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Water Footprint and the Law of WTO

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As 'blue gold' is becoming a scarce good, different methods for protecting the human right to water are being devised. One of these is to reduce the ways in which it is misused. In order to achieve this, the concepts of 'virtual water' and a 'water footprint' are being developed. An ecolabel with a water footprint indicator is being applied by the first representatives of agribusiness. However, its potential is much more significant. It could be used as a tool of public policy. In both cases, it could affect international trade and therefore needs to be evaluated under the law of the World Trade Organization. The International Organization for Standardization already works on a water footprint norm, which would provide public entities with a strong argument for their water-saving policies. To date, states have not been provided with any relevant international standard. Nevertheless, they must comply with the norms of international trade. The aim of this article is to provide clarification on the existing and developing legal framework on the matter. It also argues that even if the concept of a water footprint were to remain a private standard, states would still be under a 'best effort' obligation to ensure the transparency of its elaboration and application.

1 INTRODUCTION

Due to different phenomena such as urbanization, population growth and rising industrial production, demand for water has been growing. 'Blue gold' has become a scarce good. Water, however, is often underpriced, and there is an increasing need to calculate virtual water flows.¹ Water input in the production of different goods would be measured by the unit of a 'water footprint'.² Using the classical approach of inter-state cooperation, Jeniffer McKay proposed the establishment of a Virtual Water Trading Council, but this path was not followed further.³ The incentives of transnational private and hybrid regulatory bodies such as the International Organization for Standardization (ISO) are more adaptable to the realities of global

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¹ See section 2.1 below.

² See section 2.2 below.

³ See section 3 below.

water governance. What ultimately developed and affected international trade was the introduction of ecolabels – these are symbols or stickers indicating environmental concerns that consumers could take into consideration when shopping.⁴

The concept of a water footprint did not receive much attention until September 2007 when a meeting of representatives from civil society, business, academia and the United Nations took place. Since then, there has been a steady growth of interest in applying the concept to government policies and corporate strategies.⁵ The degree of government involvement in water footprint regulation and its voluntary or mandatory nature is crucial when evaluating the standard in the light of the laws of the World Trade Organization (WTO).⁶ The finalization of the water footprint as a standard of the ISO would provide states with a base for their water-saving policies.⁷ This article aims to evaluate the WTO legal framework *vis-à-vis* the developing standards which are beginning to appear in international trade.⁸

2 THE TERMS ‘VIRTUAL WATER’ AND THE ‘WATER FOOTPRINT’

2.1 VIRTUAL WATER

John Allan introduced the concept of ‘virtual water’.⁹ He was inspired by Gideon Fishelson’s critique of Israeli trade policy.¹⁰ Israel, a country which faces a major water deficit, produced and exported citrus fruits, avocados and cotton with the result that it has been overexploiting its water resources.¹¹ The term ‘virtual water’ was coined at a seminar at the School of Oriental and African Studies in London in 1993.¹² Until then, Allan used the term ‘embedded water’ which ‘did not capture the attention of the water managing community’.¹³ To his mind, the term ‘virtual water’ could be viewed as a useful metaphor.¹⁴

⁴ See section 4 below.

⁵ Arjen Y. Hoekstra, Ashkok K. Chapagain, Maite M. Aldaya and Mesfin M. Mekonnen, *The Water Footprint Assessment Manual Setting the Global Standard*, 2 (Earthscan, 2011); the book is also available online <http://www.waterfootprint.org/downloads/TheWaterFootprintAssessmentManual.pdf> (accessed 25 June 2012), 130.

⁶ See section 5.2 below.

⁷ See section 5.3 below.

⁸ See section 5.4 below.

⁹ John A. Allan, *Virtual Water - the Water, Food, and Trade Nexus. Useful Concept or Misleading Metaphor?*, 28 *Water Int.* 4 (2003).

¹⁰ Gideon Fishelson, *The Allocation and Marginal Value Product of Water in Israeli Agriculture*, Jad Isaac, Hillel I. Shuval (eds), *Water and Peace in the Middle East*, 427, 434 (Elsevier, 1994).

¹¹ *Water consumption data for local authorities in 2010*, <http://www.water.gov.il/HEBREW/PROFESIONALINFOANDDATA/ALLOCATION-CONSUMPTION-AND-PRODUCTION/Pages/Local-authorities-data.aspx>, (accessed 4 October 2012).

¹² See Allan, above n 9, 4.

¹³ *Ibid.*

¹⁴ *Ibid.*

However, the term ‘embedded water’ has remained in use in the literature on water economy and policy.¹⁵ Less frequent, but still used, denominations are ‘hidden water’ or ‘embodied water’.¹⁶ The latter term resembles the notion of ‘embodied energy’, which Graham Treloar at roughly the same time defined as being:

[t]he quantity of energy required by all of the activities associated with a production process, including the relative proportions consumed in all activities upstream to the acquisition of natural resources and the share of energy used in making equipment and in other supporting functions i.e. direct energy plus indirect energy.¹⁷

Simply put, ‘embodied energy’ is the energy required to produce certain categories of goods or to provide a service. At a time when the international community is struggling to reduce greenhouse gases in order to combat global warming, the concept has attracted a great deal of attention from many authorities, including international trade lawyers.¹⁸ One vital question they have focussed upon pertains to the amount of energy used in the production process of goods that do not normally translate into the physical properties, characteristics or end uses of the final product.¹⁹ Doubts have been raised regarding the differential treatment under the law of the WTO, especially in relation to the national treatment under domestic tax law. Gavin Goh concluded²⁰ that energy adjustment could be found to be inconsistent with Article III:2 while leaving it open for countries to justify measures under Article XX of the General Agreement on Tariffs and Trade (GATT).²¹

Whether it is regarded as ‘virtual’, ‘embedded’, ‘embodied’ or ‘hidden water’, the concept relates to the quantity of water required to produce a relevant good. Allan has not attempted to expand the scope of his study beyond agriculture.²² He also did not elaborate a quantified model of virtual water input. His scepticism was based on similar attempts to calculate the energy content of commodities which

¹⁵ See John Briscoe, *Water and Agriculture: Implications for Development and Growth. Essays from the CSIS and SAIS Year of Water Conference*, (Centre for Strategic and International Studies, 2009) 32, http://nicholasinstitute.duke.edu/water/agriculture/water-and-agriculture-implications-for-development-and-growth/at_download/paper (accessed 30 June 2012).

¹⁶ Colin J. Chatres, Samyuktha Varma, *Out of Water. From Abundance to Scarcity and How to Solve the World's Water Problems*, 95 (Pearson Education, 2011).

¹⁷ This definition is taken from the work of Graham J. Treloar, *Energy Analysis of the Construction of Office Buildings*, Master of Architecture thesis, (Deakin University 1994) 96; the thesis is available online at <http://dro.deakin.edu.au/eserv/DU:30023354/treloar-energyanalysis-1995.pdf> (accessed 30 July 2012).

¹⁸ Gavin Goh, *The World Trade Organization, Kyoto and Energy Tax Adjustments at the Border*, 38 J. World Trade 395, 408 (2004).

¹⁹ See section 5.1 below.

²⁰ See Goh, above n 18, 423.

²¹ World Trade Organization, *The Legal Texts: The Results of the Uruguay Round of Multilateral Trade Negotiations*, 424 (Cambridge University Press, 2010).

²² See Allan, above n 9, 5.

ended in confusion.²³ Some authors have suggested that this model was far from being precise: 'Calculating embedded water is as much an art as a science. We do not currently have a science-based consensus about what methodologies are acceptable for calculating embedded water.'²⁴

2.2 WATER FOOTPRINT

Leaving aside Allan's doubts, a quantification method was proposed by Arjen Hoekstra and Pham Hung when they developed the concept of a 'water footprint'. Their first proposal concerned total domestic water use and the net import of virtual water as a measure of a state's actual appropriation of global water resources. The concept was to be complemented by such indicators as a state's 'water self-sufficiency' and 'water dependency'.²⁵

The concept of a 'water footprint' was analogous to an 'ecological footprint' – an analytical tool comparing the human demand for natural resources to the Earth's capacity for their regeneration. William Rees conceptualized an 'ecological footprint' in 1992, and Mathis Wackernagel later elaborated the quantification methods.²⁶

Hoekstra in his later work developed and specified the concept of the water footprint. The water footprint is an indicator of freshwater use that takes into consideration not only the direct water use of the consumer or producer, but also their indirect water use. It may be regarded as a comprehensive indicator of freshwater resources appropriation, akin to the traditional and restricted measure of water withdrawal. The water footprint of a product is the volume of freshwater used to produce a product measured over the full supply chain.²⁷ It is an analytical tool which assists in the evaluation of consumption or the use of virtual water by specific groups of consumers, producers, municipalities or states. The concept of a water footprint may be instrumental in helping us understand how activities and products relate to water scarcity and pollution, and other related impacts, and what

²³ John A. Allan quoted in: World Trade Council, *E-Conference Synthesis: Virtual Water Trade - Conscious Choices*, http://www.waterfootprint.org/Reports/virtual_water_final_synthesis.pdf, (accessed 22 June 2012).

