Exporting Nature's Gift: An Analysis of Contemporary Water Law Issues in Aotearoa New Zealand

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ABSTRACT

Fresh water is an essential natural resource. The sustainable use, restoration, and conservation of freshwater resources is vital to meet the needs of current generations, while conserving this resource for future generations. However, the management of freshwater resources poses many complex challenges. In Aotearoa New Zealand, freshwater management has become an issue of increasing public concern because of complex issues arising from the competing needs of New Zealand's main water users and international commercial interests. The exploitation of freshwater resources in New Zealand is occurring in two prominent ways: the direct and indirect exportation of water. These exports have contributed to the depletion of New Zealand's freshwater resources for economic gain, to the detriment of social, cultural, and environmental values. New Zealand's "first-in, first-served" and multi-faceted management approach to water allocation fails to address these issues and fails to adequately prepare freshwater users for future climate realities.

In the context of global water scarcity, climate change, and New Zealand's own environmental values, a more efficient and sustainable approach to managing freshwater resources is required. This may be achieved by regulating virtual water flows and bottled water exports, using a freshwater pricing mechanism targeted at commercial users, and banning future permits allowing the bottling of New Zealand freshwater for exportation. These policy solutions would allow New Zealand to achieve a more integrated system of water management that internalizes the negative environmental costs of freshwater exports. An alternative approach may be found in the expansion of legal personhood for freshwater resources, an approach which would legally recognize the inherent value of freshwater resources, but which requires further exploration. This Article also acknowledges the need to address Māori rights and interests in freshwater and the political barriers to implementing changes to the status quo of freshwater management. Nonetheless, by engaging with the momentum to address the

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challenges facing freshwater management, whether by crafting better, targeted policy, or by considering alternative approaches, such as expanded environmental rights, fresh water can shift from a degraded resource to one that is valued and sustainably conserved. In doing so, New Zealand may not only reduce its global water footprint and improve domestic access to water but may also implement solutions to serve as a model for other countries confronting similar freshwater inefficiencies.

TABLE OF CONTENTS

INTRODUCTION

Good water, good life. Bad water, bad life. No water, no life - Sir Peter Blake.

An analysis of international water law reveals a multitude of significant challenges facing the international community. The most critical is water scarcity, an issue affecting every continent on earth.[1] With the impact of climate change and increasing global population, water scarcity has become a global crisis which has proven difficult to address at both domestic and international law levels.[2] This crisis does not necessarily reflect a global water shortage, but rather, the uneven distribution and unsustainable use and management of water around the globe. For some members of the international community, water remains a resource often taken for granted. The island country of Aotearoa New Zealand and its

1. EDITH BROWN WEISS, INTERNATIONAL LAW FOR A WATER-SCARCE WORLD (2013).
2. Jonathan H. Adler, *Warming Up to Water Markets*, 31 REGULATION 14, 14 (2008).

4.9 million inhabitants provides one such example.[3] In a water scarce world, New Zealand may be considered a beneficiary of nature's most precious and essential gift, not due to the large presence of historically valued resources such as oil, gold, or coal, but because of a relative abundance of fresh water. New Zealand's freshwater resource advantage has supported domestic economic growth, particularly through agricultural exports. However, freshwater supply is not evenly distributed across the country, and changes in the state of freshwater resources have given rise to a number of complex water law issues and tensions. These issues—combined with falling availability, deteriorating water quality, and increasing competition between different users—have led to growing public concern surrounding fresh water in New Zealand.[4] Such challenges highlight the complex trade-offs entangled with freshwater management and reveal weaknesses in New Zealand's current water management framework.[5] These weaknesses largely stem from the fact that fresh water is a resource governed by a regionalized regulatory framework which allocates water through a "first-in, first-served" mechanism.[6] Under this framework, the taking of water is essentially "free," which means the costs of negative environmental impacts from excessive or inefficient use are not internalized. As a result, exploitation of New Zealand freshwater resources can be seen in two prominent ways: the exportation of water directly and indirectly.

The direct exportation of water from New Zealand primarily occurs through bottled water exports. The indirect exportation of water from New Zealand occurs through virtual water exports (the water consumption required for the production of a commodity),[7] primarily in agriculture commodities and especially from the meat and dairy industry. This Article explores the water exploitation issues of virtual water exports and bottled water in the context of the current regulatory framework and how these issues have challenged the status quo of freshwater management. After providing an overview assessment of the current water law and policy framework in New Zealand, the Article argues that the New Zealand Government, with stakeholder involvement, ought to address the negative environmental impacts stemming from excessive or inefficient use of freshwater resources by reforming the existing legal and regulatory framework. Two significant options for reform are: (1) the introduction of a water pricing mechanism and (2) a ban on future permits to take freshwater for bottled water exports. These reform options may provide a solution to water exploitation occurring via virtual

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3. *Population Clock*, STATS NZ (last visited Nov. 4, 2019), https://perma.cc/LWC2-V67P.

4. Professor Sir Peter Gluckman, *New Zealand's Fresh Waters: Values, State, Trends and Human Impacts*, OFFICE OF THE PRIME MINISTER'S CHIEF SCI. ADVISOR 7 (2017), http://perma.cc/T5M7-BND6.

5. *Water Management in New Zealand: A Road Map to Understanding Water Value*, N.Z. INST. OF ECON. RES. 3–5 (2014), https://perma.cc/8R63-RHCQ.

6. *Id*. at 3-4.

