THE INTERNATIONAL AGREEMENTS AND REDUCING THE DEMAND FOR FRESHWATER: A PATH TOWARD A NEW REGULATION[1]

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SUMMARY: In an era of water scarcity, this article analyzes the possible solutions for the lack of international regulations about the reduction of water demand. First it analyzes major international rules in this area and after it proposes some solutions for new international regulations to control and reduce the water consumption such as: good practices and standards, recycling and reusing of water, and green government management.

KEYWORDS: Water. Scarcity. International. Rules. Agreements. Reduce. Consumption. Good Practices. Standards. Recycling. Reusing. Green. Government. Management.

INTRODUCTION

The great importance of water for human life, for human well being, for the ecosystem and for life in general is currently well known. Furthermore, it is widely accepted that water has been contributing to the development of human society. As a consequence of this development different kinds of freshwater uses are growing.

These water uses, such as energy power, industrial, agricultural and cities have had an increased impact on the water supply[2] generating a great concern about water scarcity and the necessity to find more sources of water. This concern is even higher in this millennium, a time of climate change and growing human population.

As a result, states and the international community have become more aware about problems related to the freshwater supply, especially the ones related to pollution, allocation and sharing a single river basin between countries.

In order to deal with water scarcity and conflicts generated by different kinds of water uses, states have entered into many agreements, bilateral, regional, and multilateral, among countries trying to solve their conflicts in sharing the same river basin.

Besides that, the international community is also realizing the limits on supply solutions because of the increased demand due to the growing population and the development of new uses for water and also climate change, all this impacting the availability of freshwater. As a consequence, some states have been developing new approaches that focus on reducing the demand for freshwater.

However the issues related to reducing the demand for freshwater have not yet been well developed in the international scenario when compared to the other supply related problems, such as pollution control and allocation of water for different uses.

The new approaches on reducing the demand for freshwater focus on efficiency of water uses and the decrease of water waste. One approach that has been discussed is the market solution that for some points of

2 CHOPRA, Kanchan et al. Findings of the Responses Working Group of the Millennium Ecosystem Assessment. Ecosystems and Human Well-being: Policy Responses, v. 3, Islandpress, p. 218. Available at International Law Seminar: Water Resource, Prof. Edith Brown Weiss, course material page 419.

view can push consumers toward efficiency in water use through the market and price regulation. In this article this solution will not be considered because the market solution would be an entire article itself. The other issue this article will not address is about the possibilities of punishment for individuals and states that do not comply with the rules about efficient water use. Whether to punish misuse or not, and how to develop a system for monitoring user responsibility is an issue for another article as well.

Therefore this article will focus on solutions, new practices and standards, except for the market solution, that can lead to the efficiency in water use. Also this article will address the lack of international regulation in this matter[3] and offer suggested solutions for how an international regulation can contribute to the development of the efficiency in water uses. I will analyze how this regulation could and should work, taking into consideration some drafts of practices, specifically recycling and reuse of water, and government management programs, already developed in some countries.

In order to develop these ideas the article will first show how major International rules about water resources address the problem of reducing water demand of water problem, analyzing the most broad and influential rules in this issue: the 1997 Convention on the Law of the Non-navigational Uses of International Water Courses; the UNECE Convention on the Use of Transboundary Watercourses and International Lakes; and the International Law Association Berlin Rules. Second, I present a brief overview of important examples of good practices and standards, recycling and reusing water and government management, addressing their meaning and importance in the development of more efficient use and in reducing the water demand. Third, this article will develop how these practices can be adopted by these international rules, the meaning and importance of them in the international scenario. In the end, some conclusions and prognostics for this issue will be described.

1 MAJOR INTERNATIONAL WATER RESOURCES RULES: HOW THEY ADDRESS THE PROBLEM OF REDUCING THE DEMAND FOR FRESHWATER.

First international document to be analyzed is the Convention on the Law of the Non-navigational Uses of International Watercourses

3 WEISS, Edith Brown. *The Evolution of International Water Law, Recueil des cours*, 2007. page 229-230.

because of its importance and broad reach as a convention adopted by the United Nations.