²⁴ See Briscoe, above n 15, 32.

²⁵ Arjen Y. Hoekstra, Pham Q. Hung, *Virtual water trade. A quantification of virtual water flows between nations in relation to international crop trade*, 11 Value of Water Research Report Series 1, 7 (2002), <http://www.waterfootprint.org/Reports/Report11.pdf> (accessed 23 June 2012).

²⁶ William E. Rees, *Ecological footprints and appropriated carrying capacity: what urban economics leave out*, 4 Environ. Urban. 121, 121–30 (1992); Mathis Wackernagel, *Ecological Footprint and Appropriated Carrying Capacity: A Tool for Planning Toward Sustainability* (School of Community and Regional Planning, The University of British Columbia, 1994), PhD thesis available at <https://circle.ubc.ca/bitstream/handle/2429/7132/ubc_1994-954027.pdf?sequence=1> (accessed 23 June 2012).

²⁷ See Hoekstra, Chapagain, Aldaya and Mekonnen, above n 5, 2.

can be done to ensure activities and products do not contribute to the unsustainable use of freshwater. As an analytical tool, a water footprint assessment provides insight. It does not provide guidance in terms of 'what to do'; rather, it helps us understand 'what can be done'.²⁸

As virtual water flows are mainly associated with trade in agricultural goods – crops (67% of virtual water flows) and livestock/livestock products (23% of virtual water flows)²⁹ – the debate about virtual water flows is mainly related to trade in agriculture. The estimations of water content in selected products may vary considerably and also depend on climate, the year/season, the point of measurement, and the method of production used in farming. Hoekstra, who is the leading hydro-engineer working on virtual water flows, admitted in 2003 that '[c]onsidering the various studies available, little convergence exists with respect to the general approach taken'.³⁰ For example, the differences in the estimates of virtual water in maize vary widely.³¹ Therefore, clarification regarding the relevant international standard is a crucial requirement for providing water savings based on the instrument of the water footprint.³²

The water footprint concept also allows to evaluate the virtual water import dependency of states. Some water-scarce states have managed to limit their water dependency by importing water-intensive products. Jordan is one good example, but it is also the case for some countries that are not generally seen as water-scarce, such as the Netherlands and the UK.³³

As virtual water relates mainly to food products, the regulations of international trade stemming from the WTO Agreement on Agriculture are relevant.³⁴ Annex 1 of the Agreement provides for its application to almost all kinds of agricultural goods. However, the virtual water issue is also relevant to the international trade in energy products, i.e., biofuels. The efficiency of biofuels and the emergence of replacement fossil fuels are under discussion. The policy of

²⁸ *Ibid.* 4.

²⁹ Arjen Y. Hoekstra, *Virtual water trade Proceedings of the International Expert Meeting on Virtual Water Trade*, (2003) 12 Value of Water Research Report Series 16; <http://www.waterfootprint.org/Reports/Report12.pdf> (accessed 30 July 2012).

³⁰ *Ibid.* 15.

³¹ *Ibid.* 16, Hoekstra & Hung provided a figure of 450 m³ of water per ton, whereas Oki et al. who referred to Japanese production, provided a figure of 1900 m³/ton.

³² See section 5.3 below.

³³ Arjen Y. Hoekstra, *The Global Dimension of Water Governance: Why the River Basin Approach is no Longer Sufficient and Why Cooperative Action at Global Level is Needed*, 3 Water 21, 33 (2011); also available online at <<http://www.waterfootprint.org/Reports/Hoekstra-2011-Global-Dimension-of-Water-Governance.pdf>> (accessed 25 June 2012).

³⁴ See World Trade Organization, above n 21, 33; see also Alix Gowlland-Gualtieri, *Legal implications of trade in "real" and "virtual" water resources*, Philippe Cullet, Alix Gowlland-Gualtieri, Roopa Madhav, Usha Ramanathan (eds), *Water Law for the Twenty-First Century - National and International Aspects of Water Law Reform in India*, (Routledge, 2010) 59.

subsidizing plant breeding and the costs of the process of biofuel production, which requires important energy input, have also been criticized.³⁵ However, what makes the potential use of biofuels attractive is that the energy used in the production process may be obtained from non-imported resources. The attractiveness of biofuel relies, therefore, not on its efficiency but on the possibility of bringing about energy independence. The utilization of biofuels would seem to have the advantage of reducing greenhouse gas emissions. There is, however, some dispute regarding the extent of these savings, and the ecological price that would result from land-use.³⁶ A potential increase in crop production will also affect the redistribution of water resources. It is forecast that the commitment of the European Union (EU) to a 30% increase in biofuel use by 2025 will require imports of biofuel feedstock from non-EU states.³⁷ Simultaneously, the export of biofuels from states such as South Africa and Brazil will increase their virtual water deficits.

3 INTER-STATE COOPERATION

A proposal to establish an International Virtual Water Trading Council was raised almost ten years ago. Jennifer McKay envisioned the idea of a body that would function within the WTO.³⁸ It would supervise the distribution of virtual water and the trading of its surpluses between states. The Council would evolve from recognition that trade in certain food products also consisted of a trade in virtual water, and that humanitarian laws designed to regulate virtual water exports are special and need to be treated differently.³⁹

McKay's idea would be effective in a world of harmonious inter-state cooperation. The crisis within the Doha Round, however, has demonstrated that there exist substantial disagreements among international trade partners about how the liberalization of international trade should develop. This controversy is especially salient in the area of food and agriculture to which the idea of virtual water trade is most pertinent. For this reason, the establishment of a separate international body has not progressed beyond paper. Moreover, this body would have to be equipped with powers to set virtual water trade standards and norms

³⁵ David Biello, *The False Promise of Biofuels*, 305 Sci Am 58 (2011).

³⁶ Timothy Searchinger, Ralph Heimlich, Richard A. Houghton, Fengxia Dong, Amani Elobeid, Jacinto Fabiosa, Simla Tokgoz, Dermot Hayes and Tun-Hsiang Yu, *Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change*, 319 Science 1238 (2008).

³⁷ Sara Hughes, Lena Partzsch, Joanne Gaskell, *The Development of Biofuels within the Context of the Global Water Crisis*, 7 Sustainable Development Law & Policy 58, 60 (2007).

³⁸ Jennifer McKay, *A Proposal for an International Virtual Water Trading Council: Building Institutional Frameworks at International Level to Reduce Poverty*, İ.H. Olcay Ünver, Rajiv K. Gupta, Ayşegül Kibaroglu (eds), *Water Development and Poverty Reduction*, 111, 119 (Kluwer, 2003).

³⁹ *Ibid.* 121.

affecting not only states but also private trade partners. The binding character of these standards would provoke opposition and prompt questions about the transparency of the methods of their preparation. The lack of an international consensus on the implementation of the Kyoto Protocol also raises doubts about whether the idea of creating an intergovernmental body supervising the flows of virtual water would be politically feasible.

However, the lack of an intergovernmental body for virtual water trade supervision should not obscure the need for an analytical tool that provides an idea on virtual water flows. The emergence of global administrative law⁴⁰ strongly encourages the prospect of transnational cooperation in this respect.

4 ECOLABELS AND INTERNATIONAL TRADE

The incentives to quantify the exploitation of virtual water and its trade flows may be compared to the existing transnational regulatory frameworks related to natural resources such as fisheries, forests, and the cultivation of organic food.⁴¹ They engage in different kinds of governmental involvement⁴² and have the common goal of reducing the overexploitation of natural resources. Similar initiatives are related to jewellery,⁴³ flowers,⁴⁴ and tropical crops, including coffee, bananas, cocoa, oranges, ferns, and tea.⁴⁵ Certificates like 'Fairtrade' apply not only to crops which should be grown and sold in a socially, economically and environmentally responsible manner,⁴⁶ but also to services in the tourism sector.⁴⁷

Ecolabelling essentially relies on symbolic differentiation. They provide information on the characteristics of a product. However, the features may be unnoticeable as they relate to Processes and Production Methods (PPMs),⁴⁸ which do not determine the final qualities of a given good, but affect the environment. Labels play an important informative role by providing the necessary data to consumers who make their choices. Without a label they may be unwilling to pay more for goods that have environmental or social value, even if they are environmentally aware. The goal of water footprint labelling would be to create

⁴⁰ Benedict Kingsbury, Nico Krisch, Robert B. Stewart, *The Emergence of Global Administrative Law*, 68 *Law and Contemporary Problems* 15 (2005).

⁴¹ See sections 4.1, 4.2, 4.3 below.

⁴² See section 5.2 below.

