Assessing the Institutional Setups and the Impacts of Shared Responsibilities in Poor Water Services: A Case Study of Garowe, Somalia

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Abstract

Background: Post-conflict poor water services in the developing counties are caused mainly by the institutional setups and the devastating infrastructures. This study tries to answer the following question: How the institutional setups affect the poor water services in Somalia which couldn't achieve the millennium development goal (MDG) seven.

Methods: Qualitative method was used, by which, in-depth interviews with selected households and key informants' interview were used for data collection. Twenty households were interviewed from seven zones from Garowe city, the administrative capital of Puntland state of Somalia, and seven key informants were interviewed from the government institutions including ministries, agencies and local municipality. Thematic analyses were used, codes were identified and then organized in themes. Detailed readings and translations of the transcribed interviews were used to categorize the themes.

Results: The result showed that the institutions involved in water sector in Puntland were not well organized, the roles and the responsibilities were not clear to the different governmental institutions, the institutions were criticizing each other for deliberately taking responsibility of one and other. This led to a fragmented water sector responsibility which in turn led to a poor domestic water quality and overpriced. While other consumers couldn't afford a drinking water resources at their homes, which forced them to walk long distances and queue for long time to fetch water. Analyzing the current situation showed, that it will be difficult for the country to achieve, the Sustainable development Goal six (target one) under the current institutional setups.

Conclusions: People living in Garowe city don't have safe and affordable water due to inadequate institutional setups. To achieve the SDG goal six (target one), new institutional reforms are recommended in the water sector by which everyone in Puntland can afford a safe drinking in 2030.

Key Words: Water Sector, SDGs Institutional setups, PPP, Water Supply, Post-conflict services.

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Declaration

I, Abdinur Ali Jama, declare, that this thesis is my original work and it has never been presented for a degree in any other university. And all the used data and information have been properly cited.

Signature…… Date 01 august 2018

Supervisor

This thesis has been submitted for the fulfillment of the requirements of the Master of Science, Water Policy track from Pan African University, Institute of Water and Energy Sciences.

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Contents

1. Introduction

1.1. Background

Somalia is still recovering from the civil war that has started in 1990 in the whole country. The civil war destroyed all the infrastructures including water services. Before the civil war the central government was the responsible body for providing water supply, operation and maintenances (Gulled et al. 2006), As a part of the recovery phase, small water entities were locally established to manage and distribute water at regional and state levels. These utilities were monitored by the local government agencies especially in Somaliland and Puntland states.

Public Private Partnerships (PPPs) played a good role in supplying water service to the population. However, the services are very low due many reasons including unwillingness to expand the service, poor water quality and high price of the service. The UNICEF, report of 2015 mentioned that the populations whom have access to safe drinking water reached 32% of the whole country (UNICEF, 2015). While, Gulled et al., (2006), stated that there are poor and non-existence water resources management plans due to many parallel responsibilities in providing water either by construction, management or maintenance, which led to many organizational plans without common goals between the institutions.

Somalia adopted a federal system, which is a bottom up approach of governance in 2004 (Isse, n.d). The federal government in consultation with the federal states adopted national policies including environmental policies (Article 45, 4) (Provisional Constitution of Somalia, 2012), that included water policies adoption.

This research highlighted the areas that hindered the development of water services in Somalia, and how the institutional arrangements blocked the development of the water sector. Furthermore, this research will serve as a baseline for other researches in the water sector due to the lack of independent water related researches in Somalia after the civil war.

This research is crucial for policy and decision making in water sector since it investigated the obstacles that are facing the development of the water sector in Somalia. It will be a good reference for stakeholders and decision makers, who are working towards the achievement of the sustainable development goal six (Clean water for all), in Somalia.

Qualitative research method was used in this research for data collection and sampling, Non-probabilistic sampling methods were adopted, in choosing the research participants have the required information and the knowledge to contribute in the research.

This study contains five chapters, the introduction which focuses introducing the problem and the objectives, the literature review, the used methods, result & discussion and conclusions & recommendations.

1.2. Problem Analysis

As a result of the civil war in Somalia, most of water infrastructures managed by the previous government became out of order. The people started to move to cities for a better life, which have increased the pressure on the already poorly operated infrastructure. The population growth was doubled, especially in the pacified areas of the country (Mohamud, et al. 2006).

In most parts of the country, people depend on groundwater as a major source of water for drinking, cooking, washing etc. which led to a water shortage since the capacity of the service providers couldn't balance the supply and the demand due to the population (UNICEF, WHO, 2000).

Since the country is facing problems like droughts and war against Alshabab(Islamic insurgent group), the intervention of international donors couldn't support improving water supply and sanitation status of the country. (Mohamed et al., 2006). This hindered achieving the MDG goal seven of halving the proportions of people who don't have access to a clean and safe drinking water by 2015.

Somaliland and Puntland regions have tried to re-adjust water supply by establishing local water supply providers including Public Private Partnerships (PPP) which replaced the community managed water supply systems, under long term concessions (USAID, 2010).

Currently, water supply in Garowe is managed by local water company called (NUWACO), which provides water through pipe-lines connected to the households, while it serves as a contractor with PSAWEN under concession agreement.

NUWACO, is the main supplier of the water in this city, but the water they provided couldn't be used for the drinking as it contained high minerals due to lack of the treatment. Groundwater is the only source of NUWACO.

Another company called, ALNA'IM WATER COMPANY, provides treated water through truck and tanks, more expensive than NUWACO's untreated water supply, which makes water unaffordable. People use this kind of water for drinking only.

While the poor and low income households uses surface water that was collected during the rainy seasons by roof water harvesting or from surface water storage constructed by local NGOs, and stored in underground tanks for months to use for all the purposes.

These different types of water sources and uses are indications of the poor water management, lack of clear policies and coordination among the institutions and lack of political interest to serve a safe, affordable and reliable drinking water.

The above-mentioned problems led the country to not achieve the MDG no. seven. Moreover, it will hinder achieving the SDG no. six.

1.3. Research questions

This study answers the following questions:

1. How many institutions are involved in the water sector in Somalia?
2. How the sharing responsibilities affects water sector?
3. What is the role of PPP in the water supply of Somalia?
4. How do the current institutional setups hinder achieving SDG no. six?

1.4. Significance of the study

The current water supply situation is very low both in urban and rural areas in Somalia, which increases child mortality, disease outbreaks in the rural area and the migration from rural areas to the urban areas. Furthermore, water prices are high, especially in the water shortage periods; there is an increase of failures of water projects due to the poor design and management. The main reason behind these problems are the inadequacy structures of the water institutions, poor coordination in sharing responsibilities (which causes poor coordination), and the lack of regulations of the private sectors.

Therefore, this research is very important, since it will contribute to a better solutions for the current water services of the country, it will present the real situation of the water services and how the structures and models of the water authorities affect the water sector, while in same time this research will also focus on how the country can go forward achieving its national and international goals the government committed to be parts of. This research will also shed the light on the main challenges that could block the country to meet the SDG goal six by 2030.

1.5. Statement of the problem

Water is the main driver of the socio-economic development (UNEP, 2010). The vast majority of water on the planet is salty nearly more than 97%, while the fresh water which suitable for human consumptions is less than 3% (UN, 2015). Africa has the least share of the planet's fresh water 9% (UNEP, 2010). Somalia water resources are majorly dominated by surface water mainly Juba and Shebelle Rivers with an area of 810,427 Km^2 (FAO, 2005). But according to (Gulled et al., 2006), majority of the Somali people depends on groundwater for the supply.

Somalia's vision in water and sanitation is to have clean water for drinking and sanitation for all its citizens (NDP, 2015). The united nations in 2015 stated the 17 global development goals to be achieved by 2030, SDG no. 6 aimed to ensure safe water and sanitation for all (ait,2015).