7. Ellen Hey, *Virtual Water, "Land Grab" and International Law*, *in* INT'L LAW AND FRESHWATER: THE MULTIPLE CHALLENGES 298, 300 (2013).

water and bottled water exports that will improve the overall freshwater management system in New Zealand.[8] This Article also briefly considers the unique legal situation arising from the Whanganui River being granted legal personhood, and contrasts this novel legal approach with the proposed market-based and regulatory solutions.[9]

This is not intended to be an exhaustive exposition of all aspects of New Zealand water law and policy. The approach is to identify relevant weaknesses apparent in the current framework and explore the recent significant issues related to water exports (both virtual and direct) and how pricing water and a ban on future permits to bottle freshwater for exportation may be a warranted solution to address these issues in New Zealand. The potential for an expanded environmental-rights approach to assist with sustainable and efficient freshwater management is considered at the conclusion of the Article to highlight an alternative approach which may offer considerable benefits, but which requires further exploration.

I. BACKGROUND: CONTEMPORARY LEGAL ISSUES ARISING FROM NEW ZEALAND'S FRESHWATER RESOURCE LAW

A. THE EXISTING NEW ZEALAND FRESHWATER MANAGEMENT LEGAL FRAMEWORK

Fresh water provides vital support to New Zealand's ecosystems and economy, and it serves New Zealand's social and cultural well-being with recreational and national identity values.[10] At the heart of freshwater management in New Zealand is the inherited English common law principle and Crown position that no-one "owns" naturally flowing fresh water, a position which has been challenged.[11] While the Crown does not claim "ownership" of fresh water, it has exercised statutory power to regulate the management and use of the resource.[12] The management of freshwater resources in New Zealand is governed by numerous laws, regulations and plans across the national, regional, and local government level.[13] The primary piece of legislation covering water management in New Zealand is the Resource Management Act 1991.[14] The Resource Management Act 1991[15] preserves the sole right, originally vested in the Crown by the Water and Soil Conservation Act 1967, to "dam any river or stream, or to divert or take

8. *See* N.Z. GOV'T, BRIEFING TO THE INCOMING MINISTER FOR THE ENVIRONMENT: WATER ISSUES (2017), https://https://perma.cc/TS6D-RKDT.

9. Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, Part 2 s 14 (N.Z.).

10. BRIEFING TO THE INCOMING MINISTER FOR THE ENVIRONMENT, *supra* note 8, at 3.

11. Anne Salmond, *Tears of Rangi: Water, Power, and People in New Zealand*, 4 HAU: J. OF ETHNOGRAPHIC THEORY 285, 287 (2014).

12. Olivia Nyce, *Water Markets Under the Resource Management Act 1991: Do They hold Water?*, 14 CANTERBURY L. REV. 123, 140–44 (2008).

13. *Managing Fresh Water*, MINISTRY FOR THE ENV'T, https://perma.cc/AXZ9-4FTQ, (last visited July 13, 2018).

14. Resource Management Act 1991 (N.Z.).

15. *Id.*

natural water, or discharge natural water or waste into any natural water, or to use natural water."[16]

The Resource Management Act 1991 defines fresh waters as all "water except coastal water and geothermal water."[17] It provides the overarching framework for freshwater management, including use, quality, and discharges, and it sets out the requirements for regional councils as well as the roles and responsibilities of central government.[18] It allows persons to "take, use, dam, divert, or discharge into, any water in which the Crown has an interest[,]" provided they obtain resource consent (via a water permit) or do not contravene the Act or regulations.[19] This requirement to obtain consent covers both surface water and groundwater.[20] If fresh water is taken or used for an individual's "reasonable domestic needs; or the reasonable needs of a person's animals for drinking water, and the taking or use does not, or is not likely to, have an adverse effect on the environment," then no resource consent is required.[21] No special protections are afforded to groundwater aquifers under the Resource Management Act.[22] In fact, the terms "groundwater" and "aquifers" are absent from the Act entirely, but the definition of "fresh waters" is interpreted to include groundwater.[23] A resource consent water permit to "take, use, dam, divert, or discharge" does not provide a real or personal property right or ownership right in the resource but, in effect, is a grant of a right to use property (or, more specifically, the resources on or under it).[24] Water permits may be granted for up to thirty-five years and generally permit holders are granted a right of renewal.[25] Applications for water permits are allocated in accordance with their priority in time, creating a "first-in, first-served" approach to freshwater resource allocation.[26] Water permits do not run with the land, but a consent holder may apply to transfer a permit to a new owner or occupier of the land.[27]

Under the Resource Management Act framework, the central government is responsible for setting the "national direction" for councils to follow, through regulations such as freshwater national policy statements and national environmental

16. Water and Soil Conservation Act 1967, s 21 (N.Z.).
17. Resource Management Act 1991, Part 1 s 2 (N.Z.).
18. *Id*.
19. *Id*. Part 14 s 354.
20. *Id*. at Part 1 s 2 (N.Z.) ("Water – (a) means water in all its physical forms whether flowing or not and whether over or under the ground: (b) includes fresh water, coastal water, and geothermal water: (c) does not include water in any form while in any pipe, tank, or cistern").
21. *Id*. at Part 3 s 14(3)(b) (N.Z.).
22. *See* Resource Management Act 1991 (N.Z.).
23. *Id*.
24. Resource Management Act 1991, Part 6 s 112 (N.Z.); *see also* BARRY BARTON, THE NATURE OF RESOURCE CONSENT: STATUTORY PERMITS OR PROPERTY RIGHTS 1, 4 (2019), https://perma.cc/Z6A4-945H.
25. Resource Management Act 1991, Part 6 s 123 (N.Z.); MINISTRY FOR THE ENV'T, WATER PROGRAMME OF ACTION: WATER ALLOCATION AND USE 8 (June 2004), https://perma.cc/W8LG-XGDA.
26. Fleetwing Farms Ltd v. Marlborough District Council [1997] 3 NZLR 257.
27. WATER PROGRAMME OF ACTION: WATER ALLOCATION AND USE, *supra* note 25, at 8.

standards.[28] The Resource Management Act 1991 does not specifically refer to allocation of water.[29] The matter is therefore left to councils to determine within the broader principles of the Act and the purpose of the Act, which promotes the "sustainable management of natural and physical resources."[30]