⁴³ Responsible Jewellery Council, <http://www.responsiblejewellery.com/> (accessed 11 July 2012).

⁴⁴ Forest Garden Production Certification, <http://www.forestgardencertification.com/> (accessed 11 July 2012), <http://www.fairflowers.de/> (accessed 20 July 2012).

⁴⁵ Rainforest Alliance, <http://www.rainforest-alliance.org/> (accessed 11 July 2012).

⁴⁶ Fairtrade International, *Aims of Fairtrade Standards*, http://www.fairtrade.net/aims_of_fairtrade_standards.html (accessed 11 July 2012).

⁴⁷ Fair Trade in Tourism South Africa, <http://www.fairtourismsa.org.za> (accessed 11 July 2012).

⁴⁸ See section 5.1 below.

incentives among consumers to buy products which promote less water-consuming technologies.

Ecolabels from different countries, regions or networks may compete with each other.⁴⁹ In many states, labelling has become an important national environmental policy tool.⁵⁰ The goal of presenting three sectors of certifications – namely, fisheries, forestry, and organic food – would serve to demonstrate the potential analogies to virtual water certification.⁵¹ In some cases, like fisheries and forestry,⁵² labelling does not relate to the quality of the product, as may be the case with organic food,⁵³ which is relevant to the discussion of PPMs and their coverage by WTO law.⁵⁴

4.1 FISHERIES

The Marine Stewardship Council (MSC) is a non-governmental organization (NGO) which issues ecolabels related to sustainable fishery. It certifies that fish that have been labelled in this manner do not contribute to environmental degradation. The MSC have drawn up two standards: an MSC environmental standard for sustainable fishing and an MSC chain of custody standard for seafood traceability. The former serves to secure fish stocks for the future without overexploitation, to minimize the environmental impact of fishing, and maintain the function and diversity of the ecosystem on which fisheries depend, as well as comply with all local, national and international laws.⁵⁵ An MSC label *inter alia* is granted if measures are in place to limit by catch – living creatures caught unintentionally, including other species of fish and marine animals such as turtles

⁴⁹ See the example of forestry described in section 4.2 below.

⁵⁰ Wilhelm Althammer Susanne Dröge, *Ecological Labelling in North-South Trade*, 604 German Institute for Economic Research Discussion Paper 1, (2006), http://www.diw.de/documents/publikationen/73/diw_01.c.44514.de/dp604.pdf, (accessed 16 July 2012).

⁵¹ In some cases, a water footprint is compared to the Energy Star standard initiated by the Environmental Protection Agency and the Department of Energy of the US. This is not a good comparison in the sense that Energy Star reflects the energy sufficiency of electric devices or buildings in their functioning, whereas a water footprint measures the amount of water used in the production of a specific good. See National Geographic, *Will Water Footprints be Next "Energy Star"?*, <http://news.nationalgeographic.com/news/2009/11/091127-virtual-water-footprints/>, (accessed 16 July 2012), Energy Star, *History of Energy Star*, http://www.energystar.gov/index.cfm?c=about.ab_history (accessed 16 July 2012).

⁵² See sections 4.1, 4.2 below.

⁵³ See section 4.3 below.

⁵⁴ See section 5.1 below.

⁵⁵ Marine Stewardship Council, *MSC environmental standard for sustainable fishing*, <http://www.msc.org/about-us/standards/standards/msc-environmental-standard> (accessed 2 July 2012).

and dolphins.⁵⁶ Therefore, the goals of an MSC label correspond to the trade/environmental disputes which took place before the GATT/WTO, i.e., *US–Tuna (GATT) I*,⁵⁷ *US – Shrimp*,⁵⁸ and *US–Tuna II (Mexico)*.⁵⁹

4.2 FORESTRY

The Forest Stewardship Council (FSC) Founding Assembly was held in Toronto, Canada in 1993.⁶⁰ The FSC was established in order to conduct surveillance of exploitation of wood harvesting in an environmentally sound manner. It was a common initiative involving the representatives of timber users, traders, environmental and human rights organizations.⁶¹ The FSC established an ecolabel programme applicable not only to tropical and temperate forests but boreal forests as well.⁶² As the founding of the FSC met with scepticism from traditional forestry interests,⁶³ competitive initiatives emerged. One of them was the Pan-European Forest Certification Council (PEFC). It aimed to provide a common framework for mutual recognition of nationally based certification programmes rather than promulgating a single overall standard. As the FSC is mostly identified with transnational NGOs, the PEFC is perceived as representing the traditional forestry interests of landowners and the timber industry.⁶⁴

The FSC's ecolabelling brought about greater consumer awareness about the deforestation problem. The European Communities enacted a regulation that led to a Community ecolabel award scheme.⁶⁵ Some local authorities in the Netherlands even decided to enact measures that went beyond the European requirements.⁶⁶ Because international trade law imposes constraints that serve to limit the possibility of imposing trade bans, a much more feasible solution has

⁵⁶ *Ibid.*

⁵⁷ GATT Panel Report, *United States – Restrictions on Imports of Tuna (US–Tuna I)*, DS21/R, 3 September 1991, unadopted, BISD 39S/155.

⁵⁸ WTO Appellate Body Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products (US–Shrimp)*, WT/DS58/AB/R, adopted 6 November 1998.

⁵⁹ WTO Appellate Body Report, *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products (US–Tuna II)*, WT/DS381/AB/R, adopted 13 June 2012; WTO Panel Report, *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products (US–Tuna II)*, WT/DS381/R, circulated to WTO Members 15 September 2011.

⁶⁰ Forest Stewardship Council, <http://www.fsc.org/our-history.17.htm>, (accessed 12 July 2012).

⁶¹ *Ibid.*

⁶² Forest Stewardship Council A.C. By-Laws, para. 8; <http://www.fsc.org/download.by-laws.379.htm> (accessed 12 July 2012).

⁶³ Errol Meidinger, *The Administrative Law of Global Private-Public Regulation: the Case of Forestry*, 17 Eur. J. Int. Law 47, 54 (2006).

⁶⁴ *Ibid.*

⁶⁵ Council Regulation 880/92, OJ 1992 L 99/1.

⁶⁶ Shawn L. Bryant, *Environmental Labelling's Effects on the Timber Wood Industry*, <http://www1.american.edu/ted/projects/tedcross/xtrop14.htm> (accessed 12 July 2012).

stemmed from the procurement policies of states' governments.⁶⁷ Unilateral bans were not effective tools for sustainable timber production. Austria, for example, eventually decided to change its import policy.⁶⁸

The FSC ecolabelling scheme attracted the attention of global administrative lawyers.⁶⁹ As in the case of organic food,⁷⁰ the voluntary regulatory certification scheme gradually became linked with government regulatory and management programmes. As Errol Meidinger has shown, governments portrayed themselves as non-actors in forest certifications.⁷¹ However, the threat of increased governmental regulation has been an underlying factor for the acceptance of the certifications. Moreover, certification programmes have received a certain amount of public support because they have promoted compliance with existing laws. Finally, many certification programmes have drawn directly from government resources, such as the criteria and indicators produced by intergovernmental organizations.⁷² The non-FSC certification programmes administered by the PEFC and LEI – the Indonesian Ecolabel Institute and the Canadian Standards Association – have involved much government influence even though government officials have served limited roles in formal certification processes.⁷³ States acting as forest owners or managers have also decided to obtain certifications for their silvicultures.⁷⁴ Imposing a requirement of certification on government procurement has provided important support and promotion for labelling programmes.⁷⁵ Moreover, in some cases, certifications have created the presumption of compliance with existing domestic regulations, and have influenced more general regulations.⁷⁶

⁶⁷ More on that topic: Cathy L. Wittmeyer, *A Public Procurement Paradox: The Unintended Consequences of Forest Product Eco-Labels in the Global Marketplace*, 23 J. Law Commer. 69 (2003).

⁶⁸ Antti Rytönen, *Market Access Of Forest Goods And Services*, 69, <http://foris.fao.org/static/data/trade/pdf/rytkonen.pdf> (accessed 12 July 2012).

⁶⁹ See Meidinger, above n 63.

⁷⁰ See section 4.3 above.

⁷¹ See Meidinger, above n 63, 59.

⁷² *Ibid.*

⁷³ *Ibid.*

⁷⁴ Piotr Paschalis-Jakubowicz, *Forest Certification in Poland*, in: Benjamin Cashore, Fred Gale, Errol Meidinger, and Deanna Newsom (eds), *Confronting Sustainability: Forest Certification in Developing and Transitioning Countries*, 235, 245 (Yale F&ES Publication Series, 2006).

⁷⁵ Summary Report of the GEN Survey on Government Green Procurement, <http://www.igpn.org/news/pdf/GEN%20GGP%20Survey%20Analysis052006V1.3.pdf> (accessed 12 July 2012).