However, according to UNICEF only 32% of total population in Somalia has access to safe drinking water and 39% have access to safe sanitation. The people especially women walk long distances in the rural villages to fetch water, in rural areas the quality of the service is not in the

standards of the drinkable water, the prices are high which make it difficult for poor people to afford, most of the rural areas depend on untreated rain water, which have increased disease outbreaks caused by water borne disease such as cholera and diarrhea, especially in the rainy seasons (UNICEF 2015),

Water demand is increasing in the urban areas due to the internally displaced peoples (IDPs) and the overall population's growth (Gulled et al. 2006), which deteriorates the already poor services. In terms of the international development goals, Somalia didn't achieve the millennium development goals (MDGs) especially goal number 7: "Improving environmental sustainability" where under that goal; one of the targets was to halve the proportions of population without access to safe drinking water and sanitation.

This study will tend to assess mainly the role of institutional setups in the poor water services in Somalia, and the obstacles of improving the water supply situations in urban and rural areas as well to reach SDG goal six.

1.6. General Objective

The General Objective of this Study to:

- Assess the impact of shared responsibilities of different institutions on water sector and its effect on poor water supply and its relationship with achieving SDG goal six (target one).

1.6.1. Specific Objectives

The specific objectives of this study are to:

- Explore the current institutional setups and roles of different institutions for the water sector from national, regional, district and village levels.
- Investigate the effect of the overlapping of responsibilities on the deterioration of the water services.
- Shed light on the roles of public private partnership in improving water supply and compare with community managed water supplies.
- Identify the challenges towards achieving SDG goal six and meeting its target (target 1).

2. Literature Review

2.1. Overview of the world's water resources

Water is one of the resources that affects acheiving of sustainable development, while the proportion of human consumptions is unstably increasing compared to the already diminishing quantity available (UNFPA, 2001). 2.5% of the world's water is fresh and 0.5% of this is available for human consumption by surface or ground water, while the rainfall is erratic in time and space (Northern African and Western Asia have smallest in the world). The income levels of countries also are related to the availability of water, since the richer countries have more water than poor, while they are also more active to invest in water (UN, 2001).

Moreover, the population trend is increasing, the use of water is increasing due to the industrialization and due to the irrigation development but nothing has changed with the quantities of the fresh water (UNFPA, 2001). According to the United Nations, more than 1 billion of the world's populations don't have access to safe drinking water (UN, 2000). In terms of health there are millions of deaths from preventable diarrhea disease (WHO, 1996), where poor and low-income people can't access to the water supply.

In 2000, 44% of the population in Sub-Saharan countries had access to safe water supplies, while East Asia and Pacific have had 67%, minimum improvement has been made since 1990 though water supply infrastructure has been installed (UNDP,_2001).

Poor governance systems and unstable sustainable development has an effect on water resources' quality and availability which in place of that hinders economic and social benefits (UN, 2015). According to (MEA,2005), from 1960 to 2012, the world's GDP was increasing 3.5% each year, due to this the world's freshwater resources have been put in a pressure to meet the demand where this development increased the pollution of the water resources.

The amount of water resources that a country uses is affected by the national water policies and the water scarcity of the countries. The scarcity in water can be a physical (there's no enough water), economical (poor or inadequacy of infrastructure), or institutional (lack of institutions whom can provide reliable, secure and equitable supply of water resources). There also different sectors whom use water for different uses including agriculture, industries and local municipalities. Currently, the agriculture uses the highest share 69%, while the industrials withdraw 19% and the local municipalities' uses 12%.

In Africa the rural water supplies are always lagging behind the urban communities. (UNDP et al., 2015), stated that there is a wide gap in the access to drinking water in Africa, between (rural and urban areas), where the urban areas enjoy a higher access to sustainable drinking water, for Example in Mozambique the percentage of population with safe water supplies increased from 72% to 80% between 1990-2012, while the rural population increased 23.3% to 35%, this shows the gap between rural and urban communities and its almost the same in all African countries.

Nigeria, (NPC,1991), compared the budgetary government expenditure on water since 1962 to 1996, in that study it was unfortunately found that the government expenditure decreased from 11.% to almost 4.5% between 1962-1975, and then gradually decreased by half since 1996. (Niyi et al., 2007), also admitted that the government neglected the rural water supply while it focused on urban areas. 50% of the rural communities in Nigeria have access to safe water supply (National Millennium Development Goals Report, 2005).

At the global level, industries, agriculture and municipalities withdraw 9% of the global renewable freshwater resources. This is an indication, of that below 25% withdrawal threshold, where the line of the physical water stress starts. There are 41 countries that experienced water stress in 2011, this number moved upward from 36 in 1998, ten of these countries withdraw more than 100% of renewable freshwater. When a country reaches this level it starts depleting its renewable groundwater or its conventional sources of water.
Recently, around 40% of the world's population is being affected by water scarcity, which is estimated to increase. The scarcity of the water has negative effect on every continent and the sustainability of natural resources, economic and social development (UN, 2015).

Somalia is endowed with water resources, especially the two permanent rivers of the country, Juba and Shebelle; 14.7 km^3 of water is estimated to be available in the whole of Somalia, which is mainly contributed by the two rivers, while the annual withdrawal rate is around 3.3 km^3 (AfDB, 2014). The water supply is managed by private sector with a little or no support from the government in terms of the service provision, this sector is mainly supported by the international donors, while the public institutions play as a facilitator. At the federal level, the ministry of Energy and Water Resources is solely responsible for managing the water resources of the country.

2.2. Water Status in Somalia

Somalia is wakening from devastated civil war which started in 1990. Due to the civil war the country's way towards the development was completely blocked, the service delivery has been dramatically disappeared due to the lack of maintenance, where the water supply was one of the basic services which have lost its operation nationwide (Gulled et al. 2006).

The water supply service was previously led its management by central government authorities from national level to local and village level. After the civil war it was substituted by local utilities which report to state agencies, however, Gulled et al. (2006), argued that the service of the local utilities didn't meet the increasing demand after the renaissance of peace in most parts of the country due to the increasing movement of population inside the country to urban areas and the return of some people from abroad, which led to deterioration of the previously poor services.

According to (UNICEF,2015), 30% of the population in Somalia has access to improved water supply due to huge efforts done by the international donors. This shows the poor status of water

supply in the country, according to the same report without implementing community water management or private involvement in water supply this level couldn't have been achieved.

In the rural areas, where the water supply is almost very scarce and continuously faces water shortage, due the lack of storage plus the breakdown of the services. Muthusi et al, (2007), stated that for the rural communities to curb the water shortage they decreased the uses of water per day which compromises the hygienic situation. In the same study it has been mentioned that some in regions in Somalia, the rural people use unsuitable water (contaminated) for drinking due to poor awareness and the lack of any other source of water.

Muthusi, et al, (2007), bounded in terms of water management by community, private, but in the case of the community, it is unsustainable where most of the projects always miss cost of recovery in terms of breakdown of equipment's. But in contrary (UNICEF, 2015), their annual report of
Somalia indicated that the community management approach is dependable according to a case of Rabable (Nugal) where UNICEF implemented the emergency project. But in terms of sustainability of the water supply in the rural areas Muthusi, (2007) suggested that private sectors should be given a chance to show their capabilities. While (UNICEF, 2015,) confirmed in its annual report that the establishment of public private partnership is quite successful.

WHO and UNICEF, (2013), reported that 89% of the population in the globe had access to safe drinking water at the end of 2011, while 55% got access to piped water inside their households. Meanwhile it has been forecasted that 768 million people living without access to an improved water supply 344 millions of who reside in Africa. Regrettably, in Africa providing improved drinking water is one the problems the continent is facing, though in many international and national policies and plans, it's one of the first priorities (AfDB, 2015).