The National Policy Statement for Freshwater Management ("Freshwater NPS") is the primary piece of regulation that provides regional councils direction on how to meet national freshwater management responsibilities when developing their regional freshwater plans and policies.[31] The most recent Freshwater NPS was released in 2014 and updated in August 2017 to incorporate changes aimed at "ensuring freshwater quality improves over time."[32] The Freshwater NPS allows regional councils to set limits on the use of freshwater resources within their regions and then allocate resource consents for abstraction of water.[33] The "first-in first-served" approach to allocation encourages consent applications and the perpetual renewal of permits.[34] There are no charges levied for water "take[n], use[d], dam[med], divert[ed], or discharge[d]," but regional councils may charge a fee to process a water permit consent application, variation, review, or transfer.[35] More than 20,000 freshwater takes have been consented to across New Zealand, of which approximately seventy percent is for groundwater takes and thirty percent is for surface water takes.[36] The Freshwater NPS mandates incorporation of sustainable management values into regional council plans, acknowledging *Te Mana o te Wai*—the concept that "fresh water as a natural resource . . . is integral to the social, cultural, economic and environmental well-being of communities."[37] However, the Ministry for the Environment has recognized that the current "first-in first-served" water allocation approach is largely inconsistent with the concept of sustainable and efficient use, particularly as demand for water increases and take limits are reduced.[38]

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28. *Laws and Regulations Governing How Fresh Water is Managed*, MINISTRY FOR THE ENV'T, https://perma.cc/7575-4HT5 (last visited Sept. 7, 2018).

29. *See* Resource Management Act 1991 (N.Z.).

30. *Id.* at Part 1 s 5.

31. *Laws and Regulations Governing How Fresh Water is Managed*, *supra* note 28.

32. *2017 Changes to the National Policy Statement for Freshwater Management*, MINISTRY FOR THE ENV'T, https://perma.cc/7QBT-GSDP (last visited Sept. 7, 2018).

33. MINISTRY FOR THE ENV'T, NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2014 18 (2017), https://perma.cc/26B6-E2KF.

34. BRIEFING TO THE INCOMING MINISTER FOR THE ENVIRONMENT, *supra* note 8, at 18.

35. Ross Cullen et al., *New Zealand Freshwater Management and Agricultural Impacts*, AJARE (2006), https://perma.cc/X2K4-LW26.

36. AQUALINC RES. LTD., UPDATE OF WATER ALLOCATION DATA AND ESTIMATE OF ACTUAL WATER USE OF CONSENTED TAKES 9 (2010), https://perma.cc/86LE-GK3W.

37. NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2014, *supra* note 33, at 18.

38. BRIEFING TO THE INCOMING MINISTER FOR THE ENVIRONMENT, *supra* note 8, at 18.

Prior to 2010 most abstractions of fresh water in New Zealand were not measured.[39] However, introduction of the Resource Management (Measurement and Reporting of Water Takes) Regulations in 2010 provided for consistent measurement, recording, and reporting of water takes across the national, regional, and catchment levels (including groundwater resources catchments).[40] These Regulations have increased the active measurement of the total volume of water allocated by resource consent from thirty-two percent to almost one hundred percent.[41] Despite these measurements, the interaction and connection between takes from surface water and groundwater still creates a level of uncertainty in data monitoring.[42] Furthermore, the fact that consents are granted on an individual basis creates challenges in managing the cumulative effects of abstraction.[43] It can therefore be difficult to get a full representation of freshwater resource allocations and the impact of consents to take, use, dam, divert, or discharge freshwater resources.[44] This can lead to over allocation of freshwater resources in certain catchment areas and regions.

Before concluding a summary of New Zealand's freshwater management legal framework, it must be acknowledged that the rights and customary interests of Māori, as tangata whenua, were not extinguished when the common law system was introduced to New Zealand.[45] While the incorporation of Māori values and the involvement of Māori in decision making and planning processes have occurred to a limited extent in the legislative framework, Māori rights and interests in New Zealand freshwater resources have not yet been adequately addressed by the Crown. Any changes to freshwater management in New Zealand must address and recognize Māori rights and interests through active engagement, consultation, and partnership. Further discussion of Māori perspectives relating to freshwater management can be found in section II.C, which covers environmental rights-based approaches and the Whanganui River example, but full exploration of Māori customary claims to New Zealand's freshwater resources is beyond the scope of this Article.

B. THE FRAMEWORK IN OPERATION: PROMINENT WATER USE ISSUES

New Zealand has more than 250,000 miles of rivers and streams and nearly 4000 lakes, but these freshwater resources are not evenly distributed throughout

39. *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010*, MINISTRY FOR THE ENV'T, https://perma.cc/UNR6-8EZ5 (last visited Sept. 21, 2018).

40. *Id.*

41. *Id.*

42. *Water Management in New Zealand*, *supra* note 5, at 4–5.

43. Sarah Boone & Stephen Fragaszy, *Emerging Scarcity and Emerging Commons: Water Management Groups and Groundwater Governance in Aotearoa New Zealand*, 11 WATER ALTERNATIVES 795, 814 (2018).

44. *Water Management in New Zealand*, *supra* note 5, at 4, 19.

45. *Ngati Apa* v Attorney-General [2003] NZCA 117, 3 NZLR 643.

the country.[46] Total water use in New Zealand exceeds most other Organization for Economic Co-operation and Development ("OECD") countries by two to three times more water use per capita.[47] The volume of water allocated nationally by resource consent issued by regional councils under the Resource Management Act 1991 has steadily increased over the last decade.[48] The main water users in New Zealand are the agriculture sector (seventy-five percent), municipal drinking water supply (nine percent), and industry (nine percent), and each of these users presents competing needs and values.[49] The increase in water allocation nationally is linked to land use and expansion of irrigated land areas for dairy and livestock farming.[50] The current freshwater resource allocation system in New Zealand does not allow the environmental costs of water exploitation to be internalized, and more efficient and sustainable use methods are therefore difficult to incentivize.[51] Following an overview of the New Zealand freshwater management legal framework, the following sections address the framework in operation, highlighting prominent water use issues in New Zealand.

