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Virtual water trade & international trade law

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Abstract:

More efficient use of fresh water will be crucial in mitigating increased competition over this scarce resource, which is predicted to be substantially accentuated by climate change. Based upon the 'water footprint' concept, which indicates the total amount of water that is used during the production cycle of a good, the 'global water saving' concept emerged in 2004. Therewith scientific tools were available to investigate upon the amount of fresh water that could be saved be means of international trade in 'virtual water'. 'Virtual water' indicates the total amount of water which is needed to produce a certain good (agricultural or industrial) in a certain place, thus 'embedded' in this good. Looking into the 'water footprint' data, it becomes clear that if water-demanding crops are being produced in water-rich regions and low water-demanding crops are being produced in the more water-scarce regions, a significant amount of fresh-water can be saved, while food-production efficiency can be improved at the same time. Two highly relevant topics under the WTO international trade law framework in this regard are the legal status of irrigation subsidies and the legal status of 'water- footprint standards', or 'water-ppms'.

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Content

Introduction

Water is essential for all life-forms. It is a unique resource which cannot be produced artificially. Although the total amount of water resources on the planet is enormous and remains constant in a closed hydrological cycle[1], one has to keep in mind that only 2.5 % of all water resources are freshwater resources, and merely 1% is relatively easily accessible for human consumption and agricultural and industrial demands.[2] Moreover, the remaining percentage of relatively easily accessible freshwater resources is unequally divided over the planet, with only 10 countries disposing over approximately 60 % of the resources.[3] Yet, global warming is an additional factor to be taken into account.[4]

In despite of the closed hydrological cycle wherein no water is lost, and being only at the very beginning of the potential impacts of 'global warming', freshwater already is a scarce resource for many people in many regions of the world.[5] According to the latest update of the WHO /UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, an estimated 884 million people still don't dispose over a reasonable access[6] to safe drinking water.[7] Another study, using the criterion of water scarceness evolving at less then 1000m3/year/capita, shows that the percentage of the population concerned by water scarcity increased constantly throughout history.[8] According to this study an estimated 35 % of the world population faced water scarcity in the year 2005.[9] Economic development accompanied by increasing energy needs, both in the developed and the developing world, are boosting competition over the world's available fresh water resources. Overall, in between 2 and 7 billion people could face water-scarcity by the year 2050.[10] It is thus safe to say that more efficient use of freshwater resources will be crucial in mitigating competition over this scarce resource. International trade law can play a crucial role in regulation global water flows, not only in providing for an efficient trade framework but also when it comes to dispute settlement.

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[1] See USGS, Science for a changing world, Water Science for Schools, http://ga.water.usgs.gov/edu/index.html (accessed 29th June 2011).
[2] See *Ibid.*.
[3] See AQUASTAT: http://www.fao.org/nr/water/aquastat/main/index.stm (accessed 29th June 2011).
[4] See Falkenmark, M. (1984), "New Ecological Approach to the Water Cycle: Ticket to the Future", Ambio **13**(3): 152-160; Bates, B., Z. W. Kundzewicz, et al. (2008). Climate Change and Water, Technical Paper of the International Panel on Climate Change, IPCC Technical Paper IV, IPCC Technical Papers, IPCC, Geneva, Switzerland, 210 p.
[5] See Water Poverty Index (WPI), http://maps.grida.no/go/graphic/water-poverty-index-by-country-in-2002 (accessed 19th June 2011).
[6] Reasonable access to safe drinking water means a disposal of t least 10 litres per person per day accessible within a range of 1 kilometres, see Howard, G. and B. Jamie (2003), Domestic Water Quantity, Service, Level and Health. Geneva, World Health Organisation, 33 p, available at http://whqlibdoc.who.int/hq/2003/WHO_SDE_WSH_03.02.pdf (accessed 29th June 2011).
[7] See W.H.O.-U.N.I.C.E.F. (2010), Joint Monitoring Programme on Water Supply and Sanitation (JMP), Progress on sanitation and drinking water: 2010 update, 56 p., available at http://whqlibdoc.who.int/publications/2010/9789241563956_eng_full_text.pdf (accessed 29th June 2011).
[8] See Kummu, M., P. J. Ward, et al. (2010) Is physical water scarcity a new phenomenon?, Global assessment of water shortage over the last two millennia, Environmental Research Letters 10 p.
[9] *Ibid.*, p. 6.
[10] UN – UNESCO, 2003, International Year of Fresh Water - Water for our future, what are the trends?, http://www.wateryear2003.org/en/ev.php-URL_ID=3697&URL_DO=DO_TOPIC&URL_SECTION=201.html (accessed 29th June 2011).

I. The 'virtual water trade' concept

From the early 1990s on, Professor Tony Allan[11] studied water scarcity in the Middle-East, gradually developing the 'virtual water' concept.[12] Initially being inspired by Israeli concerns not to 'over-export' water intensive agricultural products in view of emerging local water scarcity, Professor Allan brought under general attention that, rather then going into some (predicted) wars about the scarce resource water, the water-scares countries in the Middle-East successfully compensated their looming fresh water shortages by importing water intensive food such as wheat and rice.[13] The water needed to produce these water rich commodities throughout their complete production period was initially referred to as 'embedded' or 'exogenous' water, which rapidly changed into the flashier but often criticized concept of 'virtual' water[14]. At present, and in despite of these often repeated critics, trade in products with reference to their virtual water content is generally known as 'virtual water trade', which will also be the term used for this paper.

Inspired by the work of Professor Allan, Professor Aryen Hoekstra[15] introduced the 'water footprint' concept in the early 2000s[16], presenting a new method for measuring the total amount of water being consumed in a particular country (water footprint of a nation[17]), as well as for measuring the total amount of water being used in the production process of a particular good (water footprint of a product). A famous example of the latter method is the estimated water footprint of a cup of coffee, which is of 140 litres on average.[18] Hoekstra's water footprint methodology also brought under general attention that the amount of water needed in the production process of a particular product can vary considerably, depending upon the used production method and the location of production.[19] The production of 1 ton of wheat, for example, requires 690 m3 of fresh water in China, 1.654 m3 in India and as much as 2.375 m3 in Russia.[20] The production of 1 kilogram of beef requires 11.681 m3 in the Netherlands, 16.482 m3 in India and as much as 21.018 in Russia.[21]

In the year 2003 Falkenmark added another crucial factor to the debate by specifying that the virtual water content of products contains a green component (rainwater), a blue component (surface- and groundwater) and a grey component (used or polluted water).[22] These three components have a different impact on water scarcity since ground- and surface water have higher opportunity costs than rainwater and

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[11] School of Oriental and African Studies, University of London.
[12] For an overview of Prof. Allan's publications on this topic, see http://www.soas.ac.uk/staff/staff30563.php (accessed 29th June 2011).
[13] See a.o. Allan, J. A. (1997), 'Virtual water': a long term solution for water short Middle-Eastern economies?, University of London, SOAS - Water Issues Group, 21 p
[14] See f.e. Merrett, S. (2003), "Virtual Water and Occam's Razor ", Water International **28**(1): 103-105.
[15] University of Twente.
[16] Hoekstra, A. Y. and P. Q. Hung (2002), Virtual Water Trade, A Quantification of Virtual Water Flows Between Nations in Relation to International Crop Trade, Value of Water Research Report Series No. 11, Delft, Netherlands, UNESCO-IHE Institute for Water Education.
[17] The 'water footprint of a nation' represents the total amount of water being consumed or polluted in a particular county, added all virtual-water imports, minus all virtual-water exports.
[18] See http://www.waterfootprint.org/?page=files/CoffeeTea (accessed 29th June 2011).
[19] See generally http://www.waterfootprint.org/?page=files/home (accessed 29th June 2011).
[20] Hoekstra, A. Y. and A. K. Chapagain (2008b), Globalization of Water: Sharing the Planets Freshwater Resources, Oxford, UK, Wiley-Blackwell Publishing, p. 14.
[21] *Ibid*.
[22] Falkenmark, M. (2003), "Freshwater as shared between society and ecosystems: from divided approaches to integrated challenges.", Philosofical Transactions of the Royal Society of London B **358**(1440): 2037-2049.

polluted water. In 2004 Wichelns linked Hoekstra's findings with the comparative advantage theory out of the field of economics, stressing that international trade could play an important role in adaptation and mitigation of water scarcity by means of international virtual-water trade.[23] Simultaneously the 'global water saving' concept emerged, emphasizing the fact that a certain amount of fresh water resources could actually be saved on the global level through international virtual-water trade if certain products where produced at one place, rather then in another one, depending on the water requirements for production at these specific locations. [24]

The theory of global water savings by means of virtual water trade is highly interesting, although it is fair to say that there is less water saving as generally accepted under this methodology, since the water footprint of transport (production cycle of the used fuel) has been excluded from being taken into account, at least for the time being. Nevertheless, the theoretical framework remains highly relevant and it is crucial to investigate upon which rules of international trade law are relevant to the concept of virtual water trade, and how these rules could be improved in order to contribute more substantially to the mitigating of global water scarceness.

[23] Wichelns, D. (2004), "The policy relevance of virtual water can be enhanced by considering comparative advantages.", Agricultural Water Management **66**(1): 49-63.
[24] See Oki, T. and Kanae, S. (2004), "Virtual water trade and world water resources", Water Science and Technology **49**(7): 203-209; Chapagain, A. K. and Hoekstra, A.Y. et al. (2005), Saving Water Through Global Trade, Value of Water Research Report Series No. 17, Delft, Netherlands, UNESCO-IHE Institute for Water Education; Chapagain, A. K., Hoekstra, A.Y. et al. (2006a), "Water savings through international trade of agricultural products." Hydrology and Earth System Sciences (HESS) **10**(3): 455-468.

II. International trade law issues

With 'globalization' proceeding and many developing countries on the path of development, natural resources are becoming increasingly scarce, causing increased competition and rising prices. International trade in natural resources is a highly debated and often a controversial issue. This holds through for tropical timber, for oil and for gas, and certainly also for fresh water resources. While most people would hesitate to consider 'bulk' fresh water to be a tradable commodity, an addition layer was added to the debate quite recently: virtual water trade. Virtual water trade has had a quite positive realm from the very beginning, being considered as a possible solution to water scarcity in many countries and regions of the world.

Under the comparative advantage doctrine, a product should be produced in the country or region disposing over the best conditions to produce it, and should then be traded to other regions or countries, maximizing economic advantages for all. International trade in virtual water is to be considered as an emanation of this theory.[25] WTO international trade law offers the most suitable framework for dealing with this issue. It should be investigated to what extend it is already responding to issues of water scarcity, and which improvements could be made in order to respond to these concerns in a more adequate manner. Two main issues will be analyzed under this paper; the legal treatment of 'water' subsidies and process and production methods related to the amount of water that is used in the production cycle of a commodity.

A. *Irrigation subsidies*

Theoretically, trade in virtual-water leads to global water savings if more water intensive products are produced in water rich regions and then exported to water scarce regions and vice versa.[26] It has to be taken into account thereby, that there are three types of water involved in the production process[27], of which groundwater is the most valuable type of fresh-water since it can be overused and depleted in the medium- or the long run. Irrigating farmland with groundwater is often heavily subsidized, sometimes in combination with subsidies for the installation and running of the water-pumps and other agricultural subsidies such as subsidies for chemical treatment.

Exact data on the total amount of irrigation subsidies are not available in most countries. Concerning the US, Berthelot, in his reports for the US congress estimates the total amount of irrigation subsidies in the EU at 1.2 billion Euros on average for

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[25] Wichelns, D. (2004), "The policy relevance of virtual water can be enhanced by considering comparative advantages.", Agricultural Water Management **66**(1): 49-63.

[26] See Oki, T. and Kanae, S. (2004), "Virtual water trade and world water resources", Water Science and Technology **49**(7): 203-209; Chapagain, A. K. and Hoekstra, A.Y. et al. (2005), Saving Water Through Global Trade, Value of Water Research Report Series No. 17, Delft, Netherlands, UNESCO-IHE Institute for Water Education; Chapagain, A. K., Hoekstra, A.Y. et al. (2006a), "Water savings through international trade of agricultural products." Hydrology and Earth System Sciences (HESS) **10**(3): 455-468.

