Secretary-General of the conference. Mageed inherited the organizational structure of the conference in financial trouble, lacking technical expertise and proper preparation. Nevertheless, with the support of Mostafa Kamal Tolba, head of UNEP, he managed to mobilize the necessary resources to ensure that the conference could proceed.⁶⁴

The UN Water Conference took place in Mar del Plata, Argentina, from 14 to 25 March 1977, and was the first global conference entirely devoted to water. It resulted in the Mar del Plata Action Plan (MPAP), which provided recommendations on water resources, education, and research, and concluded with ten resolutions. The

⁶¹ National Security Archive, 40 Years of Freedom of Information Action: *The "Carbon Dioxide Problem": Nixon's Inner Circle Debates the Climate Crisis*, April 26, 2024.

⁶² R.A. Morgan, *Climate Change and International History*, 97.

⁶³ A.K. Biswas, C. Tortajada, 'United Nations water conferences: reflections and expectations', *International Journal of Water Resources Development* 39:2 (2023) 177-183, there 178.

⁶⁴ *Ibid* 178-179.

conference also led to the establishment of the UN Inter Secretariat Group for Water Resources (ISGWR) in 1979, bringing together 24 UN entities to coordinate the implementation of the MPAP.⁶⁵ The conference warned that water management in many countries was severely inadequate and called for more coordinated approaches. It particularly emphasized the poor state of water and sanitation services in developing countries, urging the international community to resolve these issues by 1990. This appeal led to the International Drinking Water Supply and Sanitation Decade (IDWSSD-Decade, 1981–1990), and endeavor that mobilized global efforts and funding to address water, sanitation, and hygiene challenges worldwide.⁶⁶

The Mar del Plata conference firmly placed water on the international agenda, encouraging countries to better inventory and manage their water resources. As an immediate result of it, many states started producing their first reports on water use and management, improving monitoring and data collection.⁶⁷ Yet, results fell short due to limited expertise and technical capacity. After the Water Decade ended, much of the momentum was lost.⁶⁸ Development and environmental aspects were still not treated as interrelated; there remained an excessive focus on expanding technical infrastructure for water supply and wastewater treatment, while demand management was largely absent from policy.⁶⁹

At the close of the Decade, the 1990 Global Consultation on Safe Water and Sanitation was held in New Delhi under the slogan *Some for all rather than more for some*. The UN subsequently established the Water Supply and Sanitation Collaborative Council (WSSCC) to continue the unfinished work of the Water Decade.⁷⁰ It was concluded that reducing costs and securing additional resources were crucial, with special attention to institutional and management reforms.⁷¹ Despite these efforts, many water and sanitation projects continued to fail, as development agencies seemed largely unresponsive to the WSSCC's recommendations.⁷² By the early twenty-first

⁶⁵ J. Newton, 'A brief history', 355.

⁶⁶ P. Hjorth, K. Madani, 'Adaptive Water Management', 2252.

⁶⁷ A.K. Biswas, C. Tortajada, 'United Nations water conferences', 179.

⁶⁸ P. Hjorth, K. Madani, 'Adaptive Water Management', 2252.

⁶⁹ W. Scheumann, A. Klaphake, *Freshwater Resources*, 6-7.

⁷⁰ J. Newton, 'A brief history', 355-356.

⁷¹ W. Scheumann, A. Klaphake, *Freshwater Resources*, 7.

⁷² P. Hjorth, K. Madani, 'Adaptive Water Management', 2253.

century, 1.1 billion people still lacked access to safe drinking water, and 2.4 billion had inadequate sanitation services.⁷³

1.5 From Water Blindness to Sustainable Development

Economic instability and crises in many (developing) countries had marked the Water Decade. As a reaction, many countries turned into a much stronger and consistent application of neoliberal policies. The ideological and political choices of such leaders as Margaret Thatcher and Ronald Reagan, while emphasizing freer markets and less state intervention, spurred deregulation and privatization, reducing government control over essential public services such as water management and pollution control.⁷⁴ Rising environmental degradation, combined with socio-economic marginalization, in turn, spurred new forms of environmental activism, not only around water issues. Emerging calls for environmental justice came out and a renewed international attention to water emerged. Environmental justice movements and anti-toxics campaigns advocated for a healthy living environment for everyone, with a particular focus on the disproportionate environmental burdens placed on poor communities and racial minorities. The speed, scale, and impact of these movements took policymakers by surprise and significantly influenced both national and international environmental policy.⁷⁵

In 1987, for instance both the European Convention on Long-Range Transboundary Air-Pollution and the Montreal Protocol, which the UN Secretary-General defined as the most important environmental treaty ever, were signed.⁷⁶ The year 1987 also saw the launch of the UN World Commission on Environment and Development (WCED), better known as the Brundtland Commission, which published the influential report *Our Common Future*. Through it, the UN experts placed the concept of sustainable development on the global agenda.⁷⁷ While comprehensive in

⁷³ J. E. Castro, 'Water Governance in the Twentieth First Century', *Ambiente & Sociedade* 10:2 (2007) 97-118, there 98.

⁷⁴ P. Hjorth, K. Madani, 'Adaptive Water Management', 2250-2251.

⁷⁵ S.L. Cutter, 'Race, class and environmental justice', *Progress in Human Geography* 19:1 (1995) 111-122, there 113-114. A. Szasz, *Ecopopulism: Toxic Waste and the Movement for Environmental Justice* (Minnesota 1992).

⁷⁶ S.J. Macekura, *Of Limits and Growth*, 265-268. E.R. DeSombre, 'The Experience of the Montreal Protocol: Particularly Remarkable, and Remarkably Particular', *UCLA Journal of Environmental Law and Policy* 19:1 (2000) 49-82, there 49-50.

⁷⁷ J. Newton, 'A brief history', 356.

scope and leading toward an all-encompassing definition of sustainable development, the report reiterated the centrality of developmentalist discourses and left issues such as water scarcity and its institutional and political dimensions only marginally addressed, touching upon them primarily as subtopics within urban development and food security. Still, the report compelled the international water community to reflect on the interdependence of water, the economy, and the environment.

The concept of sustainable development transformed the political perception of resource conservation, but the lack of a bridge between international water experts, who had already warned of an impending water crisis, and the environmental and development policies of the Brundtland Commission led to an underestimation of the global water situation. Despite the Water Decade, freshwater remained neglected during the 1980s as a scarce resource under increasing environmental pressure. Such an approach, which has been defined as “water blindness,” helps to explain why the core principles of a global water policy were still far from gathering widespread consensus in the 1980s and why those years are often described by scholars as a lost decade for international water policy.⁷⁸

It took a major transformation on the international system for water governance to be back on the international agenda and for water blindness to be overcome. The end of the Cold War brought about the dissolution of the Soviet Union, Eastern Europe gained greater independence, Germany was reunified, and India and China liberalized their economies. This “new” world order fostered optimism among environmental activists, who hoped for stronger international cooperation. It was in this context that the UN and several international expert groups paved the way for the Dublin Conference. The International Conference on Water and the Environment (ICWE), held in Dublin in 1992, was a major milestone. The conference aimed to provide essential input on international water governance in preparation for the United Nations Conference on Environment and Development (UNCED), better known as the Earth Summit in Rio de Janeiro.⁷⁹ The call for a global conference in Rio, after all, reflected the growing awareness that the international cooperation initiated at Stockholm had been

⁷⁸ W. Scheumann, A. Klaphake, *Freshwater Resources*, Z. A.K. Biswas, ‘Deafness of Global Water Crisis: Causes and Risks’, *Ambio* 27:6 (1998) 493.

⁷⁹ J. Newton, ‘A brief history’, 356.

insufficient to address escalating environmental problems. It also became clear that environmental and development issues could no longer be treated separately.⁸⁰ And the Dublin Conference, which will be the object of the next chapters, was supposed to contribute to filling the gaps in water management that the international community had left wide open from Stockholm onward.