But still there is a progress in terms of the coverage of water supply in Africa, according to (AMCOW, 2012), indicated that the process of improvement of water supply paused at 85%, due to the increase of the population, between 2000 and 2010 the growth rate in average was 3.9%, while the access to water supply increased also by 3.9% in that period. In conclusion urban water supply systems are not growing due to: the increase of urbanization, the population growth, poor infrastructure, the increase of informal slums, institutional weaknesses and the poor water resources.

The urban areas in Africa are growing faster than any other region in the world, the number of the population in the urban areas might double over the coming two decades, while its growth rate is the highest in the world. 409 million (40% Africans) are currently residing in urban areas which are double of the number in 1990. This number will rise to become half of the continent's population in 2030 (Jacobsen et al., 2013).

In Somalia, due to the lack of baseline information it is difficult to know the exact percentage of population in urban areas whom have access to safe drinking water, but (UNICEF,2015), reported that 32% of the 14 million Somalis has access to safe drinking water.

While the government mentioned in its national development plan of 2017-2019, that it is willing to increase the access of water supply from 35% to 45% by 2019, by reforming the national policies, institutions at federal to district levels (NDP,2017).

Somalia is a water scarce country in terms of the quantity and the quality. It faces recurrent droughts that affect mainly the rural populations, by which the economic and social development can't exist without a proper water management.

Currently the private sector is hugely involved in the water supply of the country, though before the civil war the central government was wholly responsible for operation, maintenance and management of water supplies (rural and urban). (Muthusi, et al., 2007).

In terms of the link between the household water availability and the economic conditions in the rural areas, (Innocent et al., nd) study on south of Africa reveals that, any household with poor access to safe drinking water is likely to be poor economically, in his study, it was argued that having safe water supply is connected to the better household's economic situation.

The poor water supplies were associated with weak or lack of institutional setups, which were required to supply efficient water supply, this led to many expert to question on centrally managed system and how they require re-evaluation (McCommon et al., 1990).

2.2.1. Inadequacy of Institutions involved in urban water supply

In his study about institutional inadequacies related to the service provision, Tiroyamodimo,(2007), articulated that, without considering the affordability of the communities and the involvement of the private sector in water supply decision making will lead to poor institutional inadequacies for the service delivery. He also suggested that, service provision must separate from regulation and management of the water supply.

Addo, (2010), examined how the inadequacy institutional structure contribute to poor water supply in Ghana, he found that, the lack of interest among the stakeholders/actors of the water supplies processes, lack of political will are also in place which affects the continuity of the projects from previous governments. He also examined that, the poor control of urbanization worsened the water supply situation, since the local water utilities were unable to map out service delivery. The sector wide approach was being recommended to bring all the actors of the water supply in one place, decentralized and resources committed achieved.

The old infrastructure of water supply in African utilities will not be able to the growing demand for water. Furthermore, due to their poor governance those utilities are not able to provide adequate services and good water quality. Huge investments are necessary for African cities to

provide clean water and sanitation to challenge the growing social and economic trends. But still many African utilities are lacking sufficient funds to expand their water systems or renew their water infrastructure. The expansion of coverage rate of water services is hindered by lack of cost recovery and inefficient governance. For this reason, the utilities to recover their capital, increasing tariffs for the customers is an option, whereby half of the customers can't afford in Africa (Banerjee and Morella, 2011). By increase the tariffs to the previous water consumers to expand the service to the poor, would result increase of equity, although the political dilemma would tackle down this alternative (Van Ginneken, et al., 2012).

2.2.2. The Bureaucratic Paradigm

This refers to the old (Traditional) approach which the public entities were managed (Hood, 1991; Lane, 1994), This system is complex hierarchical which is based on top-down management and decision making (Yamamoto, 2003). The public institutions are mostly permanent and stable with its strong procedural approaches (Peters, 1996; Larbi 1990). As everything has its own limitations, this approach is always common with inefficiency service delivery to the public (Metcalfe and Richards 1990; World Bank 1997). Similarly, (Shirles and Xu 1997) stated that the water authorities managed by the government are more common with bureaucratic systems without accountability; therefore decentralization approach for water service delivery is needed.

2.2.3. Decentralization of water Supply

The movement to the decentralized system in managing water institutions came as a consequence and need to against bureaucratizing the public services. The decentralization itself can be defined as the transfer of the power of authority and responsibility from the government entity to the local or private sector (World Bank 2001). The decentralized services should change the attitude of the government and treat water as economic good, by creating some incentive to balance the system and promote efficient use of water. Also, the local institutions have the ability to get in touch with the water consumers and get information about the status of the local situations, for this information it can be used to improve the system itself in terms of quality…etc. which will lead for the consumers to buy more for the service (World Bank Group, 2004). Sometimes it's said that the decentralization occurs at a time where by the powers and resources are handed to of local authorizes which are accountable to the local population (Agrawal and Ribot 1999).

At the global level the failure of the decentralized water service delivery, worsened by decreasing supply of water and increased pressure of decentralization.

"The Dublin Principles" issued by the international conference on Water and the Environment, which were held in Dublin in 1992:

- The "Ecological Principle" required holistic water management

- The “Institutional Principle” which requires the communities to participate water management including devolution of responsibility “to the lowest appropriate level” by involving the NGOs, private sector and the women and
- The “Instrument Principle” which is suggesting the water should be managed as an economic good (World Bank Group,2004)

From this perspective, there are three main systems of decentralization of water service according to the (World Bank Group, 2004). This includes private sector participation (PSP), delegation and devolution. The PSP may range from full transfer to the private to a contract based for the service delivery. Hence the PSP has shown a capacity to handle and succeeded in urban areas. For the delegation the government transfers the water supply (Management) to the public or semi-private companies. The delegation may not be an improvement on service provision or for the public or private contractors. While the devolution refers as transferring of responsibilities to a local institution, which can more deeply focus on communities, while they are also dependent on the central government for the technically related issues.

2.2.4. Impact of Poor Water Supply in Somalia

The population with access to safe water supplies in Somalia is estimated at 32%, this is an indication that Somalia is one of the lowest statuses in the water supply of the world (UNICEF/WHO, 2013). There are recurrent droughts which become as common natural characteristics of Somalia, poor water supply networks; internal displacements are also weighing the problems in the country.

Lack of clean and safe water increases the occurrences and spread of the water-borne diseases specially Cholera, which endemic in Somalia. This led to high mortality rate in the country specially the children under five years, where the mortality rate reaches 133 per 1,000 live births (AfDB, 2013).

Climate change has a negative impact on the country’s effort to attain food and water security. In the rural areas, conflicts arise between the settled communities and the pastoralists due to the poor water network structures, where both the villagers and livestock share the same sources of water, which may sometimes lead to death due to the clashes between them.

2.3. MDG Goal Seven in Somalia

At the beginning of the millennium the world decision makers gathered and decided to fight, the poverty together. This vision was presented in the eight millennium development goals (MDGs) to be achieved in fifteen years (UN, 2015). As expected the UN studied the achievement of the MDGs after the end of the period, according to (UN, 2015), and declared that every nations can do at least do something tangible, however, uneven achievements of the desired targets.

MDG 7: Ensure environmental sustainability (MDG7), the target which is the interest of this study is “by 2015, to half the proportion of the people without access to safe drinking water”.

The UN report (2015), stated, that 91% of the world population has access to safe drinking water, 2.6 million got access to improved supply and 1.9 million had piped connections. Despite not fully achieving this target, but it has reached a substantial step forward.

