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What rights and whose responsibilities in water? Revisiting the purpose and reassessing the value of water services tariffs

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ABSTRACT

Access to water and sanitation are recognized as human rights by the United Nations, reflecting their vital importance to every person's life. At a fundamental level - delivering minimum standards of water services to meet basic human needs - it is a simple equation. People are rights-holders and States are responsible under international law to provide those services. Rights-holders can claim their rights and duty-bearers must guarantee the rights to water and sanitation equally and without discrimination. This paper explores the relationship between the human rights to water and sanitation, the Sustainable Development Goals, water services and the role of water service tariffs in helping or hindering delivery of a broad range of societal objectives, including human rights and sustainability. Two key questions emerge: (i) *What are the rights that apply in these circumstances and who is responsible for addressing those rights?* (ii) *How can the viability of the water service system be maintained without imposing dramatic price increase, and without compromising the social and human right to water in good quality and affordable conditions?* In this paper we argue that human rights to water and sanitation, and the tariffs that are applied to them, should not be addressed as technical problems but rather as social and political issues of justice. We conclude that the re-politicisation of water, and of the setting of water tariffs, would help ensure that the responsibilities upon Governments for delivering human rights to water and sanitation are clear.

1. Introduction

The human right to safe drinking water was first recognized by the United Nations General Assembly and the Human Rights Council on July 28, 2010 when it became part of binding international law (UN Water, 2010). That recognition reflected a deep concern that approximately 884 million people lacked access to safe drinking water, 2.6 billion did not have access to basic sanitation, and 1.5 million children under the age of 5 years die and 443 million school days are lost each year because of water- and sanitation-related diseases (UN A/RES/64/292, 2010). The UN resolution acknowledged the importance of equitable access to safe and clean drinking water and sanitation as an integral component of the realization of all human rights which, it reaffirmed, were the responsibility of States.

The umbrella recommendation of the UN is that "*all governments have the obligation to respect, protect, and fulfill the human rights to water and sanitation, including ensuring that private actions do not interfere with these rights*" (Jones and Moulton, 2016, p.29). Furthermore, governments at all levels should prevent third parties from impeding the enjoyment of these rights, and fulfill (progressively over time, within maximum available resources) conditions by which every person enjoys these rights (Jones and Moulton, 2016). We agree with the view of Farhana Sultana that water is essentially about power – the power to decide, control, allocate, manage – thereby affecting people's lives. We also agree that this is intersectional to gender, class, race, and other axes of social difference, although impacts may be felt in different ways (Sultana, 2018).

Recognizing that the human right to water and sanitation is essential for the full enjoyment of life and all human rights, the UN Resolution calls upon States and international organizations to provide financial resources, capacity-building and technology transfer, through international assistance and cooperation, in order to scale up efforts to provide safe, clean, accessible and affordable drinking water and sanitation for all. The Resolution notes, in particular, the need to provide this support to developing countries (UN A/RES/64/292, 2010).

Approaching water from a broad framework of control, distribution,

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rights, and access, Joy et al. (2014) claims there is a need to "repoliticise" water debates as a first step towards a more explicit discussion of water in terms of justice (Joy et al., 2014). It is globally acknowledged that the human right to water is indispensable for leading a life in human dignity and that it is a prerequisite for the realization of other rights. While the dimension introduced in the world debate by the United Nations Declaration on Human Rights to Water and Sanitation has recognized access to drinking water and sanitation as a human right (UN, 2011), it is clear that access to water must also be discussed in relation to the scarcity concept, with access to water being a human need and the satisfaction of that need a key political objective.

The Millennium Development Goals (MDGs) drove a global effort to tackle the indignity of poverty by establishing measurable, universally-agreed objectives for tackling extreme poverty and hunger, preventing deadly diseases, and expanding primary education to all children, among other development priorities. More than 1 billion people were lifted out of poverty, child mortality dropped by more than half, and the number of out of school children also declined by more than 50%m since 1990, and since 2000 HIV/AIDS infections have fallen by almost 40%. There were, however, valuable experiences and lessons from the MDGs with which to begin work on new goals (UNDP, 2019).

Action has been also taken at regional level, for example in Europe, where political agreement among scientists, researchers and activists for water rights was reached, and it was considered that the 'access to this general interest equity or value must be recognized and guaranteed to all, as citizens' social rights'. Several earlier movements towards this attempt can be referenced in a framework that considers water as an 'essential good' and a 'human right' (Sadler, 1987; Petrella, 1998; Morley, 2010). In 2005, the European Declaration for Water that was symbolically signed by 100 researchers and stakeholders in Madrid, stated in 2005 that the 'availability of quality water in unlimited quantities 24 h a day and 365 days a year for multiple uses and at extremely reasonable rates, beyond merely satisfying the human right to a basic share of drinking water, is indeed a conquest of public health, welfare and social cohesion' (Arrojo et al., 2005).

One of the lessons from the previous failure of fully accomplishing the MDGs was the need to focus more directly on water and sanitation. Despite efforts under the MDGs, and the recognition of human rights to water and sanitation in 2010, the WHO/UNICEP Joint Monitoring Programme for Water Supply and Sanitation (JMP)[1] reported in 2015 that 663 million people still did not have access to improved water sources and more than 2.4 billion still lacked basic sanitation services (WHO/UNICEF, 2015). Clearly more needed to be done. The World Health Organization (WHO) suggests that the minimal amount required is 50 L per resident per day. This water needs to be also healthy to the extent that is freed of microorganisms, chemical substances and radiological dangers that constitute a threat for human health. Furthermore, water and sanitation must be affordable to the extent that a home's economy cannot be affected by getting it. The United Nations Development Program suggests that the cost of water should not go over 3% of a home's income (Organización de las Naciones Unidas- ONU, 2016).

The Sustainable Development Goals (SDGs) were born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012 (UNDP, 2019), and on September 25, 2015 Member States of the UN unanimously agreed to *Transforming our world: the 2030 Agenda for Sustainable Development.* The Agenda is "a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom." In adopting the 2030 Agenda for Sustainable Development, Member States resolved to "end poverty in all its forms", to take bold and transformative steps to "shift the world on to a sustainable and resilient path" and to ensure that "no one will be left behind". The Agenda established 17 SDGs with 169 global targets addressing social, economic and environmental aspects of development.

While most, if not all, of the SDGs relate to water in some way, SDG 6 directly aims to *"Ensure availability and sustainable management of water and sanitation for all"*. Member States subsequently agreed on targets for SDG 6 (and all SDGs), and those targets address Water, Sanitation and Hygiene (WASH) services, increasing treatment, recycling and reuse of wastewater, improving efficiency and ensuring sustainable withdrawals, and protecting water-related ecosystems as part of an integrated approach to water resources management (UN, 2011). The establishment of SDG 6 reflects the increased attention on water and sanitation issues in the global political agenda (UNWater, 2018). The JMP now has responsibility for monitoring and reporting on SDG 6 against a range of global indicators identified by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDG, 2016).

