

## **PUBLIC-PRIVATE-PEOPLE PARTNERSHIP FOR SUSTAINABLE PORTABLE WATER SUPPLY SYSTEM IN NIGERIA**

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### **ABSTRACT**

In an attempt to achieve the target of the Millennium Development Goals (MDGs in respect of reducing in halve the population without access to safe drinking water by 2015, developing countries requires extra efforts. One of such efforts in Nigeria is the government's call for private sector participation in the provision of drinking water. In response, the private sector has been involved since 1995 but up till today, only about 45% of Nigeria population has access to potable water. In recognition of water as a 'social good' which does not have to be left solely with the private sector, this study focused on searching for the best practice against the 'Public-Private Participation' policy of the government. The study began with the understanding of the quality of water from available sources vis-à-vis human health; and proceeded to government and private role in water provision. The study recommends the need for the government and private sectors to involve the end-users. Hence, it proposes 'Public-Private-People Participation' (PPPP/4Ps) for sustainable drinking water provision in Nigeria. The processes of adopting this plan are also recommended.

**Keywords:** Groundwater, Surface Water, Quality, Private Sector, Nigeria.

### **INTRODUCTION**

Viewed from space, one of the most striking features of our home planet is the water, in both liquid and frozen forms, that covers approximately 75% of the Earth's surface. Water is a vital substance that sets the earth apart from the rest of the planets in the solar system. It is practically everywhere on earth (Steve Graham et al, 2010). In particular, water appears to be a necessary ingredient for the development and nourishment of life. It is the only known substance that can naturally exist as a gas, a liquid, and solid within the relatively small range of air temperatures and pressures found at the earth's surface.

In all, the earth's water content is about 1.39 billion cubic kilometers, with the bulk of it (about 96.5%) being in the global oceans. Of the rest, approximately 1.7% is stored in the polar icecaps, glaciers, and permanent snow, and another 1.7% is stored in lakes, rivers, streams, soil and as groundwater. Only a thousandth of 1% of the water on earth exists as water vapor in the atmosphere (Table 1).

For human needs, the amount of freshwater on earth for drinking is particularly important. Freshwater exists in lakes, rivers, and frozen as snow and ice. Estimates of groundwater are particularly difficult to make, and they vary widely. (The value in table1 is near the high end of the range.) Groundwater constitutes between 22 to 30% of fresh water, with

ice (including ice caps, glaciers, permanent snow, ground ice, and permafrost) accounting for most of the remaining 78 to 70%.

### **IMPORTANCE OF DRINKING WATER**

Essential to life, a person's survival depends on drinking water. Water is one of the most essential elements of good health -- it is necessary for the digestion and absorption of food; it helps to maintain proper muscle tone; supplies oxygen and nutrients to the cells; rids the body of wastes; and serves as a natural air conditioning system. Health officials emphasize the importance of drinking at least eight glasses of clean water each and every day to maintain good health (Alpha Omega Marketing, 2012).

According to Botkin & Keller (1975) and Asthana and Asthana (2001), water is a natural resource of fundamental importance, without which life is impossible. It supports all forms of life and creates jobs and wealth in the water sector, tourism, recreation and fisheries (Ntengwe, 2005).

The importance of water can further be extracted from its ability to prevent and cure many illnesses (<http://www.freedrinkingwater.com/water-education3/28-water-hepatitis.htm>, Bronwen Dekker (2007) and Barbara and David, P. Mikkleson (2011)). Some of such illnesses include high blood pressure and cholesterol; gallbladder stones; skin problems; osteoporosis; heart disease; asthma and allergies; colon health; cough and cold; gout; hemorrhoids; diabetes; arthritis; insomnia; kidney; and hepatitis.