The Convention on the Law of the Non-navigational Uses of International Watercourses was adopted by the General Assembly of the United Nations on May 21, 1997. This Convention has it sources in the provisions of the Charter of United Nations – articles 1, 2 and 13 paragraph 1 (a) – and in the necessity to address the problems of increasing demand and pollution of watercourses, as stated in the considerations of the preamble of the document.[4]

Nonetheless the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses begins with this general accomplishment to address the increasing demand problem, as this article demonstrates, it seems that this commitment did not lead the Convention to develop rules about reducing demand in comparison to what they do with pollution.

It is not the purpose of this article to discuss the reasons behind this lack of reduced water demand rules, but only to analyze it as a source of the necessity for new rules, that this article has the aim to develop.

According to article 3, the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses is a non-binding convention with the important purpose of developing guidelines for international agreements, bilateral or multilateral, on watercourses.

Article 5 of this UN Convention inaugurates the equitable and reasonable utilization of international watercourse. The states are called to "utilize an international watercourse in equitable and reasonable manner … with a view to attaining optimal and sustainable utilization … consistent with the adequate protection of the watercourse."

It is clear that these ideas of reasonable, optimal and sustainable use are related to the reduction of water demand and the efficiency in water use. Especially this idea about "optimal" can be interpreted toward an efficient use, while the other words, sustainable and reasonable, are more vague. Depending on the context, reasonable or sustainable can be related, for example, to pollution issues.

4 *Available at International Law Seminar*: Water Resource, Prof. Edith Brown Weiss, course material, page 35.

As a general principle this purpose can be stated broadly and generally but these words alone do not say too much. The necessity of developing more detailed provisions, this is the lack of rules that this article analyzes and tries to address.

Article 6 of the 1997 Convention describes the "factors relevant to equitable and reasonable utilization" and has the purpose of developing the provisions of article 5. However, in the issue of efficiency in water use, this article does not have any more detailed rule, only the letter "f" that speaks generally about "economy of use".

Part IV of this UN Convention is about "protection, preservation and management". This part has some more detailed rules about pollution but in article 24 about management and in paragraph 2 letter (b) there are the same general and broad words such as "promoting the optimal and rational utilization" that can be interpreted as related to the issue of reducing the demand for water.

Consequently, one can conclude that the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses has no detailed rules about the reduction of water demand. The Convention has only very general and vague wording, such as "rational", "optimal", "sustainable" related to the utilization of international watercourses, that can or cannot be related to reducing water use, and accepts different kinds of interpretation.

Then one can state the necessity of developing rules about the ideas of "rational", "optimal", "sustainable" use which must include provisions about how to reduce demand for water, specific directions about the efficiency of water use.

Another important instrument is the UNECE Convention on the Use of Transboundary Watercourses and International Lakes. This is a convention state by the United Nations Economic Council for Europe (UNECE) on March 17, 1992 and has the main purpose to address pollution problems in the European rivers.

Likewise, the 1997 UN Convention in article 2 about the general provision and paragraph 2 that states the "appropriate measures to ensure that transboundary water are used" letter b "with the aim of ecologically sound and rational water management".

The UNECE Convention on the Use of Transboundary Watercourses and International Lakes in the above cited article 2 paragraph 5 letter c) states that for the paragraph 2 measures the Parties have to be guided by the general principle that the "water resources shall be managed so that the needs of the present generation are met without compromising the ability of future generations to meet their own needs".

This principle is important because there should be a general assumption that it is related to the reduction of water demand. This article is not the space to better develop this idea, but it comes from the general assumption that the problems of water scarcity and security in a time of growing population and climate change have to be addressed by the reduction of water demand or else the needs of the next generations will not be guaranteed.

Another important aspect of the UNECE Convention is the presence of detailed rules about pollution. These rules address issues such as sharing information among states, research, public information, cooperation, mutual assistance, monitoring etc. Nonetheless the UNECE Convention does not have the same provisions about the reduction of water demand, but it provides a model used for pollution that can be adapted to the issues related to efficiency in water use and the reduction of water demand that will be developed later in this article.

Another important document is the more recent International Law Association Berlin Rules.[5] Before this Berlin Rules launched in 2004, there were the Helsinki Rules created in 1966, on the same purpose to suggest a framework of rules about the uses of the water of international rivers.

The International Law Association was founded in 1873 and is a private association with approximately 4000 members worldwide that studies and advances the international law.[6] This association is a kind of council of experts from many countries.