1.6 Conclusion

Despite a constantly global attention to water, throughout the second half of the twentieth century, international water governance often lagged behind ambition. While a steady process of institutionalization did indeed take place, albeit in fits and starts, particularly within the UN, the lack of coordination, funds, political willingness and commitment made these efforts generally ineffective in addressing major issues of water scarcity, pollution, and degradation. Regulatory regimes solved technical issues or defended private and regional interests but failed to comprehensively address the deteriorating status of global water resources. Overall, international efforts remained fragmented with water often subordinated to economic and political priorities. The 1980s, marked by neoliberal reforms and widespread “water blindness,” brought further stagnation as water issues were overshadowed by other development and environmental concerns. Only in the early 1990s, as a reaction to further pushes coming from below across local communities over the world and due to a renewed interest in global water justice and pollution did water governance begin to gain real traction, paving the way for the integrated approach that will characterize the decades that followed.

⁸⁰ R.N. Gardner, *Negotiating Survival, Four Priorities After Rio* (New York 1992) 3-4.

Chapter 2

The Dutch Contribution to the Rise of Integrated Water Resource Management

2.1 Introduction

This chapter examines the role of the Dutch government's appointed experts in preparation of and during the International Conference on Water and the Environment (ICWE), held from 26 to 31 January 1992 in Dublin.⁸¹ It explores the preparations leading up to the conference, the event itself, the emergence of IWRM as a concept and a policy strategy, and a reflection on the conference outcomes. Dutch experts played a notable role by introducing key ideas, among them IWRM itself, shaping discussions on institutional arrangements, and emphasizing the importance of ecological standards and capacity building.

2.2 An Introduction to the Dublin Conference and the Dutch Delegation

The Dublin Conference represented the most significant contribution to the discussions about freshwater issues that crossed the 1992 UNCED Conference in Rio de Janeiro. The conference was organized by the Irish government and was convened by the WMO on behalf of more than twenty UN organizations. In total, it brought together 500 participants from 114 countries, along with representatives of 38 NGOs, fourteen intergovernmental organizations, and 28 UN agencies.

The conference primarily focused on four main objectives. First, it aimed to assess global freshwater resources and identify urgent priorities as well as long-term strategies. Second, it sought to develop comprehensive, coordinated, and cross-sectoral approaches to water management. Third, it focused on formulating ecologically sustainable strategies and action programs. Finally, it aimed to raise awareness and build support for the implementation of national water programs and policies. The substantive work was carried out primarily by six working groups, which addressed integrated water resources management, water resources and climate

⁸¹ International Conference on Water and the Environment: Development issues for the 21st century, The Dublin Statement and Report of the Conference, 1992, VII.

change, ecosystem protection, water and sustainable urban development, drinking water and sanitation in urban and rural areas, which a special focus on food production and rural development, and mechanisms for implementation and coordination of water governance at all levels.⁸²

The experts that gathered in Dublin for both the preparatory work and the conference itself were mostly appointed by governments. Despite their different cultural backgrounds and political priorities, they all agreed that the global freshwater situation was critical and emphasized that immediate action was necessary. They also called for a radical change in water governance, demanding fundamentally new approaches to evaluating, developing, and managing freshwater resources. The experts also stressed the need to increase political engagement at all levels and support good water practices through investments, legislation, institutional reforms, technology, public education, and capacity building. The conference highlighted the interdependence between humans and nature and urged world leaders, who would convene in Rio, to translate the recommendations into practical action programs.⁸³

The Dutch delegation at the conference consisted of G.J. Alaerts, W.G. Ardon, J. Blom, R. Koudstaal, H.M. Oudshoorn, F. Rijsberman, H. Savenije, R. Zijlmans, and F.C. Zuidema, with E.C. Newton and T.B. Statia representing the Netherlands Antilles.⁸⁴ Alaerts recalled that the Dutch team functioned very effectively. Along with Rijsberman, Koudstaal and Savenije, Alaerts was an external specialist, not working for any governmental agency at the time of the conference, yet holding an extensive experience in international water programs. This group of experts operated both before and during the conference with considerable autonomy. According to their own accounts, the Dutch government of the time did not exercise any strict control upon them. External experts were given ample space for developing their own ideas, although consultation and coordination with governmental officials did take place. Governmental policy drafts were primarily handled by officials working at the former Ministry of Housing, Spatial Planning and the Environment, the Ministry of Water Management, and in particular, the

⁸² Ibid.

⁸³ Ibid 3.

⁸⁴ Ibid 46.

Ministry of Development Cooperation, which had a specialized water unit and, according to Alaerts, possessed the most expertise on international water issues.⁸⁵

According to Savenije, the Dutch government highly valued the work of these experts because both the national water administration, the Rijkswaterstaat, and the regional water boards were mainly focused on issues that directly concerned the country, such as the building of new dikes, water distribution, and irrigation for agricultural purposes. Dutch authorities, however, had less insight into international issues such as water scarcity and flooding and therefore tended to trust the expertise that Dutch scientists were bringing to the table. That expertise, in particular, was coming from the Delft Institute for Water Education (IHE), where Savenije worked and where a dedicated Water Resources Management course was established in 1999 - 1992. This course was strongly based on the background paper prepared by the Dutch delegation for the Dublin Conference.⁸⁶

2.3 Preparations for Dublin

The preparatory works for the ICWE started already in 1991 through a series of specialized workshops held in Vienna, Copenhagen, Bangkok, Oslo, Bratislava, and Delft.⁸⁷ In some workshops, Dutch experts were only minimally involved; however, according to Alaerts, they contributed significantly especially during meetings in which the contents of IWRM were discussed or in which topical issues such as basin management were addressed.⁸⁸ In these preliminary stages, the Dutch government and experts played an active role especially for what concerned the strengthening of

⁸⁵ Semi-structured Interview Guy Alaerts, November 19, 2025.

⁸⁶ Semi-structured interview Huub Savenije, November 10, 2025.

⁸⁷ ASCEND 21 ICSU International Conference on an Agenda of Science for Environment and Development into the 21st century in Vienna, November 1991. Nordic Freshwater Initiative for the UN Conference on Environment and development (RIO), 1992 and the International Conference on water and the environment (Dublin), 1992. Copenhagen Report: Implementation mechanisms for integrated water resources development and management. Copenhagen Informal Consultation, November 11-14, 1991. ESCAP Workshop on Sustainable and Environmentally Sound Development of Water Resources in Bangkok, October-November 1991. Consultation on Water Supply and Sanitation Collaborative Council Global Forum in Oslo, September 1991. World Meteorological Organization, Information needs for water quality assessment and management, Report of a WMO/WHO/UNEP Expert consultation, Bratislava, Augustus 26 - 30, 1991. G.J. Alaerts, T.L. Blair, F.J.A. Hartevelt, A Strategy for Water Sector Capacity Building, IHE-Report 24, IHE/UNDP, Delft/New York 1991. G.J. Alaerts, H.H.G. Savenije, F.R. Rijsberman, 'Komt er een Mondiale Watercrisis?', *H2O* 25:5 (1992) 108-111, there 108.