⁷⁶ See Meidinger above n 63, 59.

4.3 ORGANIC FOOD

The organic agriculture movement is growing, and despite the economic slowdown in 2009, it seems that full market potential has not yet been achieved.⁷⁷ The movement is opposed to the industrialization of agricultural production that involves the use of pesticides and chemical fertilizers. It also aims to reduce the overexploitation of soil and water resources by big farm industry.⁷⁸

As an increasing number of organically aware consumers have been seeking alternative sources of agricultural goods, a need has appeared to distinguish food which in appearance may be less marketable, but that is organically produced. Naturally, this led to the idea of certification. It was first implemented by local, mostly private, entities. The International Federation of Organic Agriculture Movements (IFOAM) was founded in 1972. Its aim was to coordinate the work on standards of organic food and create an entity that inspected its quality at the international level.

Organic certification, which began in the 1970s, was based on general standards and farmers inspected themselves on a voluntary basis.⁷⁹ Third-party certification required the establishment of impartial bodies. This is a more demanding task, but as consumers have started to require it, public supervision is needed and many governments have started to enact regulations on organic food. With the progress of trade liberalization at the regional and multilateral levels, the question of label recognition has emerged. The European Economic Community (EEC) Regulation 2092/91⁸⁰ was the first in the world that subjected organic food and farming to legal definitions and control.⁸¹ It has since been replaced by EEC Regulation 834/2007 on organic production and the labelling of organic products.⁸² In drafting these EEC regulations, the IFOAM played a role in the form of providing expert support.⁸³ It was also the main representative of the

⁷⁷ See Organic World, *The World of Organic Agriculture 2011: Key Results*, <http://www.organic-world.net/yearbook-2011-key-results.html?&L=0> (accessed 12 July 2012).

⁷⁸ See Bexhill Environmental Group, *LOAF stands for food which is Locally produced, Organically grown, Animal friendly and Fairly traded*, <http://www.bexhillenvironmentalgroup.org.uk/page%203.htm> (accessed 5 August 2012).

⁷⁹ IFOAM, *Organic Standards and Certification*, http://www.ifoam.org/about_ifoam/standards/index.html (accessed 11 July 2012).

⁸⁰ Council Regulation 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs, OJ 1991 L 198/1.

⁸¹ IFOAM EU Group, *The New EU Regulation for Organic Food and Farming: (EC) no 834/2007, Background, Assessment, Interpretation*, 8, http://www.ifoam.org/about_ifoam/around_world/eu_group-new/positions/pdf/IFOAMEU_dossier_new_regulation_EN.pdf (accessed 11 July 2012).

⁸² Council Regulation 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation 2092/91, OJ 2007 L 189/1.

⁸³ See IFOAM Group, above n 81, 8.

organic sector and submitted proposals and comments during the drafting process.⁸⁴

These organic food standards may serve as a good example of regulations which at the beginning were private and voluntary, but which have since been subsumed into domestic public law. The water footprint standard may thus follow a similar path. It seems that the scope of the growing organic agricultural market and the function of food quality supervision require purely voluntary standards to be replaced with public law supervision. However, EEC regulations also make reference to private standards like ISO Guide 65 with respect to control systems. Organic food regulation may serve as a good example of public–private norm interference, or of a ‘global administrative space’ as described by Benedict Kingsbury, Nico Krisch, and Rorbert Stewart.⁸⁵

5 THE FORM OF A WATER FOOTPRINT

The legal relevance of a water footprint standard depends on many factors. First, a water footprint standard would qualify as a PPM and may potentially violate Articles I, III and XI of the GATT. Therefore, its coverage under WTO law should be clarified. The question of government involvement in regulating and granting water footprint labelling is especially important.⁸⁶ Due to Article 2.4 of the Uruguay Round Agreement on Technical Barriers to Trade (TBT),⁸⁷ the existence of an ISO standard is crucial in taking up any related public initiatives.⁸⁸ The private codification of the water footprint regulations by NGOs and by industries⁸⁹ will also affect international trade and requires clarifications from a WTO legal standpoint.⁹⁰

An ecolabel should provide the consumer with clear and transparent information. It also plays a similar role to advertising. Both the informative and persuasive components would have to be well balanced, especially when taking into account the relatively limited surface that it would occupy. In the case of the water footprint, the information provided will need additional standardization.

⁸⁴ *Ibid.* 12, 13.

⁸⁵ See Kingsbury, Krisch and Stewart, above n 40, 18.

⁸⁶ See section 5.2 below.

⁸⁷ See World Trade Organization, above n 21, 121.

⁸⁸ See section 5.3 below.

⁸⁹ <http://www.waterfootprint.org> (accessed 16 July 2012).

⁹⁰ See section 5.4 below.

5.1 COVERAGE OF THE WATER FOOTPRINT BY THE TBT: THE PPMS ISSUE

First, the relationship between the GATT and the TBT should be clarified. The latter Agreement was concluded in order to eliminate technical regulations which would limit trade without legitimate purpose. The general interpretative note to Annex 1A indicates a *lex specialis* rule. The TBT should take precedence over the GATT in the event of conflict between them. The WTO Appellate Body agreed with the Panel's statement that the 'WTO Agreement is a "Single-Undertaking" and therefore all WTO obligations are generally cumulative and Members must comply with all of them simultaneously. [...] It is important to understand that the WTO Agreement is one treaty.'⁹¹ Similarly, in relation to the TBT, the Appellate Body in the *EC-Asbestos* case, after a careful analysis of the term 'technical regulations',⁹² stated that not all 'measures' under Article III:4 or the GATT are necessarily 'technical regulations'.⁹³ The decree at issue was classified by the Appellate Body as a 'technical regulation' and it went on to assert that:

although the TBT Agreement is intended to 'further the objectives of GATT 1994', it does so through a specialised legal regime that applies solely to a limited class of measures. For these measures, the TBT Agreement imposes obligations on Members that seem to be different from, and additional to, the obligations imposed on Members under the GATT 1994.⁹⁴

Nevertheless, many GATT and TBT obligations are similar. For example, the most favoured nation and national treatment standards embedded in Articles I and III of the GATT are reflected in Article 2.1 of the TBT. The environmental exceptions reflected in Article XX(b) and (g) of the GATT are similar to Article 2.2 of the TBT trade restrictions based on environmental premises; both prescriptions require a 'necessity' test. In *US-Cool* the Appellate Body did not have an opportunity to express its view on the issue as to whether a technical regulation consistent with the Article 2.1 of the TBT would violate Article III:4 of the GATT.⁹⁵ However, the appellants' request for examining conditionally the inconsistency with Article III:4 in case there was a reversal of the Panel's finding of inconsistency under Article 2.1 of the TBT Agreement,⁹⁶ may lead one to assume that violations of the two prescriptions may be treated autonomously.

⁹¹ WTO Appellate Body Report, *Korea – Definitive Safeguard Measure on Imports of Certain Dairy Product (Korea-Dairy)*, adopted 12 January 2000, WT/DS98/AB/R, paras 74, 75; WTO Panel Report, WT/DS98/R, circulated 21 June 1999.

⁹² WTO Appellate Body Report, *European Communities – Measures Affecting Asbestos and Asbestos-Containing Product (EC-Asbestos)*, adopted 5 April 2001, WT/DS135/AB/R, paras 66–76.

⁹³ *Ibid.* para. 77.

⁹⁴ *Ibid.* para. 80.

⁹⁵ WTO Appellate Body Report, *United States – Certain Country of Origin Labelling (COOL) Requirements*, WT/DS384/AB/R, WT/DS386/AB/R, adopted 23 July 2012.

⁹⁶ *Ibid.* para. 492.

To say whether potential regulations on virtual water use would be qualified as ‘measures’ or ‘technical regulations’ is too abstract; however, case law based on the GATT would be relevant for assessing their legality in case there is governmental normalization.

Another question relates to the possible qualification of a water footprint as a non-product-related PPM and the applicability of GATT/TBT regulations to such measures. It is connected to the wording of the definitions of ‘technical regulation’ and ‘standard’ in Annex 1 of the TBT.⁹⁷ The definition of ‘technical regulation’ defines it as a ‘document which lays down characteristics or their *related* processes and production methods’.⁹⁸ A similar term ‘related’ appears in the definition of ‘standard’. This suggests that the TBT covers product-related PPMs and does not address other PPMs.⁹⁹

The second sentence in both definitions only mentions a different ‘product, process or production method’ without the term ‘related’.¹⁰⁰ One possible interpretation is to read the sentence as a mere illustration of the first sentence, and that therefore it is not necessary to repeat the term ‘related’ in the second sentence. Another possible interpretation could be to see the second sentence as being of a constitutive nature. It would therefore broaden the definition and the scope of the TBT. This view may in support of this argument point to the word ‘also’ in the second sentence, which seems to imply an enlargement of the definition.¹⁰¹ Whereas the negotiating history of the TBT suggests that non-product-related PPMs are not covered by the TBT,¹⁰² the Appellate Body’s decision in the *US-Shrimp* case seemed to indicate the opposite. An *a priori* exclusion of the non-product-related PPMs from their possible justification under the GATT, Article XX exceptions would render this provision inutile.¹⁰³ However, such

⁹⁷ Paragraphs 1 and 2, Annex 1 of the TBT: Terms and their Definitions for the Purpose of this Agreement, above n 21.