Water is a unique source of life, comparable only with air, and without which human beings cannot survive. Falkenmark allocated to water four critical functions: health, habitat, transport and production, all of which have both ecological and economic components. Smith (2009) extensively discussed the *sui generis* nature of water, the path of different countries and how legal dispositions have been establishing the government's sovereignty over the water resources. Through a summary of cases, he defends that public-ownership consensus over water is a longstanding, persistent and global phenomenon (Smith, 2009).

There have been many discussions regarding the nature of 'water' and 'water resources', and how these should be considered within the General Agreements on Tariffs and Trade (GATT[2]). Bryant Smith argues that GATT cannot apply to water as it would to a 'commercial good', since water resources belong to the public, that states establish use rights not ownership, and that use rights are too abstract to be a 'product' for consideration under GATT. In short, Bryant defends that it is for states to determine the scope of their public ownership through management of use rights (Smith, 2009). This is also the understanding in many regulatory or legal frameworks, for example the European Water Framework Directive states that "*water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such*" (European Commission, 2000; point 1 of the preamble).

This paper explores the relationship between the human rights to water and sanitation, the Sustainable Development Goals, and the need to rethink how tariffs for water services help or hinder the delivery of a broad range of societal objectives, including human rights and sustainability. It is not intended to exhaust the field for discussion, or to even try to explain or give absolute solutions. On the contrary, it aims to challenge some assumptions, ask some questions, contribute to the discussion, and suggest some answers that can be adapted for each situation and context.

Two key questions emerge: (i) What are the rights that apply in these circumstances and who is responsible for addressing those rights? (ii) How can the viability of the water service system be maintained without imposing dramatic price increase, and without compromising the social and human right to water in good quality and affordable conditions? We argue that human rights to water and sanitation, and the tariffs that are applied to them, should not be addressed as technical problems but rather as social and political issues of justice.

[1] The WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (WASH) has produced regular estimates of national, regional and global progress on drinking water, sanitation and hygiene (WASH) since 1990.

[2] The General Agreement on Tariffs and Trade (GATT) is a legal agreement whose overall purpose was to promote international trade by reducing or eliminating trade barriers such as tariffs or quotas. First discussed during the United Nations Conference on Trade and Employment, it was the outcome of the failure of negotiating governments to create the International Trade Organization (ITO). GATT was signed by 23 nations in Geneva on 30 October 1947, and took effect on 1 January 1948. It remained in effect until the signature by 123 nations in Marrakesh on 14 April 1994, of the Uruguay Round Agreements, which established the World Trade Organization (WTO) on 1 January 1995.

2. The human right to water and sanitation and the Sustainable Development goals

Access to water and sanitation are recognized by the United Nations as human rights, reflecting the fundamental nature of these basics in every person's life. The right to water entitles everyone to have access to *sufficient*, *safe*, *acceptable*, *physically accessible* and *affordable* water for personal and domestic use. The right to sanitation entitles everyone to have physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, and socially and culturally acceptable and that provides privacy and ensures dignity. These rights have been further defined through various dialogues, with a summary presented in Box 1 (UNDESA, 2014).

There is clearly a strong link between the SDGs and the human rights to water and sanitation through the targets and indicators for SDG 6 (Box 2). Critically, these targets and indicators not only relate specifically to water and sanitation services, but also to creating an environment conducive to water and sanitation services, such as effective, efficient and integrated water resource management.

Box 1. Definition of human rights to water and sanitation

Sufficient	The water supply for each person must be sufficient and continuous for personal and domestic uses. These uses ordinarily include drinking, personal sanitation, washing of clothes, food preparation, personal and household hygiene. According to the World Health Organization (WHO), between 50 and 100 liters of water per person per day are needed to ensure that most basic needs are met and few health concerns arise.
Safe	The water required for each personal or domestic use must be safe, therefore free from micro-organisms, chemical substances and radiological hazards that constitute a threat to a person's health. Measures of drinking-water safety are usually defined by national and/or local standards for drinking-water quality. The World Health Organization (WHO) Guidelines for drinking-water quality provide a basis for the development of national standards that, if properly implemented, will ensure the safety of drinking-water.
Acceptable	Water should be of an acceptable color, odor and taste for each personal or domestic use. [...] All water facilities and services must be culturally appropriate and sensitive to gender, lifecycle and privacy requirements.
Physically accessible	Everyone has the right to a water and sanitation service that is physically accessible within, or in the immediate vicinity of the household, educational institution, workplace or health institution. According to WHO, the water source has to be within 1,000 meters of the home and collection time should not exceed 30 minutes.
Affordable	Water, and water facilities and services, must be affordable for all. The United Nations Development Programme (UNDP) suggests that water costs should not exceed 3% of household income.

Box 2. Targets and Indicators for SDG 6 - *Ensure availability and sustainable management of water and sanitation for all*

Target 6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all
Indicator 6.1.1	*Proportion of population using safely managed drinking water services*
Target 6.2	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
Indicator 6.2.1	*Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water*
Target 6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
Indicator 6.3.1	*Proportion of wastewater safely treated*
Indicator 6.3.2	*Proportion of bodies of water with good ambient water quality*
Target 6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
Indicator 6.4.1	*Change in water-use efficiency over time*
Indicator 6.4.2	*Level of water stress: freshwater withdrawal as a proportion of available freshwater resources*
Target 6.5	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
Indicator 6.5.1	*Degree of integrated water resources management implementation*
Indicator 6.5.2	*Proportion of transboundary basin area with an operational arrangement for water cooperation*
Target 6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
Indicator 6.6	*Change in the extent of water related ecosystems over time*
Target 6.A	By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
Indicator 6.A.1	*Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan*
Target 6.B	Support and strengthen the participation of local communities in improving water and sanitation management.
Indicator 6.B.1	*Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management*

In its first update on progress on drinking water, sanitation and hygiene, the JMP reported that 844 million people lacked even a basic drinking water service and 2.3 billion people lacked a basic sanitation service in 2015 (WHO/UNICEF, 2017). The JMP's second report in 2019 focuses on inequalities between and within countries and reveals populations most of risk of being left behind (WHO/UNICEF, 2019). It notes that by 2017: (i) the population using safely managed drinking water services increased from 61% to 71%; (ii) the population using safely managed sanitation services increased from 28% to 45%; and (iii) 60% of the global population had basic handwashing facilities with soap and water at home.