In 2010, many countries met the MDG goal seven (the target of water). However, unfortunately 45 countries were not on their way to meet this target by 2015, 20 of them from Africa, due to the high population growth and the lack of data

In Africa 24% of the population got access to improved drinking water, is the lowest in the world population. While only 16% of the Africans has access to piped connection systems, which is also the lowest in the globe. In Africa, urban areas have a higher water access compared to the rural areas, which led the national graphs to incline down; poor baseline data and population growth are also exacerbating the situation in Africa (UNDP et al., 2015).

On the other side, the number of people who have access to safe drinking water and sanitation has decreased, in the countries of sub-Saharan Africa. This region is mainly lagging behind the rest of the world in terms of achieving the MDGs goal seven.

According to the UNDP, most of the African countries had a well-developed plan to reach the MDGs goal, but these plans remain only as documents, and not being implemented (EUAWI etc al., EUWI et al. 2016). Furthermore these plans had a little consistency where it's also difficult for the policy makers to follow up and track the progress.

In Somalia, it was not easy to monitor and assess the progress of MDGs due the lack of data and the inaccessibility to some areas for security reasons. Most of the data was collected by international development organizations and it was mostly based on their priorities of interventions (UNDP, 2010).

According to (UNICEF,2015), in spite of improving the proportion of population with access to improved drinking water from 21% to 32%, while 58% of the 32% are living in urban areas, this also shows that the rural population are lagging behind, which mostly caused migration from the rural areas to the urban areas. According to UNDP (2010), the access to a safe drinking water had increased by 8% from 2000 to 2006, but Somalia was not on the way to achieve and didn't meet MDGs goal seven.

In an assessment conducted in Somalia, it was found that, there's no baseline data in Somalia to monitor the progress of the MDG goal seven and its targets. This problem is still in place and it is also affecting the monitoring of the achievements of the SDG goal six and its targets on 2030(Gulled et al., 2006).

2.4. Sustainable development goal six in Somalia

The inclusion of the water as a goal at United Nations development agenda of 2015, acknowledges that water is a central for the sustainable development rather than reporting as

secondary aspect of other sectors, where it is exposed to be neglected and to be in no-one's responsibility (Kadi,2016). He assured that for the sustainable development goals (SDGs) to be achieved, the way of thinking in water management should change. For the water security to be invested there is no single pathway of developing the water resources but, instead flexibility is needed, to cover country unique economic, social and environmental dimensions of development, which will lead to water security.

The world's concerns over water resources, foregrounded by World Economic Forum in 2015 (WEF, 2015), was nearly looked into the SDGs but the SDG 6 was not the only one, which water was mentioned directly or indirectly, but in a recognition that the water is the integral part of the whole development agenda. Water is included in all other goals specifically those related to food, energy and the environment. Water links the chain of the 17 goals and their 169 targets, this is an indication that water can't be isolated and separated from the other goals, which if we achieve all other goals will be met too.

Somalia has many problems to be solved, but the SDGs summarized and deeply mentioned needs of every corners of the country, the SDG goal six seems to be a core and integral part of achieving many other goals. This goal is a key and stairs for achieving more 5 goals of SDGs. According to Mugagga et al. (2016), achieving goal six means of achieving other SDG goals includes, No Poverty, No hunger, a Good Health, life below water and life on land (SDG G, 1,2,3,14,15 respectively).

Achieving goal six will be the gate for achieving many other important goals in Somalia, which is facing food insecurity, recurrent droughts, poverty and climate. WFP (2017) underlined that food security is under threat in Somalia due to the rainfalls, crop failures and shortage of pasture and water. This caused a raise in the price of food, and a loss of many live stocks, which led to 3 million people not to attain their daily food. This threat of achieving SDG 2: No hunger and food insecurity but getting reliable water supply for the agricultural production can tackle these problems.

The decrease of the agricultural production has also impact on achieving zero poverty and economic growth of the country, which the agricultural production is main sector of Somalia where more than 60% of the people depend on. AfDB (2017), Stated that the GDP of Somalia will be decline in 2017 to 2.5%, in an estimated growth of 3.7% of 2016, due to lower agricultural production of the country.

Achieving goal six has also impact on achieving goal three of good health and well-being 2030, by providing wash facilities in the schools, increase the well of the children and especially girls attendance in the schools. According to UNICEF (2017), 19% of the child death under five 5 is caused by diarrhea, which is a water related disease.

Therefore, it is very crucial to deal with achieving goal six, (ensuring of availability and sustainability of clean water and sanitation for all). Achieving this goal will have a huge impact on other goals achievements as I mentioned above.

2.5. Role of Institutional Structure in Service Delivery

Many scholars have questioned about the importance of reevaluating the centralized water management systems, due to water inadequacy, linked with poor institutional capacities to effectively and efficiently management of the water resources (McCommon et al., 1990).

In Botswana, water sector has been undergoing continuous reforms since its independence in 1966 (Rahm et al, 2006). These reforms went bit by bit against growing water problems without a rigid policy. The first water regulation come one year after the independence in 1967 and department of Water Affairs were established in the same year (Sillery,1974), this department was later named: The Ministry of Mineral Resources and Water Affairs, now renamed as the Ministry of Minerals, Energy and Water Resources (MMEWR). This ministry is responsible for the water policy and weighs its activities on the Department of Water Affairs (DWA). It is also responsible of groundwater investigation, protection of water resources and monitoring, as well as provision of water to all the villages. As part of the decentralization, the district council gave the responsibilities of the water supply systems in the smaller villages including operation and maintenance of the villages' water supply system to the Councils' water department (Government of Botswana, n.d).

The current water management systems are in-capable of achieving with maximum efficient water supply, due to the poor governance. (Toepfer, 2004), argued that the poor water governance is the cause of the water crisis in this world, while (GWP, 2000), agreed that good water governance has the major role in setting the needed polices for managing water in a sustainable way.

According to (GWP, 2000), water resources management sector is directed by sectorial approach, which is common in uncoordinated and fragmented systems of development. Many scholars assume that, poor service delivery in the water sector is a result of poor management and governance, Koudstaal et al. (1992), suggested that the successful water sector requires institutional arrangements rather than technological development.

Joint study that was conducted by the African Development Bank and the Federal Republic of Somalia, founded that, low institutional capacities and poor infrastructure are the main causes of the poor water supply in Somalia (AfDB, 2016).

2.6. Roles and Importance of Public Private Partnerships

2.6.1. The PPP

There are several definitions concerning PPP, according to Nijkamp et al. (2002), the PPP is a kind of cooperation between public and private sector to achieve a goal together with same targets and shared risks.

Pubic Private Partnership (PPPs) refers to a kind of agreement between public and private bodies, but this shouldn't be understood as full privatization, where the ownership is being transferred to private sect. There are different categories of involving the private sector in the management of the water sector, this includes, an option where the operation (ownership) is under public, but the private sector involves in designing and construction of the facilities. Another option of form of PPP is where; the private sector manages the finance, operation and/or management.

In all the options of the PPPs, the public authority is always responsible for supervising of the activities and ensuring the public need are met. The public authorities also have the responsibilities of setting the standards' as well as enforcing it (OECD, 2003).

The global economic decline in 1970 has led a change in the government functions and responsibilities; the private sector of profit oriented goals has been affected. The private sector proved a success this has increased the attentions of privatization and the result of economic decline in 1970 encouraged government to hire private sector to transfer government responsibilities to be efficiently done (Pongsiri,2002).

The yearly numbers of the PPP projects were increasing from 1990, a record of 4 to 29 between 1991 and 1999 in the low middle income countries. Only in Latin America and Caribbean, there were 106 PPP projects, 73 project of PPP in East Asia and quite number of increasing in Middle East, North Africa and sub Saharan Africa (Franceys and Bos, 2003).