[27] Falkenmark, M. (2003), "Freshwater as shared between society and ecosystems: from divided approaches to integrated challenges.", Philosofical Transactions of the Royal Society of London B **358**(1440): 2037-2049.

the period 1995-2002[28], and for the USA at 7.36 billion dollars on average for the years 2000-2001[29]. Also in water scarce countries, irrigation is sometimes heavily subsidized which leads to the rather absurd situation where farmers receive subsidies which de facto encourage the waste and eventually the export of a precious resource (fresh water).

1. WTO framework

WTO international trade law contains various rules on subsidies which are spread over not less then three agreements; the AG[30], the ASCM[31] and the GATT 1994[32]. These rules are designed to tackle the trade distorting effects of subsidies, but neither their content nor their mutual relationship is clear. Other then the possibility of dispute settlement proceedings there are no enforcement rules foreseen. The WTO's general agreement on subsidies is the ASCM, more specific rules concerning agricultural subsidies are laid down in the AG. An internationally agreed upon definition of what type of state-aid is to be considered a subsidy for the purposes of the WTO agreements can be found in article 1.1. ASCM. A first condition and four categories of subsidies are listed under lit. (a) 1. and a second condition under lit. (b):

> *"1.1. For the purpose of this Agreement a subsidy shall be deemed to exist if:*
>
> *(a) (1) there is a financial contribution by a government or any public body within the territory of a Member (referred to in this Agreement as "government"), i.e. where:*
> *(i) a government practice involves a direct transfer of funds (e.g.) grants, loans, and equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees);*
> *(ii) government revenue that is otherwise due is foregone or not collected (e.g. fiscal incentives such as tax credits);*
> *(iii) a government provides goods or services other than general infrastructure, or purchased goods;*
> *(iv) a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the type of functions illustrated in (i) or (iii) above which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments,*
>
> *or*
>
> *(a) (2) there is any form of income or price support in the sense of Article XVI of GATT 1994;*
>
> *And*
>
> *(b) a benefit is thereby conferred"*

The definition of a subsidy under article 1 ASCM is far from perfect, providing room for interpretations and leaving certain subsidies and implicit subsidies uncovered.[33]

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[28] See Berthelot, J. (2006), Review of the EU agricultural distorting supports to rebuild fair and sustainable agricultural trade rules after the Doha Round hibernation, 48 p., available at http://www.wto.org/english/forums_e/ngo_e/posp63_solidarite_e.pdf (accessed 29th June 2011).
[29] See Berthelot, J. (2005), The king is naked: the impossible US promise to slash its agricultural supports, 36 p., available at http://www.wto.org/english/forums_e/ngo_e/posp52_solidarite_king_e.doc (accessed 29th June 2011).
[30] Agreement on Agriculture (AG), available at http://www.wto.org/english/docs_e/legal_e/14-ag.pdf (accessed 29th June 2011).
[31] Agreement on Subsidies and Countervailing Measures (ASCM), available at http://www.wto.org/english/docs_e/legal_e/24-scm.pdf (accessed 29th June 2011).
[32] General Agreement on Tariffs and Trade 1994 (GATT), available at http://www.wto.org/english/docs_e/legal_e/06-gatt.pdf (accessed 29 June 2011).
[33] Bernasconi - Osterwalder, N. (2005), Water, Agriculture, and Subsidies in the International Trading System, Fresh Water and International Economic Law *in* E. Brown Weiss, L. Boisson de Chazournes and N. Bernasconi – Osterwalder, New York, USA, Oxford University Press**:** 207-235, p. 209; See also Bigdeli, S. Z. (2009), Incentives schemes to promote renewables and the WTO law of subsidies *in* International Trade Regulation and the Mitigation

The AG is 'lex specialis' to the ASCM and covers three main topics related to agricultural products, so called 'pillars', namely: domestic support, market access[34] and export subsidies[35]. Annex 1 of the AG lists the products covered by this agreement by referring to the WCO's harmonized system and product classification.[36] For the purposes of this paper, merely the 'pillar' on the reduction of trade-distorting domestic support is relevant.

Provisions on reducing agricultural domestic support under the AG are called 'disciplines'. All trade-distorting agricultural subsidies fall under the so-called 'amber-box' and are subject to reductions as laid down in Member's schedules.[37] Reduction commitments are expressed in so-called 'total AMS[38]' which calculation is product-specific and traced out in annexes three and four of the AG.[39] Generally, developed countries are bound to higher reduction commitments and a shorter implementation period then developing countries, while least developed countries receiving special and differential treatment combined with an even longer implementation period. Non-, or minimally trade distorting subsidies, to be notified under a 'green[40]' or a 'blue[41]' box, are not subject to reductions and can even be increased. The requirements for agricultural subsidies to be considered as non- or minimally trade distorting, are expressed in Annex 2 para. 1 AG:

> "*Domestic support measures, for which exemption from the reduction commitments is claimed, shall meet the fundamental requirement that they have no, or at most minimal, trade-distorting effects of effects on production. Accordingly, all measures for which exemption is claimed shall conform the following basic criteria:*
>
> *(a) the support in question shall be provided through a publicly-funded government programme (including government revenue foregone) not involving transfers from consumers; and,*
>
> *(b) the support in question shall not have the effect of providing price support to producers;*
> *plus policy-specific criteria and conditions as set out below.*[42]"

The green, blue and amber box classification system under the AG was developed to reduce the large amounts of trade distorting domestic support in the agricultural sector but has so far been ineffective in reaching that goal.[43] One of the main flaws in the system is the fact that Member states can choose freely to list their domestic support to the agricultural sector under a certain category. There is no control mechanism in place and no sanctions are foreseen, leading to a situation where only a

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of Climate Change, World Trade Forum, T. Cottier, O. Nartova and S. Z. Bigdeli. (Eds.), Cambridge, Cambridge University Press: 155-192.

[34] Market access concessions are expressed in tariff reductions and are laid down in detail in Members schedules of concession.

[35] Export subsidies are forbidden under the ASCM but an exception with regard to the agricultural products was made under the AG (article 13), the so called 'peace clause', under which the products covered by the AG were temporally exempted (until 31 December 2003) from the general ban on export subsidies under certain conditions. The 'peace clause' was not prolonged but is further discussed under the ongoing Doha Round negotiations, in the mean time also a ban on export subsidies for agricultural products is in place.

[36] Harmonized Commodity Description and Coding System (HS) of the World Customs Organization (WCO), see http://www.wcoomd.org/home_hsoverviewboxes_hsharmonizedsystem.htm (accessed 29 June 2011).

[37] Article 6 AG.

[38] Total Aggregate Measurement of Support.

[39] There is a de-minimis threshold before the calculation of total AMS reduction.

[40] Domestic support listed under the so-called 'green-box' is considered to be non- or minimally trade distorting and is not subject to reduction.

[41] Domestic support listed under the so-called 'blue-box' is not subject to reduction if the total production of the concerned product is reduced.

[42] The publicly-funded government programmes mentioned are further specified non-exhaustively under Annex 2, para. 2 AG. Domestic food aid is one of them, Annex 2, para, 4. AG.

[43] See Murphy, S. (2003), World Trade Organization on Agriculture Basics. Minneapolis (Minnesota), USA, Institute for Agriculture and Trade Policy (IATP): 15 p.

small part of all domestic support is notified. The AG also contains a provision on the obligation to continue negotiations on agricultural reforms; in this regard proposals are currently discussed under the DOHA development round negotiations.[44] Agriculture is by far the most embattled sector under the DOHA round, notably the USA and the EU continue to be reluctant to alter their respective protectionist policies in the field, therewith largely contributing to the stalemate wherein the DOHA round, as a single undertaking, is still entangled at present.[45] In view of climate change, global warming and increasing water scarcity problems, it would be recommendable if all WTO Member States concerned could take into account the negative impacts of irrigation subsidies and other related subsidies on water scarcity.

2. Irrigation subsidies and virtual water trade

Irrigated agriculture consumes about 65% of all fresh-water resources in developed countries, and up to 90 % in certain developing countries.[46] An often repeated criticism with regard to the granting of irrigation subsidies claims that the incentive to sparsely use ground- and surface waters is taken away. Fact is that in such cases there are virtually no limits set to over-use and waste, which also leads to a certain number of environmental problems such as the depletion of groundwater stocks, salination, soil-erosion, water-lodging and increased pollution of the soil with chemicals. On the other hand, one must take into account that irrigation-subsidies contribute substantially to low food prices, and foster agricultural and economic development in many developing countries.

Irrigation subsidies also have a significant influence on trade patterns, i.e virtual water trade. Although the hydrological water cycle remains constant and no water is lost, less fresh water resources may be used to produce the same amount of certain agricultural products, thus 'saving' these resources from being used.[47] Irrigation subsidies are mostly granted with the purpose of facilitating the pumping of groundwater or surface water (blue water), which has a greater opportunity cost then rainwater (green water).[48] Additionally, when we come to a situation where irrigation subsidies are granted to agricultural production in water-scarce regions, the local production of more water-intensive products is erroneously encouraged.

3. Preliminary conclusions

In cases where irrigation subsidies are granted in water scarce regions related to the production of water intensive products, a triple-loss situation can be observed; (1)

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[44] See also Article 20 AG.

[45] For information on the ongoing Doha negotiations see generally http://www.wto.org/english/tratop_e/dda_e/dda_e.htm (accessed 29th June 2011).

[46] Abu-Zeid, M. (2001), "Water Pricing in Irrigated Agriculture.", International Journal of Water Resources Development **17**(4), p. 527.

[47] See Oki, T. and Kanae, S. (2004), "Virtual water trade and world water resources", Water Science and Technology **49**(7): 203-209; Chapagain, A. K. and Hoekstra, A.Y. et al. (2005), Saving Water Through Global Trade, Value of Water Research Report Series No. 17, Delft, Netherlands, UNESCO-IHE Institute for Water Education; Chapagain, A. K., A. Y. Hoekstra, et al. (2006a), "Water savings through international trade of agricultural products." Hydrology and Earth System Sciences (HESS) **10**(3): 455-468.

[48] See Yang, H., L. Wang, et al. (2006), "Virtual water trade: an assessment of water use efficiency in the international food trade.", Hydrology and Earth System Sciences (HESS) **10**(3): 443-454; Chapagain, A. K., Hoekstra, A.Y. et al. (2006a), "Water savings through international trade of agricultural products." Hydrology and Earth System Sciences (HESS) **10**(3): 455-468, (466-467).

Country A subsidizes the export of her own scarce resource (water), (2) distorting trade for (developing) other countries, and (3) causing damages to the environment (common concern for the global community). It is clear that such subsidies should be banned under the AoA; they make no sense from a virtual water trade angle or from an environmental point of view. On the other hand, three other situations can be observed were irrigation subsidies on the contrary should be stimulated (at least for transitional periods); (1) the production of water-demanding crops in water-rich regions; (2) the production of low water-demanding crops in water-scarce regions, And (3) the development of drip-irrigation infrastructure in water-scarce regions. Here, a quadruple - win situation can be observed: (1) Country A is stimulated to use its comparative advantage to produce (water-demanding crops in water-rich regions and low water-demanding crops in water-scarce regions), (2) there are no or only minimally trade distorting effects for other countries, (3) such subsidies are environmentally sustainable, and (4) (L)DCs potentially benefit from relatively lower-priced food imports (looming food crisis).

A problem which is not very visible but not less cumbersome, lies in the fact that there are no adequate statistics on irrigation subsidies on hand in most counties, even in the EU level and the USA. Furthermore, an obvious problem lies in the fact that Members States decided themselves if, and in which category they list their (irrigation) subsidies. There are no control organism and no remedies foreseen under the AoA. Therefore, first of all, Member States should make correct information on irrigation subsidies available on the national level. Secondly, notification of irrigation subsidies should be made obligatory at the WTO level. Last but not least, an effective control mechanism under the AoA should be created. Additionally, thoughts could also be given to the creation of an AoA environmental box (non-actionable), eventually under a new 'peace-clause'.