### **EFFECTS OF POLLUTED WATER ON MAN**

Water-related illnesses fall into four major categories (The Habitable Planet, 2012):

- Waterborne diseases, including cholera, typhoid, and dysentery, are caused by drinking water containing infectious viruses or bacteria, which often come from human or animal waste.
- Water-washed diseases, such as skin and eye infections, are caused by lack of clean water for washing.
- Water-based diseases, such as schistosomiasis, are spread by organisms that develop in water and then become human parasites. They are spread by contaminated water and by eating insufficiently cooked fish.
- Water-related diseases caused by insect vectors, such as mosquitoes, breed in or near water and spread diseases, including dengue and malaria. This category is not directly related to water supply or quality.

### **EFFECT OF POPULATION GROWTH ON DEMAND AND AVAILABILITY OF DRINKING WATER**

The human population growth of the last century has been truly phenomenal. It required only 40 years after 1950 for the population to double from 2.5 billion to 5 billion. This doubling time is less than the average human lifetime. The world population passed 6 billion just before the end of the 20th century. Present estimates indicate that the world population will reach 8-12 billion before the end of the 21st century.

As of 2002, 1.1 billion people around the world representing 17 percent of global population did not have access to safe drinking water. As a result, millions of people die each year of preventable water-related diseases. Most of the countries with inadequate supplies of safe drinking water are located in Africa, Asia, and the Pacific. However, water supply problems exist globally. For example, many households lack adequate sewage treatment services in Eastern Europe. And

inequity among water users is widespread: cities often receive better service than rural areas, and many poor communities in both rural and urban areas lack clean water.

Population in Nigeria increased from 1990 to 2008 with 57 million and 60 % growth in population. Nigeria is the most populous country in Africa and accounts for about 18% of the continent's total population, however, exactly how populous is a subject of speculation. The United Nations estimates that the population in 2009 was at 154,729,000, distributed as 51.7% rural and 48.3% urban, and with a population density of 167.5 people per square kilometer (See population growth between developed and developing worlds in Figure 1).

In Nigeria, population growth effects on water demand is not better. According to the United Nations, Nigeria has been undergoing explosive population growth and one of the highest growth and fertility rates in the world. By their projections, Nigeria is one of eight countries expected to account collectively for half of the world's total population increase from 2005–2050. By 2100 the UN estimates that the Nigerian population will be between 505 million and 1.03 billion people.

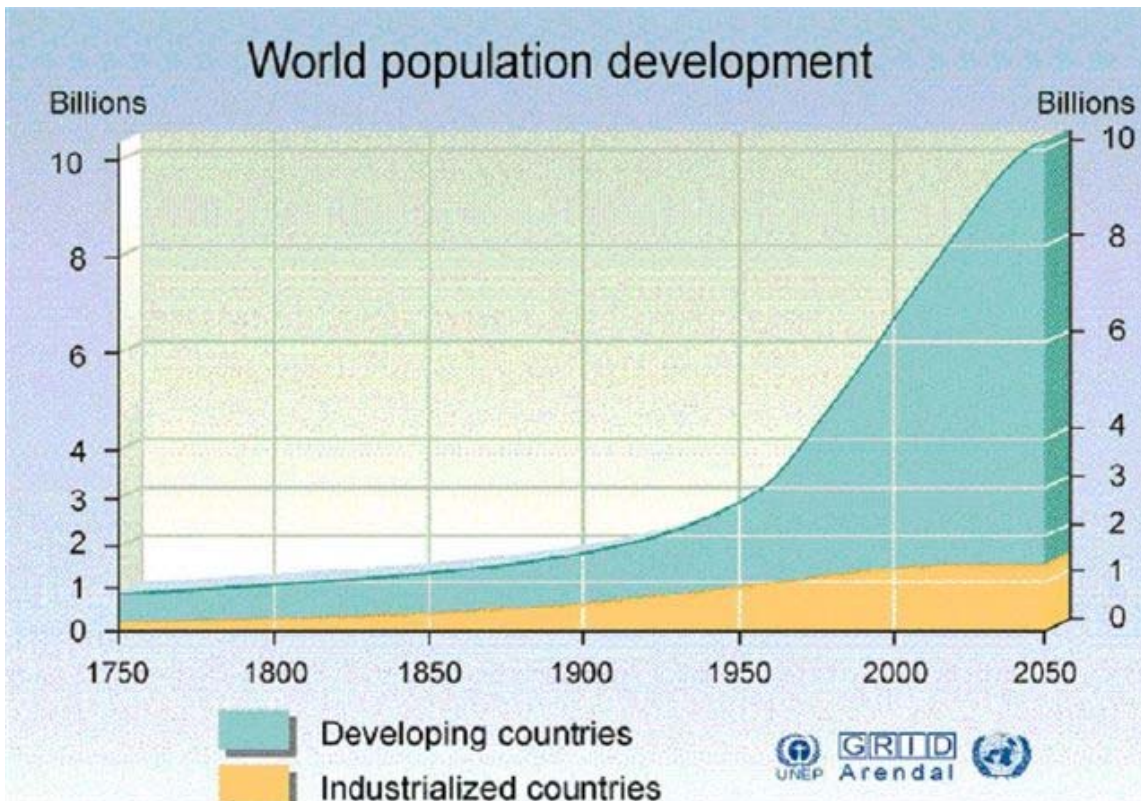
For this high population to have access to safe drinki water will require extra effort both by both government at various levels, and private organizations. Earth's water resources, including rivers, lakes, oceans, and underground aquifers, are under stress in many regions. Humans need water for drinking, sanitation, agriculture, and industry; and contaminated water can spread illnesses and disease vectors, so clean water is both an environmental and a public health issue. It is consequent upon this that the Millennium Development Goals calls for halving the population without access to safe drinking water by 2015.