⁹⁸ *Ibid.* para. 1, [italics added].

⁹⁹ Steve Charnovitz, *The Law of Environmental “PPMs” in the WTO: Debunking the Myth of Illegality*, 27 Yale J. Int. Law 59, 65 (2002).

¹⁰⁰ Paragraphs 1 and 2, Annex 1 of the TBT: Terms and their Definitions for the Purpose of this Agreement, above n 21.

¹⁰¹ Michael Koebele, *Commentaries on “Article 1 of the TBT Agreement—General Provisions/Annex 1 of the TBT Agreement—General Provisions and Definitions”*, Rüdiger Wolfrum, Peter-Tobias Stoll and Anja Seibert-Fohr (eds), *WTO-Technical Barriers and SPS Measures*, 178, 196 (Martinus Nijhoff Publishers, 2007).

¹⁰² *Ibid.* 196–197; Committee on Trade and Environment, Committee on Technical Barriers to Trade, Negotiating History of the Coverage of the Agreement on Technical Barriers to Trade With Regard to Labelling Requirements, Voluntary Standards, and Processes and Production Methods Unrelated to Product Characteristics, WT/CTE/W/10, G/TBT/W/11, 29 August 1995, paras 131–146.

¹⁰³ Appellate Body Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, adopted 6 November 1998, para. 121.

measures may not constitute a means of ‘arbitrary or unjustifiable discrimination’, as required by the chapeau of Article XX.¹⁰⁴

To make a distinction between product-related PPMs and non-product-related PPMs could be viewed as nitpicking.¹⁰⁵ In the case of the water footprint, there is a question as to whether final goods produced with different amounts of water would have the same characteristics. In most cases, reduction of the water footprint would mean saving water in business operations, and would reduce water pollution to zero.¹⁰⁶ This kind of production adjustment should not affect the final qualities of products per se; however, a generalized answer might prove to be inaccurate, and, therefore, a case-by-case approach should be taken. Moreover, as Steve Charnovitz has put it, ‘the assertion that a PPM is unrelated to a product is too strong. Since no PPM is employed without reference to some product, categorizing it as “unrelated” or “non-related” is a misnomer’.¹⁰⁷ Labour, environmental, and human rights issues could indeed be ‘related’ to a product.¹⁰⁸ Accordingly, the water footprint should be qualified as a PPM, but a further distinction as to whether it is ‘product related’ should not affect the relevance of GATT/TBT legal frameworks. What needs to be assessed is whether a particular regulation over the water footprint follows the requirements stemming from relevant WTO legal provisions and case law.

5.2 GOVERNMENTAL INVOLVEMENT

The WTO Appellate Body has expressed the view that ‘the relevant question is thus whether *governmental* intervention “affects the conditions under which like goods, domestic and imported, compete within a Member’s territory”’.¹⁰⁹ Although virtual water labelling schemes remain voluntary and private, the involvement of governments has already been noticed and their more active engagement may be expected.

¹⁰⁴ See, *ibid.* paras 148–186; Appellate Body Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products – Recourse to Article 21.5 of the DSU by Malaysia*, WT/DS58/AB/RW, adopted 21 November 2001, paras 134, 144.

¹⁰⁵ Abhinay Kapoor, *Product and process methods (PPMs): “a losing battle for developing countries”*, 17 Int. Trade Law & Reg. 131, 133 (2011).

¹⁰⁶ Water Footprint, *Why Act and How?*, http://www.waterfootprint.org/?page=files/FAQ_Why_act_and_how, (accessed 23 July 2012).

¹⁰⁷ See Charnovitz, above n 99, 66.

¹⁰⁸ Arthur E. Appleton, *Telecommunications Trade: Reach Out and Touch Someone?*, 19 Penn. J. of Int. Econ. Law 209, 216 (1998).

¹⁰⁹ WTO Appellate Body Report, *US-Tuna II*, above n 59, para. 237 quoting WTO Appellate Body Report, *Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef (Korea – Various Measures on Beef)*, 10 January 2001, WT/DS161/AB/R, WT/DS169/AB/R, para. 149 (*italics added*).

The Spanish government is the first national government that has incorporated water footprint assessment into policy, by making water footprint analysis an obligatory part of the process of developing river basin plans.¹¹⁰ In July 2007, the European Commission released a communication which stated that '[c]onsumers increasingly demand more information on the way water is used at all stages of the industrial or agri-food process. Labelling is an effective way to provide targeted information to the public on water performance and on sustainable water management practices'; at the EU level 'the possibility of expanding existing EU labelling schemes whenever appropriate in order to promote water efficient devices and water-friendly products' should be explored.¹¹¹ This is in line with more general ecolabelling stipulated in Regulation 66/2010.¹¹² It aims to promote products that have a high environmental performance.¹¹³ This goal should be achieved by harmonization and mutual recognition in accordance with the ISO 14024 type I ecolabelling scheme – which has established the standard on environmental labels and declarations.¹¹⁴

As water is becoming a scarce good, governments through their intervention may be considering the regulation of water use. There are an array of potential instruments that could be used to influence the water footprint. As water is often regarded as being underpriced,¹¹⁵ and therefore overused, governments may impose additional taxes based on water footprint standards. Such a policy could have as its goals: (1) to discourage the consumption of goods that have a high water footprint – for example meat¹¹⁶ – and foster their partial replacement with other goods that require less water for production; (2) to encourage producers to develop production methods that result in a smaller water footprint; and (3) to implement a polluter-pays principle in relation to grey water footprint

¹¹⁰ Arjen Y. Hoekstra, *The water footprint: a tool for governments, companies and investors*, 4, <http://doc.utwente.nl/78370/1/Hoekstra11water.pdf> (accessed 17 July 2012).

¹¹¹ Communication from the Commission to the European Parliament and the Council – Addressing the challenge of water scarcity and droughts in the European Union, 18 July 2007, COM(2007) 414 final.

¹¹² Regulation 66/2010 on the EU Ecolabel, OJ 2010 L 27/1.

¹¹³ *Ibid.* para. (5) of the preamble.

¹¹⁴ *Ibid.* Art. 11.

¹¹⁵ Charles W. Howe and Helen Ingram, *Roles for the Public and Private Sectors in Water Allocation: Lessons from Around the World*, in Douglas S. Kenney (ed.) *In Search of Sustainable Water Management: International Lessons for the American West and Beyond* (Edward Elgar, 2005), 25, 28–29, who argue that water in the US is underpriced and explain the role of pricing in reducing demand.

¹¹⁶ Production of meat involves high water consumption, see Mesfin M. Mekonnen and Arjen Y. Hoekstra, *A Global Assessment of the Water Footprint of Farm Animal Products*, 15 *Ecosystems* 401 (2012), also available at <http://www.waterfootprint.org/Reports/Mekonnen-Hoekstra-2012-Water-FootprintFarmAnimalProducts.pdf> (accessed 30 July 2012).

standards.¹¹⁷ Such measures may be further reinforced by international cooperation. Several instruments have been proposed, including water labelling for water-intensive products, an international water-pricing protocol, international business agreements on water footprint accounting, and a Kyoto Protocol-like agreement on tradable water footprint permits.¹¹⁸ States may also promote the limitation of the water footprint through government procurement policies.

When states decide to foster production and trade in water-efficient products, they should follow the WTO Appellate Body's report guidelines on state involvement in the labelling process. According to Article 2.2 of the TBT, a technical regulation 'shall [. . .] not be more trade-restrictive than necessary to fulfil the legitimate objective'. The Appellate Body in *US-Tuna II* had an opportunity to take a closer look at the meaning of 'legitimate objective'. It deduced from '*inter alia*' that the list of objectives in Article 2.2. is not exhaustive.¹¹⁹ The provision was held to provide a reference point according to which other objectives may be considered as legitimate, and this should be proved by the WTO member that is establishing the measure.¹²⁰ A WTO Panel considered that consumer information¹²¹ falls within the broader goal of preventing deceptive practices, and that the objective of dolphin protection may be understood as intended to protect animal life or health, or the environment.¹²² Those findings were not contested before the Appellate Body. In the case of technical regulations based on the water footprint, the objectives of consumer information and protection of the environment could be invoked as justification. The measure ought to fulfil the objective, but what would also be scrutinized is the level of its 'trade-restrictiveness'.¹²³ It should not provoke 'unnecessary obstacles to international trade'.¹²⁴ Such a trade regulation would be unjustified if another less trade-restrictive measure could achieve the same goal. In other words, the measure would be questionable if a 'reasonably available alternative measure'

¹¹⁷ The Grey Water Footprint refers to pollution and expresses the volume of freshwater required to assimilate the load of pollutants, see Hoekstra, Chapagain, Aldaya and Mekonnen, above n 27, 29–31.