⁸⁸ Semi-structured Interview Guy Alaerts, November 19, 2025.

capacity building. The Dutch government's Directorate-General for International Cooperation (DGIS) actively promoted an overarching approach to water issues that mirrored the one applied at home. On May 15, 1991, the DGIS held a well-attended brainstorming session with Dutch water sector experts and professionals, inviting relevant institutions and stakeholders to gather input for further refining water management and capacity-building policies.⁸⁹ Then, together with the United Nations Development Programme (UNDP), the DGIS organized and hosted a crucial ICWE preliminary symposium in Delft.⁹⁰

The Delft symposium, held from June 3 to 5, 1991, at the IHE, focused on two major challenges: the growing need for an integrated approach to water management and the weak institutional environment that undermined many water projects. Professionals and officials from around the world discussed strategies to strengthen the sustainability of water sector programs. Emphasis was placed on improving performance in irrigation, drinking water, and sanitation, and on the importance of demand management as being at least as crucial as increasing water supply. Ways to build capacity and the workings on water agencies were also discussed, focusing on strengthening the ability of institutions and individuals to improve planning and management processes in the water sector. Extensive discussion addressed the importance of an “enabling environment,” community engagement, the role of the private sector and NGOs, national planning under scarcity, and the need for better-coordinated donor strategies. The value of capacity building as a new concept applied to water governance was also debated. Contributions to these discussions formed the basis for what came to be known as the Delft Declaration.⁹¹ According to Alaerts, the symposium was highly successful because, for the first time, institutional problems in the water sector were analyzed systematically, giving shape and substance to the idea that an “integrated” approach meant the involvement of several actors and sectors of society, which needed to be adequately informed and empowered.⁹²

⁸⁹ G.J. Alaerts, T.L. Blair, F.J.A. Hartevelt, A Strategy for Water Sector Capacity Building, IHE-Report 24, IHE/UNDP, Delft/New York 1991, 157.

⁹⁰ G.J. Alaerts, H.H.G. Savenije, F.R. Rijsberman, ‘Komt er een Mondiale Watercrisis?’, 108.

⁹¹ Ibid 7-8.

⁹² Semi-structured Interview Guy Alaerts, November 19, 2025.

Another important step in the process that led to the Dublin Conference was the informal consultation round that was held in Copenhagen, from November 11 to November 14, 1991. On that occasion, the Dutch experts discussed with their international colleagues the viability of the demand-driven approach to water resources, complementing it – in an attempt to overcome or at least mitigate the distortions of both neoliberal policies and developmentalist discourses and practices – with the principle of subsidiarity.⁹³ The idea was that making decisions at the most local level possible (like watersheds or communities) would have improved efficiency, stakeholder involvement, and tailored solutions. Such an approach was shared by the representatives of Denmark, Finland, Norway, and Sweden, and it further strengthened the idea of developing a common IWRM.⁹⁴

Furthermore, in preparation for the conference in Dublin, ten keynote papers by leading experts were written, with the aim to provide a comprehensive overview of the key issues surrounding water and development. These papers served as essential background material for the discussions in Dublin and were presented plenary on the first day of the conference so as to give the working groups, which were responsible for drafting the action plans and the final recommendations, a common foundation. One of these papers, perhaps the most consequential one for its breadth and scope, was *Water and Sustainable Development*, and it was not accidentally coauthored by the Dutch experts Koudstaal, Rijsberman, and Savenije.⁹⁵ In this paper, they advocated a new approach to integrated water management, arguing that 'integration' should extend beyond traditional ideas such as coordination between water management agencies, interactions between surface and groundwater, or planning approaches that merely compare strategies and impacts.⁹⁶

⁹³ H. Savenije, J. Soussan, F. Rijsberman, *Water for the future, Integrated water resources management, 2 Policy Priorities for Netherlands Development Assistance* (Den Haag 1998) 32.

⁹⁴ Nordic Freshwater Initiative for the UN Conference on Environment and development (RIO), 1992 and the International Conference on water and the environment (Dublin), 1992, Copenhagen Report: Implementation mechanisms for integrated water resources development and management, Copenhagen Informal Consultation, November 11-14, 1991, 1-3.

⁹⁵ International Conference on Water and the Environment: Development issues for the 21st century, Keynote Papers, Dublin 1992.

⁹⁶ W.B. Snellen, A. Schrevel, IWRM: for sustainable use of water; 50 years of international experience with the concept of integrated water resources management, Background document to the FAO/Netherlands Conference on Water for Food and Ecosystems, The Hague, January 31, February 5, 2005, 14.

According to Savenije, this background paper was the single most important Dutch contribution to Dublin. The idea behind it was to provide a comprehensive input into the relationship between water management and sustainable development. The goal was to bring water issues and environmental policies and regulations together, ensuring that water would receive a prominent place in the discussions about future global environmental development in Rio. Savenije noted that the Dutch delegation had not expected climate change and biodiversity to be higher on the Rio agenda, yet these themes were central in their analysis. This was not an easy task- nor an unchallenged one. In fact, the Dutch experts recall that there were strong lobbying efforts coming from both governments and international institutions like the UNEP, UNICED, and WHO to limit water issues to drinking water and sanitation. This frustrated the Dutch delegates, who according to Savenije, wanted water to have a much broader significance and prominent role in the discussions about the global environment. Their point of view and main conviction was that water, connecting all societal activities, had to be central in any discourse about sustainable environmental futures. That was what induced them to further emphasize the importance of an integrated approach and helped to craft what in Dublin will become the IWRM.⁹⁷

2.4 The Dublin Conference

During the conference in Dublin, the point that the Dutch experts, including Alaerts, Rijsberman, and Savenije, emphasized was that, unlike climate change, which was a single identifiable environmental challenge, there was no single global water problem. Water resources were under threats in many parts of the world and because of many causes. However, among the most urgent issues to address these was the fact that the availability and quality of freshwater in many regions was under pressure, putting development, the environment, and public health at risk. The experts also noted that previous environmental reports, such as the 1987 Brundtland Report, had been giving insufficient attention to this issue.⁹⁸ In areas facing water scarcity, deep socio-

⁹⁷ Semi-structured interview Huub Savenije, November 10, 2025.

⁹⁸ World Commission on Environment and Development, *Our Common Future* (The Brundtland Report) (Oxford 1987). R. Koudstaal, F.R. Rijsberman, H.H. Savenije, 'Water and sustainable development', *Natural Resources Forum* (1992) 277-290, there 278.

ecological crises were already looming, and the Dutch experts noted that these problems would have been exacerbated by demographic and economic growth. To these people it was crucial that the Dublin Conference stressed that the carrying capacity of many freshwater systems was nearly reached, that human-water relations, in other words, were close to a tipping point.⁹⁹

The conceptual changes and practical reverberations that this line of thought implied were deep. As early as the first UN Water Conference in Mar del Plata in 1977, indeed, it was amply recognized that water resources were finite, although this was primarily seen as a hydrological observation rather than a warning of potential conflicts. The Mar del Plata Action Plan recommended river basin management and noted that less than half of the world's population had access to safe drinking water and sanitation. To cope with this issue, the International Drinking Water and Sanitation Decade in the 1980s, focused on universal access and improved water management, but the results had remained limited. Irrigation continued to consume around 80 percent of freshwater and was often inefficient, while goals for sanitation and wastewater management were far from being achieved. Private interests kept clashing with public ones, and ecological marginalization kept impinging on communities that were over-reliant on water resources. The shift in water management had to be radical, and for this reason, unlike the five- to ten-year horizon of Mar del Plata, Dublin adopted a 40-year perspective and highlighted the often-underestimated link between environmental and social impacts of large-scale water infrastructure.¹⁰⁰

After the opening ceremony, the conference was organized into four main components: a plenary session presenting the keynote papers, six working groups, a poster session, and a closing plenary session in which the Dublin Declaration and the reference report were adopted.¹⁰¹ Although the documents were based on extensive background material, new emphasis was occasionally introduced during the conference. The Dublin Declaration noted that the global water sector was in a critical state: without improved water management, public health, food production, industry,

⁹⁹ G.J. Alaerts, H.H.G. Savenije, F.R. Rijsberman, 'Komt er een Mondiale Watercrisis?', 108.

¹⁰⁰ Ibid 108-109.