B. *Water efficiency, process and production methods (PPMs) and international trade law*

The multiplication of studies over the last decade upon 'virtual water' and related topics[49], has resulted in a more generalised awareness over the fact that there exist large variations in the amounts of water needed to produce the same agricultural product, depending upon the climate of the region where it has been produced. Entering an era where accelerated population growth is at the crossroads with the negative impacts of global warming on fresh water resources, such knowledge, of course, also becomes increasingly relevant. Climate change is already causing damages to global food production at present. A decline in average global production of 3,8 % for maize and of 5,5 % of wheat, caused by a relatively small raise in temperature over the last 30 years (1980-2010)[50], has been demonstrated recently. [51] The same study also shows that the global production for rice and soybeans has

[49] See Allan, J. A. (2003), "Virtual water - the water, food and trade nexus: Useful concept or misleading metaphor?" Water International **28**(1): 106-113; Chapagain, A. and Hoekstra A.Y. (2004), Water Footprints of Nations, Volume 1 Main Report, Value of Water Research Report Series No. 16, Delft, Netherlands, UNESCO-IHE Institute for Water Education; Wichelns, D. (2004), "The policy relevance of virtual water can be enhanced by considering comparative advantages." Agricultural Water Management **66**(1): 49-63; Hoekstra, A. Y., Chapagain, A.K. et al. (2009). Water Footprint Manual, State of the Art 2009. Enschede, Netherlands, Water Footprint Network**:** 127 p.

[50] 0.13 degrees, see Solomon S. et al., (2007), Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge, Cambridge University Press.

[51] Lobell, D. B., Wolfram, S. et al. (2011), Climate trends and global crop production since 1980, University of Standford, p 1.

remained constant, in despite of all technological advances[52]. The four crops mentioned account for approximately 75 % of global calorie consumption.[53] Other studies predict for the middle and long term severe water shortages due to desertification in many regions and countries, while other locations on the contrary would receive more rainfall.[54] The impact of global warming on fresh water resources being at the heart of the matter[55], it becomes increasingly important to investigate upon which stimuli WTO international trade law could give in the context of international virtual water trade bearing in mind the common goal of 'global water saving'.[56]

As it is acknowledged that climate change is a problem to be dealt with on the global level, we should also think about managing the planet's fresh water resources at the global level. Virtual water trade is hereby crucial; the concept is considered to be an emanation of the comparative advantage theory[57] and has the potential to contribute substantially to global water savings[58]. Without any specific stimuli additional to the free market mechanism, international virtual water trade in agricultural products already 'saves' as much as 350 billion m3 /of fresh water resources per year[59], which accounts for 22 % of the fresh water resources which would have been used without international virtual water trade, and for 5 % of global fresh water use in agricultural production[60]. For wheat, for example, global annual fresh water savings due to international virtual water trade are of 103 Gm3/year for the period 1997-2001[61]. For maize the savings are of 68 Gm3/year and for rice, the savings are of 21Gm3/year, all calculated for the same period 1997-2001.[62] A lot more can be achieved though. Under the theory of comparative advantage countries should produce these goods which they can produce best, with the less costs, and import these goods for which other countries have an advantage in producing. Water scarce countries should thus import more water demanding crops, while water rich regions and countries should export more water rich crops. This way, all parties involved should gain from international virtual water trade.

Israel and the Kingdom of Jordan, for example, which are among the most water stressed countries of the world[63] already import 74 %, respectively 73 %, of their total

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[52] *Ibid*., p.1

[53] Cassman K.G., (1999) *Proceedings of the National Academy of Sciences* **96**, 5952.

[54] See Kundzewicz, Z. W., L. J. Mata, et al. (2007), Freshwater resources and their management, Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge, Cambridge University Press**:** 173-210.

[55] See *ibid*.

[56] See W.T.O. (2010), World Trade Report 2010: Trade in natural resources, World Trade Report Series, Geneva, Switzerland, World Trade Organization.

[57] Wichelns, D. (2004), "The policy relevance of virtual water can be enhanced by considering comparative advantages." Agricultural Water Management **66**(1): 49-63

[58] Oki, T. and Kanae, S. (2004), "Virtual water trade and world water resources", Water Science and Technology **49**(7): 203-209; Chapagain, A. K., Hoekstra, A.Y. et al. (2005), Saving Water Through Global Trade, Value of Water Research Report Series No. 17, Delft, Netherlands, UNESCO-IHE Institute for Water Education; Chapagain, A. K., Hoekstra, A.Y. et al. (2006a), "Water savings through international trade of agricultural products." Hydrology and Earth System Sciences (HESS) **10**(3): 455-468; Hoekstra, A. Y. and Chapagain, A.K. (2008b), Globalization of Water: Sharing the Planets Freshwater Resources, Oxford, UK, Wiley-Blackwell Publishing, 208 p.

[59] Calculations based upon averages between 1997 and 2001; See Hoekstra, A. Y. and Chapagain, A.K., (2008b), Globalization of Water: Sharing the Planets Freshwater Resources, Oxford, UK, Wiley-Blackwell Publishing, p. 42.

[60] Calculations based upon 285 crop products and 123 livestock products; See Hoekstra, A. Y. and Chapagain, A.K., (2008b), Globalization of Water: Sharing the Planets Freshwater Resources, Oxford, UK, Wiley-Blackwell Publishing, p. 42 - 43.

[61] See *Ibid*., Map 6 p. 84 - 85.

[62] See *Ibid*., Map 7 and 8 p. 84 - 85.

[63] The Kingdom of Jordan disposes of 164m3/year/capita of renewable fresh water resources; see Israel Palestine Center for Research and Information (I.P.C.R.I.), (2010), Water Imports - An Alternative Solution to Water Scarcity in Israel, Palestine and Jordan?, Annex 2 (data from AQUASTAT and FOA 2007); See also El-Naqa, A. and A. Al-Shayeb

water needs through virtual water trade.[64] On the other hand, Egypt, also a highly water stressed country, with a high population increase rate, only imports 23,55 % of its annual fresh water needs through virtual water trade[65]. Moreover, Egypt still increases production and export of highly water intensives crops such as wheat, rice, maize and cotton[66]. As a consequence, from the year 1997 on, Egypt fresh water availability/capita/year fell bellow the UN water poverty threshold of 1000m3[67], and the country ever since continues to deplete its underground water tables. There are also places in the world where water intensive crops are grown in water arid areas, almost exclusively for export purposes. A famous example is the growing of cotton in the desert of Uzbekistan, for which the run-off of two rivers where diverted under the former Soviet regime, turning the Aral Sea (now Kazakhstan), once the world's forth biggest lake, into a desert. In view of emerging climate change adaptation strategies, including the 'global water saving' doctrine, the growing of cotton in the desert would clearly be a practice which is at odds with the comparative advantage theory, and should be rebutted. Other situations are more difficult to assess since food prices play an important role and policies of food self-sufficiency have the advantage of keeping prices low; however, the real price of fresh water use is generally not included.

The WTO international trade law framework has the potential to stimulate international virtual water trade into more efficiency. One crucial condition is that environmental concerns, such as the safeguarding of global fresh water resources, can legally be taken into account, which is not yet the case. One could for example think of taxing (import) products in a different way, according to the amount of water that has been used to produce them. Technically, under WTO law, such a distinction is referred to as a non-product related process and production method (NPR-PPM). The taking into account of the amount of water which is used to produce a certain good, which doesn't change the good itself (non-product related), but allows for a technical distinction for environmental purposes, in fact a water footprint standard, could also be referred to as a 'water-ppm', in order to stay in WTO parlance. So far, the use of non-product related process and production methods has not been formally accepted under the WTO framework because of concerns that this may open the door to hidden protectionism and discrimination of export products coming from developing countries, which usually cannot afford very stringent environmental standards.[68]

1. Water footprints, like products and water footprint standards (water-ppms)

In analogy to the well known 'ecological footprint' concept, Hoekstra et al. developed the 'water footprint' concept from the early 2000s on.[69] A water footprint can be calculated for individuals, products, businesses, nations, regions, and even for the

(2009), "Groundwater Protection and Management Strategy in Jordan.", Water Resources Management **23**(12): 2379-2394.

[64] Hummel, D., T. Kluge, et al. (2006),Virtual Water Trade, documentation of an international expert workshop. Frankfurt/Main, Germany, Institute for Social - Ecological Research (ISOE), p. 15.

[65] El-Sadek, A. (2010), "Virtual Water Trade as a Solution for Water Scarcity in Egypt.", Water Resources Management, **24**(11): 2437-2448 (2437).

[66] *Ibid*., p. 2441, fig. 1.

[67] *Ibid*., p. 2440.

[68] See Cottier, T. and Oesch, M. (Eds.), (2005), International Trade Regulation, Law and Policy in the WTO, the European Union and Switzerland, Bern, Switzerland/London, UK, Staempfli Publishers/Cameron May, p. 412-419.

[69] See Chapagain, A. K. and Hoekstra A.Y. (2004), Water Footprints of Nations, Volume 1 Main Report, Value of Water Research Report Series No. 16, Delft, Netherlands, UNESCO-IHE Institute for Water Education; Hoekstra, A. Y., Chapagain, A.K. et al. (2009). Water Footprint Manual, State of the Art 2009. Enschede, Netherlands, Water Footprint Network**:** 127.

planet as a whole[70]. For example, the water footprint of a product indicates the total amount of water that has been used for the production of that good throughout its entire production cycle, whereas the water footprint of a nation takes into account the total amount of water needed for the complete production cycle of all goods and services consumed within a particular nation on an annual basis. [71] The result can also be specified into consumption of various types of fresh water according to their opportunity costs. Non - polluted ground- and surface water is thereby referred to as blue water, rainwater which doesn't transform into groundwater is referred to as green water, and polluted water is called grey water.[72] The use of blue water is considered to have the highest opportunity cost since it is the most difficult to replace and thus more valuable then rain water or polluted water, with the latter having the lowest opportunity cost. More subdivisions are possible, such as light – blue, dark blue and black water which refers to surface water (rivers, lakes), renewable groundwater and non-renewable (fossil) groundwater, each with a different opportunity costs.[73] The results of these studies are often surprising, demonstrating huge differences in water use for the same product. At the same time, the potential for international trade becomes obvious. Ongoing international virtual water trade already involves the WTO international trade law regime as it stands today[74], but if the goal would be to effectively stimulate water saving on the global level, beyond the normal trade flows in a free market, then the international trade law framework still lacks sufficient flexibility.

In the context of virtual water trade and international trade law, a crucial question is whether identical agricultural products, though produced with a significant difference in fresh water use throughout their production cycle, could be considered as 'different products' for GATT purposes. For example, the production of 1 ton of seed cotton in Australia requires 2.178 m3 of fresh water[75], while the production of 1 ton of seed cotton in Uzbekistan (Aral Sea) requires 4.360 m3 of fresh water[76], and the production of 1 ton of seed cotton in India as much as 8.662 m3 of fresh water[77]. If these products, still having the same physical aspect, are to remain 'like' products for GATT purposes, then they cannot be treated differently. If, on the other hand, they may be considered as different products, due to the fact that they have different impacts on global fresh water resources, then they could be taxed or levied differently, giving the appropriate incentive for production under a global water saving doctrine. Moreover, an additional criterion in fresh water use could also consist in differences in the use of blue, green and grey water, considering the difference in opportunity cost. For example, seed cotton from Brazil is almost exclusively produced with green water[78] while seed cotton from Uzbekistan (Aral Sea) is almost exclusively produced with blue water[79], and seed cotton from Egypt even being exclusively produced with blue water[80].