¹¹⁸ Arjen Y. Hoekstra, *Water neutral: reducing and offsetting the impacts of water footprints*, 28 Value of Water Research Report Series 7, 8 (2008), <http://www.waterfootprint.org/Reports/Report28-Water-Neutral.pdf> (accessed 26 June 2012).

¹¹⁹ WTO Appellate Body Report, *US-Tuna II*, above n 59, para. 313.

¹²⁰ *Ibid.* paras 303, 313.

¹²¹ Consumer protection was also mentioned as a legitimate objective in *US-Cool*, above n 95, paras 394, 432.

¹²² WTO Appellate Body Report, *US-Tuna II*, above n 59, referring to WTO Panel Report, *US-Tuna II*, para. 7.437.

¹²³ See, WTO Appellate Body Report, *European Communities – Trade Description of Sardines*, (EC-Sardines), WT/DS231/AB/R, adopted 23 October 2002, paras 310–311.

¹²⁴ Article 2.2 of the TBT.

could be applied.¹²⁵ However, the legality of such technical regulations based on a water footprint could not be judged in abstract terms and needs be evaluated on a case-by-case basis.

Ecolabelling seems to be the first logical step in the promotion of water-friendly products. Harmonization of a water footprint ecolabel in the framework of the ISO becomes more feasible and would provide governments with an important legal tool in their policies.

5.3 WATER FOOTPRINT AS AN ISO STANDARD

Liberalization of trade at the international and regional levels requires the codification of norms regulating quality and safety standards. There are essentially three available methods: (1) unilateral technical regulations applied to both domestic and imported products; (2) mutual recognition, where states agree to recognize each other's standards; and (3) harmonization, where through negotiations states agree to adopt identical or similar standards.¹²⁶ Harmonization may be achieved through two models. The first model is mandatory and public harmonization, which is particularly important in relation to product safety, and therefore is quite common in the food¹²⁷ and sanitary sectors.¹²⁸ The second model is private and voluntary self-commitment by industries. Norms may be harmonized by different producers.¹²⁹ Through their national committees, they act within the ISO which aims to codify different technical norms.

The ISO's first initiatives, which were related to water management, faced protests from NGOs.¹³⁰ They were also related to the significant role of the French delegation to the ISO in the formation of Technical Committee 224. The Secretariat of the Committee is based on the French standards body, the Association Française de Normalisation (AFNOR)¹³¹ which initiated its work,

¹²⁵ *Ibid.* WTO Appellate Body Report, *US – COOL*, above n 95, para. 326; WTO Panel Report, *US – Tuna II*, above n 59, para. 7.566.

¹²⁶ Mitsuo Matsushita, Thomas J. Schoenbaum and Petros C. Mavroidis, *The World Trade Organization. Law, Practice, and Policy*, (Oxford University Press 2006), 813.

¹²⁷ See Regulation 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority, and laying down procedures in matters of food safety, OJ 2002 L 31/1.

¹²⁸ See Council Directive 93/42/EEC concerning medical devices, OJ 1993 L 169/1.

¹²⁹ For example, by the American Manufacturers Standardization Society (MSS).

¹³⁰ Public Citizen, *Water Privatization Letter to the American National Standards Institute from Public Citizen and Friends*, http://www.citizen.org/trade/article_redirect.cfm?ID=7153 (accessed 19 July 2012).

¹³¹ ISO, *TC 224 Service activities relating to drinking water supply systems and wastewater systems - Quality criteria of the service and performance indicators*, http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=299764 (accessed 19 July 2012).

and France consequently holds the chair.¹³² The French delegation includes not only standards experts but also the two largest water companies in the world: Vivendi-Veolia and Suez-Lyonnaise.¹³³ The strong French presence raised concerns about the future policy on the privatization of water services and the potential underrepresentation of consumer interests.¹³⁴

The ISO took the first steps to introduce a standard on the water footprint – ISO 14046. It was intended that the standard would deliver principles, requirements and guidelines for a water footprint metric. Due to the current lack of international standards in this area, business organizations around the world apply different definitions and criteria in their environmental reports, and in their product packaging or documentation on water use. For example, often there is no distinction between water borrowing (e.g., cleaning water released after use into the nearest body of water) and water consumption (e.g., evaporated water), which gives rise to confusing information regarding the use of water by business organizations.¹³⁵ The virtual water measurement unit would be applicable not only to products but also to processes and organizations.¹³⁶ As mentioned above, the quantification of virtual water use may lead to different results. Accordingly, at the organizational level, the ISO water footprint standard could consider the guidance in ISO 14064 for greenhouse gases.¹³⁷ This standard provides assistance in the management, reporting and verification of greenhouse gas information and data. As ISO 14064 assures that one ton of CO₂ is always the same, wherever it occurs, a future ISO 14046 standard would provide the same quantification method of virtual water input in production processes. The standard would provide guidance on impact assessment, as given in ISO 14044,¹³⁸ and guidelines for life-cycle assessments.¹³⁹ It would also define how different types of water resources (e.g., ground water) and water releases should be considered, and how local environmental (e.g., dry/wet areas) and socio-economic (e.g., developed/developing countries) conditions should be treated.¹⁴⁰ The standard

¹³² Robin Simpson, *Down and dirty: providing water to the world*, 24 Cons. Policy Law Rev. 146 (2004), 147.

¹³³ *Ibid.*

¹³⁴ *Ibid.*

¹³⁵ Water Footprinting Tools and Frameworks, http://api.ning.com/files/CDhrb77Kd*-HqHK2C9jhNhoZjihF8m9EO6mAuweuW6HjEWSnw5*ryQFccyPnC*-uqro2pqdy2TGfRDBK2mR3RfvHFzjaZTFC/SustainabilityFrameworksforWaterOct2011SSV.pdf (accessed 19 July 2012).

¹³⁶ Mélanie Raimbault, Sebastien Humbert, *ISO considers a potential standard on water footprint*, http://www.iso.org/iso/isofocusplus_bonus_water-footprint (accessed 14 July 2012).

¹³⁷ Sebastien Humbert, *Water footprinting, life cycle assessment, and standardization*, http://gec.jp/gec/en/Activities/ietc/fy2010/wf/wf_s3-2.pdf (accessed 19 July 2012).

¹³⁸ *Ibid.*

¹³⁹ ISO, *ISO 14044:2006*, http://www.iso.org/iso/catalogue_detail?csnumber=38498 (accessed 19 July 2012).

¹⁴⁰ See Raimbault and Humbert, above n 136.

would also address the issue of, and take into consideration, the relative character of water use, depending on the availability of water resources in a given region. This particular problem is especially important, as the same amount of water waste leads to different consequences in water-scarce and water-rich countries.

Communication issues on the methods used for announcing water footprint results to clients, in the form of environmental labels and declarations, will also be regulated. This could be based on the existing ISO 14020, which aims to provide a basis for other ISO standards.¹⁴¹ ISO 14046 probably would not propose that the standard offer a methodology for calculating offsets or compensation, but rather would address the positive aspects, such as how to decrease the water footprint.¹⁴² Therefore, such an ISO standard would not address questions about how different entities should react to virtual water wasting. Preparations within the ISO for a virtual footprint standard began in 2009 and aimed for completion in 2011,¹⁴³ although it was indicated that the standard was unlikely to be established until at least 2013.¹⁴⁴

An ISO 14046 water footprint standard would be a particularly useful tool, and it would encourage governments to base their policies and practices on it in their domestic regulations. Furthermore, ISO standards are of special significance for WTO law. Article 2.4 of the TBT requires the use of existing or imminent 'relevant international standards' as the basis for domestic technical regulations. The ISO, together with the Codex Alimentarius Commission, has the most prominent position in standard codifications. It possesses a dominant position in several areas of technical standardization, widespread membership, and a general competence over almost all conceivable technical issues.¹⁴⁵ Moreover, the two organizations have decided to cooperate in the area of providing information on standards.¹⁴⁶ Taking all the relevant factors into account, it would be hard to imagine that ISO standards would not be considered as 'relevant international standards' in the meaning of Article 2.4 of the TBT. Thus, codification of the water footprint by the ISO could provide a strong basis for government policies.

¹⁴¹ ISO, *ISO 14020:2000*, http://www.iso.org/iso/catalogue_detail?csnumber=34425 (accessed 19 July 2012).

¹⁴² See Raimbault and Humbert, above n 136.

¹⁴³ See Humbert, above n 137.