The 2004 International Law Association Berlin Rules have been developed according to its preface with the purpose of addressing

5 International Law Association Berlin Conference (2004) Water Resources Law available at: <http://www.internationalwaterlaw.org/documents/intldocs/ILA_Berlin_Rules-2004.pdf>, last consulted on: Dec., 20, 2012.

6 Editors' Introductory Note Regarding the International Law Association's *Helsinki and Seoul Rules. Available at International Law Seminar: Water Resource, Prof. Edith Brown Weiss, course material, page 53.*

the problems created by the increased water demand, the supply limited by pollution and climate change that has become a source of conflict between countries. They are not an agreement but they reflect the customary international law and they are applied not only as law between countries but law that regulates water resources at all, according to the article 1.

Then the purpose of these Rules is to propose management water solutions. In the article 3 about definitions in the paragraph 19 the meaning of sustainable use is "the integrated management of resources to assure efficient use of and equitable access to waters for the benefit of current and future generations…"

Management is understood in a broad view that includes the terms of this article 3, paragraph 14, development, use, protection, allocation, regulation, and control of waters.

Despite addressing the efficiency in use in the definition of sustainable use, when chapter 2 states the principles that shall regulate the management of water in article 7 again the idea is expressed only vaguely in words such as "manage water sustainably."

Moreover there is the article 13 about reasonable use and the relevant factors related to it. In the list of these relevant factors there are again vague words such as "the sustainability of proposed and existing use" in letter "h". And again there is no direct reference to the reduction of water issue, only the same broad words as the 1997 Convention, "economy in use" in letter "f".

This lack of regulation about efficiency in water use is sensible when related, for example, to assessment and responsibility. These two critical areas must take into consideration the efficiency in use. Article 29 is about the assessment and that its content does not give any reference to the efficiency in use or the avoidance of waste of water.

At the same time, article 68 only states that responsibility is related to the sustainable management, but whether this idea of sustainable management is described in the other articles is not linked clearly, in a more detailed way, to the issue of a reduction in the demand for water. As a result, it becomes difficult to demonstrate the responsibility that any state should have for activities that lead to the waste of water.

The International Law Association Berlin Rules were established in 2004, so they are recent and they have some considerable advancement in many areas, including integrating groundwater, navigation and non-navigation, extreme and war rules, relationship between states, pollution, allocation, primacy of human vital uses, assessment, public participation, cooperation.

There are many new important rules but it is very surprising that there is no specific rule about efficiency in use, measures to reducing the demand of water that clearly are needed to fulfill the purpose of the Berlin Rules to collaborate on the development of the International Law and to address the increasing demand of water in a situation of decreasing supply. So, for these Berlin Rules, the same comments are applicable as those stated above about the other documents.

In conclusion, it is fair to say that there is a clear demonstration that the international documents analyzed above have not developed detailed rules or even a more clarified principle that includes the issue of a reduction of water demand, adopting the efficiency in water use as a central problem that should have measures to be addressed, such as the development and adoption of good practices and standards, as this article will analyze bellow.

2 TOWARD NEW GOOD PRACTICES AND STANDARDS

This part of the article describes two new good practices and standards used in different activities that have been adopted by some countries and that develop new solutions and ways of addressing the efficiency in water use and the reduction of the demand for water problem.

There are other practices and standards that could be brought here and in the same way with an important impact for the efficiency in water use, for example some agricultural new practices that can avoid the waste of water and produce good quality food.

The article analyzes these two examples only to illustrate and show that the government has a very important role in both. These two examples come along with a necessity for regulation, new laws and government leadership in directing the solutions. This is important for the role that could be played by the international law as well.

2.1 RECYCLING AND REUSING WATER

In recent years the development of the recycling and reusing of water has increased as an important solution regarding the growing water demand. The costs and benefits analysis related to the recycling and reusing of water has pushed Governments to consistently find solutions to avoid barriers and better develop these practices.