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[70] See Hoekstra, A. Y., Chapagain, A.K. et al. (2009). Water Footprint Manual, State of the Art 2009. Enschede, Netherlands, Water Footprint Network**:** 127.
[71] See http://www.waterfootprint.org/?page=files/NationalWaterAccountingFramework
[72] See Hoekstra, A. Y., Chapagain, A.K. et al. (2009). Water Footprint Manual, State of the Art 2009. Enschede, Netherlands, Water Footprint Network, p. 20 a.f..
[73] See *Ibid*., p. 21
[74] See Hoekstra, A. Y. (2010), The relation between international trade and freshwater scarcity, World Trade Organization Economic Research and Statistics Division, Staff Working Paper 25 p..
[75] See Hoekstra, A. Y. and Chapagain, A.K., (2008b), Globalization of Water: Sharing the Planets Freshwater Resources, Oxford, UK, Wiley-Blackwell Publishing, p. 110, table 9.3.
[76] *Ibid.*
[77] *Ibid.*
[78] *Ibid.*
[79] *Ibid.*
[80] *Ibid.*

2. Dispute settlement

The two pivotal GATT provisions, the 'most favoured nation' (MFN)[81] clause, prohibiting discriminations of 'like products' among member states, and the national treatment' (NT) [82] clause, prohibiting discriminations of 'like' domestic products and products from other member states, are also determent for international virtual water trade. There is still an ongoing discussion concerning the criteria which may be used to determine which 'like' products could nevertheless be treated differently, for social or environmental concerns (ppm discussion). And what exactly 'like products' are, is not crystal - clear neither. The term is used in both the MFN and the NT clauses, but its meaning differs, even internally in the NT clause.[83]

Generally, and this holds true for both the MFN and the NT clause, the term 'like' refers not only to the physical characteristics of products but also to 'directly competitive or substitutable' products.[84] Early criteria for determining whether products are to be considered as 'like' were determined in GATT case law and since then called 'the border tax adjustment criteria'[85]; 'physical characteristics', 'consumer's tastes and habits', and 'the products end-uses in a given market'.[86] 'Tariff classification' was added as a forth criterion later in time. A consensus was reached upon a narrow interpretation of 'like products'.[87] For example, in one of the early cases the GATT dispute settlement panel determined that 'shochu' and vodka' were considered to be 'like products' for the purposes of the GATT because they were considered to be 'directly competitive'.[88] Shochu and vodka were thus to be treated without any discrimination in tariffs and taxes, while entering the local market. The narrow interpretation of the 'like products' criterion thus empowered the international trade law system in efficiently tackling protectionist measures. On the other hand, considerations external to trade, such as environmental concerns, including the use of so called process and production methods (PPMs), could easily be rejected.

Some scholars insist on the fact that there has been no clear prohibition in GATT, and consequently WTO case law, on the use of PPM criteria in order to determine if a product is a 'like product' for WTO purposes.[89] However, a distinction has to be made between product related ppms and non-product related ppms. The former production method changes the physical characteristics of the end-product, while the latter doesn't. [90] Non-product related process and production methods (NPR-PPMs), under which environmental concerns can best be addressed, and under which also water footprint standards or 'water-ppms' can be categorised, is far less likely to be

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[81] Article I GATT.
[82] Article III GATT.
[83] See Hudec, R.E. (2000), "Like Product": The Differences in Meaning in GATT Articles I and III, Regulatory Barriers and the Principle of Non-discrimination in World Trade Law *in* Cottier, T. and Mavroidis, P., University of Michigan Press**:** 103-123.
[84] See *Ibid*; See also Note ad Article III GATT, Para. 2.
[85] Border Tax Adjustment, Report of the Working Party, 2 December 1970, BISD 18S97, 1972, Para. 18.
[86] See Cottier, T. and Oesch, M. (Eds.), (2005), International Trade Regulation, Law and Policy in the WTO, the European Union and Switzerland, Bern, Switzerland/London, UK, Staempfli Publishers/Cameron May, p. 390 a.f.
[87] *Ibid.* p. 391.
[88] Japan – Custom Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages (1987), Report of the Panel, 10 November 1987 (L/6216 - 34S/83), available at http://www.worldtradelaw.net/reports/gattpanels/japanliquor.pdf (accessed 29th June 2011).
[89] Charnovitz, S. (2002), "The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality.", Yale Journal of International Law (YJIL) **27;** Howse, R. and D. H. Regan (2000), "The Product/Process Distinction - An Illusory Basis for Disciplining 'Unilateralism' in Trade Policy.", European Journal of International Law (EJIL) **11**(2): 249-289.
[90] See http://www.wto.org/english/tratop_e/envir_e/envt_rules_gatt_e.htm (accessed 29th June 2011).

accepted as a criterion for the classification of 'unlike' products for WTO purposes.[91] Since the Appellate Body's report in the EC – Asbestos case, investigation should occur on a case to case basis.[92] Considering future global water scarceness en relating desertification problems, the reasoning to economically punish water intensive production and to reward less water intensive production on the global level may sound as a logical way forward.

Would a production water footprint standard, or a water-ppm, as a non-product related ppm, stand the test of dispute settlement review? As already mentioned, the question is linked with the degree of acceptability of environmental concerns under WTO international trade law. Although the germ for approval of environmental concerns and criteria under WTO international trade law can already be found in the preamble of the Marrakesh Agreement establishing the WTO itself, 15 years later, WTO case law is still struggling with this matter, allegedly out of concern for disguised protectionist measures. Hereunder follows an analysis of the most relevant case-law regarding the legal treatment of ppms under GATT articles I (MFN), III (NT) and XI (Quantitative restrictions) and its consequences for water footprint standards. Importantly, under article XX GATT, exceptions to the mentioned disciplines can be granted; for example, related to the protection of human, animal or plant life or health[93], and the conservation of exhaustible resources[94]. Besides the direct acceptance under articles I, III or XI via the 'like products' distinction, some of the provisions of article XX could thus constitute a second avenue for water footprint standards as 'water-ppms' to be considered under GATT law.

a) Water-footprint standards (water ppms) under the MFN principle

The Most Favoured Nation (MFN) principle impedes GATT member states to discriminate among the 'like products' of other GATT member states with regard to import/export regulations, taxes, custom duties and any charges of the like.[95] If a member state would grant a 'favour' in this regard to another member state (the most favoured nation), than the former is automatically obliged to grant the same favour 'immediately and unconditionally' to all other member states. For example, if a GATT member state A, let us assume a non-producer of seed cotton, would decide to (exempt Australian seed cotton from import duties) reduce its import tariff upon Australian seed cotton, arguing that the low water demanding production for seed cotton in this country benefits to the global environment, than this would principally be considered as a granted favour to Australia under GATT article I.1. Theoretically, to be in line with the MFN principle, the same (exemption) reduction on import tariffs would than also have to be granted to seed cotton imports from all other GATT member states. Unless of course the low water demanding seed cotton produced in Australia would no longer be considered to be a 'like product', compared to the more water intensive seed cotton from other GATT member states.

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[91] See Charnovitz, S. (2002), "The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality.", Yale Journal of International Law (YJIL) **27.**

[92] European Communities - Measures Affecting Asbestos and Asbestos Containing Products (E.C. - Asbestos), WTO, Report of the Appellate Body, WT/DS135/AB/R, 21st March 2001, available at http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds135_e.htm (accessed 29th June 2011).

[93] Article XX (b) GATT.

[94] Article XX (g) GATT.

[95] See Article I GATT.

(1) Belgian Family Allowances[96]

The earliest case ever involving a ppm distinction was the 1952 'Belgian Family Allowances' GATT case. At stake was an assessment by the Belgian Government of foreign 'family allowances programmes' as compared to the Belgian family allowance provisions. This assessment was then taken as a criterion for taxing those imports which were acquired by the Belgian government bodies. Countries who disposed of a similar family allowance programme to the Belgian one were exempted from the import tax, the others weren't. Consequently, imports from Sweden were exempted from the import tax but not those form Norway and Finland, since Belgium alleged that the latter countries didn't dispose over a 'family allowances programme' similar to the Belgian one. This way, the Belgian government made a technical non-product related ppm distinction. Norway and Finland thereupon complained that article I GATT (MFN) was violated since they considered that there was an unjustified discrimination occurring among Belgian GATT trading partners. The complaining parties won the case before the Panel which was of the opinion that the Belgian non-product related ppm distinction between 'family allowance programmes' was discriminatory under article I GATT.[97] However, no environmental standard was yet involved, no article XX exception was yet invoked, and the Belgian judgement of foreign 'family allowances programmes was quite obviously arbitrary.[98]

(2) Spain – unroasted coffee[99]

The next GATT case dealing with ppms concerned a product related ppm, namely the way unroasted coffee beans were produced. The litigation was brought before the GATT panel in 1981. Two years earlier, in 1979, the Spanish administration decided to distinguish between 3 different types of unroasted coffee and tax them differently; mild, unwashed Arabica and Robusta unroasted coffee. Spain considered that the new sub-classification of unroasted coffee was justified by a number of differences during cultivation and processing, which led to different flavours of the end-products and thus to differences in consumer's tastes. In the following, Brazil complained before the panel claiming an article I GATT violation, arguing that Spain's different taxation of varieties of unroasted coffee was illegal under article I GATT; unroasted coffee beans should all-alike be considered as 'like products'. In its report, the Panel first declared that Spain disposed over a sovereign right to differentiate between varieties of unroasted coffee for classification purposes.[100] The Panel subsequently argued however that Spain could not refer to a difference in cultivation and/or processing methods in order to consider the same physical product (unroasted coffee beans) as 'unlike products' for GATT purposes: [101]

> "*4.6 The Panel examined all arguments that had been advanced during the proceedings for the justification of a different tariff treatment for various groups and types of unroasted coffee. It noted that these arguments mainly related to organoleptic differences resulting from geographical factors, cultivation methods, the processing of the beans, and the genetic factor. The Panel did not consider that such differences were sufficient reason to allow for a different tariff treatment. It pointed out that it was not unusual in the case of agricultural products that the taste and aroma of the end-product would differ because of one or several of the above-mentioned factors.*"

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[96] Belgian Family Allowances, 7 November 1952, G/32-1S/59, available at http://www.worldtradelaw.net/reports/gattpanels/belgianfamilyallowances.pdf (accessed 29th June 2011).
[97] See *Ibid.* p. 1-2.
[98] See *Ibid.* p. 2.
[99] Spain – Tariff Treatment of Unroasted Coffee, Report of the Panel, 11 June 1981(L/5135 - 28S/102), available at http://www.worldtradelaw.net/reports/gattpanels/spaincoffee.pdf (accessed 29th June 2011).
[100] See *Ibid.*, para 4.4.
[101] See *Ibid.*, para 4.6.

The case is quite interesting for our 'water-ppm' analysis since the Panel investigates upon differences in 'cultivation methods' and 'the genetic factor' as criteria to distinguish between otherwise like products.[102] Water-ppms clearly resort under the broader category of 'cultivation methods' (*in casu* being product-related ppms), which the panel here rejects as a criterion to distinguish among otherwise 'like products'. A fortiori, water-ppms, as non-product related ppms, leaving no distinguishable trace in the end product itself, would be equally rebutted. Also the rejected genetic differences criterion is connected to the water-ppm issue, since genetic engineering could well play a crucial role in future water and food security by creating crop varieties which grow on less water. However, the panel in the unroasted coffee case merely referred to conventional genetic differences. Additionally, the GMO discussion involves both health and environmental concerns.[103] In fact, at that point in time, the message from the Panel was very clear: like products should be taxed in the same way, and even a product related ppm distinction for 'like products' wasn't allowable under article I GATT. The ban on product related ppms, a fortiori on non-product related under the MFN provision was herewith established for the time being. However, under the unroasted coffee case, as in the family allowance case, no environmental concern was involved, and neither was an article XX exception.

(3) Canada – Automotive Industry[104]

The next case involving a ppm distinction under article I GATT occurred almost two decades later. In the year 1998 Canada installed an import duty exemption for imports of motor vehicles by motor vehicle manufacturing companies established in Canada. [105] As an additional requirement, the manufacturers had to demonstrate a minimum amount of Canadian value added in their products, and sell a minimum amount of motor vehicles in Canada. Hereupon, the EU and Japan complained before the panel, which came to a conclusion in the year 2000. Although the panel decided that the Canadian non-product related ppm distinction violated article I GATT, a meaningful evolution in the panel's opinion with regard to ppms can be descried: [106]

> "*10.23 Article I:1 requires that, if a Member grants any advantage to any product originating in the territory of any other country, such advantage must be accorded "immediately and unconditionally" to the like product originating in the territories of all other Members. We agree with Japan that the ordinary meaning of "unconditionally" is "not subject to conditions". However, in our view Japan misinterprets the meaning of the word "unconditionally" in the context in which it appears in Article I:1. The word "unconditionally" in Article I:1 does not pertain to the granting of an advantage per se, but to the obligation to accord to the like products of all Members an advantage which has been granted to any product originating in any country. The purpose of Article I:1 is to ensure unconditional MFN treatment. In this context, we consider that the obligation to accord "unconditionally" to third countries which are WTO Members an advantage which has been granted to any other country means that the extension of that advantage may not be made subject to conditions with respect to the situation or conduct of those countries. This means*

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[102] See *Ibid.*
[103] See generally http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds292_e.htm (accessed 29th June 2011).
[104] Canada – Certain Measures Affecting the Automotive Industry, Report of the Panel, adopted 11 February 2000, WT/DS139/R - WT/DS142/R, available at http://www.wto.org/english/tratop_e/dispu_e/6100d.pdf (accessed 29th of June).
[105] Motor Vehicles Tariff Order (MVTO) 1998; See *Ibid.* para. 2.19 a.f..
[106] See Canada – Certain Measures Affecting the Automotive Industry, Report of the Panel, 11 February 2000, WT/DS139/R - WT/DS142/R, para. 10.23 and 10.24. available at http://www.wto.org/english/tratop_e/dispu_e/6100d.pdf (accessed 29th of June),

that an advantage ranted to the product of any country must be accorded to the like product of all WTO Members without discrimination as to origin.