¹⁴⁴ See, *Assessment of the efficiency of the water footprinting approach and of the agricultural products and foodstuff labelling and certification schemes, Final Report prepared for European Commission, DG Trade, Part A, iv-v*, <http://www.rpaltd.co.uk/documents/WaterFootprintingPartA.pdf>, (accessed 17 July 2012) 16.

¹⁴⁵ Filippo Fontanelli, *ISO and Codex standards and international trade law: what gets said is not what's heard*, 60 Int. Comp. Law Q. 895 (2011), 908.

¹⁴⁶ Decision on Proposed Understanding on WTO-ISO Standards Information System, 15 April 1994, LT/UR/D-2/1; WTO TBT Committee, Minutes of the Meeting Held on 21 April 1995, TBT/M/48, para. 47.

5.4 WATER FOOTPRINT AS A PRIVATE STANDARD

Despite the incentives of governments, monitoring the use of water over supply chains has been only a self-imposed commitment on the part of the food industry. For example, SABMiller has published studies on its beer water footprint,¹⁴⁷ Coca-Cola on sodas and juices,¹⁴⁸ Nestlé on shredded wheat,¹⁴⁹ Marks and Spencer on clothes ranges and the top five key crops,¹⁵⁰ and Mars on candies and pasta sauce.¹⁵¹ Raisio, a Finnish company, has launched the first ever water footprint ecolabel – the H₂O label on Elovena oat flakes. It indicates the total water consumption of the product from cultivation through manufacturing to packaging materials. It includes the amount of water that the plant uses for growth and that used in production, as well as the resulting wastewater. Calculations for primary production are based on evaporation data from the Finnish Meteorological Institute's weather observation stations, the amount of water consumed in oat cultivation and the three-year averages for oat crops supplied by Raisio's contract farmers.¹⁵²

Private enterprises are free when it comes to choosing commercial partners and entering into contracts according to their business policies, which may but not necessarily have to embrace non-economic values. Nevertheless, private standards may also lead to restrictive trade effects. For example, buyers or final retailers that choose to conform to a voluntary standard may insist that certain environmental conditions must be met along the production chain, and a producer or exporter has little choice but to meet them.¹⁵³ In the case of the MSC ecolabel for responsible fishery practices created by Unilever and the World Wildlife Fund,

¹⁴⁷ SAB Miller, *WWF and SABMiller unveil water footprint of beer*, <http://www.sabmiller.com/index.asp?pageid=149&newsid=1034> (accessed 17 July 2012).

¹⁴⁸ See The Coca-Cola Company, The Nature Conservancy, *Product Water Assessments. Practical Application in Corporate Water Stewardship*, http://www.thecoca-colacompany.com/presscenter/TCCC_TNC_WaterFootprintAssessments.pdf (accessed 16 July 2012).

¹⁴⁹ Water Footprint, *Water Footprint of Nestlé's 'Bitesize Shredded Wheat'*, <http://www.waterfootprint.org/Reports/Nestle-2010-Water-Footprint-Bitesize-Shredded-Wheat.pdf> (accessed 17 July 2012).

¹⁵⁰ Strawberries, tomatoes, lettuce, potatoes and roses, Marks & Spencer, *How wet is your water footprint?*, <http://plana.marksandspencer.com/about/partnerships/wwf/stories/22/> (accessed 17 July 2012).

¹⁵¹ Mars, *Water Impact*, <http://www.mars.com/global/about-mars/mars-pia/our-operations/water-impact.aspx> (accessed 22 November 2012).

¹⁵² Ekologia.fi, *H₂O Label on Elovena Oat Flakes*, <http://www.raisio.com/www/page/2443> (accessed 21 July 2012).

¹⁵³ Dale Andrew, Karim Dahou and Ronald Steenblik, *Addressing Market-Access Concerns of Developing Countries Arising from Environmental and Health Requirements: Lessons from National Experiences*, 5 OECD Trade Policy Working Paper, 9, available at [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/ENV/TD\(2003\)33/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/ENV/TD(2003)33/FINAL&docLanguage=En) (accessed 20 July 2012).

small-scale fishermen – who are particularly numerous in developing countries – experienced difficulties in qualifying for the label.¹⁵⁴ A similar effect occurred in Colombia, when the introduction of pure private standards on cut flowers resulted in a significant decrease in the country's export sector,¹⁵⁵ especially to Germany.¹⁵⁶ While NGO standards are often perceived as consumer-driven initiatives unsupported by any government-conferred advantage, developing countries' manufacturers are apprehensive of their potential for misuse. This apprehension stems from the possibility that some NGO standards may be misused by domestic industry groups and governments motivated by protectionism in order to discriminate against products from other countries and to impose 'disguised' restrictions on their imports.¹⁵⁷ This may result in a situation where an industry in one state refuses to import products without specific water footprint ecolabels from another state. The crisis of the Doha Round shows that developed and developing states often have conflicting interests in the agricultural sector; therefore, the use of different methods for market protection is a realistic scenario.

The second sentence of Article 4.1 of the TBT provides that:

[Members] shall take such reasonable measures as may be available to them to ensure that [...] non-governmental standardizing bodies within their territories [...], accept and comply with [...] the Code of Good Practice [for the Preparation, Adoption and Application of Standards].

The substantive provisions of the Code of Good Practice, contained in Annex 3 to the TBT, largely resemble similar provisions of the Agreement.¹⁵⁸ For example, the national treatment obligation and a Most Favoured Nation (MFN) obligation stemming from paragraph D of the Code are reflected in Article 2.1 of the TBT, while the prohibition of unnecessary obstacles to trade resembles Article 2.2. Where available, WTO members shall use international standards; however, the Code does not provide that standards based on internationally defined criteria enjoy a presumption of compliance with WTO law, as is the case with technical regulations.¹⁵⁹

The Code of Good Practice in Annex 3 to the TBT 'is open to acceptance to any standardizing body',¹⁶⁰ therefore the term 'non-governmental standardizing

¹⁵⁴ *Ibid.*

¹⁵⁵ See Committee on Trade and Environment Report of the Meeting Held on 19–20 March 1998, WT/CTE/M/17, 9 April 1998.

¹⁵⁶ Samir R. Gandhi, *Regulating the Use of Voluntary Environmental Standards Within the World Trade Organization Legal Regime: Making a Case for Developing Countries*, 39 J. World Trade 855, 860 (2005).

¹⁵⁷ *Ibid.* 855.

¹⁵⁸ See Michael Koebele and Gordon LaFortune, *Commentaries on "Art. 4 and Annex 3 TBT"*, in Wolfrum, Stoll and Seibert-Fohr, above n 101, 243, 249.

¹⁵⁹ Paragraph F of the Code of Good Practice, Annex 3 to the TBT, above n 21; Carlos Lopez-Hurtado, *Social Labelling and WTO Law*, 5 J. Int. Econ. Law 719, 734 (2002).

¹⁶⁰ Paragraph B the Code of Good Practice, Annex 3 to the TBT, above n 21.

body' should be interpreted broadly.¹⁶¹ However, it is doubtful whether the private initiatives of industries, such as the Finnish Raisio label, would fall within the scope of Article 4 of the TBT. The definition of 'standardizing body' appeared in the first drafts of the TBT.¹⁶² However, due to parallel negotiations taking place in the frameworks of the ISO/ECE, the final version of Annex 1 of the TBT refers to the ISO/IEC Guide. The Guide defines the 'standardizing body' as a 'body that has recognized activities in standardization'.¹⁶³ According to paragraph 2 of Annex 1, a 'standard' is a 'document approved by a recognized body that provides for a common and repeated use, rules guidelines or characteristics for products or related processes and production methods with which compliance is not mandatory'.¹⁶⁴ The ISO/IEC Guide defines a 'body' as a '(responsible for standards and regulations) legal or administrative entity that has specific tasks and composition'.¹⁶⁵

From this definition, it seems that a company such as Raisio is a 'body'. However, it should be 'responsible for standards and regulations'. Moreover, a 'standard' should be approved by a 'recognized' body. It seems that not all norms regulating production would become standards. Some of them are only for internal use within companies. A 'standard' would be for 'common' use, i.e., joint or collective use 'shared by two or more'¹⁶⁶ entities. It follows that the application of Raisio's H₂O ecolabel by other companies using the same methodology would make the ecolabel 'common' and would render the TBT applicable. Such a 'common' use of a water footprint would be especially relevant in production chains, when a situation of industry collusion may occur. According to the GATT Panel report in *Tuna-Dolphin I*, ecolabels would constitute a breach of trade law if they restricted the sale of products or access to a government-conferred advantage.¹⁶⁷ Potential violations of MFN treatment would require associating the advantage conferred with an act of the government.¹⁶⁸

The obligation of states under Article 4.1, second sentence, is one of best effort and not the result: '[Members] shall take such reasonable measures as may be available to them'.¹⁶⁹ In contrast to paragraph 12 of Article XXIV of the GATT, the best effort obligation also encompasses responsibility for non-governmental organizations.¹⁷⁰ Article 4.1, second sentence, does not provide a method of

¹⁶¹ See Gandhi above n 156, 876.