In terms of drinking water, the 2019 JMP Report found that while 5.3 billion people used safely managed services and a further 1.4 billion used at least basic services, 206 million people used limited services, 435 million used unimproved sources, and 144 million still used surface water directly. Further, 80% of the people lacking even basic services lived in rural areas and nearly half lived in Least Developed Countries

(LDCs). In terms of sanitation, the 2019 Report found that 3.4 billion people used safely managed services and an additional 2.2 billion used at least basic services. However, 627 million people used limited services, 701 million used unimproved facilities, and 673 million still practised open defecation. 70% of people who still lacked even basic services lived in rural areas and one-third lived in LDCs (IBID).

2.1. Water service – a privilege or a right?

The Sustainable Development Goals Knowledge Platform notes that too many people still lack access to safely managed water supplies and sanitation facilities. Water scarcity, flooding and lack of proper wastewater management also hinder social and economic development. Increasing water efficiency and improving water management are critical to balancing the competing and growing water demands from various sectors and users (SDG Goals Knowledge Platform, 2019).

An SDG 6 Synthesis Report on Water and Sanitation was prepared on behalf of UN-Water as an input into the 2018 annual High-level Political Forum (HLPF), at which Member States follow-up and review the 2030 Agenda and its 17 goals (UN-Water, 2018). The report identified the following key messages relating to understanding the baseline status and trends of the global indicators:

- **Extending access to safe drinking water presents a huge challenge.** *Achieving universal access to safe and affordable drinking water means providing basic water services to 844 million people and improving service quality to 2.1 billion people who lack safely managed drinking water services.* (SDG 6 Indicator 6.1.1)
- **Billions of people still need access to basic toilet and handwashing facilities.** *Over 2.3 billion people lack basic sanitation services, 892 million still practice open defecation and 4.5 billion people lack safely managed sanitation services. These will not be eradicated by 2030 with current trends. Only 27% of the population in LDCs has access to soap and water for handwashing on premises.* (SDG 6 Indicator 6.2.1)
- **Improving water quality can increase water availability.** *Worsening water pollution must be tackled at source and treated to protect public health and the environment and to increase water availability.* (SDG 6 Indicator 6.3.2)
- **Agriculture offers opportunities for significant water savings.** *The agricultural sector accounts for nearly 70% of global freshwater withdrawals. Saving just a fraction of this would significantly alleviate water stress in other sectors.* (SDG 6 Indicator 6.4.1; 6.4.2)
- **Implementing IWRM is an important comprehensive step towards achieving SDG 6.** *Integration across the water and water-using sectors is essential for ensuring that limited water resources are shared effectively among many competing demands.* (SDG 6 Indicator 6.5.1)
- **Sustaining water-related ecosystems is crucial to societies and economies.** *The world has lost 70% of its natural wetlands over the last century. Sustaining and recovering water-related ecosystems are vital for societal well-being and economic growth.* (SDG 6 Indicator 6.6.1)
- **Improved international cooperation and more and better use of funding is needed.** *Over 80% of countries reports insufficient financing to meet national WASH targets. ODA funding is important, but so too is stronger domestic financial engagement, including the private sector, and better use of existing resources.* (SDG 6 Indicator 6.A.1)
- **Public participation is critical to water management.** *Community participation in decision-making can yield many benefits, but better means of measuring quality and effectiveness of such participation are needed rather than just relying on quantity of engagement.* (SDG 6 Indicator 6.B.1)

2.2. Connecting human rights to water and sanitation, agenda 2030 and other societal objectives

As far back as November 2002, the Committee on Economic, Social and Cultural Rights noted that in addition to the human right to water being indispensable for leading a life in human dignity, "It is a prerequisite for the realization of other human rights" (CESCR, 2002). The 2030 Agenda for Sustainable Development reinforce this link between water and the achievement of a wide range of human rights and broader societal objectives. It lists rising inequalities, natural resource depletion, environmental degradation and climate change among the greatest challenges of our time, and recognizes that social development and economic prosperity depend on the sustainable management of freshwater resources and ecosystems (UNWater, 2018). In doing so, it highlights the integrated nature of SDGs and the central role of water and sanitation services in the achievement of Agenda (2030).

The key messages demonstrate that the provision of water and sanitation services, and the water resource management that underpins them, are a key to achieving the broad aims established in Agenda (2030). This, in itself, reflects the position of these activities as not only services in their own right, but as a means to an end for other objectives.

The provision of water and sanitation is a community service, and as such, it should aim to help achieve as wide a range of public policy objectives as possible.

Water services should be designed and managed to:

1. Deliver the human rights to water and sanitation
2. Directly or indirectly help deliver the broader set of human rights
3. Directly or indirectly help deliver other societal objectives, including but not limited to those identified within Agenda 2030.

This is not, however, always the case. There are many examples where the role of water and sanitation services in delivering against a broad set of societal objectives has been lost or misplaced. Often, policy on matters such as water rights and water pricing/tariffs is at the core of this misalignment. Reducing the delivery of water services, and the broader benefits of water service to the achievement of a range of human rights, for example through inappropriate tariffs or water cutoffs for failure to pay fees, is directly opposing the original intention of delivering water services.

2.3. The price of water and water tariffs: what are we paying for?

When we pay for water, we are usually paying for the service (connection to the network, the meter, and a contribution towards infrastructure maintenance and renewal) – we are not paying for water, since we cannot hold the water we use other than temporarily. At some point, the costs of water resource management that support water services will also need to be met. Water is taken out of the natural system to be delivered to us even if we only consume part of that water. While some of it makes its way back into the natural system (e.g. via wastewater or greywater), there were impacts and resource management costs associated with delivering it to us. The costs of the water we consume (e.g. drinking and cooking), the water we use (e.g. bathing), the ecological costs of taking water from the natural system (e.g. reduced recreational fisheries or amenity value), of returning water to that system (e.g. poorer quality, different location), and the costs of water resource management (e.g. policy and planning) that supports water services (and other water uses) should all be clearly identified. The tariffs that are set for water services should not just be determined in order to recover the costs of water services, but rather should reflect the importance of water services in delivering the things we identified in 1, 2 and 3 above: human rights to water; other human rights; and other societal values. That is, governments should set tariffs in a way that supports, and does not impede the achievement of those three key aims. This will require either a system of cross-subsidies (recognizing the benefits of water services to the achievement of a range of societal objectives, including human rights), or a system of rebates for the poor which ensure their basic human rights are maintained and other societal objectives are achieved Failure to one, the other, or a combination of these approaches which leads to loss of access for water and sanitation services is a failure to deliver on human