Private sector involvement has brought a lot of advantages in filling the government's position of providing the required services in efficient ways but it is difficult to reach a point of market competition (Kirkpatrick and barker 2004). In the case of Somalia it is difficult to debate about market and fair competitions of PPP, because the main objective behind that is to provide services like water to one of the poorest communities in the world, approximately more than 50% are under the poverty line. Many researchers have focused on regulations, successfulness and the influence of the PPP, but little has focused on the achievements of the PPP. This paper will be highlighted the key achievements of PPP in water supply sector in Somalia.

2.6.2. The Achievements of PPP in Somalia

Due to the collapse of the central government of Somalia, the public infrastructures suffered due to the huge destruction, especially the water supply and sanitation sector due to the poor maintenance. UNICEF with the help from European Union and the governments implemented

PPP projects in some selected areas- and it was seen that these PPP projects worked well and the situation changed, Gulled et al. (2006).

In the same study of Gulled et al. (2006), mentioned that very low number of water sources have met the requirements of Joint Monitoring Program (JMP) of safe drinking due to the biological and chemical characteristics were not studied in the piped water of the areas of the assessment, under the PPP project. Water prices decreased by 40%, after the implementation of PPP from $1 to $0.6 per M^3.

In Somalia the progress of PPP was felt by the all the stakeholders, the PPP improved the water supply coverage by reducing the cost, though it's not fair and affordable to the low-income people. According to Marooko(2011), before the implementation of the PPP, the city of Qardho used to face water shortages and frequency water borne disease(diarrhea), people specially the women were walking more than 1 Km to fetch water under hot sub Saharan sun, but after the implementation of the PPP project, the situation got better the women walk less distance to fetch water or it is in their premises, the diseases dropped down and the lives of the city were improved.

Actually there is a number of challenges that reduce the supply in terms of coverage, including the PPP willingness to implement new projects in other areas due to factors (poor research in water resources, some areas face decline of water table which may stop water supply, the increase of the IDPs (internally displaced people) and Diaspora from abroad and poor skilled personnel (Gulled et al, 2006).

Water quality has been criticized in PPP of Somalia; ground water is the main source of the water this area of PPP, which has high chemical and biological contamination that should be treated before drinking.

The management approaches of water supply and the lack of strict regulation from the government are the main issues that had caused the low coverage rates, poor performance and the price fluctuations in the drought periods. According to Mateus et al. (2013), the performance of water supply does not only depend on the ownership of public or private, but regulations, transparent and accountability are the main factors for the performance of water supply systems to be successful in PPP form.

In Africa the PPP has quite different views, but it has shown a success in terms of the quality service and high reliability while it also experienced by high charges Farlam (2005).

2.7. Performances of Water Service Delivery Institutions in Africa

Water sector reforms were launched in many countries around the world to as a way to strengthen the poor governance. According to Zambian National Water Supply and Sanitation Council (2004), the core of the reforms in Zambia, is due to the poor service delivery of institution mandated for water service provision, there are also other challenges resulted this

reform like the unclear responsibilities of water institutions, the lack or the poor investment in the water sector, and the poor cost recovery. Those problems are not found in Zambia, but in many other countries.

Most of the challenges these countries share includes but not limited to:

- Poor coordination between institutions;
- Duplication of responsibilities between institutions;
- Lack of investment in the water sector which leads to deterioration of the infrastructure;
- Poor planning to balance the demand and supply of water; and
- Poor stakeholder's engagement and participation in planning and managing related projects.

2.8. Theoretical Frame Work

2.8.1 Conceptual framework of SDG goal six

Sustainable development goals, known "Global Goals", as are a set of goals that were built on SDGs the successes of the MDGs, SDGs focus on, climate change, sustainability, clean water and sanitation etc. These goals are attached with a specific clear set of guidelines and targets for all the countries to adopt in line with their priorities (UN, 2015).

More than 40% of the world's populations is affected by water scarcity; this is an alarming figure which is estimated to increase with the increase of global temperature due to the climate change. 2.1 billion people have access to improved water and sanitation since 1990, but there is a gradual decrease of safe drinking water which is one of the major obstacles that facing the globe.

The universal access of safe and affordable drinking water for all requires a huge infrastructure to be invested, regarding to the targets of SDG goal six, especially those who are the focus of this study is:

- By 2030, everyone on this globe to have equitable access to safe and affordable drinking water.

This is the target where this study will focus on, to ensure that everyone has clean water in 2030, and what are the institutional challenges ahead of achieving this goal?

3. Methodology

3.1. Description of the Research Area

3.1.1. Location

Garowe is located in the north eastern of Somalia, Figure 1, with an elevation of 500-100m above the sea level; it's also surrounded by Nugal Valley. It's the administrative capital of Puntland State of Somalia. After the outbreak of the civil in Somalia, it has been hosting thousands of people who fled the war in the southern part of the country.

Map1: Garowe, Somalia Source: Google Earth

3.1.2. Climate

The weather in Garowe is more or less hot, sunny and dry, from November to February it is cold and the temperature ranges from 23 to 25 Degree Celsius. It starts to heat up in the spring, while it rains in April. Its highest temperature occurs in the summer where it hits around 41 Degree Celsius. The average annual rainfall is low about, 123mm in average. Groundwater is the main sources of water supplies in those cities due to the reliability during the drought periods.

3.1.3. Demographics

The population in this district is estimated to be 190,000 residents (Local government, 2014), there are also rural areas which under its administration where the people whose living are dependent on same sources of water during the dry periods.

3.2. Research Design

According to (Morsi, 2003), qualitative research can be applied when little is known about the topic or situation, or when the results are not quantifiable, the lack of data about the water supply in Somalia, and the main questions of this research are difficult to be quantified. Therefore, the qualitative method was adopted for the data collection; in terms of the sampling non probability sampling was used in this study.

The review of previous literatures about water supply, MDGs and SDGs was gathered and analyzed according to their relation to the topic of the study. Interview of key informants was also used.

3.3. Target Population and Sampling

This research was carried out at an urban area. The communities whom use different sources of water supplies was observed and interviewed, the government representatives in the field of water sector at different levels were interviewed.

3.4. Sampling and Sample Selection

In terms of sampling, non-probabilistic sampling was adopted, where the researcher had a choice for selecting of the respondents. The main reason behind this selection was to select the informative source about the core of water supply in the region. At PSAWEN, water engineer, expert, water supply consultant and director of projects was selected. They were one of the main runners of the water supply at this important agency for the research that helped the research problem to be more deeply understood. Similarly, at Nugal Water Company (NUWACO) which is the main providers of the water supply in Garowe, the deputy head of the company was purposively selected since they worked there for long period of time. Also, an engineer from the Ministry of Environment were selected and interviewed, from the local municipality, the director of social affairs were selected. And each of the other of participants such as the households, were selected according to the previous categories.

3.5. Methods of Data Collection

For the data collection, the interview of key informants and in the depth interview of households, were involved for PSAWEN and NUWACO and the water consumers. The interview and the in-depth interview were included a list of different questions about important matters.

3.5.1. Key Informants Interview

Any kind of information gathering through a conversation can simply be defined as an interview (Berg, 1989). The total number of the key informants were interviewed were seven. The interview of the key informants in the field of water sector institutions in Puntland and in Garowe specifically was one of the approaches we used to collect information, through questions. Also, this type of interview gives the respondents a space that they can feel comfortable to share their thoughts but also the questions were consistent and in order. In this type of interview the respondents were selected on purpose based on their positions and the

information they have had. Most of the interviews were conducted by face-to-face meetings after agreed appointments.