10.24 In this respect, it appears to us that there is an important distinction to be made between, on the one hand, the issue of whether an advantage within the meaning of Article I:1 is subject to conditions, and, on the other, whether an advantage, once it has been granted to the product of any country, is accorded "unconditionally" to the like product of all other Members. An advantage can be granted subject to conditions without necessarily implying that it is not accorded "unconditionally" to the like product of other Members. More specifically, the fact that conditions attached to such an advantage are not related to the imported product itself does not necessarily imply that such conditions are discriminatory with respect to the origin of imported products. We therefore do not believe that, as argued by Japan, the word "unconditionally" in Article I:1 must be interpreted to mean that making an advantage conditional on criteria not related to the imported product itself is per se inconsistent with Article I:1, irrespective of whether and how such criteria relate to the origin of the imported products."

The panel thus seems to open the door to a non-product related ppm distinction for 'like products', under the condition of strict neutrality with regard to the origin of the product.[107] Retaking our example of the low water intensive production of seed cotton in Australia encouraged by an import duty reduction by GATT member state A (out of environmental concern)[108], then member state A's water-ppm distinction would again be rebutted since merely favouring seed cotton imports originating from Australia. Only if the threshold would be sufficiently high so that also other countries could benefit from the same tariff duty reduction (or exemption), there would arguably be no violation of the MFN clause.

b) Water-footprint standards (water ppms) under the NT principle

In the early nineties, the focus of the discussion about the allowableness of non-product related ppm distinctions for 'like products' started shifting towards the question of their legality under article III of the GATT, the GATT 'national treatment' (NT) provision. Article III was drafted with the purpose to avoid protection of domestic production.[109] Under the NT principle, 'like' national and foreign products should not be treated 'less favourably', and thus not taxed or levied, or, more generally, discriminated. Article III GATT contains two different provisions on national treatment; article III.2 with regard to internal taxes, and article III.4 with regard to internal regulations. In both provisions the term 'like products' is used, but there are interpretational differences.[110]

Principally, if a non-product related ppm distinction for 'like' products would not be allowable, than a different taxation for foreign products as compared to national products, according to the amount of water which has been used to produce the same physical product, would violate article III GATT. For example, if Australia would decide to levy a higher VAT upon foreign seed cotton, since foreign seed cotton is produced with significantly higher amounts of fresh water then the domestic seed

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[107] See Charnovitz, S. (2002), "The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality.", Yale Journal of International Law (YJIL) **27**, p. 15.
[108] See supra, p. 16.
[109] See Article III.1 GATT.
[110] See Hudec, R.E. (2000), "Like Product": The Differences in Meaning in GATT Articles I and III, Regulatory Barriers and the Principle of Non-discrimination in World Trade Law *in* Cottier, T. and Mavroidis, P., University of Michigan Press**:** 103-123; European Communities - Measures Affecting Asbestos and Asbestos Containing Products (E.C. - Asbestos), WTO, Report of the Appellate Body, WT/DS135/AB/R, 21st March 2001, para 99, available at http://www.worldtradelaw.net/reports/wtoab/ec-asbestos(ab).pdf (accessed 29th June 2011).

cotton[111], then this would principally be an article III.2 violation. If, on the other hand, Australia would for example impose an import ban for foreign seed cotton which would not be produced with water saving techniques, such as drip – irrigation, then this would *a priori* be an article III.4 violation. But if the low water demanding seed cotton produced in Australia would no longer be considered to be a 'like product', compared to the more water intensive seed cotton from other GATT member states, then Australia's higher VAT and import ban would have far better chances to be legitimate; under the condition that there would be no disguised protectionism involved.

Important to note that a domestic subsidy related to the production of low water demanding crops would be allowable under the article III.8 (a) GATT exception. A foreign producer who would produce equally low water intensive products for the same national market would not have the right to obtain the same subsidy aid. But was exactly is a subsidy? If the domestic support wouldn't qualify as a subsidy under the definition of the subsidy agreement, than this producer could very well have the right to obtain the same aid under article III.2 GATT. That is to say; if the products concerned are considered to be 'like' products.

(1) Tuna – Dolphin cases[112]

In the so called Tuna – Dolphin cases, for the first time, an environmental standard was allegedly violating the GATT's non-discrimination principle. At the origin of the dispute lied a 1972 US regulation[113] aiming at the protection of dolphins which were collateral victims to tuna-fishing with large nets in the Eastern Tropical Pacific Ocean. In the year 1990, after a court decision, the US imposed their regulation also upon imported Tuna, installing an embargo against imported Tuna which was caught while exceeding by more than 25 % the US maximum allowable amount of dolphin collateral losses. Mexico, suddenly losing market share in the US, complained first.[114] The EEC and the Netherlands complained later in a separate case.[115]

The defending party invoked compliance with article III.4 of the GATT, referred to the Note ad article III GATT[116], and subordinately invoked article XX GATT exceptions. The Panel came to the conclusion that a non-product related ppm distinction, such as *in casu* a regulation concerning the method with which a certain fish can be cached, while having no impact at all on the product at stake itself, didn't fall under the scope of the Note ad article III[117], nor under the scope article III.4 GATT[118]:

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[111] See Hoekstra, A. Y. and Chapagain, A.K., (2008b), Globalization of Water: Sharing the Planets Freshwater Resources, Oxford, UK, Wiley-Blackwell Publishing, p. 110, table 9.3.
[112] United States - Restrictions on Imports of Tuna (Tuna/Dolphin I), Report of the Panel, 3 September 1991, DS21/R - 39S/155, available at http://www.worldtradelaw.net/reports/gattpanels/tunadolphinI.pdf (accessed 29th June 2011) ; United States - Restrictions on Imports of Tuna (Tuna/Dolphin II), Report of the Panel, 16 June 1994, DS29/R, available at http://www.worldtradelaw.net/reports/gattpanels/tunadolphinI.pdf (accessed 29th June 2011).
[113] 1972 Marine Mammal Protection Act (MMPA).
[114] United States - Restrictions on Imports of Tuna (Tuna/Dolphin I), Report of the Panel, 3 September 1991, DS21/R - 39S/155, available at http://www.worldtradelaw.net/reports/gattpanels/tunadolphinI.pdf (accessed 29th June 2011).
[115] United States - Restrictions on Imports of Tuna (Tuna/Dolphin II), Report of the Panel, 16 June 1994, DS29/R, available at http://www.worldtradelaw.net/reports/gattpanels/tunadolphinI.pdf (accessed 29th June 2011).
[116] The Note ad article III deals with the grey-zone in between an internal regulation and an import ban and states as follows: "*Any internal tax or other internal charge, or any law, regulation or requirement of the kind referred to in [Article III:1] which applies to an imported product and the like domestic product and is collected or enforced in the case of the imported product at the time or point of importation, is nevertheless to be regarded as an internal tax or other internal charge, or a law, regulation or requirement of the kind referred to in [Article III:1], and is accordingly subject to the provisions of Article II.*"
[117] Tuna - Dolphin I, para 5.14.
[118] Tuna - Dolphin I, para 5.15.

> *"5.14 The Panel concluded from the above considerations that the Note Ad Article III covers only those measures that are applied to the product as such. The Panel noted that the MMPA regulates the domestic harvesting of yellowfin tuna to reduce the incidental taking of dolphin, but that these regulations could not be regarded as being applied to tuna products as such because they would not directly regulate the sale of tuna and could not possibly affect tuna as a product. Therefore, the Panel found that the import prohibition on certain yellowfin tuna and certain yellowfin tuna products of Mexico and the provisions of the MMPA under which it is imposed did not constitute internal regulations covered by the Note Ad Article III.*
>
> *5.15 The Panel further concluded that, even if the provisions of the MMPA enforcing the tuna harvesting regulations (in particular those providing for the seizure of cargo as a penalty for violation of the Act) were regarded as regulating the sale of tuna as a product, the United States import prohibition would not meet the requirements of Article III. As pointed out in paragraph 5.12 above, Article III:4 calls for a comparison of the treatment of imported tuna as a product with that of domestic tuna as a product. Regulations governing the taking of dolphins incidental to the taking of tuna could not possibly affect tuna as a product. Article III:4 therefore obliges the United States to accord treatment to Mexican tuna no less favourable than that accorded to United States tuna, whether or not the incidental taking of dolphins by Mexican vessels corresponds to that of United States vessels."*

Extrapolating the case to water-ppms, it is interesting to note that, although water-ppms could well be considered to be interfering primarily with the production process rather than with the product as such, they, unlike the US Tuna-Dolphin regulation at stake, nevertheless also directly target the end product. On could hereby think of the case where a national water footprint regulation prescribes the amount of fresh water which can maximally be used in the production process of a product. Idem for the example of the Australian embargo on imports of seed cotton which is not produced with drip irrigation. In such cases, the Panel would have more reasons to take up the question of the allowableness of a non-product related ppm, *in casu* a water-ppm, under article III of the GATT, and the discussion would than boil down again to the 'like products' ppm-distinction issue. Here, the Panel continued to investigate the case under the applicability of the general exceptions of article XX GATT, which will be discussed infra. The Tuna – Dophin cases were never adopted, thus remaining non-binding.[119]

(2) US – Alcoholic & Malt Beverages[120]

Interesting in this case is the Panel's elaboration of its views on the 'like products' discussion under article III.2 GATT. At stake was (among a variety of other issues) a tax reduction granted by the state of Mississippi for wine produced with a certain type of grape. The grape variety was only cultivated in the South-East of the United States and the Mediterranean area. Canada complained that this tax reduction didn't apply to their exported wines. The Panel first established that referring to the use of a particular type of grape, which only grew in the South-East of the United States and in the Mediterranean region, in order to make a distinction between wines as otherwise 'like products', in fact boiled down to take a geographical distinction as a criterion to differentiate between otherwise like products.[121] The panel then logically continued towards the point that such 'de facto' geographical distinction for 'like products' under the Mississippi tax reduction law, had in fact the effect 'as to afford

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[119] Unlike the old GATT rules under which the Tuna Dolphin reports were pronounced, a report now is considered to be adopted if not unanimously rejected within 60 days.
[120] United States - Measures Affecting Alcoholic and Malt Beverages, Report of the Panel, *(DS23/R - 39S/206)*, available at http://www.worldtradelaw.net/reports/gattpanels/usmaltbeverages.pdf (accessed 29th of June).
[121] See US – Alcoholic & Malt Beverages, para. 5.26.

protection' to this geographical area, which is prohibited by article III.1[122] Additionally, the Panel emphasised that, even in the case that wine from this particular grape would considered to be unlike other wine, these products would still be 'directly competitive' in the sense of the Interpretative Note ad Article III.2, and thus still have to be considered as like products for GATT purposes.[123]

What does the Panel's statement means for the case of water-ppms? In fact, making a water footprint distinction comes close to a 'de facto' geographical distinction. The question than would be if this would be considered as 'affording protection' in the sense of article III.1 GATT? For example, Australia decides to grant a VAT reduction for seed cotton with a virtual water content less than 2.200 m3/ton. According to Hoekstra's calculations, only Australia itself and China would comply with this condition.[124] Would this water footprint standard (or water-ppm) than considered to be' so as to afford' protection to these geographical areas, or would the alleged goal of global water saving as an environmental criterion prevail? Following the above analyzed case law, the outcome would most likely be a negative one; affording protection to the articular geographical areas. The Panel would than have to continue to investigate the case under the article XX (b) or (g) exceptions, related to the protection of human health and the environment. However, contrary to an investigation under article III (or I) GATT, the burden of proof for compliance with one of the article XX GATT exception lies with the party who is invoking this exception.[125] Moreover, there is also a difficult second hurdle to take with the provisions of article XX's chapeau prohibiting 'arbitrary or unjustifiable discrimination between countries where the same conditions prevail' and 'disguised restriction on international trade'.