¹⁰¹ P. McKeague, 'Water and the Environment-Development Issues for the 21st Century', *Environmental Policy and Law* 22:1 (1992) 16-21, there 17.

and water-dependent ecosystems were at risk. Accordingly, the conference formulated recommendations based on four guiding principles. The first principle stated that freshwater was a finite and vulnerable resource, essential for life, development, and the environment. Consequently, a holistic, integrated approach to water management, one that could simultaneously address both socio-economic development and ecological sustainability - in all similar that what the Dutch experts had envisioned in their preparatory report - was needed. Groundwater and surface water had to be managed together with land use at the river basin level. This implied that countries and organizations should treat water as a single sector, rather than through traditional, fragmented ministries. Only by recognizing a “higher water interest” and collaborating across departments could sustainable use and effective water conflict management be achieved.¹⁰²

The second principle stated that water development and management had to be participatory, involving users, planners, and policymakers at all levels. This required education, decentralization, and active user participation in planning and implementation. Top-down decision-making alone was insufficient; operational decisions were better made locally, which led to more efficient management and stronger institutions. The third principle emphasized the central role of women in drinking water provision and water management. Dublin advocated for women's full participation and institutional recognition at all levels. Finally, the fourth principle asserted that water had an economic value. Everyone had the right to reliable and affordable water, through ignoring its economic value – something that came out for the preliminary discussions in Copenhagen – had to be avoided too, as this had led to waste, environmental damage, and inefficiency.¹⁰³ Integrated water management thus had to include demand management, for example through tariffs that reflected scarcity. Sustainable water management had to start from fair environmental usage and clear limits for each system, which had to be determined before planning took place, rather than merely limiting negative impacts of development.¹⁰⁴

¹⁰² G.J. Alaerts, H.H.G. Savenije, F.R. Rijsberman, ‘Komt er een Mondiale Watercrisis?’, 109.

¹⁰³ Copenhagen Report: Implementation mechanisms for integrated water resources development and management, Copenhagen Informal Consultation, November 11-14, 1991, 31.

¹⁰⁴ International Conference on Water and the Environment: Development issues for the 21st century, The Dublin Statement and Report of the Conference, 1992, 4.

Alaerts emphasized that the discussions about the principle that was had to be treated as an economic good were particularly intense. Many representatives saw water management purely as a governmental responsibility and therefore tended to see water resources merely as public goods. Others presented examples showing that governmental management sometimes fell short when economic interests were not properly addressed, that is, private interests enhanced public management efficiency.¹⁰⁵ The difference was therefore more on the consequences of such an interpretation of water governance than on ideological viewpoints. And, according to Savenije, the point that the fourth Dublin principle made, that water was an economic good, has often been misunderstood precisely because such a difference has not been explained in depth. It was not, indeed, about pricing water as a product, but about recognizing that water was a societal resource and an essential economic input. Payments were meant primarily to cover costs and influence demand; value and cost, however, have often come to be confused.¹⁰⁶ Dublin's final declaration, indeed, still foresaw decisions about use and allocation based on societal cost-benefit considerations, not on the ability to pay. Consequently, according to this view, which the Dutch experts endorsed, water use with high societal value but low ability to pay should be supported by the government. Sectors that could pay, such as industry or affluent households, were expected to acquire water at its economic value.¹⁰⁷

Unlike Mar del Plata, Dublin had recognized that infrastructure programs often failed due to insufficient user involvement, lack of financial resources, and weak management. Both user groups and institutions had lacked the capacity to make sustainable use of new "hardware." Dublin therefore placed capacity development at the center, endorsing fully the ideas developing by the Dutch experts. This vision included research into water and ecosystem dynamics, strengthening the national knowledge base through education and training, reviewing and simplifying mandates,

¹⁰⁵ Semi-structured Interview Guy Alaerts, November 19, 2025.

¹⁰⁶ Semi-structured interview Huub Savenije, November 10, 2025.

¹⁰⁷ P. van der Zaag, H.H.G. Savenije, 'Towards improved management of shared river basins: lessons from the Maseru Conference', *Water Policy* 2 (2000) 47-63, there 51-52. H.H.G. Savenije, P. van der Zaag, 'Water as an Economic Good and Demand Management *Paradigms with Pitfalls*' *Water International* 27:1 (2002) 98-104.

institutions, and regulations, and providing information and communication to promote broad societal engagement.¹⁰⁸

2.5 An Insiders' View on IWRM

The conference report emphasized that the Dublin Conference was the first major international meeting to place holistic water management at the center – this was codified as an “integrated” approach, which came to be known as IWRM – water management had to be integrated within a human and ecological context, rather than addressing sectoral interests in isolation.¹⁰⁹ The Dublin Statement equated “integrated” with “holistic,” and sought to link water management with social and economic development as well as with ecosystemic protection. This meant that the entire water cycle, the needs of different sectors, varied ecological aspects, and the interconnections within river basins and groundwater systems, including their relationship with other natural resources, had to be managed in an integrated and coordinated manner.¹¹⁰

The concept of Integrated Water Resources Management (IWRM) predates the Dublin Conference. As early as 1926, water management at the river basin level was integrated into Spanish law, and IWRM was explicitly referenced in the water management directives of Hesse State, Germany, in 1960. However, the concept gained widespread recognition and prominence after the 1992 World Summit in Rio. By the 1990s, it became increasingly clear to many professionals that water issues were complex, spanning multiple dimensions, sectors, regions, and interests. These challenges, driven by various causes and agendas, could only be addressed through coordinated, multidisciplinary, and multi-stakeholder efforts.¹¹¹

Savenije recalled that many of the older members of the Dutch delegation found the concept of IWRM interesting but did not fully understand it. Yet, according to him, it was Frank Rijsberman and Rob Koudstaal who had played a key role in crafting the

¹⁰⁸ G.J. Alaerts, H.H.G. Savenije, F.R. Rijsberman, ‘Komt er een Mondiale Watercrisis?’, 110-111.

¹⁰⁹ International Conference on Water and the Environment: Development issues for the 21st century, The Dublin Statement and Report of the Conference, 1992, 12.

¹¹⁰ H.H.G. Savenije, P. van der Zaag, ‘Conceptual framework for the management of shared river basins; with special reference to the SADC and EU’, *Water Policy* 2 (2000) 9-45.

¹¹¹ J.J. Bogardi, et al., *Handbook of Water Resources Management: Discourses, Concepts and Examples* (Cham 2021) 365-366.

concept and its empirical references: they had worked extensively on complex water system analysis and on resource analysis. These studies have been crucial to developing the functioning and the characteristics of IWRM. The broader theoretical framework for IWRM, thus, had genuinely Dutch roots, and Dutch experts had been largely responsible for both its conceptual refining and scientific development, establishing an approach that was entirely new at the time.¹¹²

According to Alaerts, the Dutch government and experts also played an important role not only in introducing but also in supporting and spreading the IWRM. While some countries adopted it, it was still unfamiliar to many, and skepticism was seemingly preventing its widespread application. Alaerts, thus, was among the first ones to focus primarily on the institutionalization of such a governance approach, studying ways to improve and facilitate, across policy systems, aspects of drinking water and wastewater. To him capacity building, organizational management, training, and strengthening institutions were the key factors for the success of IWRM. The work that Alaerts and his colleagues did in Dublin in setting up and promoting IWRM, and institutional development eventually paid off. These ideas were taken up by the World Bank and other bilateral organizations, with substantial international funding going to IWRM projects on river management, ecological flows, ecosystem restoration, and decision support systems; all of which fully integrated multiple values of water use.¹¹³

Seen from the inside, thus from the perspective of those who worked to establish it, the success of IWRM was not easily predictable. At the beginning of the 1990s, IWRM was still new and partially controversial, especially in developing countries where governments were still organized along traditional sectoral structures. According to Alaerts, it took years to put these ideas into practice, and it was only by the late 1990s and early 2000s, that many countries started to introduce new water laws incorporating joint management concepts. This marked a kind of paradigm shift. IWRM slowly became a central policy theme, which became mostly visible, for example, in the European Water Framework Directive. The directive prescribed management plans and set ecosystem improvement as a goal, establishing a water governance structure inspired

¹¹² Semi-structured interview Huub Savenije, November 10, 2025.