3.5.2. In-depth Interview

Glaser and Strauss, (1967), recommended that in the qualitative researches the concept of saturation is applicable to achieve an appropriate sample size. (Morse, 1994), suggested around 30-50 participants, while (Creswell, 1998), suggests only 20-30 participants in the interview. In this study, considering the resources available and the study objective I have selected 20 participants for interviewed in depth across the city. The 20 randomly selected households was conducted in seven zones of the city, 3 households of each zone were interviewed except one zone which we selected 2 households, through a guide of interview translated to Somali language, which is aimed to capture the needed information for this research, including the amount of monthly used water, their income status, water availability in the zone etc.

3.5.3. Field Observation

Water resources infrastructure of the city was also observed to compare it with collected information in the interviews; I have visited the private companies whom provide the piped water connections to the households, dug wells of the IDPs and Hafir Dams that some people collect water through water tracks in the rainy seasons.

3.5.4. Literature Review

In this study, many documents were reviewed including published articles, books and articles and unpublished documents from water authorities which were important for the research results of this research. Most of the documents were brought from publications, water reports and assessment of the country though it's view, legislations such as the water act of Puntland which still not passed by the parliament but approved by the cabinet.

3.5.3. Ethical Issues

In this research the respondents were told in advance that, the main purpose of the interview were research and were assured that their names will not appear in the research paper.

3.6. Data Analysis

The responses of the interview were written typed in a computer and recorded as well. The data were summarized and re-structured, the commonalities in the answers were also indicated to ensure the originality, and this facilitated the data analysis.

3.7. Data Sources

In this study, secondary and primary data sources were used; the secondary data were collected from previous literatures, publications and archival records. Many personal visits were made to PSAWEN and NUWACO to search for original data they have collected. In terms of the primary data key informants' interviews with respondents from PSAWEN and NUWACO was conducted as well as interviews with the consumers of water.

4. Study Findings

4.1.Socio-Demographic characteristics of the participants

4.1.1. In-depth interviews

From the households, Figure 2, twenty were interviewed, taking men and women, who mostly manage the family affairs and traditionally the woman takes care of the issues like water in Somalia. 45% (n=9) of the participants were male, while 55% (n=55) were female, 3 households

were selected from each zone of the city except one IDP where the households who's living there were 150 HH. 55% (n=11) of the participants' income of the was between $100-200 per month, while 30% (n=6) of participants' income were varied according to the seasons of the year since they don't have permanent jobs (these HH includes those who construct houses and earns wages daily according to the availability), meanwhile 15% (n=3) of the participants income were between $200-500. According to the amount of tap water they use per month varies according to the number of the households and the income, 60% (n=12) of the households contains members of 6-8, and consume between 5-8 cubic meters per month, while 35% (n=7) of the participant's households contained 4-6 and consume 4-6 cubic meters of water per month and 10% (n=2) of the participants households contains 4-8 consumes 8-10 cubic meters of tap water per month.

Figure 2, interview (by Jemal Mohamed)

Table 1: Number of HH vs. respondent's number

Name of the zone	Respondent
Waberi	3
Hodon	3
Hantiwag	3
1 augost	3

Horsed	3
Khayrad IDP	3
Jawle IDP	2
Total	**20**

Source: Field data

Table 2: Respondents' Sex

Respondents Sex	**Number**
Male	9
Female	11
Total	20

Table 3: HH Income

Household	**Income**	**Remarks**
11 HH	100-200	
3 HH	200-500	
6 HH	N/A	They don't have constant income, just they work for the day

Households income ($)	**Amount of tap water per month (cubic meter)**	**Income spent on tap water ($)**	**Income spent on drinking water in %**	**Total income spent on water (%)**
150	3	$ 3.9 which equivalent to 2.6 % of their income	$10 which is equivalent to 10% of their income	12.6%
300	8	$10.4 which is equivalent to 3.5% of their income	$15 which is equivalent to 5% of their income	8.5%

4.1.2 Key Informants Interview

Seven key informants were interviewed from different government institutions, including high ranking government officials from PSAWEN, Ministry of Environment, deputy director of Nugal water company (NUWACO), and the director of social affairs of the local municipality of garowe city. It was not easy to find the above-mentioned people especially during the appointment times, most of them were busy and in hurry

.

Table 4: Details of Key Informants

KI code	Key informants	SEX	Organization	Duration of interview
KI01	Director of Projects	M	PSAWEN	2 hour
KI02	Site Engineer	M	Ministry of Environment	2 hour
KI03	Director of Social Affairs	M	Local Municipality	2 hour
KI04	Water Engineer	M	PSAWEN	2 hour
KI05	Researcher in Water Resources	M	PSAWEN	2 hour
KI06	Head Section	M	Ministry of Environment	2 hour
KI07	Water supply Consultant	m	PSAWEN	2 hour

4.2. Roles of Institutions involved in Water Sector

4.2.1. Puntland State Water and Energy (PSAWEN)

PSAWEN is the government main agency that has the overall responsibilities for managing the water resources of the region, its mandates include construction of boreholes, sand dams; rehabilitation of the water sources includes springs and boreholes. It also monitors the activities of the NGOs involving the water sector.

The findings showed that the agency was challenged by the Ministry of Environment of Puntland, which is currently implementing constructions and management of all surface waters including dams. The key informants interviewed during the data collection from both PSAWEN and Ministry of Environment, showed a conflict of responsibilities.

Since PSAWEN is the main governmental agency responsible of leading the water sector, it consists of only one department which the role for the water development has called "Department of Water", under this department there are technical engineers and geologists. In terms of how the structure of the water departments affects the water development plans and project "a confusion and mixture of tasks in the department, and a parallel of same and different tasks who's carrying out by same engineer" Quoted by an engineer.

The structure is not based on need and according to the mandate, vision or goal but only it stands as nominal where the director of the department can command anyone to any tasks he prefers.

4.2.2. Ministry of Environment of Puntland

The findings showed that the Ministry of Environment is responsible for managing the surface water resources, as it was established in 2009, to be responsible of protecting the environment, wildlife and sources of tourism, as part of protection it had implemented a number of water projects by constructing dams to protect the environment from degradation etc. The ministry has constructed a number of surface water harvesting dams, sand dams etc. Thought, there is a conflict of responsibilities between the water actors (PSAWEN), still it is implementing projects related to surface water development.

There have been resolutions led by the regional presidents (Governor), to solve this conflict related to the responsibility between the two institutions. "for the last meeting led by the president(regional governor), it has been mutually agreed that any surface water above 4 meters deep is for the responsibility of the ministry of environment, while PSAWEN had the responsibilities of managing the ground water specially below 4 meters deep" site engineer quoted during the key informants interview.

The ministry has mainly two departments dealing with water, department of natural resources, under this department there is soil and water conservation and the department of climate action where under this department there is the rain water harvesting section.

4.2.3. Local Municipality of Garowe City

The role of the local municipality is not as it was expected, the implementation of the infrastructure of water sector at district level is supposed to be under the local municipality, but the lack of decentralization affects this local municipality where by all the responsibilities and decisions are on water sector is taken only by the central government. "Currently every bit of action is controlled by the water agency (PSAWEN), and they don't give any consideration to the local governments, there's no any water related activity, responsibility or a decision that we have in our hands as the local municipality, but there's a bit of improvements that we are currently working on such as decentralization of Education and Health" key informants interview replied.

As a result, there are no community involvements in the water decision making or any kind of representation in the district level, like water users associations. The ordinary public can't interfere in this essential manner which has effect to their socio-economic development.

The local municipality doesn't have a department or sections dealing with the water except the department of social affairs where the director mentioned, that "it is our responsibility to have a department or section but they don't have that capacity for the moment and there is no decentralization in the water sector".