¹⁶² See Negotiating History, above n 102, paras 25–48.

¹⁶³ Paragraph 4.3 of the ISO/IEC Guide (ISO/IEC 2004, Geneva 2004), 18.

¹⁶⁴ Paragraph 2, Annex 1 to the TBT, above n 21 (italics added).

¹⁶⁵ Paragraph 4.1 of the ISO/IEC Guide, above n 163, 18.

¹⁶⁶ *Oxford Dictionary of English* (Oxford University Press 2010), 350.

¹⁶⁷ See *US-Tuna I*, above n 57, para. 5.42.

¹⁶⁸ See Gandhi, above n 156, 864.

¹⁶⁹ Article 4.1. of the TBT, above n 21.

¹⁷⁰ See M. Koebele and G. LaFortune, above n 102, 255.

attribution of the actions of private actors to WTO members;¹⁷¹ rather it constructs a separate state's obligation of 'taking reasonable measures', so that 'the non-governmental standardizing bodies [. . .] accept and comply with [. . . the] Code of Good Practice'.¹⁷² A limit of 'reasonableness' suggests that the obligation is less stringent than a requirement that 'all necessary measures' be taken. However, as some commentators suggest, the actual difference between the obligation of states to ensure that 'central government standardizing bodies accept and comply with the Code' and to take 'reasonable measures as may be available to [. . .] accept and comply with the Code' in the case of non-governmental bodies may be narrower than one may expect.¹⁷³ Thus, if a non-governmental standardizing body establishes a water footprint standard, a WTO member could be held liable if a breach of the duty to employ all reasonable and available instruments to achieve compliance with the Code occurred. However, the obligation of WTO members subsists irrespective of whether a standardizing body has accepted the Code of Good Practice. Accordingly, it is the member's duty to assure that the standardizing bodies follow the Code's guidelines.¹⁷⁴

It is also possible that a water footprint standard could be compiled and applied by multinational bodies. In such a case the question of attribution of responsibility to a plurality of states arises. If the Code of Good Practice is not followed, Article 47 of the International Law Commission Draft Articles on State Responsibility¹⁷⁵ provides an indication. This responsibility is not diminished by the fact that one or more other states are also responsible for the same act.¹⁷⁶ Joint responsibility may especially be invoked as Article 4.1 of the TBT provides that states are responsible for the acts of a non-governmental standardizing body 'acting within their territories'.¹⁷⁷ Thus, Article 4.1 suggests a criterion of real activity of a standardizing body, and not necessarily one of registration, as a standard for attribution of state responsibility. Nevertheless, in the case where the acts of an NGO within a state cannot be interpreted as constituting 'reasonable measures' towards such a standardizing body, the criterion of registration would thus come into play as a means of attributing state responsibility.

¹⁷¹ *Ibid.* 256.

¹⁷² Article 4.1. of the TBT, above n 21.

¹⁷³ See M. Koebele and G. LaFortune, above n 102, 257.

¹⁷⁴ Article 4.4 of the TBT, above n 21.

¹⁷⁵ International Law Commission, Draft Articles on Responsibility of States for Internationally Wrongful Acts with commentaries, November 2001, Supplement No. 10 (A/56/10), available at: http://untreaty.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf (accessed 23 July 2012). It should be kept in mind that the general rules on states' responsibility play only a subsidiary role within the law of the WTO as it disposes its own system of assuring compliance.

¹⁷⁶ *Ibid.* 124.

¹⁷⁷ Article 4.1 of the TBT, above n 21.

6 CONCLUSION

The water footprint is an emerging standard which, due to growing water scarcity, may play a growing role in environmental protection. Its final content is still under debate. However, due to intensifying transnational and international cooperation, its significance may increase within international trade law.

The current debate about carbon footprint ecolabeling schemes may also provide guidance on potential difficulties and solutions in relation to the water footprint standard. The goals of the two footprints are concurrent – to measure and effectively limit the use of water and the emissions of greenhouse gases. A session held in 2010 at the WTO headquarters noted the main difficulties related to carbon footprint schemes; these included a low quality of documentation, a lack of a clear or general methodology and compliance assessment for most schemes, and uncertainties about how to treat the loss of soil carbon in agricultural practices.¹⁷⁸ The two footprints thus face many parallel problems. Preparations for an ISO 14067 standard on the carbon footprint started in late 2008 and were intended to be finalized in November 2011.¹⁷⁹ Due to the complexity of the issues involved and stakeholders' interests,¹⁸⁰ preparations are still ongoing and a new publication target date of mid 2014 was announced.¹⁸¹

A water footprint standard will depend strongly on governmental involvement, which should be based on relevant international standards. Its possible introduction as a private instrument is more probable, as the requirements of an international trade legal regime for non-public instruments are less demanding. Even if it were only a private standard, a water footprint ecolabel could become an important informational tool to promote awareness on the need for water savings by both consumers and producers. Nevertheless, the finalization of an ISO water footprint standard would open the door for states to regulate water use in their production processes. These public standards would be presumed to be in accordance with the law of the WTO. The growing number of standardization initiatives outside the ISO are also within the ambit of the TBT. Ecolabel schemes may be required to be registered with the WTO so that

¹⁷⁸ WTO, *Information session on product carbon footprint and labeling schemes*, http://www.wto.org/english/tratop_e/envir_e/events_feb10_e/event_17feb10_e.htm (accessed 12 September 2012). The information was based on OECD studies on Product Carbon Footprint and Labelling Schemes.

¹⁷⁹ Riso-R-Report, *Emerging product carbon footprint standards and schemes and their possible trade impacts*, <http://www.risoe.dtu.dk/rispubl/reports/ris-r-1719.pdf> (accessed 11 October 2012), 14.

¹⁸⁰ *Carbon footprint standard moves forward*, *ISO Focus*, 6 *ISO Focus* (2009) 16, available from http://www.iso.org/iso/home/news_index/iso-magazines/iso-focus_2009.htm (accessed 12 September 2012).

¹⁸¹ No more waste – tracking water footprints, 29 July 2013, http://www.iso.org/iso/home/news_index/news_archive/news.htm?refid=Ref1760 (accessed 3 November 2013).

transparency is guaranteed.¹⁸² However, it seems probable that, given the growing need for water-saving, private regulations will turn public in the future. Public carbon footprint initiatives, like the EU Ecolabel, the Carbon Footprint Measurement Toolkit,¹⁸³ or the California Carbon Labelling Act, indicate the likelihood of water footprint standards following a similar path.¹⁸⁴ In the case of binding commitments, the questions of who would calculate, and how they would calculate, gas emissions or water use would become pivotal.

Water-saving procedures may interfere with the regulations of international economic law. It seems that the legal problems of the water footprint may serve as a 'litmus test' of how the international community will act in order to harmonize water-related economic and environmental goals. Depending on further developments, the water footprint may serve as a preparatory tool for the legitimization of water-saving policies at the international level. However, such policies will not be effective without respecting the necessary pluralism between different actors of the international community. The problem of 'water tradability'¹⁸⁵ already shows that there is a lack of consensus between states on how water should be treated under the law of the WTO. It seems that at present, as water deficits are predominantly regional, there is no pressing need for a uniform global water-saving policy. If this situation changes, the water footprint could serve as a starting reference point for legal instruments within the international community.

¹⁸² See Art. C of Annex 3 to the TBT Agreement.

¹⁸³ Gian Luca Baldo et al., *Study for the EU Ecolabel Carbon Footprint Measurement Toolkit*, http://ec.europa.eu/environment/ecolabel/about_ecolabel/carbon/final_activity_report_en.pdf (accessed 9 October 2012).

¹⁸⁴ California Legislature 2007–2008 Regular Session, Assembly Bill n 2538, http://www.leginfo.ca.gov/pub/07-08/bill/asm/ab_2501-2550/ab_2538_bill_20080222_introduced.pdf; later version California Legislature 2009–2010 Regular Session, Assembly Bill n 19 http://www.leginfo.ca.gov/pub/09-10/bill/asm/ab_0001-0050/ab_19_bill_20081201_introduced.pdf (accessed 9 October 2012), voted out.

¹⁸⁵ Cf. 1993 *Statement by the Governments of Canada, Mexico and the United States*, available at the website of the Canadian Intergovernmental Conference Secretariat, http://www.scics.gc.ca/cinfo99/83067000_e.html related to water and NAFTA obligations, with statements of Turkish officials on their water sale projects with Israel, *Israel signs agreement to buy water from Turkey*, March 2004, <http://www.uswaternews.com/archives/arcglobal/4israsign3.html>.

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