¹¹³ Semi-structured Interview Guy Alaerts, November 19, 2025.

by IWRM.¹¹⁴ In his recollections, Savenije stressed that once IWRM became a popular concept, it was rapidly adopted even though at times this happened without a clear understanding of its full implications. The concept, indeed, existed in the form of mathematical models complementing American optimization ones. In its academic form, the concept had been fully developed at the IHE, in Delft, and Brought with itself a series of consequences that run against the prevalent profit-oriented models at use before IWRM's adoption. Instead of trying to maximize outcomes, indeed, the Dutch water experts had tried to find ways to determine use priorities and balance supply and demand.¹¹⁵ This was the essence of a balanced approach to water that IWRM promoted, but it needed time to be digested and fully implemented.

The reasons why this system was born in the Netherlands are many: the presence of top-notch water programs and a vibrant scientific community is one of these factors. At the same time, there are several socio-political variables to be considered. The Netherlands has a long tradition of social organization and institutional development in water management. After the 1953 flood disaster, the country developed expertise in hydraulic engineering and a new water defense system. The country developed advanced expertise in hydraulic works that, by 1955, several developing countries requested training for their engineers in the Netherlands, a trend that led to the first international course in Hydraulic Engineering in 1957 and to the founding of the IHE. From 1960 onwards, the institute was further expanded, thus professionalizing the Dutch water sector and providing crucial knowledge for international water programs.¹¹⁶ Such a body of knowledge rested upon a culture where water is perceived as an existential source, due to the country's exposure to the sea, and where water-related decisions have been long democratized and participated. The Dutch culture and socio-political system, thus, was the perfect conduit for the development of IWRM, as the first-hand experience of the Dutch experts who crafted it fully proves.

¹¹⁴ Ibid.

¹¹⁵ Semi-structured interview Huub Savenije, November 10, 2025.

¹¹⁶ H. Savenije, J. Soussan, F. Rijsberman, Water for the the future, Integrated water resources management, 2 Policy Priorities for Netherlands Development Assistance, Den Haag 1998, 26-27. See also: IHE Delft, 'Institute for Water Education under the auspices of UNESCO'.

2.6 Assessing the Immediate Impact of Dublin

The four guiding principles of the Dublin Statement were translated into concrete recommendations that UN organizations could bring to UNCED in Rio and that helped countries address their water challenges.¹¹⁷ A key outcome was the inclusion of a water section in the Earth Charter and Agenda 21, which established rights and responsibilities for water use, management, and the protection of aquatic ecosystems. Since Dublin, water management and water resources have been firmly on the international agenda.¹¹⁸

According to Alaerts, Savenije, and Rijsberman, several concepts emphasized by the Dutch delegation in Dublin were well received, even beyond the integrated water management approach. Such was the case, for instance, of ecological standards, effective natural resource management, broad participation in decision-making, and guidance of urban development through regional planning frameworks. At the same time, addressing environmental and ecological issues had proven to be rather difficult for many participants in Dublin, so some recommendations remained cautious, and concrete targets could not yet be established due to uncertainties in the data. Yet, the Dutch delegates admit the debates in 1992 were more professional and less polarized than those in 1977, marking an important step in international water policy.¹¹⁹

Savenije recalled that the Dutch delegation was disappointed that water ranked so low on the Rio agenda and that discussions often reverted to drinking water and sanitation. Although the broad importance of water was recognized, the focus often remained on commercial interests, consistent with the World Bank's neoliberal approach emphasizing privatization and pricing. According to him, the IHE opposed this by focusing on capacity building: ensuring governments could pay properly, providing education, and establishing strong institutions. But the cogency of neo-liberalization was too strong to be fully opposed. Even the Netherlands followed a semi-public model: drinking water companies were publicly owned but managed commercially. This model, with public shareholders and private management, worked effectively and delivered the

¹¹⁷ International Conference on Water and the Environment: Development issues for the 21st century, The Dublin Statement and Report of the Conference, 1992, 5.

¹¹⁸ H.H.G. Savenije, P. van der Zaag, 'The Maseru Conference', *Water Policy* 2 (2000) 1-7, there 5.

¹¹⁹ G.J. Alaerts, H.H.G. Savenije, F.R. Rijsberman, 'Komt er een Mondiale Watercrisis?', 111.

best water at the lowest cost, something the World Bank reportedly did not want to acknowledge.¹²⁰

According to Alaerts, the Dutch delegation was satisfied with the outcomes of Dublin. Their lessons and observations were incorporated into the discussions and texts, and the concepts and recommendations had a worldwide impact: they were taken up by the European Commission, the World Bank, and UN agencies, and translated into investments, national legislation, and policy. Alaerts stated that the Dublin Conference marked a significant shift in water management. For the first time, experienced experts, bilateral organizations, developing countries, and NGOs were brought together, enabling sharp debates and concrete lessons. It came at the right moment, after the partly unsuccessful Drinking Water and Sanitation Decade, and laid the foundation for future actions. Where IWRM had barely been addressed in Mar del Plata and sectoral approaches had dominated, Dublin in the 1990s and early 2000s led to investment programs and new legislation in many countries. According to Alaerts, IWRM, the principle that water has economic value, and the river basin approach remain relevant today.¹²¹ Dublin was a key step in the global recognition of the need for IWRM. Although some doubted its practical feasibility, the majority of the international community still supports its goals and core principles.¹²² The broad relevance of the Dublin principles is reflected in the large number of international documents and declarations citing them.¹²³

Internationally, the consensus on IWRM grew after the conference ended: the debate shifted from the necessity of IWRM to its implementation. During the preparatory meetings for Rio in 1992, IWRM concepts were extensively discussed and adopted.¹²⁴ Savenije also confirmed that IWRM gained significant influence from Dublin onward. The establishment of international NGOs, such as the Global Water

¹²⁰ Semi-structured interview Huub Savenije, November 10, 2025.

¹²¹ Semi-structured Interview Guy Alaerts, November 19, 2025.

¹²² M. Kelly-Quinn et al., 'Dublin Ireland: a city addressing challenging water supply, management, and governance issues', *Ecology and Society* 19:4(2014) 8. P.B. Moriarty et al., The Dublin principles revisited for WSS, Water, Sanitation and Hygiene: Challenges of the Millennium, 26th WEDC Conference, Dhaka, 2000.

¹²³ W. Scheumann, A. Klaphake, *Freshwater Resources and Transboundary Rivers on the International Agenda: From UNCED to RIO+10* (Bonn 2001).

¹²⁴ H. Savenije, J. Soussan, F. Rijsberman, *Water for the the future, Integrated water resources management, 2 Policy Priorities for Netherlands Development Assistance, Den Haag 1998, 30.*

Partnership in 1996, in response to the global challenges of water scarcity and pollution, played a crucial role in spreading the Dublin principles worldwide, which form the core concepts of integrated water management.¹²⁵ Since then, IWRM has been widely accepted.¹²⁶

2.7 Conclusion

The Dutch delegation played a pivotal role in the development and promotion of IWRM. Drawing on their expertise and active engagement, Dutch delegates helped establish an integrated approach to water management, that took into consideration several aspects including extraction, societal well-being and conservation. Their contributions laid a strong foundation for a wider international recognition of water management as a complex, multidisciplinary challenge and have since shaped policy, legislation, and practice around the world. Key milestones in this global consensus included the Informal Consultation in Copenhagen in 1991, the UNDP symposium on capacity building in the water sector in Delft in 1992, and the ICWE in Dublin, which produced the Dublin principles and Chapter 18 of Agenda 21 on freshwater, later adopted at UNCED in Rio.¹²⁷

¹²⁵ H.H.G. Savenije, P. van der Zaag, 'Conceptual framework for the management of shared river basins', 16.

¹²⁶ Semi-structured interview Huub Savenije, November 10, 2025.

¹²⁷ H. Savenije, J. Soussan, F. Rijsberman, Water for the the future, Integrated water resources management, 2 Policy Priorities for Netherlands Development Assistance, Den Haag 1998, 32.