1. Agricultural Export Issues: New Zealand Dairy Industry Products

Agriculture, and the dairy industry in particular, plays a significant role in the New Zealand economy, and dairy products are New Zealand's largest export market.[52] But linked with the growth of this sector is a significant agricultural water use footprint in New Zealand.[53] Eighty-one percent of allocated fresh water in New Zealand is designated for agriculture, and the majority of irrigated agricultural land is on dairy farms.[54] Water is also used by dairy farm operations for stock drinking water and dairy shed washing.[55] Farm conversions to irrigated-based dairy farms and the intensification of farming operations has had an environmental impact on both water quantity and quality, such as nitrate and phosphate leaching of rivers and streams along with groundwater and surface water

46. CHARLES FELTHAM, FRESHWATER USE IN NEW ZEALAND 1 (Dec. 2011), https://perma.cc/DSE3-GJMJ.

47. *Id.*

48. *Id.* at 1–2.

49. *Update of Water Allocation Data and Estimate of Actual Water Use of Consented Takes*, *supra* note 36, at 1; *see also* FELTHAM, *supra* note 46, at 1.

50. Ramesh Baskaran et al., *Estimating Values of Environmental Impacts of Dairy Farming in New Zealand*, 52 N.Z. J. OF AGRIC. RES. 377, 378 (2009).

51. *Water Management in New Zealand*, *supra* note 5, at 46.

52. *Our Markets*, FONTERRA, https://perma.cc/9VXC-NVKW (last visited Oct. 21, 2018).

53. Of the total water extracted in New Zealand annually, around 80% is used for irrigation by agricultural sector. Te Ara, *Managing Water Resources*, TE ARA: THE ENCYCLOPEDIA OF NEW ZEALAND (Nov. 24, 2008), https://perma.cc/6NRQ-LZ3A.

54. Gluckman, *supra* note 4, at 6.

55. Rory Flemmer & Claire Flemmer, *Water Use by New Zealand Dairy Farms, 1997–2000*, 50 N.Z. J. OF AGRIC. RES. 479, 479 (2007).

depletion from irrigation.[56] As of June 30, 2017, New Zealand had a total of 6,529,811 dairy cattle.[57] Recent research utilizing figures from DairyNZ (an organization representing New Zealand dairy farmers) found that dairy farms in New Zealand use the equivalent amount of water of almost sixty million people, or the combined populations of Los Angeles, New York, London, Rio de Janeiro, and Tokyo.[58] The Dairy Companies Association of New Zealand estimates that around ninety-five percent of New Zealand's dairy products are exported.[59] New Zealand is therefore a net exporter of *virtual water*, defined as "the water needed for the production of [a] product," primarily due to agricultural water use.[60]

The significance of these virtual water exports can be seen in the example of whole milk powder, which is New Zealand's top dairy export product.[61] The industry average for water use per cow per day is seventy liters (including stock drinking water and cow shed water but *excluding* the amount of water used in irrigation), and in warmer, dryer months this figure can double.[62] Hundreds of liters of water may therefore be used to produce liquid milk, which itself has a water content of around ninety percent, and then this water is removed through evaporation processes to produce exportable whole milk powder.[63] This example demonstrates the high virtual water content of dairy export products, despite the exported product itself being dry. It has been estimated that in recent years the cost of environmental impacts from dairying, such as increasing water demand from irrigation, have exceeded revenue from dairy exports.[64] However, because these negative environmental impacts from intensive farming activities largely remain externalities, economic "growth" from dairy has at least partly occurred at the expense of the environment.[65] Adding to the challenges of water use in the agricultural sector is the issue of climate change, which is expected to result in increased demand for irrigation in parts of New Zealand due to projected warming and drying as well as prolonged droughts.[66]

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56. Baskaran, *supra* note 50, at 378.

57. *Agricultural Products Statistics*, STATS NZ (2017), https://perma.cc/8PHP-ZHMB.

58. Peter Fraser & Alison Dewes, *Dairy Farms Using Same Amount of Water as 60 Million People*, SCOOP, (Sept. 18, 2017), https://perma.cc/NM5A-FY43.

59. *About the NZ Dairy Industry*, DCANZ (Oct. 22, 2018), https://perma.cc/8XDY-N8G9.

60. El-Sadek, A, *Virtual Water: An Effective Mechanism for Integrated Water Resources Management*, 2 AGRIC. SCI. 248, 249 (2011); *Virtual Water: Emerging Issues*, ROYAL SOC'Y N.Z. (2009), https://perma.cc/SP7B-65RZ.

61. *See* David Lee-Jones, *New Zealand Annual Dairy and Milk Supply Report 2017*, USDA FOREIGN AGRIC. SERV.: GLOB. AGRIC. INFO. NETWORK, NZ1707 (Oct.15, 2017), https://perma.cc/J27Y-Z5YE.

62. Dairy NZ, *Water Use Calculator*, DAIRY NZ (Oct. 25, 2018), https://perma.cc/HX7H-2PL9.

63. Warren Judd, *Milk – More Than a Drink*, N.Z. GEOGRAPHIC (Nov. 17, 2018), https://perma.cc/Q8HJ-2739.

64. Kyleisha J. Foote et al., *New Zealand Dairy Farming: Milking Our Environment for All Its Worth*, 56 ENVTL. MGMT. 709, 717 (2015).