One example of this development on the reuse and recycling of water is in the western states of the United States. In these states there is already a general assumption that their problems regarding population growth, scarcity of water and the lack or cost of new water supplies has directed them to the solutions offered by the reuse and recycling of water.[7]

The reuse of wastewater is a practice that has been growing especially because of the improvement of technology for water treatment. The reclaimed water is a kind of water effluent, a wastewater that had certain kind of treatment utilizing the wastewater treatment plant (WWTP) effluent. The reclaimed water can be use in many ways but recently this practice is being developed in many cities to provide tap water for the population.[8]

In many kinds of water reuse the effluent is treated and goes back to watercourse and then back to houses. However there are other reuse or recycling practices that do not need a treatment or that the water does not go back to the watercourse. In these reuse and recycling practices the efficiency is improved and avoid the costs of treatment or the loss of water in dry climate areas. One example is the use of effluent in industries that have their own equipment to treat water and use it again in the same facility for the cooler.[9]

Another example is the grey water that does not need specific treatment for the effluent. The grey water use means to reuse the non-toilet household water, for example, in agriculture and garden watering.

7 BRACKEN, Nathan S. Water Reuse in the West: State Programs and Institutional Issues. A Report Complied by the Western States Water Council, 18 *Hastings W.- N.W. Journal Environmental Law & Policy* 451, 528-29 (2012).

8 CHAPMAN, Ginette. From Toilet to Tap: The Growing Use of Reclaimed Water and the Legal System's Response. *Arizona Law Review* 47, 773 (2005).

9 Ibid.

This is one example of recycling water that has been adopted successfully in the US' western states.[10]

The advantages related to this practice are low cost compared to other supply solutions; the ecological benefits related to recycling as wastewater because there is an abundance of wastewater due to a growing population that at the same time provides an increased source for recycling water.[11]

There are some barriers that have to be addressed in order to implement recycling and reusing water as an effective program. The western States in the US have for example addressing problems regarding legal drafts to adapt the reuse and recycle issue to the water rights already established.[12]

Therefore there are many different legal frameworks that have been developed not only in the U.S. but around the world that are able to regulate and stimulate this practice. The solutions have to come from a better development of policies related to education and funding too. The implementation of the reuse and recycling water policy needs a strong political will and at the same time more public participation and society's involvement.[13]

2.2 GREEN GOVERNMENT MANAGEMENT

Some countries, such as Brazil, United States, Canada and Israel are developing governmental programs in order to stimulate new water management practices in public administration. These practices happen inside the government, in its own facilities and offices. The programs can be called green government or green government management or green public administration.

These programs have a focus first on public procurement in order to purchase products that in their production use less water or energy or

10 SNODGRASS, Michael R.F. *Greywater - the Reuse of Household Water*: A Small Step Toward Sustainable Living and Adaptation to Climate Change. Georgetown International Environmental Law Review, 22, 591 (2010).

11 Ibid.

12 STEIN, Jay F. et al. Water use and reuse: the new hydrologic cycle. Rocky Mountain Mineral Law Foundation-Institute 29-1 (2011).

13 STEIN, Jay F. et al. op. cit.

can reduce the waste of water, improve energy efficiency and recycling in government buildings.

This public procurement can be called green procurement and has a focus in buying products that help to improve water efficiency not only in the government, but also outside, in industry and agriculture, because the government will give preference to products that use less water in their production or products that come from a process that uses recycled or reused water or that has been developed in a way to avoid the waste of water.

These programs have the importance to stimulate a new market for products, in the case of water, that leads to efficient water use and to a recycling and reusing water operation.

Also these programs focus on a changing pattern of using water, energy and other goods and promoting a culture to avoid waste inside the government. In order to achieve these targets, some of them, such as the Brazilian program, rely more on changing civil servants' habits, others rely more on management changing and equipment purchasing or everything combined.

Moreover, for example in Brazil[14], there are educational programs for the civil servants to stimulate the efficiency in water use in order to change their habits and culture of water waste.

This educational approach is equally important to stimulate not only the civil servants but the entire society to be more careful about the waste of water. The government has an important role as a leader in stimulating the efficient use of water, the production of these products and new technology that is more efficient in water use.

Another way to achieve the targets of reduction of water use is the governmental green buildings equipped with equipment in restrooms, for example, to avoid the waste of water.