Chapter 3

Integrated Water Resources Management and Transnational Environmental Activism

3.1 Introduction

This chapter analyzes the role of international organizations and NGOs – here collectively interpreted as agents of transnational environmental activism – during and around the 1992 Dublin Conference.¹²⁸ The conference constituted a key node within the broader UNCED preparatory process, in which water was recognized as a cross-border issue, linking environment and development. By examining the preparatory process, the institutional dynamics within the UN system, and the involvement of NGOs, this chapter shows how these international and transnational actors helped shape the debate on water management in Dublin and what influence they had on both the substantive and institutional outcomes.

3.2 Introduction to the Dublin Conference and International Organizations

A telling indicator of the prominent position of NGOs in world politics is their growing presence at the international conferences, including in Dublin. Since the founding of the United Nations, a pattern of parallel NGO-conferences has emerged.¹²⁹ The protection and management of freshwater have benefited from the involvement of various international organizations.¹³⁰ The Preparatory Committee for UNCED in Rio recognized that water was one of the issues transcending the boundaries between environment and development. It therefore requested that the World Meteorological Organization

¹²⁸ P. Wapner, 'Horizontal Politics: Transnational Environmental Activism and Global Cultural Change,' *Global Environmental Politics* 2:2 (2002) 37–62.

¹²⁹ M. Finger, T. Princen, *Environmental NGOs in World Politics: Linking the Local and the Global* (London 1994) 4.

¹³⁰ L. Boisson de Chazournes, 'International Institutions, Fresh Water and the Environment: Mutual Incentives', *Environmental Policy and Law* 44:1-2 (2014) 172-175, there 172.

(WMO), who acted on behalf of the 24 UN agencies and bodies active in the water sector, convened a meeting of technical experts on water management.¹³¹ The result was the Dublin Conference, which was attended by, among others, approximately eighty representatives of international, intergovernmental, and non-governmental organizations.¹³² In total, 38 NGOs, 14 intergovernmental organizations, and 28 UN bodies and agencies were represented.¹³³ Professor Godwin Obasi, Secretary-General of the WMO, Mostafa Tolba, Executive director of UNEP, and Arcot Amachandran, Executive Director of the UN Centre for Human Settlements, welcomed the participants on behalf of the UN system organizations.¹³⁴ Alaerts noted that in addition to more general organizations such as the WMO and the FAO, several regional UN bodies participated in the Dublin Conference, including the United Nations Economic Commission for Africa (UN/ECA) and many other UN agencies involved in water management.¹³⁵ According to Savenije, UNEP, UNESCO and the World Bank played a particularly prominent and influential role in Dublin.¹³⁶

3.3 Inter-Governmental Efforts Paving the Way for Dublin

In 1991, a series of conferences and meetings already took place that contributed to the formation of views ahead of the Dublin Conference. Many of the themes discussed in

¹³¹ Those 24 UN agencies and bodies involved were: United Nations Department of International Economic and Social Affairs (UN/DIESA), United Nations Department of Technical Cooperation for Development (UN/DTCD), United Nations Children's Fund (UNICEF), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), United Nations University (UNU), United Nations Economic Commission for Africa (UN/ECA), United Nations Economic Commission for Europe (UN/ECE), United Nations Economic Commission for Latin America and the Caribbean (UN/ECLAC), United Nations Economic and Social Commission for Asia and the Pacific (UN/ESCAP), United Nations Economic and Social Commission for Western Asia (UN/ESCWA), United Nations Centre for Human Settlements (UNCHS/HABITAT), United Nations Disaster Relief Coordinator, Office of the (UNDRO), International Research and Training Institute for the Advancement of Women (INSTRAW), World Food Programme (WFP), International Labour Organization (ILO), Food and Agriculture Organization of the United Nations (FAO), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Health Organization (WHO), World Bank (IBRD), World Meteorological Organization (WMO), United Nations Industrial Development Organization (UNIDO), International Atomic Energy Agency (IAEA) and United Nations Conference on Environment and Development (UNCED).

¹³² 'International Conference on Water and the Environment', *Waterlines* 10:4 (1992) 2-3, there 2.

¹³³ The Dublin Statement and Report of the Conference, Development issues for the 21st Century, 1992, VII.

¹³⁴ Ibid 11.

¹³⁵ Semi Structured Interview Guy Alaerts, November 19, 2025.

¹³⁶ International Conference on Water and the Environment: Development issues for the 21st century, Keynote papers, Dublin 1992. Semi Structured Interview Huub Savenije, November 10, 2025.

Dublin had previously been addressed at national, non-governmental, and international meetings, including preparatory conferences for Dublin held in Vienna, Copenhagen, Bangkok, Oslo, Bratislava, and Delft, as well as the *Global Consultation on Safe Water and Sanitation for the 1990s* in New Delhi.¹³⁷ Based on these meetings, UN organizations prepared several background papers that would serve as guiding documents in Dublin. Various UN agencies contributed intensively to the preparations for the ICWE, and a series of new strategies were developed for the implementation of the Mar del Plata Action Plan. Since 1977, this plan had articulated basic objectives for community-level water supply and waste disposal and outlined concrete programs to achieve these standards. UNESCO and the WMO, for example, focused on financing, institutional arrangements, technology transfer, and capacity building for water resource assessment.¹³⁸ In addition, UN offices and agencies continued to promote the global exchange of knowledge among water experts. In preparation for the Dublin Conference, the UN circulated ten keynote papers by leading experts, intended to provide a comprehensive overview of the key issues surrounding water and development.¹³⁹

According to Alaerts, these international groups, organizations, and efforts played a significant role in the preparations for the Dublin Conference. There was considerable debate over the extent to which environmental concerns should be incorporated, an issue that also characterized the preparations for Rio, where sustainability became an explicit objective. Although the term “sustainability” was not used in Dublin, the underlying concept of IWRM and the need to incorporate ecological considerations into water decision-making were clearly present.¹⁴⁰ In general, international organizations largely supported this shift toward a more integrated approach to water management.¹⁴¹

¹³⁷ Greenpeace International (Amsterdam) Archives, archive number 02597, inventory 5936, International Institute of Social History, International Conference on Water and the Environment: Development issues for the 21st Century, Conference Information.

¹³⁸ Report on water resources assessment: progress in the implementation of the Mar del Plata Action Plan and a strategy for the 1990's, UNESCO/WMO, 1991, 6-9.

¹³⁹ International Conference on Water and the Environment: Development issues for the 21st century, Keynote Papers, Dublin 1992.

¹⁴⁰ Semi Structured Interview Guy Alaerts, November 19, 2025.

¹⁴¹ R. Koudstaal, F.R. Rijsberman, H. Savenije, 'Water and sustainable development', *Natural Resources Forum* 16:4 (1992) 277-290, there 277.

UN organizations also played a crucial role in ensuring that issues related to water resources were thoroughly examined and discussed by the specialists who gathered in Dublin.¹⁴² The ICWE was coordinated by the United Nations ACC Inter-Secretariat Group on Water Resources (ISGWR), chaired at the time by the WMO. The WMO was administratively responsible and hosted the ICWE secretariat in Geneva. While the United Nations served as the organizing framework, the conference was not a standard UN meeting. Participants did not act as government-mandated experts, as they sought to avoid taking advance positions on behalf of their governments during the UNCED preparatory process.¹⁴³ The Conference main outcome, the Dublin Principles, was also adopted by vote rather than through the usual UN consensus process. According to Woodhouse and Muller (2017), this reflected the dominance of environmentally oriented delegates from Europe and North America.¹⁴⁴

UN organizations were well represented in Dublin. Alaerts notes that many UN agencies possessed substantial external expertise in water management, but he also points to significant competition among them. According to him, UN organizations often spent considerable time competing with one another, including instances of “empire building.” Budgetary disputes, for example, arose between the FAO, claiming authority over water due to its mandate on agriculture and food security, and the WHO, which argued that responsibility lay with drinking water, wastewater, and sanitation. The WMO, in turn, asserted its claim based on its focus on the hydrological cycle. In this sense, each organization tended to defend its own institutional domain. At the same time, Alaerts suggests that such competition was not necessarily detrimental, as it could stimulate the development of strong arguments. Importantly, he also emphasizes that Dublin provided space for more marginal actors, such as the UN women’s organization, which exerted substantial influence. This ultimately became one of the Dublin Principles and reflected a growing consensus.¹⁴⁵

¹⁴² B. Grover, A.K. Biswas, ‘It's Time for a World Water Council’, *Water International* 18 (1993) 81-83, there 81.