65. OECD ENVIRONMENTAL PERFORMANCE REVIEWS: NEW ZEALAND 116 (2017), https://perma.cc/VD3T-M22D.

66. Gluckman, *supra* note 4, at 41.

2. Bottled Water Exports Issues

In terms of resource allocation, bottled water exports total a relatively small amount of New Zealand's annual freshwater resource use.[67] However, bottled water exports have come under increasing scrutiny by the New Zealand public given significant media coverage.[68] Due to the lack of water pricing under the current freshwater management framework, after the initial resource permit for extraction is obtained fresh water is essentially a free resource to extract. Bottled water privateers then package and export the resource to the international market—a potentially lucrative business for investors—but the value of return for New Zealand has been questioned, particularly when the environmental costs of extraction, energy use, transportation, and international exportation are taken into account.[69] For example, in 2017 a resource consent permit for a bottling operation in Christchurch, New Zealand was granted to Chinese-owned "Cloud Ocean Water," giving permission for the extraction of 1.57 billion liters of water a year from a single bore.[70] Cloud Ocean Water aims to produce and export 2.4 million bottles of water a week, but the company paid just $2,277 for its resource consent applications.[71] The consent permit was granted despite Christchurch being located in Canterbury, a region experiencing intensifying agricultural production and the resulting water use pressures, and where almost half of groundwater resource zones are already fully, or over-, allocated.[72]

3. Rights-Based Issues

The framework for freshwater management in New Zealand has generally taken a traditional regulatory approach, rather than human or environmental rights-based approach. However, recent changes to the legal status of the country's third longest river, the Whanganui River, have demonstrated a willingness to implement a more progressive approach to water law.[73] In March 2017, the Te Awa Tupua (Whanganui River Claims Settlement) Act gave legal personhood to the Whanganui River, affording the river all the rights, powers, duties, and

67. Nick Smith, *Bottled Water Debate Misses the Mark*, BEEHIVE N.Z. GOV'T (Mar. 15, 2017), https://perma.cc/G53J-WZTM.

68. Eleanor Ainge Roy, *New Zealand Anger as Pristine Lake Tapped for Bottled Water Market*, THE GUARDIAN (Mar. 26, 2017), https://perma.cc/57JY-BALH; Craig McCulloch, *Campaigners Want Assurance Foreign Water Bottling Investing Ceased*, RADIO N.Z. (Oct. 8, 2018), https://perma.cc/XL6W-HX2T; *Dairy Farming is Polluting New Zealand's Water*, THE ECONOMIST (Nov. 16, 2017), https://perma.cc/66E3-UY63.

69. RUTLEDGE, WATER LAW FOR THE TWENTY-FIRST CENTURY: NATIONAL AND INTERNATIONAL ASPECTS OF WATER LAW REFORM IN INDIA 62 (Philippe Cullet et al eds., 201).

70. Dominic Harris, *Canterbury Water on Way to Chinese Market as Bottling Plant Starts Production*, STUFF N.Z. (Oct. 11, 2018), https://perma.cc/E37C-JDHR.

71. *Id.*

72. Boone & Fragaszy, *supra* note 43, at 804.

73. Eleanor Ainge Roy, *New Zealand River Granted Same Legal Rights as Human Being*, THE GUARDIAN, (Mar. 16, 2017), https://perma.cc/2JSB-XUNM.

responsibilities of a person.[74] The Act provides for the establishment of a strategy group, Te Kōpuka, to act collaboratively "to advance the health and well-being" of the Whanganui River.[75] Another feature of the Act is the creation of the office of Te Pou Tupua (filled by two persons acting in a singular role), which has the purpose of being the human face of the Whanganui River, with the responsibility to act in the name of the Whanganui River.[76] The Whanganui River joins a list of other entities that have been conferred legal personhood under New Zealand law, such as companies and trusts.[77] Although this move was generally applauded for its innovative approach, particularly by global media outlets, the Whanganui River joins Te Urewera (a former national park) as one of two natural resources in New Zealand to be granted personhood to date.[78]

II. DISCUSSION: ANALYZING DIRECT AND INDIRECT WATER EXPORT ISSUES AND POTENTIAL POLICY SOLUTIONS

A. INDIRECT WATER EXPORTS: VIRTUAL WATER

The concept of virtual water is typically used to highlight the need for improved water policy in importer states.[79] However, in the New Zealand context the concept can be used to illustrate the need for water policy improvements by a virtual water exporter state. Virtual water is a particularly useful concept to apply to New Zealand's agricultural exports, as it helps to reveal the significant amount of water used in land-intensive production processes. Focusing on the dairy industry, the frame of virtual water provides a tool to examine the hidden water footprint of exported dairy products, such as whole milk powder, and offers grounds to assess resulting negative environmental externalities.

The concept of virtual water can also move beyond a purely analytical tool if incorporated into water law and used to incentivize a reduction in the amount of water used in the production processes from the outset. One way in which the concept of virtual water could be incorporated into the New Zealand freshwater management framework is through a water use pricing mechanism. This would help New Zealand shift to a more integrated water resource management approach by internalizing the environmental costs (at least partially) of intensive water use. In turn, this may reduce the current rate of freshwater resource exploitation occurring in intensive dairy operations in New Zealand (and other agricultural sector industries), by providing an economic incentive to reduce demand for fresh water and adopt new technologies and more efficient, regenerative

74. Te Awa Tupua Act 2017, *supra* note 9, Part 2 s 14.
75. *Id*. at Part 2 s 29.
76. *Id*. at Part 2 s 18.
77. *Innovative Bill Protects Whanganui River with Legal Personhood*, N.Z. PARLIAMENT (March 28, 2017), https://perma.cc/TLG9-99JJ.
78. Roy, *supra* note 73.
79. Hey, *supra* note 7, at 300.

agricultural practices. These changes would provide a variety of positive environmental flow-on effects by improving the quality and quantity of New Zealand's freshwater resources and the climate resiliency of the agriculture sector. The introduction of a pricing mechanism would also help to alleviate freshwater allocation pressures, particularly in regions where intensive dairy farms operate and where climate change is likely to create further water use challenges. Reducing the virtual water content of dairy exports can therefore be shaped as both an economic and environmental goal, which can lead to a more sustainable dairy industry. To make this shift, many changes would be required, including adjustments to the current freshwater management framework through amendments to the Resource Management Act 1991 and an updated Freshwater NPS.