Another interesting example is the adoption of a reservoir on the top of governmental buildings that can collect rainwater and use this water directly in the toilets. This technology is easy to install,

14 FERREIRA, Maria Augusta. Apontamentos sobre Gestão Socioambiental na Administração Pública Brasileira. In: BLIACHERIS, Marcos Weiss and FERREIRA, Maria Augusta, *Sustentabilidade na Administração Pública:* Valores e Práticas de Gestão Socioambiental. Belo Horizonte: Forum, 2012.

has a low cost and is important in some Brazilian cities that have been suffering with floods during the rainy season. In these Brazilian cities and states, the government has been adopting laws that require this kind of equipment in order to give permits for new buildings. However this practice has to begin in the government building itself to set the example and the directions to the entire society.

Another good example of green government management is the US program implemented by the Executive Order 13514. Specifically in the water issue the EO 13514 directs the federal agencies and offices to an efficient use of water.[15]

This US program has been developing reduced water consumption goals to be achieved by the agencies and a monitoring system to assure the achievements. It has a special focus on a management system that can lead to achieving the targets, measuring concrete results of less use of water and monitoring this achievement.[16]

The US government structure is well developed in the hierarchy system beginning with the President and the EO 13514 and continues up to the high levels of the agencies commanding the staff to achieve the goals and reporting the achievements to a central committee that directs the information back to the President's office.

These programs are examples of how the government can play a special role to indicate and stimulate a new path toward more efficient water use. As President Barack Obama said: "As the largest consumer of energy in the U.S. economy, the federal government can and should lead by example when it comes to creating innovative ways to reduce greenhouse gas emissions, increase energy efficiency, conserve water, reduce waste and use environmentally responsible products and technologies."[17]

Despite all this contribution as a leadership program, these governmental programs have to address some internal problems, such

15 FIORINO, Daniel. Implementing *Sustainability in Federal Agencies an early assessment of President Obama's Executive Order 13514*. Available at:<http://www.businessofgovernment.org/sites/default/files/Implementing%20Sustainability%20in%20Federal%20Agencies.pdf>. Last consulted on: Dec., 20, 2012.

16 Ibid.

17 FIORINO, op. cit.

as lack of resources, internal political conflicts and economic sector resistances.

In some countries there are legal problems too. Even in Brazil, for example, where new laws were established in order to support these green governmental approaches, there are some problems to accept these new laws when they generate a conflict with old laws well established in the Brazilian courts, especially in green procurement issues, challenging governmental lawyers to develop and promote a new interpretation of the old laws in order to conciliate them with the new ones.[18]

Furthermore there is no specific provision in international law about the government's role or responsibility in developing these programs. The green government management is not explicitly stated in any International document. International declarations and covenants in the environmental area address green or sustainable management issues but without mentioning the governmental management and the specific role that has to be played by the public administration in this area.

The public green procurement is one exception. It is stated in the plan of implementation of Johannesburg Declaration at item III, paragraph 19, letter "c". This item is about "changing unsustainable patterns of consumption and production" and paragraph 19 is about the actions that have to be taken from authorities in all levels including: "c - promote public procurement policies that encourage development and diffusion of environmentally sound goods and services".[19]

However the Johannesburg implementation plan does not largely consider the role of the government as a big consumer and as, in certain way, a producer of some goods as well. This international document does not cite the government's special role in order to change these patterns of production and consumption, beginning inside the government and spreading to the society through new ones. As President Barack Obama said, the kind of leadership that comes with his own actions in consumption and production inside the government.

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18 FERREIRA, Maria Augusta. As Licitações Públicas e as Novas Leis de Mudança Climática e de Resíduos Sólidos. In: SANTOS, Murillo Giordan and BARKI, Teresa Villac Pinheiro. *Licitações e Contratações Públicas Sustentáveis.* Belo Horizonte: Forum, 2011.

19 Plan of Implementation of the Johannesburg World Summit on Sustainable Development. Available at: <http://www.un-documents.net/jburgpln.htm#V>. Last consulted on: Dec., 19, 2012.

The necessity of International provisions about green government programs goes in the direction that this article is trying to address: international law supporting and pushing for the development of these programs which can help the government to fight its own internal resistances and problems that attempt to harm the development of this programs.

3 PROPOSAL RULES

All these practices, standards, and examples, ways to reduce the waste of water, listed above are feasible and easy to implement but they do have to face some challenges to a better and broad development. The most important challenges are the political will and society's involvement.

On the other hand, these practices are not clearly expressed in any major international agreement or rule. As seen above the International rules are vague in their references about the efficiency in water use and the reduction of the waste of water, despite the urgency of these issues in this century's international water scenario.