¹⁴³ J. Newton, ‘A brief history’, 356.

¹⁴⁴ P. Woodhouse, M. Muller, ‘Water Governance- An Historical perspective on Current Debates’, *World Development* 92 (2017) 225-241, there 230-231.

¹⁴⁵ Semi Structured Interview Guy Alaerts, November 19, 2025.

International organizations further exercised their influence through the ICWE exhibition and poster sessions held at Dublin Castle. UN bodies and agencies, together with NGOs and intergovernmental organizations, presented exhibitions on a wide range of water-related issues. Poster sessions followed, featuring contributions from twenty participating organizations. Sessions on various conference themes were held throughout the castle, including *Women, Water and the UNCED Process*.¹⁴⁶

Finally, the influence of international organizations on the Dublin Conference is also evident in the fact that the conference concluded that UN institutions engaged in international water issues should be strengthened in order to carry out assessment and follow-up processes more effectively. Moreover, the conference proposed for UNCED's consideration the establishment of a World Water Forum or World Water Council, which would bring together private institutions, regional organizations, NGOs, and interested governments to participate jointly in monitoring and follow-up activities.¹⁴⁷

3.4 Environmental Organizations and Dublin

Along with international and intergovernmental efforts, NGOs, voluntary organizations, and research institutions from Africa, Asia, Latin America, Europe, and North America also sought to coordinate their positions and develop strategies for developing an integrated approach to water issues. Their major effort in preparation for Dublin was the *International Forum for NGOs – Water – Environment: Strategies for the Future*, held from 12 to 14 December 1991 in Strasbourg. The forum was organized by the Secretariat for Water Association Eau Vive, which reunited a series of NGOs, in cooperation with the governments of France, Canada, and Italy, the city of Strasbourg, and the UNDP/World Bank Water and Sanitation Program. Participants adopted a joint statement focused on drinking water and sanitation, calling for a greater role for local communities, particularly women, in grassroots decision-making processes, including the selection and certification of potable water. Existing NGO initiatives in this field,

¹⁴⁶ Greenpeace International (Amsterdam) Archives, archive number 02597 inventory 5936, International Institute of Social History, ICWE Press Release no. 3, Major UN Water and Environment Conference opens ICWE exhibition and poster session at Dublin Castle.

¹⁴⁷ The Dublin Statement and Report of the Conference, Development issues for the 21st Century, 1992, 7-8. M. Muller, 'Fit for purpose: taking integrated water resource management back to basics', *Irrig Drainage Syst* 24:161 (2010) 161-175, there 164.

they argued, needed greater visibility. The discussions and recommendations were intended to guide NGOs, governments, and external support agencies in improving the integration of NGOs into national water and sanitation policies, as well as the effectiveness and sustainability of their activities. A key objective of the forum was to reach consensus on a statement that could be presented at the Dublin Conference, where the forum's report would also be submitted.¹⁴⁸

Many NGOs, including international environmental organizations, participated in the Dublin Conference. Several of these organizations had already prepared reports before the conference took place. In a press release dated 27 January 1992, for example, WWF and the Ramsar Convention Bureau urged governments to urgently address pollution and the wasteful use of global freshwater resources in order to enable sustainable development. In a report prepared for the ICWE in Dublin, they called for an increase in water-use efficiency of at least 20 percent in water-scarce countries and emphasized the importance of the prudent use and protection of wetlands. They also argued that water-saving and cleaner production technologies should be transferred to less developed countries.¹⁴⁹

Greenpeace was one of the transnational organizations present at the Dublin Conference. Internal correspondence indicates that the organization had already begun developing its strategy for UNCED 1992 as early as 1990. NGOs recognized that the preparatory meetings, rather than the conference itself, were decisive for negotiations and final outcomes. Initially, the role of NGOs in the process leading to Rio was unclear, and some (developing) countries opposed their participation. Greenpeace therefore lobbied intensively for inclusion in the preparatory meetings, including through direct engagement with UNCED Secretary-General Maurice Strong, and by distributing reports and policy documents for these meetings.¹⁵⁰

¹⁴⁸ Report of the Intercontinental Forum NGOs - Water – Environment: Strategies for the future, December 12-14, 1991, Strasbourg, i-5.

¹⁴⁹ Greenpeace International (Amsterdam) Archives, Archive number 02597 inventory 5936, PRESS World Wide Fund for Nature, 'Scientists call for conservation of world's fresh water', 1992.

¹⁵⁰ Greenpeace International (Amsterdam) Archives, archive number 02597, inventory 5937-5940, International Institute of Social History, Greenpeace International Memo about the UN Conference on Environment and Development, 1992, 4 april, 1990. Greenpeace International (Amsterdam) Archives, archive number 02597, inventory 5937-5940, International Institute of Social History, Greenpeace International Memo about Treaties and Conventions Project Staff, 23 may, 1990. Greenpeace International (Amsterdam) Archives, archive number 02597, inventory 5937-5940, International Institute

Formally, negotiations within the UNCED process took place exclusively among government representatives, but NGOs groups like Greenpeace nonetheless tried to exert influence, particularly during the Preparatory Committee (PrepCom) meetings. In parallel, the UNCED Secretariat established ten working groups on a wide range of themes to prepare the negotiation documents. Environmental NGOs, including Greenpeace, IUCN, the U.S. Conservation Foundation (CF), and the Environmental Defense Fund (EDF), were represented to a limited extent alongside UN and government officials and scientific experts. Despite their small numbers, these working groups wielded considerable influence, enabling NGOs to contribute indirectly to the outcomes of the UNCED process.¹⁵¹

Transnational watchdogs remained vigilant even after the Conference, checking the implementation of the Dublin's principles at the international level. In the run-up to UNCED, for instance, Greenpeace's campaign focused primarily on toxic substances, tropical forests, ocean ecology, nuclear issues, and energy, with a strong additional emphasis on waste. The organization concentrated mainly on the formal UNCED process and the PrepCom meetings held in, among other places, New York, Nairobi, and Geneva.¹⁵²

Environmental NGOs thus did not merely respond to the outcomes of the conference but actively sought to shape them by publishing reports and press statements in advance. These materials also reached participants in Dublin, as all attendees received keynote papers, background documents for the working groups, UN strategy papers, and reports from states, NGOs, and intergovernmental organizations.¹⁵³ According to Huub Savenije, however, NGOs such as Friends of the Earth/Earthwatch did not exert significant influence in Dublin. In his view, NGOs were far better organized at the World Wide Forum in The Hague than at the Dublin Conference.¹⁵⁴ Nevertheless, the Dublin Declaration included several provisions

of Social History, Greenpeace International, Submission to the United Nations Conference on Environment and development, November 1992).

¹⁵¹ M Finger, T. Princen, 'Environmental NGOs in World Politics', 196-197.

¹⁵² Greenpeace International (Amsterdam) Archives, archive number 02597, inventory 5937-5940, Greenpeace International, Minutes of International UNCED Meetings, July 5, 1991, Amsterdam.

¹⁵³ Greenpeace International (Amsterdam) Archives, Archive number 02597 inventory 5936, International Conference on Water and the Environment: Development issues for the 21st Century, Conference Information.