A pricing mechanism could be introduced as a tax or royalty and be applied only to those using irrigation water, or all commercial water users generally. A tax or royalty on irrigation water would apply to those with a water permit used for irrigation purposes and could be calculated at a set rate per the amount of water used for irrigation. If a tax or royalty is applied to all commercial water users, the level of use which qualifies as "commercial" (and triggers the price point) will need to be decided. The implementation of a "right to water" in South Africa may be used as an example as to how domestic, rather than commercial water, could be distinguished. Section 27(b) of the Bill of Rights Constitution of South Africa provides a right to have access to "sufficient water," which has been implemented through a "free basic water policy."[80] This policy provides 6000 liters of fresh water to every household each month, an amount based on the World Health Organization's recommendation that the average person requires between twenty to fifty liters per day,[81] though this is well below what an average person in New Zealand consumes. Applying this policy example to the New Zealand context, a tax or royalty could be triggered only when water use reaches a level above the agreed upon domestic use point, such as use beyond 10,000 liters a month. The volume of water used in commercial operations such as farming irrigation, is significantly greater than a per person basis. Given the volumes of water used for irrigation and other purposes, a charge should not apply to every liter used beyond a domestic purposes limit, but in bulk increments such as per 1000 or 10,000 liters used above the domestic limit. Legislators would also need to decide an appropriate price point to enforce. In the past, the New Zealand Labour Party (which now leads the Coalition-Government) had proposed a two-cent royalty charge per 1000 liters for irrigation water, although this proposal was sidelined when coalition deals were signed.[82]

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80. ALINE BAILLAT, INTERNATIONAL TRADE IN WATER RIGHTS: THE NEXT STEP 15–16 (2010).

81. *Id*. at 16.

82. N.Z. Labour Party, *Clean Rivers for Future Generations*, LABOUR (last visited Nov. 17, 2018), https://perma.cc/4E5K-5TKD.

Getting a consensus for a price point may be a difficult task. On one hand, proponents of a pricing mechanism approach can be found with environmental groups, some political parties such as the Green Party of Aotearoa New Zealand, and other community groups who have already expressed vocal concern about the impacts of intensive farming and irrigation on deteriorating water quality in New Zealand.[83] On the other hand, water pricing policy has, in the past and will likely continue to, face strong opposition from the primary sector due to the financial effects on farmers and concerns that it would lead to a rise in product prices impacting demand and profit margins.[84] This is despite the fact that figures from the University of Auckland Public Policy Institute indicate the average farm would pay less than NZ$14,000 a year based on a two-cent charge and assuming full irrigation over 120 days.[85] This amount is far less than estimates provided by Dairy New Zealand of NZ$45,000 in 2017, which have been described as exaggerated "fiction."[86] Furthermore, since only one in six dairy farms in New Zealand requires irrigation, the economic burden of a pricing mechanism on the majority of dairy farmers is likely to be minimal.[87] Instead, such a pricing mechanism would target intensive farm operations using excessive amounts of irrigated water and incentivize the adoption of smarter and more sustainable practices. These resulting shifts in agricultural practices may stimulate the private sector to innovate and develop new water efficient and regenerative agricultural technologies to further reduce freshwater demand and use.[88] It may also disincentivize further land conversion to irrigated farming from occurring in dry arid regions (such as that found in the Mackenzie Basin) that require significant depletion of freshwater resources and consequently alter natural landscapes and vulnerable ecosystems.[89] If a pricing mechanism were to effectively achieve a halt to further dry land to intensive dairy conversion, this would help limit the water footprint of New Zealand dairying and improve the sustainability and resiliency of the industry overall, particularly given the realities of climate change.

Given these competing considerations, it is important that any royalty or tax strikes a proportionate balance between economic realities and environmental concerns, while ensuring behavior change towards more efficient and reasonable use is fairly incentivized. Surveys of the New Zealand public have found that seventy percent of people agree that commercial water use should be charged a fee

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83. Green Party of Aotearoa N.Z., *Clean Water*, GREENS (Sept. 6, 2017), https://perma.cc/U2F3-X6W7.

84. Dr. Tim Mackle, *Dairy Could Be Hit with Trifecta of Taxes*, DAIRYNZ (Sept. 13, 2017), https://perma.cc/G98E-WUF5.

85. *Most Farmers Unlikely to Face $50,000 Water Tax Hike*, NEWSHUB (Sept. 16, 2017), https://perma.cc/RX35-UZ97.

86. *Id.*

87. *Water Tax Negligible for Most Dairy Farms – Industry Figures*, RADIO N.Z. (Sept. 16, 2017), https://perma.cc/T776-Q4NV.

88. EDITH BROWN WEISS, INTERNATIONAL LAW FOR A WATER-SCARCE WORLD (2013).

89. Gluckman, *supra* note 4, at 29–30.

to help finance waterway cleanups.[90] However, New Zealand's reliance on the primary industry sector for economic growth, particularly dairy exports, means that despite increasing public concern regarding water management issues, political support for a pricing mechanism may be a difficult (although certainly not impossible) hurdle to overcome.

An important aspect of a pricing mechanism policy is that while it would require central Government oversight, the revenue generated from freshwater pricing could be directed back into councils for use in waterway projects to improve regional water quality and the health of freshwater ecosystems, providing a benefit that could be enjoyed across the board.[91] It therefore provides a way to not only encourage more efficient and sustainable water use practices going forward, but also to deliver stimulus for the repair of harm to freshwater resources and ecosystems that has already occurred. In considering the policy option of a pricing mechanism, the enormous environmental and social costs of declining quality and quantity of New Zealand's freshwater resources provide a heavy counter to purely economic concerns raised by industry leads. The expected impacts of climate change on New Zealand's freshwater resource availability and future demands are also an important consideration. From a long-term perspective, establishing a pricing mechanism would add an important safeguard tool to New Zealand's freshwater resource management framework, particularly given that water scarcity and competition will become more prevalent in the future.