4.3. Effect of Sharing Responsibility in Water Sector

The two main governmental agencies that are involving in the water sector are the ministry of environment and Puntland state water and energy (PSAWEN); they are complaining from each other for stealing the tasks.

Sharing the management of water supply in Puntland resulted poor water supply in the region, due to mismanagement of already scarce resources. According to the key informants' interview, , there is no clear mandate for managing water resources at the state level, this led to a confusion of responsibilities, collapse of water projects and the poor people are not getting adequate safe drinking water.

When it comes to the debate of who manages the water supply or water sector in general, the responses from PSAWEN point of view is "PSAWEN is solely responsible of managing Puntland water resources and there is no any other institutions that has the mandate of any water related activities" but, the from the ministry of environment has a different view which is "our role in the water supply is leading the management, construction, supervision and monitoring surface water in rural and urban areas, but for any underground water we leave it for PSAWEN specially the water below four meters".

Regarding to the role of PSAWEN in the water supply of Garowe city, the response was: "our role is to dig boreholes and to cooperate with NUWACO (PPP under concession agreement with PSAWEN) for the water supply, this means we will build the boreholes and will transfer the management of the boreholes to NUWACO which is a PPP who manages the water supply of Garowe city". But the role of the ministry of environment regarding the district level, they have constructed, Hodaal Dam near Garowe as a part of their plan to fight water scarcity in the city. The management approach of the ministry of environment is different from that of PSAWEN, after completion of the project they transfer it to the community where it will be "Community managed water source"

Continuing same interview with the director of projects of PSAWEN, I have asked him, if he knows any other institutions involved in the water sector in Puntland and what are their roles? He replies "only PSAWEN has the role for managing the water sector in Puntland and there is no any other institution in this sector".

When it comes to PSAWEN, it's also important to know how this government institution is prepared for the water related activities, whereby in the interview I have asked about which department in PSAWEN is responsible for water supply. "The department of water responsibilities of the water supply in Puntalnd, it has the role to lead the teams of engineers to implement the water projects". He replied.

Since there is a competition between the government institutions about the water issues and there is no clear roles and responsibilities that is coming from the federal level, it was also necessary to know the perspective of water institutions in terms of the roles of local municipalities in the water supply, "it's something which is unclear but I think their role in the water supply is somehow infrastructure related, but we don't know exactly how their role is in this matter". A participant from PSAWEN, which is the main government agency who's responsible of water sector, replied.

The local municipalities has no tangible roles of managing water supply whereby they represent the local community needs, in a key informants interview I had with the director of Social

Affairs, when I have asked about the role of their institutions in the water supply sector of Garowe city he replied "there's no decentralization of responsibilities, every tasks is managed and decided by the ministries such as health, education, water etc... , but now we are trying to recover and decide on behalf of the communities we represent, if you asked me about the "water issues" I have to say, there's no any water related activities that the local municipality manages, and there's any section or department who's has that role in the local municipality"

4.4. Institution involve in water sector of Puntland

How many institutions involved in water supply sector in Puntland, Somalia? And what's the role of your institute in water supply of Garowe, Puntland?

From the key informants' interview with PSAWEN they believed that PSAWEN is the only government institution who's responsible of managing water supply of the region. "Only PSAWEN fulfills water and energy projects" director of projects of PSAWEN quoted.

As the next question was addressing the role of the institutions in water supply of Garowe, I have asked this question to PSAWEN "our role is to dig boreholes, to construct dams and to cooperate with NUWACO for water supply".

But the ministry of Environment has an idea which is opposite of the view of PSAWEN "the ministry of environment is responsible of managing the surface water supply in urban and rural areas, like Hoodaale dam which is near Garowe, which is important for the people who are living in this city"

According to the ministry of environment their role was concluded as "we build dams for the water supply and for the protection of the environment everywhere in Puntland and then us handover to the local communities".

As the findings is showing that, these institutions (mainly PSAWEN & MoE), share responsibilities, where each of them is serving for the sector but their coordination is zero, and the tasks they are doing, is supposed to done by one government institutions.

4.5. Effect of Sharing Responsibilities in water sector

How do you cooperate with the other institutions in the water sector?

Managing water sector is not something that one government institution can manage it solely, there is a necessity of cooperation between the government agencies, ministries, local governments and up to the catchment level. How the institutions share responsibilities and cooperation between the water sector government agencies was crucial for this research, in the key informants' interview we have deeply discussed about this issue.

We have asked the key informants about their cooperation with other institutions of water sector, as we have started with PSAWEN, the director responded as "there's no other institution working

in the water sector except, PSAWEN, who's solely responsible of managing the water resources of Puntland". As he quoted, it's showing that there's no cooperation between the governments institutions involved in the water sector, and everyone is asserting "that some responsibilities is for them not for others"

As I have asked same question to another key informants from the ministry of environments he replied " for water which is for irrigation we leave it for the ministry of agriculture who is responsible of managing the irrigation sector of Puntland, for underground water(Groundwater we leave it for PSAWEN, this is how we cooperate with other government agencies". From the perspective of the MoE, its showing that is willing to cooperate with PSAWEN who's ignoring the role of the MoE.

4.6. Effect of overlapping roles within different institutions

In Puntland, different government institutions have the same responsibilities (overlapped responsibilities), which sometimes causes conflict between the institutions; in the key informants interview we have discussed this. In a key informant interview we had with an engineer in the ministry of environment, he replied as "some government institutions like PSAWEN claims responsibilities of our ministry due to unknown reasons, this leads into a way where the donors stops funding projects after the conflict come to the surface, which has negative consequence to the local innocent populations".

PSAWEN is also blaming the ministry of environment, when it comes to overlapped roles between these two government bodies, with a director I had interviewed as a key informants interview has replied as "in Puntland for all water related activities, PSAWEN is responsible in representation of the government, all other government agencies who claim of water related roles are not on the right way and no one should believe it".

The effects of having the roles with different institutions is somehow clear to all of those institutions, the engineer that we have interviewed from the ministry of environment mentioned that "the main effects is that the people will not get enough water for drinking and other useful purposes of water etc., also the donors who support with fund relocate their projects due to the conflicts between the government institutions". The key informant of PSAWEN also stated the same effect of the overlapping responsibilities between the government agencies.

4.7. Role of PPP in Water Supply of Somalia

In Garowe city, NUWACO which is a private company working as PPP, is responsible of providing the water to the people of the city, NUWACO was established in 2004 to fill the government role of water supply under a PPP contract with PSAWEN. The initial investment was supported by UNICEF and it's still supported by UNICEF for extension of the water supply infrastructures.

Since 2004, It improved the water supply when it comes to the coverage level of city but still, there is a lot of work to be done. The people who have interviewed were complaining about the

quality of the water supply, which is not suitable for drinking due to high chemical content which is making unpleasant to use for drinking, whereby 14 of the 20 (70%) of the participants that have been interviewed were critically complaining about the quality of the water which forced them to use another sources of water except the tap water for drinking and cooking.

This research focused also on water affordability for the community living in this city, it has been found that, the price of one cubic meter of water is $1.3, where in average the people whose living in this city pay from $6-20 per month for getting water for from tap, and not including the other sources of water which they use for drinking which also cost $15-30 for an average household of 6 persons.

The price of the tap water was one of the toughest and most spoken by the respondents mentioning that it's too expensive for them when you compare to their income, especially the poor and internally displaced people.

Figure 3: Closed kiosks

4.8. Community Perception on the Water Provided by the PPP

4.8.1 The quality of the water

in this study we mainly focused on the tap water since majority of the community who are living in Garowe use tap water connected to the majority of the households, we have interviewed 20 participants selected based on the zones of the city (the city contains 7 zones including two IDPs), we have selected 3 households in every zone expect one zone.