(3) US – Taxes on Automobiles[126]

The US – Taxes on Automobiles case is meaningful since the Panel actively sought a happy medium which could broaden-up the leeway for governments to legitimately consider non-trade concerns under article III GATT, without affecting the Panel's ability to tackle protectionist measures.[127] In fact, the Panel fine-tuned its findings out of the above discussed US –Alcoholic Beverages case.[128] After having argued that the border tax adjustment criteria were too inflexible, the Panel developed an interpretation of the phrase 'so as to afford protection' out of article III.1 GATT, which is applicable to both article III.2 and III.4. The outcome is a twofold test, commonly known as the 'aim and effects test':[129]

> "*5.10 The Panel then proceeded to examine more closely the meaning of the phrase "so as to afford protection." The Panel noted that the term "so as to" suggested both aim and effect. Thus the phrase "so as to afford protection" called for an analysis of elements including the aim of the measure and the resulting effects. A measure could be said to have the aim of affording protection if an analysis of the circumstances in which it was adopted, in particular an analysis of the instruments available to the contracting party to achieve the declared*

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[122] See *Ibid.*
[123] See *Ibid.*
[124] Out of a number of 15 investigated countries; See Hoekstra, A. Y. and Chapagain, A.K., (2008b), Globalization of Water: Sharing the Planets Freshwater Resources, Oxford, UK, Wiley-Blackwell Publishing, p. 110, table 9.3.
[125] Regan, D. H. (2009), How to think about PPMs (and climate change)? *in* International Trade Regulation and the Mitigation of Climate Change, World Trade Forum, Cambridge, UK, Cambridge University Press: 97-123 (100).
[126] United States – Taxes on Automobiles, Report of the Panel, 11 October 1994, DS31/R, available at http://www.worldtradelaw.net/reports/gattpanels/us-autotaxes.pdf (accessed 29th June 2011).
[127] See Cottier, T. and Oesch, M. (Eds.), (2005), International Trade Regulation, Law and Policy in the WTO, the European Union and Switzerland, Bern, Switzerland/London, UK, Staempfli Publishers/Cameron May, p. 403 a.f.
[128] See *ibid.* p. 403.
[129] United States – Taxes on Automobiles, Report of the Panel, 11 October 1994, DS31/R, para. 5.10, available at http://www.worldtradelaw.net/reports/gattpanels/us-autotaxes.pdf (accessed 29th June 2011).

domestic policy goal, demonstrated that a change in competitive opportunities in favour of domestic products was a desired outcome and not merely an incidental consequence of the pursuit of a legitimate policy goal. A measure could be said to have the effect of affording protection to domestic production if it accorded greater competitive opportunities to domestic products than to imported products."

Could water-ppms successfully stand the aim and effect test? Chances under the test would probably be a lot better, especially were, a priori, the aim of a water footprint standard is not a domestic policy goal but a global policy goal; thus any favouritism of domestic products would more likely be incidental. However, the in the Tuna Dolphin cases rebutted extra- jurisdictional application of an environmental standard remains a potential stumbling block. The same holds true for the geographical distinction issue out of the US – Alcoholic Beverages case. Moreover, the US- Taxes on Automobiles case was never adopted, the 'aims and effects test' was criticised[130], and finally rejected by the Appellate body. Without more leeway for non-trade concerns under article III GATT, as would have been the case with the 'aims and effect test', the focus of attention for such concerns started shifting towards the more difficult route of article XX GATT's general exceptions.

(4) EC – Asbestos[131]

Under this case Panel and Appellate Body investigated upon the meaning of the term 'like products' under article III.4 GATT. At stake was a French regulation banning (with some temporarily exceptions) the manufacturing and trade of asbestos fibres, and products containing such fibres.[132] Canada, having an important asbestos industry, filed a WTO complaint, a.o. based upon the alleged incompatibility of the French decree with article III.4 GATT. The Panel decided that the measure at stake was indeed not permissible under article III.4 GATT, though acceptable as a 'human health' related exception under article XX (b) GATT.[133] The Appellate Body upheld the Panel's findings regarding article XX (b), but reversed the Panel's judgement regarding article III.4 GATT. The Appellate Body stated that a health criterion could very well be a valid criterion in order to distinguish between otherwise 'like products' for the purposes of article III.4 GATT; not as a 'separate' criterion but embedded in the Border Tax Adjustment criteria:[134]

"*113. The European Communities argues that the inquiry into the physical properties of products must include a consideration of the risks posed by the product to human health. In examining the physical properties of the product at issue in this dispute, the Panel found that "it was not appropriate to apply the 'risk' criterion proposed by the EC". 94 The Panel said that to do so "would largely nullify the effect of Article XX(b)" of the GATT 1994. 95 In reviewing this finding by the Panel, we note that neither the text of Article III:4 nor the practice of panels and the Appellate Body suggest that any evidence should be excluded a priori from a panel's examination of "likeness". Moreover, as we have said, in examining the "likeness" of products, panels must evaluate all of the relevant evidence. We are very much of the view that evidence relating to the health risks associated with a product may be pertinent in an examination of "likeness" under Article III:4 of the GATT 1994. We do not, however, consider that the evidence relating to the health risks associated with chrysotile asbestos fibres need be examined under a separate criterion, because we believe that this evidence can be*

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[130] See Cottier, T. and Oesch, M. (Eds.), (2005), International Trade Regulation, Law and Policy in the WTO, the European Union and Switzerland, Bern, Switzerland/London, UK, Staempfli Publishers/Cameron May, p. 404.
[131] European Communities - Measures Affecting Asbestos and Asbestos Containing Products (E.C. - Asbestos), WTO, Report of the Appellate Body, WT/DS135/AB/R, 21st March 2001, available at http://www.worldtradelaw.net/reports/wtoab/ec-asbestos(ab).pdf (accessed 29th June 2011).
[132] Décret no. 96-1133 relatif à l'interdiction de l'amiante, pris en application du code de travail et du code de la consummation (24th of December 1996, entered into force 1st of January 1997).
[133] EC – Asbestos, Report of the Panel, para. 9.1.
[134] EC – Asbestos, Report of the Appellate Body, para. 113.

evaluated under the existing criteria of physical properties, and of consumers' tastes and habits, to which we will come below."

The Appellate Body found that its reasoning was not only valid for the asbestos fibre as such, but also for the cement-based product in which the fibre was incorporated. In fact, under the investigation of the cement-based products, the Appellate Body dealt with a product related ppm; the asbestos fibre. Therewith, although furthermore incorporating the ppm criterion into the investigation of the Border Tax Adjustment criteria[135], the door seems to have been opened for (product related) ppm distinctions to fall under the scope of article III.4 GATT:[136]

> "*128. As the Panel said, the primary physical difference between cement-based products containing chrysotile asbestos fibres and cement-based products containing PCG fibres, lies in the particular fibre incorporated into the product. This difference is important because, as we have said in our examination of fibres, we believe that the health risks associated with a product may be relevant to the inquiry into the physical properties of a product when making a determination of "likeness" under Article III:4 of the GATT 1994. This is also true for cement-based products containing the different fibres. In examining the physical properties of the two sets of cement-based products, it cannot be ignored that one set of products contains a fibre known to be highly carcinogenic, while the other does not. In this respect, we recall that the Panel concluded that "there is an undeniable public health risk in relation to chrysotile contained in high-density chrysotile-cement products." We, therefore, reverse the Panel's finding, in paragraph 8.149 of the Panel Report, that these health risks are not relevant in examining the "likeness" of the cement-based products.*"

If a health criterion would be acceptable under the scope of article III.4 GATT, like it was the case here, it is only a small step to think that an environmental criterion, such as a water footprint standard, would also have its changes of acceptability. The Appellate Body also indicates what its statement means for article XX GATT, and for the relationship between the two provisions:[137]

> "*115. We do not agree with the Panel that considering evidence relating to the health risks associated with a product, under Article III:4, nullifies the effect of Article XX(b) of the GATT 1994. Article XX(b) allows a Member to "adopt and enforce" a measure, inter alia, necessary to protect human life or health, even though that measure is inconsistent with another provision of the GATT 1994. Article III:4 and Article XX(b) are distinct and independent provisions of the GATT 1994 each to be interpreted on its own. The scope and meaning of Article III:4 should not be broadened or restricted beyond what is required by the normal customary international law rules of treaty interpretation, simply because Article XX(b) exists and may be available to justify measures inconsistent with Article III:4. The fact that an interpretation of Article III:4, under those rules, implies a less frequent recourse to Article XX(b) does not deprive the exception in Article XX(b) of effet utile. Article XX(b) would only be deprived of effet utile if that provision could not serve to allow a Member to "adopt and enforce" measures "necessary to protect human … life or health". Evaluating evidence relating to the health risks arising from the physical properties of a product does not prevent a measure which is inconsistent with Article III:4 from being justified under Article XX(b). We note, in this regard, that, different inquiries occur under these two very different Articles. Under Article III:4, evidence relating to health risks may be relevant in assessing the competitive relationship in the marketplace between allegedly "like" products. The same, or similar, evidence serves a different purpose under Article XX(b), namely, that of assessing whether a Member has a sufficient basis for "adopting or enforcing" a WTO-inconsistent measure on the grounds of human health.*"

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[135] See EC – Asbestos, Report of the Appellate Body, para 142 a.f..
[136] EC – Asbestos, Report of the Appellate Body, para. 128.
[137] EC – Asbestos, Report of the Appellate Body, para. 115.

By accepting a health criterion to make a distinction between otherwise 'like products' under the scope of article III GATT, the burden of proof of the complainant shifted toward the indication of a competitive relationship between the now 'unlike' products.[138] This is not the proceeding under article XX GATT, where the burden of proof lays by the defendant who has to prove that the GATT infringement is justified by one of the exceptions. Nevertheless, the burden lying on the complainant, who would now have to prove 'a competitive relationship in the marketplace' between products that would only differ according to the amount of water used during their production (non-product related ppm), *a priori* would rather seem to be not much more than a mere formality.[139] A water footprint standard, if überhaupt to be found acceptable at some point in the future (unlike the asbestos fibre, being a non-product related ppm) would therefore more likely be found acceptable under the exceptions of article XX GATT, even if the burden of proof there is a heavy one and lies with the defendant.

c) Water footprint standards (water-ppms) under the article XX GATT exceptions

The GATT article XX exceptions contain two provisions under which environmental concerns could find refuge; article XX (b) relating to 'the protection of human, animal and plant life or health', and article XX (g) relating to 'the conservation of exhaustible recourses'. Also water footprint standards, or water-ppms, could potentially fall under either one of these exceptions. But even if an environmental measure would be accepted as falling under one of these exceptions, than there is still a second hurdle to take, namely the introductory provisions of article XX, the so called 'chapeau', which aims to prevent any abuse of the exceptions. Environmental measures constituting an 'arbitrary or unjustifiable discrimination' or a 'disguised restriction on international trade' will, even if provisory recognized as falling under on of article XX's exceptions, nevertheless be banned.

Article XX (b), (g) GATT reads as follows:

> "*General Exceptions*
>
> *Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:*
>
> *(…)*
>
> *(b) necessary to protect human, animal or plant life or health;*
>
> *(…)*
>
> *(g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption;*"

[138] See EC – Asbestos, Report of the Appellate Body, para. 118 and 136.

[139] Under the Asbestos case, Canada seems to have failed to submit relevant evidence 'tout court'; see EC - Asbestos report of the Appellate Body, para. 147.