B. DIRECT WATER EXPORTS: BOTTLED WATER

The introduction of a water use pricing mechanism that applies beyond irrigation water would also directly impact bottled water exports as such an extraction would qualify as a commercial use. However, unlike virtual water exports, a pricing mechanism purely in relation to bottled water is somewhat less controversial and may garner political support more easily. The 2017 New Zealand Water Consumer Report found strong support for water abstraction charges; eighty-nine percent of respondents agreed that there should be a cost "when taking water from the environment for bottled water and similar industries."[92] Despite this, concerns have arisen relating to the technical feasibility of a pricing mechanism for bottled water, including implementation and return on enforcement costs.[93] In the run up to the 2017 national elections, the New Zealand Labour Party campaigned on a promise to introduce a royalty for bottled water to be charged on a

90. Isaac Davison, *Majority of Kiwis Back Water Tax Even if They Face Higher Costs, New Poll Shows*, N.Z. HERALD (Aug. 28, 2017), https://perma.cc/JC5A-ZBLK.

91. *Clean Rivers for Future Generations*, *supra* note 82.

92. WATER N.Z., NEW ZEALAND WATER CONSUMER SURVEY 2017 REPORT 6 (2017), https://perma.cc/D2S2-XMKT.

93. Sam Sachdeva, *Slow Progress on Bottled Water Export Tax*, NEWSROOM (June 27, 2018) https://perma.cc/8URF-J73D.

per liter basis.[94] The New Zealand Ministry for the Environment is currently investigating policy options for the proposed introduction of a royalty on exports of bottled water under the direction of the Labour-led Coalition Government.[95] However, intervention from the Ministry of Foreign Affairs and Trade has slowed progress.[96] The reason being that a royalty on bottled water raises potential implications with New Zealand's current free trade deals and obligations under the World Trade Organization (WTO) and General Agreement on Tariffs and Trade 1994 ("GATT").[97] Bottled water is considered a tradeable good subject to applicable GATT provisions including Article XI, the General Elimination of Quantitative Restrictions.[98] In the meantime, current permit holders continue to extract New Zealand's freshwater freely, and new bottling consent permits have been granted.[99]

To avoid compliance issues with WTO rules and New Zealand's free trade agreements, the Government could consider an export levy to recover the costs of regulating the bottled water industry rather than a royalty.[100] This would be permissible because "export prohibitions or restrictions necessary to the application of standards or regulations" are not covered by GATT Article XI, allowing the Government to compile fees and charges through an export levy covering the activities and services undertaken to regulate water exports.[101]

A more ambitious policy option for the Government to consider is a temporary or permanent ban on all new water bottling permits which allow the extraction of New Zealand freshwater for exportation. This would side step trade implications entirely. A similar approach has been followed in some overseas jurisdictions such as Ontario, Canada. In December 2016, in response to growing public concern about lack of regulation over water bottling operations, a two-year moratorium was placed on all new and expanded groundwater takings for bottling water in Ontario.[102] The moratorium essentially halted expansion of the bottled water industry until January 1, 2019.[103] Following the introduction of the moratorium,

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94. N.Z. Labour Party, *Labour's 2017 Election Platform, Tax Plan: Clean Water Royalty*, LABOUR (2017) https://perma.cc/C6PF-GKFV.

95. BRIEFING TO THE INCOMING MINISTER FOR THE ENVIRONMENT, *supra* note 8, at 19.

96. Sachdeva, *supra* note 93.

97. The General Agreement on Tariffs and Trade 1994, WORLD TRADE ORG., https://perma.cc/83PZ-7J3Z.

98. *Id.*; Melanie Berger, *The Legal Nature of Water in the General Agreement on Tariffs and Trade 1994*, NCCR Trade Working Paper No.1 (Aug. 2017).

99. Alice Guy, *Consent Granted to Take Hamurana Springs Water for Bottling*, N.Z. HERALD (Oct. 9, 2018), https://perma.cc/359R-BFU2.

100. Sachdeva, *supra* note 93.

101. The General Agreement on Tariffs and Trade 1994, *supra* note 97.

102. The Honourable Glen Murray, *Ministry of the Environment and Climate Change: Minister's Annual Report on Drinking Water 2016*, GOV'T OF ONT. (Dec. 21, 2016), https://perma.cc/6KHV-D53D.

103. The Honourable Chris Ballard, *Minister's Annual Report on Drinking Water 2017*, GOV'T OF ONT. (Nov. 21, 2017) https://perma.cc/3XRT-YKDX.

in April 2017 the Government of Ontario announced stricter rules for permit renewals for existing bottled water companies, aimed at increasing transparency, public reporting, and scientific requirements in renewal applications.[104] In August 2017, the Government of Ontario implemented a new fee charge for groundwater taken by bottling companies, set at $500 for every million liters taken.[105] The steps taken by Ontario to manage the exploitation of its groundwater resources provide a useful example for New Zealand. A ban on new permits to bottle New Zealand freshwater for exportation would not only avoid complications with free trade agreements and WTO rules but would also provide the Government time to work through a pricing mechanism structure for existing permit holders. It would also allow an opportunity to investigate the environmental externalities of the bottling industry (such as the cumulative effects of abstraction) without further bottling operations being granted in that time period, a precautionary approach as water permits may be granted for up to thirty-five years.[106]