¹⁵⁴ Semi Structured Interview Huub Savenije, November 10, 2025.

regarding NGO participation in water management. Whereas most multilateral treaties prior to 1985 were silent on NGO access or allowed only limited and easily revocable participation, more recent environmental regimes granted NGOs substantially broader access. Dublin represented such a development, which enabled NGOs to be increasingly involved in major international conferences and systems of global environmental governance.¹⁵⁵

3.5 Conclusion

This chapter shows that international and transnational organizations played a central role at the Dublin Conference. UN organizations were key-actors in agenda-setting, knowledge production, and the organizational design of the conference, and they generally supported the shift toward a more integrated approach to water management. At the same time, cooperation within the UN system was accompanied by institutional competition. Such a competition was where NGOs came into play, bringing their own views and goals. Yet, their influence remained more indirect and preparatory in nature. Ultimately, the conference remained primarily an expert-driven forum. NGOs sought to exert influence mainly through reports, lobbying, and participation in PrepCom meetings, shaping the UNCED process as a whole rather than the Dublin Conference alone. Although their formal role was limited, the Dublin Conference nonetheless reflected a broader trend toward increasing NGO access to international environmental governance processes.

¹⁵⁵ K. Raustiala, 'States, NGOs, and International Environmental Institutions', *International Studies Quarterly* 41:4 (1997) 719-740, there 722-724.

Conclusion

The purpose of this thesis was to research why the 1992 Dublin Conference became a turning point in international water management and how Dutch government-appointed experts, international organizations and NGOs contributed to the emergence and dissemination of Integrated Water Resources Management (IWRM). By approaching the Dublin Conference and its preliminary processes not as a self-evident outcome of earlier developments, but as a negotiated space where scientific expertise, institutional and political interest, and transnational activism converged, this study demonstrated that the adoption of IWRM emerged from a specific alignment of actors, knowledge practices and political circumstances in the early 1990s.

As outlined in Chapter 1, the latter half of the twentieth century witnessed a growing awareness of the degradation of freshwater resources as a global concern. Although awareness of water-related issues increased internationally during the late 1960s and early 1970s, efforts to govern water on a global scale remained fragmented and largely ineffective. Initiatives to institutionalize water management were constrained by insufficient coordination, limited funding, and lack of political commitment, which hindered attempts to address the mounting pressure of freshwater systems. Water governance continued to be subordinated to broader economic and political priorities, a situation further complicated by the neoliberal reforms and widespread "water blindness" of the 1980s. Only in the early 1990s, driven by grassroots activism and a heightened concern for global water justice and pollution, did international water governance gain significant traction, paving the way for the adoption of a more integrated approach to managing freshwater resources. The Dublin Conference provided the opportunity to consolidate these developments and translate them into a globally recognized framework.

Specific actors played a decisive role in this process. As shown in Chapter 2, this study identified the crucial contributions of the Dutch government-appointed experts in

shaping IWRM. Operating both as technical specialists and policy intermediaries, these experts drew on theoretical knowledge, field experience, and participating in preparatory meetings to translate complex hydrological and environmental data into actionable policy recommendations. They framed IWRM as a holistic approach, emphasizing the interconnections between water, land, ecosystems, and social and economic systems. By doing, so Dutch scientists helped position IWRM within international discourse as a scientifically credible and politically adaptable framework, ensuring water was recognized not merely as a recourse to be allocated, but as a vital, interconnected system requiring careful, coordinated management.

The Dutch government and academic institutions, particularly the IHE in Delft, facilitated this process by granting scientific autonomy and providing platforms for collaboration with international actors and civil society organizations. This combination of political support and academic independence was vital in ensuring that IWRM recommendations were grounded in rigorous research and real-world applicability, rather than being constrained by narrowly political or economic agendas.

Moreover, in chapter 3, this thesis has explored the role of international organizations and NGOs in the development and dissemination of IWRM during the 1992 Dublin Conference. UN agencies such as UNESCO, UNDP, and the World Bank were key players in setting up the conference agenda, producing knowledge, and coordinating multilateral discussions. They generally supported the shift toward a more integrated approach to water management. Although coordination efforts within the UN system were sometimes characterized by competition and institutional maneuvering, the wide diversity of UN bodies involved in the Dublin Conference also ensured that water management was approached in a comprehensive and multidisciplinary manner. Furthermore, environmental NGOs complemented these efforts by broadening the scope of debate. Despite limited formal authority, environmental NGOs like Greenpeace, influenced agenda-setting, contributed to policy documents, and highlighted issues of ecological sustainability and local community participation. Their involvement illustrates the growing influence of transnational organizations in global environmental governance and highlights the interplay between grassroots activism and institutional negotiation.

The Dublin Conference marked both a breakthrough and a point of departure in global water governance. During the conference, IWRM evolved from a largely theoretical concept into an internationally recognized framework, formalized through the Dublin Principles. These principles subsequently influenced major policy instruments, including World Bank water programs, UN sustainable development initiatives, and regional policy frameworks such as the European Water Framework Directive. Dublin demonstrated that environmental, economic, and social considerations could be integrated into a single, flexible framework addressing complex water challenges in a comprehensive manner. However, as prior scholarship has shown, the practical implementation of IWRM has remained uneven. Regional context, power asymmetries, and conceptual ambiguities continue to challenge its application.¹⁵⁶ The Dublin Conference, therefore, was both transformative and provisional. It provided a globally recognized conceptual foundation while leaving substantive questions about practice and equity unresolved.

This thesis makes several original contributions to existing scholarship. The research provided the first detailed historical study of the Dublin Conference itself, including its preparatory processes. By integrating a top-down and bottom-up perspective, this study reveals how governance frameworks emerge from interactions between state-appointed experts, international bureaucracies, and civil society actors. It challenges linear diffusion models and demonstrates that policy frameworks like IWRM are co-produced through negotiation, mediation, and adaptation, extending the insights from Macekura (2015) who shows the influence of NGOs on governments, and United Nations institutions.¹⁵⁷ As well as Ruth Morgan (2024) who shows the diplomatic efforts of both states, scientists and NGOs to address the emergence of climate change as international problems.¹⁵⁸ The thesis also advances the historiography by highlighting the distinctive role of Dutch water expertise. It shows how Dutch scientists translated theoretical and practical experience into a global relevant framework, positioning their contributions within a broader network of negotiation and international collaboration.

¹⁵⁶ P.B. Moriarty et al., 'The Dublin principles revisited for WSS', 392. M.M. Rahaman, O. Varis, T. Kajander, 'EU Water Framework Directive', 573-574. M.M. Rahaman, O. Varis, 'Integrated water resources management', 15.

¹⁵⁷ S.J. Macekura, *Of Limits and Growth*.

¹⁵⁸ R.A. Morgan, *Climate Change and International History*.

Nevertheless, several limitations should be acknowledged. First, this study focuses primarily on Dutch experts, leaving the perspectives of other government-appointed experts underexplored. Future research could examine how actors from developing countries influenced Dublin negotiations, contested IWRM, and adapted its principles in practice. Moreover, this study does not provide a detailed account of long-term implementation across different contexts. Comparative studies could investigate how IWRM has been operationalized, identifying factors that facilitate or hinder its effectiveness.

In conclusion, the 1992 Dublin Conference was a defining moment in the history of global water governance. Growing pressures from population growth, environmental degradation, and unequal access to clean water created an urgent need for a new paradigm, one that IWRM provided. Its adoption represented the culmination of decades of intellectual exchange, scientific collaboration, and institutional negotiation. Crucially, the emergence of IWRM depended on the strategic alignment of actors: Dutch experts contributed technical knowledge and policy expertise, UN agencies provided institutional legitimacy, and NGOs brought environmental and social concerns to the forefront. These efforts intersected with a political context increasingly receptive to integrated approaches to water management. The early 1990s saw heightened awareness of water scarcity and pollution, creating a unique window in which technical knowledge, institutional authority, and political opportunity converged to crystallize IWRM as a globally endorsed framework. Dublin was therefore not merely a forum for codifying existing ideas, but a negotiated site where competing priorities, expertise, and interests were reconciled, producing a framework that was scientifically robust, politically credible, and globally relevant. The conference stands as a lasting symbol of how scientific leadership, institutional collaboration, and transnational activism can combine to address some of the most pressing environmental challenges of our time.

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