(1) Tuna – Dolphin[140]

After its statement on the non-applicability of article III GATT[141], the Panel continued to investigate the case under the applicability of article XI GATT on quantitative restrictions and the general exceptions of article XX (b), (g) GATT, concluding that these provisions didn't allow for the extra-jurisdictional imposition of national (environmental) regulation upon other member states:

> *"(…) The Panel considered that if the broad interpretation of Article XX(b) suggested by the United States were accepted, each contracting party could unilaterally determine the life or health protection policies from which other contracting parties could not deviate without jeopardizing their rights under the General Agreement. The General Agreement would then no longer constitute a multilateral framework for trade among all contracting parties but would provide legal security only in respect of trade between a limited number of contracting parties with identical internal regulations.*[142]
>
> *(…)*
>
> *The Panel further noted that Article XX(g) allows each contracting party to adopt its own conservation policies. The conditions set out in Article XX(g) which limit resort to this exception, namely that the measures taken must be related to the conservation of exhaustible natural resources, and that they not "constitute a means of arbitrary or unjustifiable discrimination ... or a disguised restriction on international trade" refer to the trade measure requiring justification under Article XX(g), not however to the conservation policies adopted by the contracting party. The Panel considered that if the extrajurisdictional interpretation of Article XX(g) suggested by the United States were accepted, each contracting party could unilaterally determine the conservation policies from which other contracting parties could not deviate without jeopardizing their rights under the General Agreement. The considerations that led the Panel to reject an extrajurisdictional application of Article XX(b) therefore apply also to Article XX(g)."*[143]

The Panel's decision to refuse the extra-jurisdictional application of an environmental standard under article XX (b) and (g) GATT caused outrage amongst environmental protectionists, and is still heavily criticised by legal scholars.[144] Unlike later article XX GATT cases, the Panel inquiry didn't even reach article XX's 'Chapeau' level. If we would extrapolate the Panel's judgement of the Tuna Dolphin cases to the issue of water-ppms, this would then most likely mean a ban on any extra-jurisdictional imposition of a national water footprint regulation under article XX (b) and (g) GATT. However, although the Tuna Dolphin cases reflect the line of thinking of the Panel at that time, neither case was formally adopted; they thus remained legally non-binding.[145]

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[140] United States - Restrictions on Imports of Tuna (Tuna/Dolphin I), Report of the Panel, 3 September 1991, DS21/R - 39S/155, available at http://www.worldtradelaw.net/reports/gattpanels/tunadolphinI.pdf (accessed 29th June 2011); United States - Restrictions on Imports of Tuna (Tuna/Dolphin II), Report of the Panel, 16 June 1994, DS29/R, available at http://www.worldtradelaw.net/reports/gattpanels/tunadolphinI.pdf (accessed 29th June 2011).

[141] See supra.

[142] See Tuna Dolphin I, para. 5.27.

[143] See Tuna Dolphin I, Report of the Panel, para. 5.32.

[144] See Charnovitz, S. (2002), "The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality.", Yale Journal of International Law (YJIL) **27.**

[145] Unlike the old GATT rules under which the Tuna Dolphin reports were pronounced, a report now is considered to be adopted if not unanimously rejected within 60 days.

(2) US – Reformulated Gasoline[146]

Unlike the Tuna – Dolphin cases, there was no extra-jurisdictional component to this case. At stake was an implementing regulation of the US Clean Air Act, 'the Gasoline Rule'. Around the mid-nineties, the purpose of the Gasoline Rule was to reduce pollution caused by gasoline combustion in the US back to 1990 levels. Therefore more stringent requirements to the composition of gasoline (reformulated gasoline) were subscribed. However, different standards were applied for domestic and imported gasoline.[147] Venezuela complained first, later joined by Brazil. The Panel, after having found that the Gasoline Rule breached the article III.4 national treatment provision, stated that the Gasoline Rule fell outside of the scope of the article XX (b), (d) and (g) exceptions.[148] But the US appealed, and the Appellate Body, for the first time, found an environmental ppm, *in casu* the Gasoline Rule, to be justified under article XX (g).[149] However, the Appellate Body found the requirements of article XX's Chapeau to be breached. The Appellate Body first addressed the question whether the Gasoline Rule relates 'to the conservation of an exhaustible resource': [150]

> *"At the same time, Article XX(g) and its phrase, "relating to the conservation of exhaustible natural resources," need to be read in context and in such a manner as to give effect to the purposes and objects of the General Agreement. The context of Article XX(g) includes the provisions of the rest of the General Agreement, including in particular Articles I, III and XI; conversely, the context of Articles I and III and XI includes Article XX. Accordingly, the phrase "relating to the conservation of exhaustible natural resources" may not be read so expansively as seriously to subvert the purpose and object of Article III:4. Nor may Article III:4 be given so broad a reach as effectively to emasculate Article XX(g) and the policies and interests it embodies. The relationship between the affirmative commitments set out in, e.g., Articles I, III and XI, and the policies and interests embodied in the "General Exceptions" listed in Article XX, can be given meaning within the framework of the General Agreement and its object and purpose by a treaty interpreter only on a case-to-case basis, by careful scrutiny of the factual and legal context in a given dispute, without disregarding the words actually used by the WTO Members themselves to express their intent and purpose."*

The Appellate Body then turned to the second part of article XX (g) on the question whether 'such measures are made affective in conjunction with restrictions on domestic production or consumption':[151]

> *"(…) Taken together, the second clause of Article XX(g) appears to us to refer to governmental measures like the baseline establishment rules being promulgated or brought into effect together with restrictions on domestic production or consumption of natural resources. Put in a slightly different manner, we believe that the clause "if such measures are made effective in conjunction with restrictions on domestic product or consumption" is appropriately read as a requirement that the measures concerned impose restrictions, not just in respect of imported gasoline but also with respect to domestic gasoline. The clause is a requirement of even-handedness in the imposition of restrictions, in the name of conservation, upon the production or consumption of exhaustible natural resources. There is, of course, no textual basis for requiring identical treatment of domestic and imported products. Indeed, where there is identity of treatment - constituting real, not merely formal, equality of treatment - it is difficult to see how inconsistency with Article III:4 would have arisen in the first place. On the other hand, if no restrictions on domestically-produced like products are imposed at all, and all limitations are placed upon imported products alone, the measure cannot be accepted as*

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[146] United States – Standards for Reformulated and Conventional Gasoline, Report of the Appellate Body, 29 April 1996, WT/DS2/AB/R, available at http://www.worldtradelaw.net/reports/wtoab/us-gasoline(ab).pdf (accessed 29th June 2011).
[147] See generally http://www.wto.org/english/tratop_e/envir_e/edis07_e.htm (accessed 29th June 2011).
[148] See United States – Standards for Reformulated and Conventional Gasoline, Report of the Panel, 29 January 1996, WT/DS2/R.
[149] See US – Reformulated Gasoline, Report of the Appellate Body, p. 29.
[150] US – Reformulated Gasoline, Report of the Appellate Body, p. 18.
[151] US – Reformulated Gasoline, Report of the Appellate Body, p. 20.

primarily or even substantially designed for implementing conservationist goals. The measure would simply be naked discrimination for protecting locally-produced goods."

The Appellate Body thus prudently elucidates the relationship between the general disciplines of article I, III and XI GATT and the exceptions of article XX GATT, emphasizing the necessity of a case to case assessment. Noteworthy is also the fact that the Panel, apparently without much ado, accepted the fact that 'clean air' is to be considered as an 'exhaustible resource' in the sense of article XX (g) GATT: [152]

> *"6.37 The Panel then examined whether clean air could be considered an exhaustible natural resource. In the view of the Panel, clean air was a resource (it had value) and it was natural. It could be depleted. The fact that the depleted resource was defined with respect to its qualities was not, for the Panel, decisive. Likewise, the fact that a resource was renewable could not be an objection. A past panel had accept*
> *ed that renewable stocks of salmon could constitute an exhaustible natural resource. Accordingly, the Panel found that a policy to reduce the depletion of clean air was a policy to conserve a natural resource within the meaning of Article XX(g).*"

The Appellate Body confirmed the finding of the Panel in this regard. *A priori*, it thus seems quite likely that also fresh water, if the issue would emerge, wouldn't encounter big difficulties for being categorized as an 'exhaustible resource' in the sense of article XX (g) GATT. Considering the evolution of GATT and WTO case law up to this point, installing a water footprint standard, or a water ppm, in order to contribute to the protection of fresh water as an exhaustible resource, would have to be judged on a case to case basis under article XX (g) GATT. While presumably having good chances of acceptability under the scope of article XX (g), the additional Chapeau requirements are the most stringent. Without going as far as the article I, III and XI requirements, the chapeau's aim is to tackle any 'arbitrary or unjustifiable discrimination' or 'disguised restriction on international trade' issuing from an eligible article XX exception; if there would be any less discriminative alternative available, which isn't used, then the measure at stake would considered to be breaching the chapeau of article XX GATT.[153] Assessment under article XX GATT thus continues to occur on a case to case basis.

(3) Shrimp – Turtle[154]

Factually, the Shrimp - Turtle case is similar to the Tuna - Dolphin cases. Likewise as for the protection of Dolphins during the fishing of Tuna, the US enacted a law to protect endangered sea turtles from incidental catch. This time the incidental catch thus occurred during the fishing of shrimp. 'Section 609 of public law 101-102' imposed an import ban on shrimp which was harvested with technology 'adversely affecting' endangered sea turtles.[155] Other than that, an exporting country could also be annually certificated as having a comparable programme for the protection of sea turtles and a similar incidental catch rate.[156] In order to assess the latter, guidelines to section 609 were issued regularly. [157] The 1996 guidelines extended jurisdiction to all shrimp harvesting nations.[158] A couple of years before, US shrimp vessels were obliged to fish with Turtle friendly TEDs or work with a 90 minutes tow-time

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[152] US – Reformulated Gasoline, Report of the Panel, para. 6.37.
[153] See Korea – Beef.
[154] United States – Import Prohibitions of Certain Shrimp and Shrimp Products, Report of the Appellate Body, 12 October 1998, WT/DS58/AB/R
[155] United States – Import Prohibitions of Certain Shrimp and Shrimp Products, Report of the Panel, 15 May 1998, WT/DS58/R, para. 2.7.
[156] See *Ibid.*
[157] *Ibid.* para. 2.8 a.f.
[158] *Ibid.* para. 2.11.

limitation in sea turtle areas in order to reduce the incidental drowning of sea turtles[159].

Jointly, four countries complained before the Panel; India, Malaysia, Pakistan and Thailand, claiming an article XI GATT violation. The US claimed that the section 609 regulation and implementing guidelines were justified under article XX (g) GATT, subordinated under article XX (b). The Panel first ruled against the US in an article XX 'chapeau down' approach concluding that the measure at stake fell outside the scope of the chapeau.[160] In the following, this ruling was severely criticised by the Appellate Body[161] which in turn installed a three staged bottom-up assessment under article XX (g) GATT.[162] Although the Appellate Body in the end equally concluded, after having found that the measures at stake were preliminary justified under article XX (g), that the requirements of the chapeau were not met, some important statements regarding the assessment of environmental measures under article XX GATT were made.[163] In fact, the Appellate Body radically changes directions as compared to the findings of the (non-adopted) Tuna –Dolphin cases.