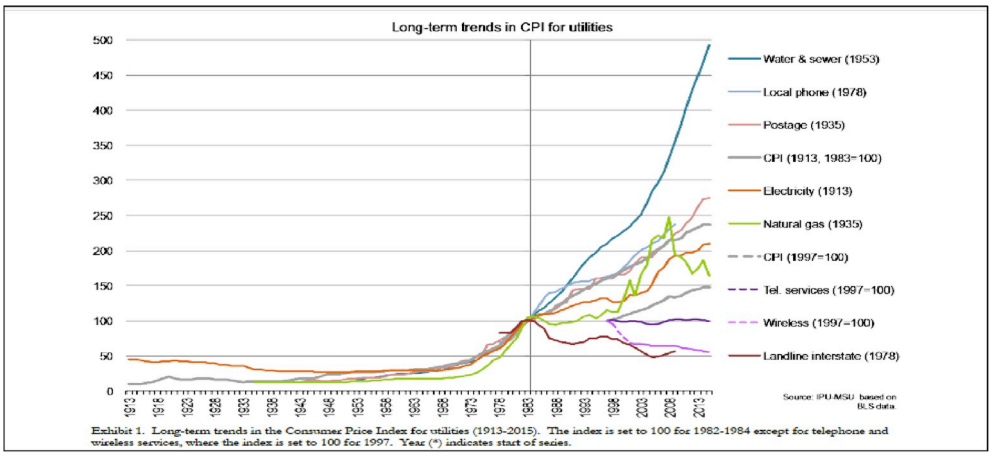

Fig. 1. Long-term trends in Consumer Price Index for utilities in the US (IPU Research Note, n.d.).

rights obligations.

Instead, we see many examples where water tariffs are set so high that they are resulting in a failure of Governments in delivering on their human right obligations. In the United States for example, to refer to a paradigmatic case, water bills have exceeded inflation for many years (Adler, 2016). The data from the Consumer Expenditure Survey shows that water expenses have grown much more sharply than other household utilities, such as gas and electricity, over the last 30 years. The National Consumer Law Center notes that from 1990 to 2006, water and wastewater bills increased by 105.7% in the United States, while household income increased by only 61%. Adler cites Jones and Moulton (2016), which shows that clean water was getting more expensive in cities across the country, and in some cases, far more expensive than what poor residents could reasonably afford for what should be a basic human right (Jones and Moulton, 2016). Official data[3] published also in same year (IPU Research Note, n.d.) reveals that the prices for water and sewer maintenance continue to rise at a rate much higher than the overall rate of inflation (Fig. 1).

Making water affordable may become difficult when the causes of rising costs are real. But it shouldn't be impossible. In the majority of countries shutoffs of water services for non-payment are not allowed. For example, Belgium, France, Russia, Scotland, and The Netherlands have banned water shutoffs (Jones and Moulton, 2016). Adler (2016) refers to several solutions proposed in the US by Jones and Moulton (2016), including prohibiting water shutoffs for non-payment by low-income households or those with sick, pregnant or nursing family members, and recommending water utilities charge less than 2.5 percent of each family's income. This would be consistent with the WHO recommendation that such services should not exceed 3% of income.

Existing laws and regulations in many countries still allow industrial, commercial, and agricultural interests to pollute drinking water resources without paying for the costs of mitigation. This is the case of the US, when in 2016 agricultural pollution, which has been largely unregulated by state and national government, was a primary source of nitrates that are harmful to human health in excessive quantities. In cases where significant agricultural exemptions are in place, like in Iowa that allows drinking water to be tainted, increasing costs are imposed to water consumers (Jones and Moulton, 2016). Another fundamental problem is also that municipalities tend to treat water as a *pay-as-you-go* product, rather than a public good supported through tax revenue (Adler, 2016).

Water is not a luxury, it is a necessity. Air, water, food, shelter and sleep are considered the five essentials for human life. And, while we might last a few weeks or even more than a month without food, without air our time is measured in minutes and without water or other liquids we have just days. To stop drinking water or other liquids is not an option, and lack of water for hygiene or household tasks can lead to social problems. Despite this reality, failure to pay a water bill comes with real consequences, for example, for the more than 33,000 Detroit water account holders which were cut off in 2014, for example (Adler, 2016).

Understanding and challenging water injustices require conceptual tools to recognize the power and politics of water use, management and governance (Boelens et al., 2018). Boelen criticizes the excessive reliance on market forces and forms of '*water expertocracy*', with subsequent impacts on land and water degradation, and profound implications regarding water rights and justice. We also agree that it is increasingly clear that water scarcity and insecurity are not so much related to the absolute availability of fresh and clean water, but rather are expressions of how water, and water services, are unequally distributed among societal groups (Boelens et al., 2018).

The so called 'water crisis' is very often less a consequence of effective scarcity, and more a result of failed water projects due to wrong policies and corruption (Boelens et al., 2018). Boelens and Zwaarteveen also referred previously to how the mainstream water policy community tends to avoid scrutinizing the root causes of water problems, and prefers to blame the victims: local water user groups, communities and their "chaotic, inefficient plural rights systems". Later, Hommes and Boelens argue that the thirst of expanding cities and industries are satisfied in many regions of the world at the expense of rural communities and smallholder families (Hommes and Boelens, 2017). Going further, these researchers affirm that supply- oriented engineering projects that divert water from increasingly distant rural areas to urban areas are many times justified by references to the Human Right to Water, the SDGs of ensuring safe drinking water access for all, and the national importance of megacities (Hommes and Boelens, 2017). This can also be discussed under what Joy et al. define as 'dispossession' of water of some groups in favour of others. State-supported forms of dispossession may happen through changes in the prioritisation of water uses, where policies and priorities can benefit drinking and domestic uses, agriculture or industry in different order (Joy et al., 2014).

On the other hand, isolating a specific water issue often misses the broader connections that tie peoples, places, policies and ecologies in far-flung places (Sultana, 2018). For that reason, one cannot argue that a unique decision has unique consequences. The land-water nexus, the territorial nature of water occurrence, the need to integrate holistically all uses and impacts, the need for transparency and public awareness of all the political decisions taken, and its effects in each group of citizens,

[3] For more information and data visit the U.S. Department of Labor, Bureau of Labor Statistics - http://www.bls.gov/cpi.

stakeholders and communities are all interrelated (Camkin and Neto, 2017).

2.4. The role of water tariffs towards the satisfaction of the human rights and basic needs

There are two ways to achieve social equity and affordability in urban water pricing: tariff structure policy and social income support policy (Chan, 2012). For tariff structure policy, Chan argues that water should be charged at a very low price for the essential amount of water for drinking, food preparation, domestic cleaning, and sanitation purposes. To achieve social equity, it is generally accepted that increasing block tariffs (IBT), or lifeline tariffs with a very low price for the first block of water consumed, are the best system. Therefore IBT has become a common water tariff structure among OECD countries. However, policy research by the World Bank in 2010 concluded that the equity objectives of the IBT structure were not met in many countries through this system because the subsidy to the lowest tariff-block does not benefit the poor exclusively. On the other hand, the minimum consumption charge is often burdensome for the poorest customers, and many poor households cannot even afford a connection to the piped water network, which is often a barrier to expansion for utilities. This is the reason why many countries have begun to subsidize household connections (Banerjee | World Bank, 2010). Mitchell and Chesnutt (2009) proposed alternative conservation-oriented water rate structures, stressing that water rates can be an extremely valuable public policy tool, for example in a drought situation. They argued that water rates can be more than a means of meeting utility revenue requirements. Water rates can be used to communicate to water users the private and social costs of water development (Mitchell and Chesnutt (2009)).