Amount of water the participants of the households we interviewed use per month were varies from 2 to 8 cubic meters based on the social status, in terms of water quality, from the household's interview we found that, 15% (n=3) of the participants households were satisfied about the quality of the water, while 85% (n=13) of the participants were not satisfied with the quality of the water and other two were feeling normal for the quality of the water.

A participant from Horseed Zone quoted as "the quality of water in my area is quite good" but the majority of the households didn't have the same perception as the participant of horsed,

another participant from Hantiwadaag quoted as "it is hard to drink so we use it for washing clothes and houses, not for drinking or cooking. It's salty and it may affect our health, we have also realized it leaves stones in the kidneys". "The quality of the water is salty not good for drinking or cooking, it has very bad taste. In general the quality of this tap water is not good, that's why we use other sources of water for drinking" a participant from Waberi Zone. The majority of the respondents were not happy about the quality of this water (the tap water from Nuwaco which is PPP).

4.8.2. Affordability of the water

The price of water depends on the amount of water the households use per month, per cubic meter of water costs $1.3

Figure 5: Closed HH tap

From the interviews with the selected participants, the price was one of the major concerns after the quality especially for the low-income households. Six households of the twenty pay from $4.5-$10 per month these households includes the IDPs who uses jerkans which they collected from water kiosks (one jerkan=2 SH.s=$0.15 they use 5 jerkans per day for the normal day where they don't wash clothes etc). seven of the selected households pay from $10-20 per month, while nine households responded that they pay more than $20 per month, these five households were complaining about high pressure in the water flow which leads misreading of the meter reading devices, and every time they report this issue the company forces them to change the meter reading devices.

The people who are internally displaced from another regions, don't have secure jobs and income, this makes them to have a difficulties in the price of water "we can't afford the price of water, sometimes we don't money to buy it, therefore, for a half day we may stay without water or

we go to neighbors and fetch water from them" respondent from Khayraad camp where 150 households lives.

Fourteen out of the twenty participants had difficulties in the price of the water, which they described it as expensive a respondent from low income household stated that "the quality of the water is not good and plus the price is high for a households like, who has daily works not a permanent salary".

4.8.3. Extension of Water Supply lines

Since the private company has taken the responsibility of supplying the water to Garowe city, the service extended which improved the coverage of the water supply in the city. But the private company which is under PPP contract has its negative impact on, the water become more of economic good rather than a right which every citizen belongs to. Currently in Garowe city most of the people have a water tap connected to their house.

From the interview with the households, we found that for every household to get tap water to their house, they must pay $180 if the main pipe is in front of their house or less than 20 meter but if the main pipe is beyond that, the household must pay per meter to get the connection. For the IDPs they can't afford the tap water to be in their home, so they use water kiosks that are near to their homes.

The private company which is under PPP agreement with the government has signed contract, with government to supply water, while the government's role is to maintain the infrastructure and extension. "The government is not fulfilling its role which was maintenance and extension of the service "deputy director of NUWACO.

Figure 6: Young girl carrying water on her back

4.9. Challenges of SDG goal six in meeting its target.

How does the current institutional setups hinder achieving goal six of SDG goals?

For everyone in Somalia in general and specifically in Puntland or Garowe to have clean water in 2030, which is affordable, sustainable, improved and safe (available in the household) is one of the goals that Somalia committed to achieve. But there are many things to be resolved; to a accomplish SDG 6. The institutions involved in the water sector are fragmented with poor cooperation, no clear roles and responsibilities between and within the government institutions; there are no policies and strategies for those involved in the water sector.

"the institutions are not ready to achieve that goal when you look to their vision or projects they are implementing, maybe some of the higher official or decision makers are not aware of these international goals specially in the regional and local level" a key informant interview responded. He continued "the structure of the government agencies is applicable to achieve such goals for example there's specific policies or department, sections who's dealing with the rural water supply development, the rural areas are almost neglected".

The key challenges of achieving goal six (target one), according to key informant interview from PSAWEN member concluded as " there is no enough government budget to do all these work, our policies are not up to date, and there are some natural phenomenon such as droughts and poor rainfall as well technical challenges"

In the key informants' interview, we have also discussed if they think that the structure of the government institutions will allow achieving this goal? All the key informants are agreed that the current structure of the government agencies will not allow for this goal to be achieved but they different in terms of the extent. From PSAWEN's point of view "if other government institutions leave the water issues for PSAWEN it will be good for us to achieve this goal but now other government institutions are trying to share our responsibilities which will be an obstacle for us to achieve these goals".

But from the ministry of environment's point of view: "it is necessary for the sector to have some structural changes, like for example it is better to establish monitoring agency that monitors the activities of other water institutions, currently no government agency monitors another agency, everyone does what he like or doesn't".

We have lastly discussed, if they think that SDG six will be achieved in 2030, since they are the people who are in charge of implementing it. While I have started with PSAWEN he replied as "if huge work is done, who knows we can but currently we are not on the way" from the key informant of ministry of environment he also replied "it is difficult for everyone to get water which is safe, clean and sustainable but maybe 70% can get in 2030"

Figure 7: A women queening for water

5. Conclusion & Recommendation

5.1.Conclusion

This study was carried out in Garowe city to investigate the impacts of the institutional setups in supplying drinking water and achieving SDG 6.

The findings of the study shown that, in Somalia the institutions involved in the water sector were not at a place to achieve the international developments goals especially goal six (Target 1), the roles were not clear or written roles and responsibilities between and within the institutions involved in the water sector, which led to a conflict of responsibilities and a competition, over the resources such as funding water projects. From the regional to district to village level the tasks were not decentralized and public participation in the decision making was very low. in Garowe city, it was found that, the local municipality of the city, didn't have any role in the water supply of the city. The water agency (PSAWEN) signed a contract with a private company under (PPP) to manage the water supply of the city, where the administration of the city doesn't control, monitor or involve in general any role in the water supply of the city.

The findings also, showed that water supplied by the private company called (NUWACO) was not in a good quality the majority of the people complained about the quality, price and the management of the water sector,. This is a result of the governance systems in the region where it lacked a monitoring agency, accountability and cooperation between the private sector and the public authorities. The private sector was also discouraged by the lack of commitment from the government, according to the contract between the government and private sector who managed the water supplied, one of the terms they agreed on , included , that, the government should implement the maintenances of the infrastructure and expansion of the service, but the government was not willing to implement this term.

Since the study was also focusing on the willingness of the government to achieve the sustainable development goal six (SDG G 6 Target 1), we also found that, majority of the interviewed government officials were not aware of these international goals, but as they got the concept, they were totally disagreed the possibility of achieving this goal, by quoting as "difficult to achieve according to the current status". Due to the institutional arrangements of the water sector, it would difficult for Somalia to achieve this goal in 2030.

5.2.Recommendations

Achieving sustainable development goal six (Target 1) requires tremendous and huge investment in the water sector, reform of the current institutional setup, involvement of the private sector with mutual benefits for both parties. For Somalia to achieve the above-mentioned goal's target in 2030, the following recommendation would be better to implement in the water sector.

- Setting institutional arrangement at national, regional and the local levels.
- Decentralization of the tasks from the federal to the local municipality (top down approach)
- The establishment of a separate power in the governmental e.g. government office that monitors the governmental projects.
- The private sector should be monitored regularly, and the encouragement of the private sector in the water sector should be prioritized.
- The community should be involved in the decisions of water related development projects from the preparation phase.
- Legislation, policies and standards of water quality in Somalia should be improved.
- Water resources should be assessed and prioritized according to its suitability to be a good resource taking the demand and sustainability into the account.

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