The Appellate Body's first emphasis is to recall that the principle of sustainable development, as related to the optimal use of natural resources, is formally an additional objective under WTO law: [164]

> *"153. We note once more that this language demonstrates a recognition by WTOnegotiators that optimal use of the world's resources should be made in accordance with the objective of sustainable development. As this preambular language reflects the intentions of negotiators of the WTO Agreement, we believe it must add colour, texture and shading to our interpretation of the agreements annexed to the WTO Agreement, in this case, the GATT 1994. We have already observed that Article XX(g) of the GATT 1994 is appropriately read with the perspective embodied in the above preamble."*

Then the Appellate Body elaborates the theoretical framework of examination under article XX's chapeau as the nevralgic centre where equilibrium between legitimate trade objectives and the like environmental concerns could, and should, be found:[165]

> *"158. The chapeau of Article XX is, in fact, but one expression of the principle of good faith. This principle, at once a general principle of law and a general principle of international law, controls the exercise of rights by states. One application of this general principle, the application widely known as the doctrine of abus de droit, prohibits the abusive exercise of a state's rights and enjoins that whenever the assertion of a right "impinges on the field covered by [a] treaty obligation, it must be exercised bona fide, that is to say, reasonably." An abusive exercise by a Member of its own treaty right thus results in a breach of the treaty rights of the other Members and, as well, a violation of the treaty obligation of the Member so acting. Having said this, our task here is to interpret the language of the chapeau, seeking additional interpretative guidance, as appropriate, from the general principles of international law.*
>
> *159. The task of interpreting and applying the chapeau is, hence, essentially the delicate one of locating and marking out a line of equilibrium between the right of a Member to invoke an exception under Article XX and the rights of the other Members under varying substantive provisions (e.g., Article XI) of the GATT 1994, so that neither of the competing rights will cancel out the other and thereby distort and nullify or impair the balance of rights and*

[159] Turtle Excluder Devices: a grid trapdoor which directs trapped turtles to the back of the net where they can escape again. See Shrimp - Turtle, Report of the Panel, para. 2.5.
[160] See Shrimp - Turtle, Report of the Panel.
[161] Shrimp – Turtle, Report of the Appellate Body, para. 112 a.f..
[162] Shrimp – Turtle, Report of the Appellate Body, para 127 a.f.
[163] Shrimp – Turtle, Report of the Appellate Body, para 146 a.f.
[164] Shrimp – Turtle, Report of the Appellate Body, para 153.
[165] Shrimp – Turtle, Report of the Appellate Body, para 158 – 159.

obligations constructed by the Members themselves in that Agreement. The location of the line of equilibrium, as expressed in the chapeau, is not fixed and unchanging; the line moves as the kind and the shape of the measures at stake vary and as the facts making up specific cases differ."

The Appellate Body came to the conclusion that the measure at stake did constitute an 'unjustifiable and arbitrary discrimination' towards other Member States, in the sense of article XX's chapeau. Additionally, the Appellate Body made the effort to clarify the consequences of its ruling under article XX GATT with regard to environmental concerns in general:[166]

"185. In reaching these conclusions, we wish to underscore what we have not decided in this appeal. We have not decided that the protection and preservation of the environment is of no significance to the Members of the WTO. Clearly, it is. We have not decided that the sovereign nations that are Members of the WTO cannot adopt effective measures to protect endangered species, such as sea turtles. Clearly, they can and should. And we have not decided that sovereign states should not act together bilaterally, plurilaterally or multilaterally, either within the WTO or in other international fora, to protect endangered species or to otherwise protect the environment. Clearly, they should and do.

186. What we have decided in this appeal is simply this: although the measure of the United States in dispute in this appeal serves an environmental objective that is recognized as legitimate under paragraph (g) of Article XX of the GATT 1994, this measure has been applied by the United States in a manner which constitutes arbitrary and unjustifiable discrimination between Members of the WTO, contrary to the requirements of the chapeau of Article XX. For all of the specific reasons outlined in this Report, this measure does not qualify for the exemption that Article XX of the GATT 1994 affords to measures which serve certain recognized, legitimate environmental purposes but which, at the same time, are not applied in a manner that constitutes a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade. As we emphasized in United States – Gasoline, WTO Members are free to adopt their own policies aimed at protecting the environment as long as, in so doing, they fulfill their obligations and respect the rights of other Members under the WTO Agreement."

The bilateral and multilateral negotiating efforts conducted by the US before introducing the measure at stake, was a crucial criterion in the Appellate Body's assessment.[167] The Appellate Body found the US not to have done what was necessary in this regard, in order satisfy the chapeau's requirements.[168] Moreover US negotiations with its trading partners themselves were found to be discriminatory.[169] But the question at which point such previous negotiations would be found to be sufficient in the eyes of the panel and the Appellate Body was not entirely clear. After the Appellate Body's report was adopted and the implementation period was passed, Malaysia formulated an Article 21.5 DSU appeal, stating that the US still didn't comply with article XX GATT obligations.[170] Malaysia thereby defended the view that negotiations, even conducted in good faith, without resulting in an agreement, were not sufficient to comply with the Appellate Body's recommendations under article XX GATT.[171] Since the Panel rebutted Malaysia's arguments, the case was again brought before the Appellate Body which ruled in favour of the US while specifying that there

[166] Shrimp – Turtle, Report of the Appellate Body, para 185 – 186.
[167] See Shrimp – Turtle, Report of the Appellate Body, para. 168 a.f.
[168] See Shrimp – Turtle, Report of the Appellate Body, para. 171.
[169] See Shrimp – Turtle, Report of the Appellate Body, para. 172.
[170] United States – Import Prohibitions of Certain Shrimp and Shrimp Products, Recourse to Article 21.5 by Malaysia, Report of the Panel, 15 June 2001, WT/DS58/RW
[171] Shrimp –Turtle, Panel 21.5, para. 5.1 a.f.

is no need to previously conclude a bilateral or unilateral agreement as long as negotiations thereto are conducted in good faith with all trading partners alike:[172]

> *"122. We concluded in United States – Shrimp that, to avoid "arbitrary or unjustifiable discrimination", the United States had to provide all exporting countries "similar opportunities to negotiate" an international agreement. Given the specific mandate contained in Section 609, and given the decided preference for multilateral approaches voiced by WTO Members and others in the international community in various international agreements for the protection and conservation of endangered sea turtles that were cited in our previous Report, the United States, in our view, would be expected to make good faith efforts to reach international agreements that are comparable from one forum of negotiation to the other. The negotiations need not be identical. Indeed, no two negotiations can ever be identical, or lead to identical results. Yet the negotiations must be comparable in the sense that comparable efforts are made, comparable resources are invested, and comparable energies are devoted to securing an international agreement. So long as such comparable efforts are made, it is more likely that "arbitrary or unjustifiable discrimination" will be avoided between countries where an importing Member concludes an agreement with one group of countries, but fails to do so with another group of countries.*
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> *123. Under the chapeau of Article XX, an importing Member may not treat its trading partners in a manner that would constitute "arbitrary or unjustifiable discrimination". With respect to this measure, the United States could conceivably respect this obligation, and the conclusion of an international agreement might nevertheless not be possible despite the serious, good faith efforts of the United States. Requiring that a multilateral agreement be concluded by the United States in order to avoid "arbitrary or unjustifiable discrimination" in applying its measure would mean that any country party to the negotiations with the United States, whether a WTO Member or not, would have, in effect, a veto over whether the United States could fulfill its WTO obligations. Such a requirement would not be reasonable. For a variety of reasons, it may be possible to conclude an agreement with one group of countries but not another. The conclusion of a multilateral agreement requires the cooperation and commitment of many countries. In our view, the United States cannot be held to have engaged in "arbitrary or unjustifiable discrimination" under Article XX solely because one international negotiation resulted in an agreement while another did not.*
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> *124. As we stated in United States – Shrimp, "the protection and conservation of highly migratory species of sea turtles … demands concerted and cooperative efforts on the part of the many countries whose waters are traversed in the course of recurrent sea turtle migrations". Further, the "need for, and the appropriateness of, such efforts have been recognized in the WTO itself as well as in a significant number of other international instruments and declarations". For example, Principle 12 of the Rio Declaration on Environment and Development states, in part, that "[e]nvironmental measures addressing transboundary or global environmental problems should, as far as possible, be based on international consensus". Clearly, and "as far as possible", a multilateral approach is strongly preferred. Yet it is one thing to prefer a multilateral approach in the application of a measure that is provisionally justified under one of the subparagraphs of Article XX of the GATT 1994; it is another to require the conclusion of a multilateral agreement as a condition of avoiding "arbitrary or unjustifiable discrimination" under the chapeau of Article XX. We see, in this case, no such requirement."*

Thus, according to the Shrimp-Turtle case law, before issuing any unilateral measure with global impact, it would be necessary to make negotiating efforts in good faith, while giving all trading partners involved equal treatment. Clearly, such a conclusion has far-reaching consequences for the 'ppm-distinction' annex 'like' products debate. Any unilateral action in this field, such as the introduction of emission standards to stimulate the reduction of green house gas emissions, or the introduction of water

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[172] United States – Import Prohibitions of Certain Shrimp and Shrimp Products, Recourse to Article 21.5 by Malaysia, Report of the Appellate Body, 22 October 2001, WT/DS58/AB/RW, para. 122-124.

footprint standards to stimulate global water savings, could only be an option after the conduction of thorough international negotiations, with all trade partners a like. When it should nevertheless come to a trade conflict, then the Panel and Appellate Body still would have to make a case to case assessment whether negotiation efforts were sufficient.

Another important conclusion is that the Appellate Body, under the Article 21.5 DSU appeal, for the first time ever, admits the use of a (non-product related) ppm-distinctions for environmental purposes; the 'revised' US guidelines for Section 609, still imposing TEDs, are found to be non-discriminatory and compatible with WTO law.[173] It needs to be underlined though, that this approval is only a provisional one; for as long as negotiations continue in good faith, or an agreement is effectively reached.[174] Although the US guidelines for Section 609 clearly had a global impact, the Appellate Body emphasized not to make any judgement about the extra-jurisdictional implications of the measure at stake under article XX GATT. For this purpose the Appellate Body made a somewhat far-sought connection with US fishing waters by stating that all the protected species of Sea Turtles occur in US waters:[175]

> "*The sea turtle species here at stake, i.e., covered by Section 609, are all known to occur in waters over which the United States exercises jurisdiction. Of course, it is not claimed that all populations of these species migrate to, or traverse, at one time or another, waters subject to United States jurisdiction. Neither the appellant nor any of the appellees claims any rights of exclusive ownership over the sea turtles, at least not while they are swimming freely in their natural habitat -- the oceans. We do not pass upon the question of whether there is an implied jurisdictional limitation in Article XX(g), and if so, the nature or extent of that limitation. We note only that in the specific circumstances of the case before us, there is a sufficient nexus between the migratory and endangered marine populations involved and the United States for purposes of Article XX(g).*"

The question of the legality under WTO law, and more specifically under article XX GATT, of a ppm-distinction for like products with extra-jurisdictional application, thus remains unsolved.[176]

(4) Conclusion

After analysis of the most relevant GATT and WTO case law concerning (environmental) ppms under articles I, III and XX GATT (until the early 2000s), a tendency from plain rejection, over more nuanced statements, towards a certain 'readiness' for acceptance under certain conditions can clearly be descried. Fortunately, GATT and later on WTO case law is not subject to 'stare decisis'. One way or the other, WTO dispute settlement, as an international framework, is condemned to show enough flexibility in order to cope with new issues of global concern; such as the protection of the environment. At the same time, this has to occur without losing focus on its core business; to watch over the flourishing of international trade and its foundations of non-discrimination. And this seems to be what has been happening over time. Of-course, concluding international environmental

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[173] *Ibid*., para 153 (b); See Charnovitz, S. (2002), "The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality.", Yale Journal of International Law (YJIL), p. 21.
[174] *Ibid.*
[175] *Ibid*. para. 133; See Charnovitz, S. (2002), "The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality.", Yale Journal of International Law (YJIL), p. 21.
[176] See Cottier, T. and Oesch, M. (Eds.), (2005), International Trade Regulation, Law and Policy in the WTO, the European Union and Switzerland, Bern, Switzerland/London, UK, Staempfli Publishers/Cameron May, p. 463-465.

agreements is the obvious way for reaching environmental objectives. But international trade law has a role to play as well; namely damage control. Reaching a global environmental agreement can take years, sometimes even decades. In the mean-time there is only one global framework with enough leverage for somewhat controlling severe damage to the environment, such as co2 emissions and global (fresh) water waste. This might be a new role for the WTO law framework but it seems to be the path to follow. One way of contributing to such damage control is to allow environmental ppms, at least until an international agreement is reached (Shrimp – Turtle). The evolution of WTO case law seems to indicate that water footprint standards, or water-ppms (as non-product related ppms) could be acceptable under certain conditions. Certainly, origin-neutrality would be a crucial requirement (Canada – Automotive), and also the extra-jurisdictional component of unilaterally imposing water footprint standards is still problematic. Yet, another problem with the introduction of water footprint standards (or water-ppms) is that every country could choose its own standards, triggering a cacophony of standards. Another option would be the introduction of (voluntary) labelling schemes; letting also consumers play their role.

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