It should be recognized that the right to water is based on water justice. And water justice is based on principles of fairness, equity, and participation (Sultana, 2018). How do these principles apply water when some cannot fulfil their basic needs, or when water access becomes dependent upon payment of fees, and can be denied for failure to pay them, regardless of affordability? In terms of its role in human survival, the urgency of access to water is more like air than any of the other essentials: food, shelter and sleep. Arguably, paying for the minimum essential needs for water is like paying for the air we breathe. And that is the core reason that water should not be seen as a commodity, or a commercial good. It is important, therefore, to separate the minimum amount of water to satisfy our basic need from the use of water for other objectives. And to clarify that we need to pay for the services of water and sanitation, through wise and fair tariffs.

Following the release in 1999 of a landmark OCED study there was a significant shift in perceptions. That global review of water and sanitation services, their coverage, metering issues, and tariff structures, found that most countries, both developed and developing, set water prices below the economically efficient level (OECD, 1999; Chan, 2012). Consequently, many water and sanitation service providers held a financially unsustainable position, with the revenue unable to cover the cost of provision. Additionally, they faced increasing water scarcity, water-use conflicts and rising water pollution, requiring a new approach to policy recognizing supply constraints (Chan, 2012). Urgent global reform to urban water pricing was recommended (UN, 2011; Banerjee | World Bank, 2010; OECD, 2003), otherwise, the water-related MDGs would be out of reach. The policy response in developed countries was substantial, and a new OECD survey in 2010 confirmed that most OECD member countries have since reformed their water pricing structures and raised prices significantly (OECD, 2010).

The 1999 OECD study did a great service in identifying the problem of unsustainability in water services, and the OECD's 2010 survey clearly identified the response in developed countries. The juxtaposition of the problem, and the response, clearly demonstrates the key issue – rather than access to water services being viewed as a fundamental human right and responsibility of the states, water was treated as just another commodity for which the price of delivery should equal (or exceed) the costs of doing so.

Less developed countries face a serious challenge of financing future development projects while maintaining their current infrastructure at the same time (OECD, 2015). However, developed countries also presents serious water problems, including growing uncertainty on the future availability of water resources due to the competition between different water users, natural disasters, and climate change. The basic difference between the water challenges of developing countries and developed countries only lays in the urgency of the answers that are needed (Cañez Cota, 2018). Grounded on the fundamental principle that clean drinking water and adequate sanitation are fundamental to the well-being of individuals and society as a whole, Chan refers to an estimation of a social benefit of between US$5- US$46 for each US$1 invested in improving water and sanitation services in developing countries. It seems clear that the social benefits of providing water free of charge significantly exceed the cost. This was once a commonly held rationale for providing water for free or lifeline (i.e. low initial price) tariffs for water services (Chan, 2012), but the reality is that while piped-water and wastewater systems bring productivity, health, and environmental benefits, these cannot be quantified (World Bank, 2010).

A key question, therefore, is how to maintain public policies that defend the public right to water and sanitation and the operation of services that ensure the long-term functioning of the infrastructures, in particular where private investment is also involved?

From a review of examples from various regions of the world, Massarutto (2012) concluded that in all cases, decisions concerning water services have ultimately became a political issue. It is our view that decisions that impact on human rights to water and sanitation should not be left to water utilities alone, either government owned/operated or private. States and their Governments are obliged to ensure the human rights to water and, therefore, should retain control over such decisions to ensure those obligations are met for all citizens and everywhere. Meeting these obligations may also require or include some form of cross-subsidisation. This is already done in existing systems such as 'social tariffs' implemented in several countries, and it should always be a matter to be decided at a national policy level as part of Governments' broader consideration of social justice across all income levels.

2.5. Water is a public good – general approaches around the world

In today's world, water is unambiguously primarily a public good. In a 2009 survey, Smith analysed domestic water laws in forty-four countries, and concluded that a significant part of the water resources belong to the state, the nation, or the people. In this survey he identified no countries that disavowed such public ownership. According to the survey, European countries, for example, had moved "either to abolish or to restrict the concept of private ownership of water, and to extend government control over all water uses and activities." France declared all water resources to be a shared asset of the nation in 1992, and Italy declared all water resources to be public in 1994. With the exception of small water bodies in Russia, Estonia, and Lithuania, all water resources in the countries of eastern European are public (Smith, 2009).

In Asia and the Pacific, the situation is similar. In Australia, federal states have largely abandoned the riparian doctrine in favour of a larger role for government management (Smith, 2009). And, rather than following economic rationale and raising prices, authorities in all major metropolitan cities of Australia chose to impose water restrictions in accordance with community opinion pressure towards a more equitable way of sharing responsibility for conserving water (Chan, 2012). The Chinese state owns, as public property, all surface-water and groundwater resources. However, its 2002 water law provides that "*the provisions of international treaties concerning water shall prevail over those of the water law, unless express reservation has been made.*" According to Smith, water laws of other countries in Asia have been influenced by French, German, Spanish, and U.S law. For example, the Philippines and

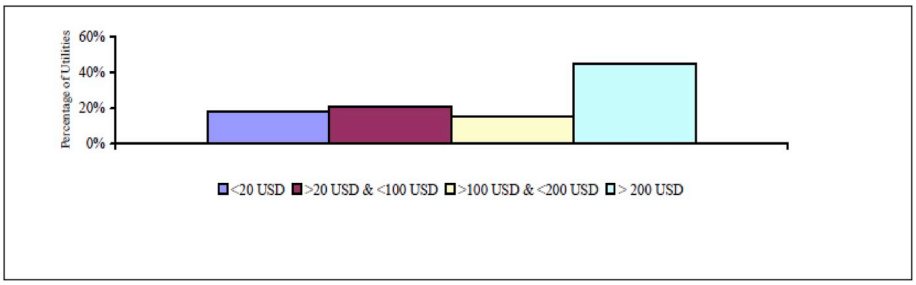

Fig. 2. Variation of costs in Utilities operating in Sub-Saharan Africa (World Bank, 2010).