The existence of rules incorporating the practices and standards exemplified above in a context of a major international agreement or rule does not necessarily need to be a binding instrument, but at least a framework of a model that can be followed and adapted by the countries in their bilateral, regional or multilateral agreements.

This article demonstrates that the three documents analyzed above could have been inserted, in an easy way, not confronting already existing rules, the practices and standards above described. The adoption of these rules, even in a broad way, would be very important to push the governments and societies in order to facilitate the adoption of these practices as much as possible.

These rules could be included, for example, in the article 6 of the 1997 UN Convention cited above. This article describes "factors relevant to equitable and reasonable utilization". So a new letter "h" could talk about the existing practices and standards used by the watercourse states or other states that are able to promote efficiency in water use and the recycling and reusing of water.

In the article 24 of this UN Convention that is about management, in paragraph 2 a new letter (c) there could be a mandate to promoting

best practices to avoid the waste of water and another letter (d) to promote the recycling and reuse of water.

The UNECE Convention on the Use of Transboundary Watercourses and International Lakes in the above cited article 2 about the general provision and paragraph 2 that could have a new letter stating about the "appropriate measures to ensure that transboundary water are used with the application of the best practices and standards available to reduce the waste of water, specially considering the use of recycled and reused water".

The UNECE Convention has also, as cited above, detailed rules about pollution. The same kind of rules can be used to efficiency in water use too. These related rules are adequate to be applied or adapted to the efficiency issue as well. The best practices, recycling and reuse issues need rules such as the UNECE Convention has about pollution directed to share data and information; promote research, public information and participation; cooperation and mutual assistance between the countries for the adoption and development of the good practices.

The 2004 International Law Association Berlin Rules in the article 3 about definitions paragraph 14 about management could include recycling and reuse. This paragraph 14 states that "management of water and to manage waters includes the development, use, protection, allocation, regulation, and control of waters." So it is clearly possible to add after use, recycling and reuse.

Also the chapter 2 about the principles that shall regulate the management of water in article 7 could add the word efficiently in its terms and becoming: "States shall take all appropriate measures to manage waters sustainably and efficiently."

Article 13 is about the relevant factors to consider about a reasonable use including "economy in use" in letter "f" and "the sustainability of proposed and existing use" in letter "h". Here could be added another letter about best practices and standards and another about recycling and reuse of water as a relevant factor to consider in order to address the reasonable use.

In the Berlin Rules the impact assessment is regulated in article 29. this impact assessment could include the analyses of alternative solutions using the best practices and the recycling and reuse to analyze the possibility of other solutions.

The responsibility aspect that is addressed by the Berlin Rules is very important as well, but at least initially, in our opinion, the best way to promote the water efficiency is to stimulate these good practices and standards than to punish the waste of water. The punishment can be a second measure when the good practices are already well developed and broadly applied.

Other issues addressed by these international documents are very important in the good practices promotion as well. The articles in these documents that address issues such as, public participation, international cooperation, sharing information and funding, for example, should be integrated in this reducing of water demand problem too.

The proposing rules developed here aim to show that is easy to include the efficiency, recycling, reuse, best practices and standards in conventions, international rules, and other kinds of international documents.

Furthermore, the international rules about efficiency in water use would play the same influence as the already better developed pollution rules. The increasing and expanding detail of the pollution rules has been very helpful for the pollution decrease and control in many countries.

The same idea can be applied to the waste water control and decrease. The more detailed the rules the easier to apply them, to comply and even to demand responsibility if they are not observed. The results can be followed and monitored by the riparian countries that can win in more quantity of water and sharing technology, research and information in a spirit of mutual assistance and cooperation.

Otherwise, the reference to these practices or standards in an international agreement or rule would influence the bilateral or regional agreements to include them and to rely on the possibility of reducing the waste of water in one feasible alternative for conflict solution.

At the same time, these new international rules about water efficiency could be spread not only to riparian countries and their basin, but other basins and countries in a virtuous cycle.

And it is not necessary that these international rules be binding. Some of the agreements or rules discussed in this article are non binding, however they have been influencing many countries to adopt their model of rules in the basin agreements as well as in regional or multilateral agreements.