A permanent rather than temporary ban or moratorium on future permits would also help to address other secondary environmental impacts caused from bottled water exports, such as the long-term and global environmental issue of plastic pollution. Polyethylene terephthalate ("PET") plastic, which is commonly used as packaging for bottled water products, is derived from crude oil and requires large quantities of water to produce.[107] While PET plastic can be recycled, it is estimated that less than a quarter of plastic bottles are recycled, creating an enormous plastic waste problem.[108] Given that worldwide, 330 million tonnes of plastic are produced annually, reducing bottled water exports through a future permit ban would allow New Zealand to show leadership in addressing a global plastic pollution crisis.[109] It would also send an important signal to the commercial sector that New Zealand's freshwater resources are valued and worth preserving, particularly when the economic gains do not justify the enormous negative environmental externalities. There may in fact be incidental economic rewards for taking such an approach by enhancing New Zealand's "green" reputation, particularly as environmental performance and sustainability play an important role in the competitiveness and attractiveness of the New Zealand economy in global markets.[110]

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104. *Id.*
105. *Id.*
106. Resource Management Act 1991, Part 6 s 123.
107. Berger, *supra* note 98.
108. *Id.*
109. Rex Weyler, *The Ocean Plastic Crisis*, GREENPEACE NZ (Oct. 15, 2017), https://perma.cc/WU5B-JB4J.
110. OECD, *supra* note 65, at 116.

C. EXPANDED ENVIRONMENTAL RIGHTS APPROACH

The introduction of a price on water and a ban on new freshwater export bottling permits are presented in this paper as two policy options that would utilize market-based mechanisms and a regulatory approach to reduce exploitation of New Zealand's freshwater resources. However, these approaches face potential strong opposition from interested parties such as the agricultural sector and overseas investors. The power of these interest groups adds to the challenge of a lack of political will to initiate change to the status quo of freshwater resource management. Alternative legal solutions also provide options worth considering.

One such option may be found in the expansion of the environmental rights-based approach to freshwater management. The granting of legal personality to the Whanganui River demonstrates the unique ways in which freshwater can be managed going forward. While legal personality for the Whanganui River is still in its infancy, the prospect of further rivers and freshwater resources being granted similar status is not improbable. The approach of giving legal recognition to significant environmental entities such as rivers, lakes, or even aquifers may be helpful in addressing the issue of over-exploitation of freshwater resources at its core. Rather than utilizing market adjustments or a top-down approach to incentivize or enforce sustainable and efficient use, further development of an environmental rights-based approach towards freshwater resources would ensure these resources are valued from more than just an economic standpoint. Legal personhood acknowledges the intrinsic value of natural resources, such as the Whanganui River, from the view that they are a living being. Such an approach allows the incorporation of indigenous principles into the common law system and the genuine integration of *Te Mana o te Wai*. At an expanded level this could improve and protect the health and wellbeing of New Zealand's freshwater resources, because intensive and inefficient use and pollution would be incompatible with the rights of environmental entities granted legal personality.

Rapid expansion of environmental rights is unlikely, and the options of a price on water and a ban on new permits allowing the bottling of freshwater for export therefore have the benefit of providing immediate solutions. However, the concept of an environmental rights-based approach provides a useful contrast to more traditional freshwater management approaches, and the concept may play a more prominent role in the future.

CONCLUSION

In a water-scarce world, fresh water is an increasingly valuable resource. While New Zealand benefits from relative abundance of fresh water compared to other states, freshwater resources are not evenly distributed throughout the country and have come under strain from competing demands. As a result, public scrutiny of freshwater usage, particularly from land intensive and irrigated agriculture

and through water exports of bottled water, has increased, and the regulatory framework requires review. An analysis of these issues reveals strong validation for such scrutiny, finding that significant gaps in regulation are contributing to the exploitation of New Zealand's freshwater resources and the degradation of freshwater ecosystems.

While no freshwater management regime is perfect, this Article has highlighted how addressing the negative externalities associated with excessive or inefficient use of freshwater resources by implementing a pricing mechanism and a ban on future freshwater bottling permits, would allow the framework to strike a better balance between economic interests and environmental values. A pricing mechanism would simultaneously permit greater control over the exploitation of freshwater resources while incentivizing a shift towards more sustainable, equitable, and efficient freshwater management. A ban on future permits which allow the bottling of freshwater for exportation would limit further exploitation of New Zealand's groundwater supplies and address the environmental externalities of such operations beyond the borders of New Zealand with plastic pollution and emissions along with the contribution to global environmental problems. Both policy approaches would require New Zealand to shift to a more centralized water regulation system, which would more effectively address the environmental externalities of water exports.

The issue of regulating direct and indirect water exports faces many political barriers. Political aversion towards addressing water ownership in a broader sense, and implementing a wider water pricing system, stems from both economic concerns tied to the impact on the agricultural sector and the complexities of Māori rights and interests in fresh water. While the current Labour-led Coalition Government has shown support for a bottled water royalty and is currently investigating policy implementation, it has stopped short of a future permit ban for bottled water extractions. It has also rejected a wider water pricing system, which would allow the concept of virtual water to be integrated into New Zealand's agricultural exports.

If the environmental costs of virtual water exports and bottled water were internalized, the economic arguments justifying the current status quo of water use would be greatly weakened. In the absence of domestic political will to initiate policy solutions, other avenues to push forward more sustainable use may require further exploration, such as expansion of an environmental rights approach to freshwater management. Any steps taken to change freshwater management in New Zealand must involve partnership with Māori and acknowledge and address Māori rights and interests in fresh water.

The solutions discussed in this Article would not only offer the environmental benefits of reducing New Zealand's global water footprint and improving domestic access to water but would also provide byproduct economic benefits. These byproduct benefits include strengthening the performance of New Zealand industries that use fresh water long-term by improving their resilience

and sustainability, in addition to the consequential benefit of strengthening New Zealand's green reputation in domestic and global markets.

Given New Zealand's water degradation and loss realities, the momentum pushing for change to the freshwater resource management framework is likely to continue. The New Zealand Government should utilize this momentum as an opportunity to substantially improve the quality, quantity, and allocation of its freshwater resources by reforming the current management framework—acknowledging that fresh water is a gift that should be valued.

Ko te wai te ora ngā mea katoa.

Water is the lifegiver of all things.