Taiwan incorporate some elements of the doctrine of appropriation. Under Japanese law, "*watercourses belong to the public domain" and "the water of a river cannot be made the object of a private right*." Cambodia, Laos, and Vietnam have declared their water resources, respectively, to be public, to belong to the state, and to belong to the national community, even though there is an abundance of water in these civil law countries. The Indian constitution also grants ownership of water to its federal states. The Indonesian constitution declares that water is '*a gift of Almighty God, and shall be controlled by the state and utilized for the greatest welfare of the people in a just and equitable manner*.' In the Middle East most countries recognize Islamic customary water law, which has also influenced Afghanistan, Bangladesh, and Pakistan. Jordan has declared all waters to be state property (Smith, 2009).

In Latin American, countries generally assert public ownership over "*all water resources everywhere. In Panama, even meteoric waters are public*" (Cota, 2018). Groundwater has a more ambiguous status in some South American countries, but it explicitly belongs to the public domain in Argentina and Mexico, among others. Water is national property in Chile, although riparian landowners can own minor internal lakes and springs. Ecuador's civil code declares water to be a "good common to all, " and its water act declares all waters, whether surface or underground, to be "national property for public use." In the Dominican Republic, all waters without exception belong to the Republic, *"and their dominion is inalienable, unlimited, and cannot be restricted. No private right to own water exists, nor any right to acquire ownership of water*" (Smith, 2009).

According to Smith (2009), in most African civil law countries, the communitarian conception of water present in Islamic customary law continues to affect the legal regimes and actual practice in many countries in Africa where all waters are in the public domain, and in some cases water is common to all "*unless it has specifically been brought under government control through legislation or judicial decisions*." Ghana invested the property rights and control of water resources in its president, "*who holds them in trust for the people of Ghana*"; Nigeria water resources lay under the jurisdiction of the country's federal states; Ethiopia constitution establishes as government property "*all resources in the water*."; Egyptian water law reflects a mixture of customary, French, and

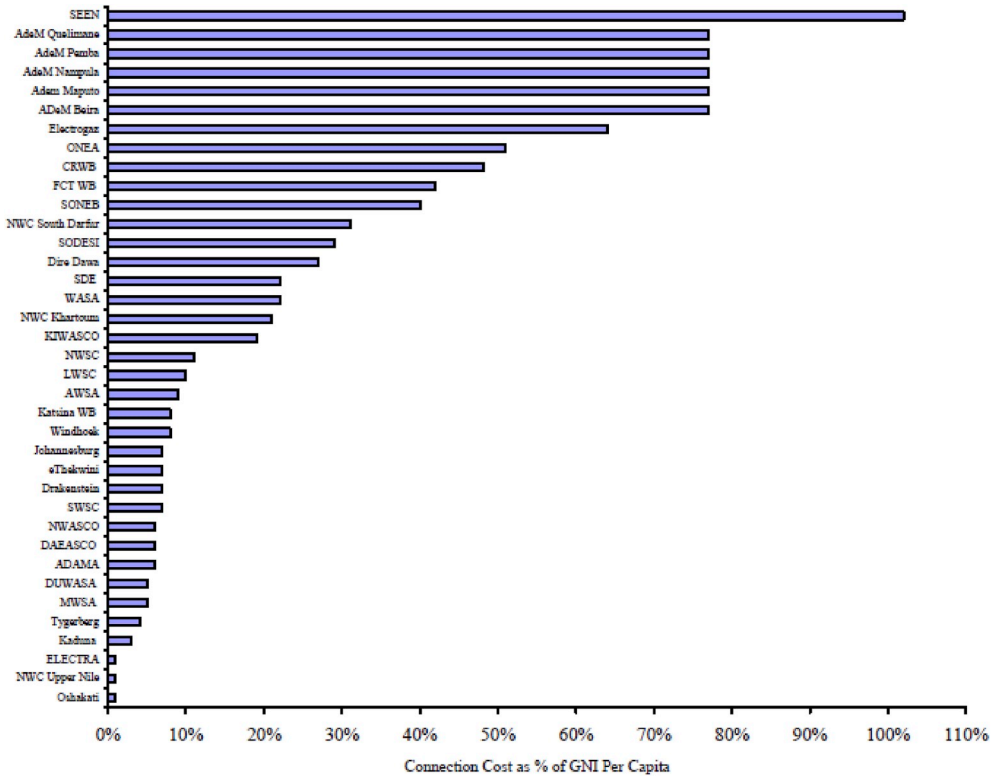

Fig. 3. Connection costs compared to GNI per capita in SSA Countries.

Income, and water as percentage of monthly income

Income (inflation adjusted 2014 dollars for the year)	Households	% of population	% of monthly household income required to pay $824 water bill
Less than $10,000	54,334	21%	Over 8% for $10,000
$10,000-14,999	25,962	10.2%	Over 5.5% for $15,000
$15,000-24,999	42,888	16.9%	Over 3% for $24,999
Income (inflation adjusted 2014 dollars for the year)	**Families**	**% of population**	**% of monthly household income required to pay $824 water/sewer costs**
Less than $10,000	24,561	16.9%	Over 8.2% for $10,000
$10,000-14,999	12,257	8.6%	Over 5.5% for $15,000
$15,000-24,999	22,926	15.8%	Over 3% for $24,999

Source: US Census

Fig. 4. Water monthly costs as % of income of families in the US (Source: Jones and Moulton, 2016; CENSUS 2014)

British law that emphasizes government control; and South Africa's national government holds the country's water as a public trustee. (Smith, 2009).

3. Examples of deviations from the original objectives of water services

In some African Countries, the costs of connecting to the network can prove to be a significant barrier to consumers. According to the World Bank Policy Report of 2010 comparing 26 utilities for which information on connection charges is available, the charges varied widely (Fig. 2), from about US$6 in the Upper Nile in Sudan to more than US$240 in Niger, Mozambique, and Cote d'Ivoire. In South Africa, connection charges could reach more than US$300 in Drakenstein, eThekwani and Johannesburg. Even among the water utilities in the same country, connection costs were very variable (World Bank, 2010).

The comparison with Gross National Income (GNI) per capita suggested that the connection charge could be quite high, and on average across Africa the connection charge is 28 percent of GNI per capita (Fig. 3). In South Africa and Namibia, though the connection cost is high in absolute terms it represents a low percentage of the GNI per capita. In the five water utilities in Mozambique in the period analysed, however, connection charges were more than 75 percent of the GNI per capita. And in countries such as Niger, the World Bank report found that the connection charge could represent more than 100 percent of the GNI per capita (World Bank, 2010).