On the other hand, as in almost all environmental issues, the public participation and information have a central role in the issues related to efficiency in water use. The civil society, NGOs, environmental groups, business groups and other stakeholders have important roles to play in the development and expansion of the reduction of the waste of water in each country and in the international community.

This involvement of the society and the international community can be pushed and developed by the adoption of the efficiency in water use in the International agreements and rules.

It does not matter if these rules are binding or non-binding instruments because in the current international law scenario the only existence of these rules would play a very important role in promoting these practices in many countries and would help to improve the practices already existent in other countries.

4 CONCLUSION

As discussed above, given the current consensus about the necessity of states and the international community to address the increasing problems related to water scarcity and given the limits of the supply solutions that have already been developed, reactions direct the states and the international community to the adoption of solutions aiming at the reduction of the water demand.

One of those kinds of solutions are the best practices and standards such as the two examples explained above. These examples give an idea about how these practices have already been adopted by some countries, the important role that they play in the issue of reducing the demand for water and some general problems that these countries have been facing in order to improve the implementation of these new practices.

In addition to that, this article explained the necessity and the lack of an approach for the reduction of water demand, and especially the best practices idea, in international agreements or rules, as frameworks, binding or non-binding rules.

Moreover, the adoption of the reduced demand of water focus is not difficult to be included in these kinds of international documents. This inclusion would play a very important role by contributing

to the development and improvement of these practices in many countries through the involvement and participation of society and the international community.

In conclusion, the adoption of international rules on the reduction of water demand will indeed contribute to the most important purpose of all the discussion stated above: water security and quality of life for present and future generations.

REFERÊNCIAS

BRACKEN, Nathan S. Water Reuse in the West: State Programs and Institutional Issues. A Report Complied by the Western States Water Council, 18 *Hastings W.- N.W. Journal Environmental Law & Policy* 451, 528-29 (2012).

CHAPMAN, Ginette. From Toilet to Tap: The Growing Use of Reclaimed Water and the Legal System's Response. *Arizona Law Review* 47, 773 (2005).

CHOPRA, Kanchan et al. *Findings of the Responses Working Group of the Millennium Ecosystem Assessment.* Ecosystems and Human Well-being: Policy Responses, v. 3. Islandpress, p. 218. Available at International Law Seminar: Water Resource, Prof. Edith Brown Weiss, course material.

FERREIRA, Maria Augusta. Apontamentos sobre Gestão Socioambiental na Administração Pública Brasileira. In: BLIACHERIS, Marcos Weiss and FERREIRA, Maria Augusta, *Sustentabilidade na Administração Pública:* Valores e Práticas de Gestäo Socioambiental. Belo Horizonte: Forum ed. 2012.

FERREIRA, Maria Augusta. As Licitações Públicas e as Novas Leis de Mudança Climática e de Resíduos Sólidos. In: SANTOS, Murillo Giordan and BARKI, Teresa Villac Pinheiro. *Licitações e Contratações Públicas Sustentáveis.* Belo Horizonte: Forum, 2011.

FIORINO, Daniel. Implementing Sustainability in Federal Agencies an early assessment of President Obama's Executive Order 13514. Available at: <http://www.businessofgovernment.org/sites/default/files/Implementing%20Sustainability%20in%20Federal%20Agencies.pdf >. Last consulted on: Dec., 20, 2012.

International Law Association Berlin Conference (2004) Water Resources Law available at: <http://www.internationalwaterlaw.org/documents/intldocs/ILA_Berlin_Rules-2004.pdf>, last consulted on: Dec., 20, 2012.

Plan of Implementation of the Johannesburg World Summit on Sustainable Development. Available at: <http://www.un-documents.net/jburgpln.htm#V>. Last consulted on: Dec., 19, 2012.

SNODGRASS, Michael R.F. Greywater - the Reuse of Household Water: A Small Step Toward Sustainable Living and Adaptation to Climate Change. *Georgetown International Environmental Law Review*, 22, 591 (2010).

STEIN, Jay F. et al. Water use and reuse: the new hydrologic cycle. *Rocky Mountain Mineral Law Foundation-Institute* 29-1 (2011).

WEISS, Edith Brown. The Evolution of International Water Law, *Recueil des cours*, 2007. page 229-230.

_____*International Law Seminar*: Water Resource, Prof. Edith Brown Weiss, course material.