In the words of several researchers and defenders of the human rights, an example of disconnection in the Northern Hemisphere is what happens in some cities of the United States. A report published under the Unitarian Universalist Service Committee (USIC) in 2016 states that "*the US is well behind the curve when it comes to recognizing, protecting, and fulfilling the human rights to safe drinking water and sanitation. Dozens of countries — from Ecuador to Bolivia, Tanzania to South Africa, India to Kazakhstan, and beyond — have enshrined the human right to water in their national constitutions, framed it within national legislation, or judicially recognized these rights. Many countries have banned disconnection of water and sanitation services because of an inability to pay as a violation of human rights*" (Jones and Moulton, 2016).

The UUSC reports that investigation of mass shutoffs in Detroit and Baltimore show unequal impact on residential customers and commercial customers. This report also calls attention to the fact that poorer households are disproportionally impacted by the water tariffs as a proportion of their monthly income (Fig. 4).

The United States has thus far failed to provide protections for the rights to water and sanitation in domestic law and policy. However, U.S. advocates have begun an effort to adopt national legislation that will set a standard for affordability (Jones and Moulton, 2016). The UUSC recommendations[4] made in 2009 for the US, after the mass water shutoffs in Detroit and water affordability crises throughout the country, include several points that can be useful in other contexts, which we summarise as:

i) To ensure that any notice of decisions on rate increases, changes in policies, disconnections, drinking water quality, and permitting the discharge of pollutants into local drinking water sources, are done in due time, and using clear and appropriate language, allowing also time for consultation and appealing decisions, as well as remedies against negative impacts.
ii) Both urban and rural consumers have a right to a hearing, representation, appeal, remedy, and payment plans; they must also have access to financial assistance for piped service and well contamination.
iii) All levels of government and service providers must adopt policies prohibiting discrimination and discriminatory impacts, and promote universal access on a non-discriminatory basis.
iv) All law and policy criminalizing lack of access to water services of any person, including the homeless, must be repealed, and sentences, fines, and criminal records must be repaid, forgiven, and expunged.

Another example comes from Australia, with poorly designed tariff policies in most Australian cities, except Sydney, where water utilities employ IBT pricing and eligible low income households (usually existing social security recipients) receive concessional rates, in the form of both

[4] Patricia Jones and Moulton, 2016, The Invisible Crisis: Water Unaffordability In The United States, By Patricia A. Jones and Amber Moulton - Unitarian Universalist Service Committee, May 2016, p. 24. UUSC. Available at: http://www.uusc.org/sites/default/files/the_invisible_crisis_web.pdf.

fixed supply fees and volumetric charges up to a high threshold. However this arrangement is neither efficient nor equitable due to the complex eligibility criteria. Consequently, many eligible households do not participate in the current concession scheme. To avoid this perversity, in the United Kingdom, where a similar system operates, income support for water bills is assessed on a case by case basis and assistance payments typically lag economy-wide inflation and rising water prices (Chan, 2012).

4. Conclusions and recommendations

The last decades were impacted by a lack of both public and private financial resources in many sectors of public policies. In many cases this fact reinforced the lack of clear principles for government (short cycles, and lack of transparency) and governance (weak implementation of co-responsibility). Within this context of seemingly permanent crisis, there are, however, opportunities for change. Some of the major drivers for change are:

- The need for more effective and transparent use of public resources;
- The need for organizational learning to deal with complexity and uncertainty;
- The need for better and inclusive dialogue among all social actors; and
- The need to focus on public interest and the quality of services from both governmental agents and the private sector.

Social equity was traditionally one of the main objectives of (urban) water pricing, although policy design today focuses increasingly on different goals: economic efficiency, financial sustainability, and cost recovery. Equity and affordability concerns have diminished in prominence and, by and large, the dominant view globally is that water prices must increase to fund the expansion of water services delivery networks (Chan, 2012). To recover the original principle of water justice (and combat water poverty), and to address the need for both development (including economic equity), and social sustainability (including social equity), suggestions targeting the areas of action in public policies, as well as governance, are presented in the following paragraphs.

This paper is not intended to exhaust the field for discussion, or to even try to explain or give absolute solutions. On the contrary, it aims to challenge some assumptions, ask some questions, and contribute to the discussion, and to suggest some answers that can be adapted for each situation and context.

4.1. Better governance and better government – social evaluation of public policies

International water organizations agree that the water crisis is a governance crisis and not a technical one (Cota, 2018). Today, in spite of large technological advances, the matter of inequality continues to be a structural problem of contemporary society. This inequality has much to do with corruption and bad governance (Banco Mundial, 2017; Cañez Cota, 2018). It is, therefore, necessary to think in terms of governance. Doing so does not mean denying the importance of economic, technical and scientific knowledge, but it is important to look for the right balance between administration and participation beyond the dark boxes for producing policies (Pardo, 2018). Instead of considering governance as a new paradigm, it should be seen as a method for public action to surpass the adverse results that may take governments and their public administrations to very difficult dilemmas, while generating effective solutions with wide social impact (Pardo, 2018). Effectively, it is the governance framework – and not economic capability – that determines the effectiveness of water policies (Cañez Cota, 2018). On the other hand with regards to the rights to water, paying attention to the mechanisms of governance might be recommended instead of arguing axiomatically in favour of this right (Pardo, 2018).

Greater social sustainability can also be developed by creating added value for communities through more adequate criteria for performance evaluation of the public policies, beyond economic efficiency. Better governmental action will also promote added value by achieving more effective social and environmental sustainability with territorial reference and comprehensive approaches, addressing adaptive capacity and resilience to unpredictable external factors such as demographic, economic and climatic changes.

4.2. Institutional strengthening, agency and policy integration for a holistic, inclusive approach

A broader perspective and holistic praxis in water management for dealing with complexity demands both a higher-order capacity from governmental or management agencies, and an integrated approach in territorial, development and water planning (Neto, 2010, 2016, 2018; Neto & Henriques, 2018).

The first – higher order capacity from governmental or management agencies - can be built through: (i) effective reform of organizational systems with serious investment in institutional change; (ii) critical capacity building; (iii) transdisciplinary approaches; (iv) adaptation and learning inside institutional systems; (v) increased capability to address multidimensional aspects and complexity; (vi) increased agency capacity; and (vii) increased ability towards social validation of public policies (Neto, 2010; Neto and Henriques, 2018).

The second – an integrated approach in territorial, development and water planning - is (or will be) grounded on: (i) water governance facing global changes and increasing complexity, with constant and clear reference to the catchment context within the water cycle (from source to the sea); (ii) promotion of sustainable uses of water and land at different scales and institutional levels; (iii) strengthened social perception of the water value, and inclusiveness; (iv) promoting multidisciplinary approaches and transversal skills for technicians and organizations; (v) promoting better planning practices with effective operational 'agendas' more than blueprint plans; and (vi) strengthening the mechanisms of horizontal and vertical policy integration to improve regulatory frameworks (Neto, 2016; Neto, 2018).

4.3. Social sustainability of water tariff systems

To fulfil their responsibilities towards the human rights to water, states must ensure that water tariff systems account for the global context of demographic, economic, and climatic changes and related challenges. Failure to do so will create obstacles to the achievement of that responsibility. Following this main assumption:

- The water cycle needs to be seen in a holistic way, with integrated approaches between water services and water resource planning, along with the land use, and territorial (and environmental) planning.
- All actors are called to play significate roles (governance) towards an active participatory and collaborative action for change. There is an urgent need to clearly consider and address socially induced, economic, and physical water scarcity in diverse situations, which calls for different approaches.
- All policies, plans, programs and projects need to be comprehensive, adaptive and inclusive. The time to develop blind policies, and top-down designed solutions, is past.

Any tariff system needs to be discussed in this context to avoid perversity and deviation from the core objectives and principles of society, such as inclusiveness and equity. This requires the application of contingency and compensation measures. Income support and payment assistance policies, for example, provide an alternative option for achieving social equity and efficient water pricing. "*Well-designed policy may achieve both objectives; poorly designed policy may achieve neither*"

(Chan, 2012).

More specific recommendations were made by Patricia Jones (Jones and Moulton, 2016),[5] and we agree that these should be applied at all levels of government:

a) To have data collection available to the household level on water and sanitation costs, lack of access, as well as the impacts of water shutoffs. This reporting needs to be transparent, written in clear and simple language, and publicly accessible.
b) Ensure universal, non-discriminatory access to safe, affordable drinking water and sanitation for urban and rural consumers and all people experiencing homelessness - by establishing: (i) *affordability standards and programs for safe drinking water and sanitation for urban and rural communities, with costs should not exceeding 2.5%*[6] *of monthly household income for all services; (ii) ban water shutoffs for non-payment when consumers do not have the ability to pay, or at least mandate protection against water shutoffs for low-income children (under age 18), elderly (over 65), persons with disabilities, pregnant and lactating women, and persons with chronic illnesses.*
c) Require regulatory agencies to study and remediate the impact of regulated and unregulated pollution on the cost of water and sanitation for consumers and households.
d) Prioritize and target all water and sanitation funding to those who do not currently have it and vulnerable populations first, followed by other investments as needed.
e) Adopt the human right to water and sanitation in domestic law with clear enforcement mechanisms and remedies.

4.4. Final notes on ways forward to an effective social valuation of water

The difficulty in finding a system of full justice in terms of water tariffs and equity is well documented. For example, despite the prevalence of IBT in most water tariff systems, it is questionable whether this pricing structure achieves equitable outcomes, according with several studies and agencies' statements (Cañez Cota, 2018; Chan, 2012; and World Bank, 2010). IBT does not account for household size, and therefore may end up punishing low income households. On the other hand, higher income households with few members may benefit from the IBT structure. To achieve more equitable outcomes, some countries (e.g. Belgium and Malta) adjusted their IBT structure for household size. However, the downside is that substantial administrative costs are incurred to maintain databases on household sizes and to monitor and enforce compliance (Chan, 2012). Overall, a policy package where economic efficiency, financial sustainability and social equity are all achieved would combine a well-designed two-part tariff with targeted social policy (Pinto et al., 2018; Chan, 2012).

Our primary recommendation is that the human right to water and sanitation should be adopted in domestic law, with clear enforcement of mechanisms and remedies in diverse contexts and situations. This can be supported by a series of clear principles for action, such as:

- Water services should aim to deliver against through the key objectives:
  - Directly deliver the human rights to water and sanitation
  - *Directly or indirectly help deliver the broader set of human rights*
  - *Directly or indirectly help deliver other societal objectives, including but not limited to those identified within Agenda 2030.*
- Adoption of a public service culture, aiming at the universality of the water services, and long-term consideration of water policies.
- Defining adequate global funding and tariff policies for the achievement of the broader set of societal objectives, and designed along with compensation and contingency measures.
- Delivering water with high quality complying with social, environmental and economic criteria in all situations.
- Operators of water services to be considered as environmental, local and regional development agents.
- Adopting open and transparent ways of communicating with citizens and local community associations and representatives.
- Working collaboratively, and inclusively, towards effective social and community control of the services provided

Finally, water rights often express the legitimacy of claims to water use, and also inclusiveness in the water management decision making. Rights need endorsement by an authority that has legitimacy in the eyes of users and non-users and that is able to enforce these rights, usually the government (Boelens et al., 2018).

In reality, however, we are all water uses and the most import right to use is the right to basic water supply and sanitation services. It goes to reason, therefore, that there must be strong mechanisms in place to ensure that the voice, and the cause, of those most vulnerable to missing out on those basic human rights is heard. In considering all water dialogues, all water plans, all water strategies, and all water tariffs, the first question to be asked is whether this will achieve the State's responsibility for ensuring the human rights to water. The second question is whether it will help achieve the State's responsibility for ensuring other human rights. And the third question, is whether it be helping to deliver on the broader set of societal objectives.

There is, in synthesis, a strong sense of the need to recognizing water problems as problems of justice that require a re-politicisation of water. This is the position defended by some researchers, as "*mainstream approaches to water resources, water governance, and legislation tend to normalize or naturalize their – basically political – distributional assumptions and implications*" (Joy et al., 2014). Therefore, an interdisciplinary approach that sees water as simultaneously natural (material) and social is very important. We align our final thoughts with this idea, and we also agree that the matter of 'how' water and the rights to it are distributed, as well as how such distributions are justified differently by different actors at different scales, has important consequences for access, rights, and equity (Joy et al., 2014). This brings us of water to the core question of rights, and to the need to treat water problems not as technical problems, but rather as social and political problems, and in one final word, as problems of justice. Governments are obliged to protect the human rights in access to water and therefore they should retain control over such decisions to ensure those obligations are met – they should not be matters left to be determined by water service providers or regulators of water service providers. Meeting these obligations may require some form of cross-subsidisation, which should also be a matter of national policy and for governments to decide whether this occurs within the water tariff system or through some other mechanism. Such matters should be determined as part of Governments broader consideration of social justice across all social groups and income levels. We believe that this re-politicisation of water issues in general, and of the setting of water tariffs in particular, will help ensure that the responsibilities upon Governments to satisfy the human rights to water and sanitation are clearly met.

[5] *In some major U.S. cities, the cost of household water services has risen over 40% from 2010-2015. Because water costs are rising much faster than inflation and incomes in the United States, this problem will only worsen. Water affordability has reached a crisis level in many U.S. communities, including Flint and Detroit, Michigan, where mass shutoffs have left thousands without water in their homes* (Patricia Jones and Moulton, 2016).

[6] Or max 3% as per the UN recommendation.

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