This study was prompted by the Federal Ministry of Water Resources recent call on the private sector to partner government in the provision of potable water call (GABOMOH, 2012). Its particular interest rests on the inability of the existing private participation policy to solve problems of portable water provision in Nigeria.

Table 1: Estimate of Global Water Distribution

Distribution	Volume (1000 km <sup>3</sup> )	Percent of Total Water	Percent of Fresh Water
Oceans, Seas, and Bays	1,338,000	96.5	-
Ice Caps, Glaciers, and Permanent Snow	24,064	1.74	68.7
Groundwater	23,400	1.7	-
Fresh	(10,530)	(0.76)	30.1
Saline	(12,870)	(0.94)	-
Soil Moisture	16.5	0.001	0.05
Ground Ice and Permafrost	300	0.022	0.86
Lakes	176.4	0.013	-
Fresh	(91.0)	(0.007)	.26
Saline	(85.4)	(0.006)	-
Atmosphere	12.9	0.001	0.04
Swamp Water	11.47	0.0008	0.03
Rivers	2.12	0.0002	0.006
Biological Water	1.12	0.0001	0.003
<b>Total</b>	<b>1,385,984</b>	<b>100.0</b>	<b>100.0</b>

Source: Gleick, P. H., 1996.



**Figure 1:** World population growth

## STUDY AREA

Nigeria, the study area, lies between latitudes 4° and 14°N, and longitudes 2° and 15°E and it is located in western Africa on the Gulf of Guinea with a total area of 923,768 km<sup>2</sup> (356,669 sq. mi), making it the world's 32nd-largest country (after Tanzania). It is comparable in size to Venezuela, and is about twice the size of California (Wikipedia, 2012). It shares a 4,047 kilometres (2,515 mi) border with Benin (773 km), Niger (1497 km), Chad (87 km), Cameroon (1690 km), and has a coastline of at least 853 km (See figure 2 for Map of Nigeria).

## ROLE OF GOVERNMENT AND PRIVATE SECTOR IN DRINKING WATER PROVISION

Government of any nation is charged with the responsibility of providing adequate quality drinking/portable water for its citizenry. "Water, water everywhere, but not a drop to drink." This quote from *Rime of the Ancient Mariner*, 1798, by Samuel Taylor Coleridge seems to have defied time and space, especially in Nigeria where only 45 percent of Nigeria's population has access to safe drinking water according to WaterAids International (World Bank Group, 2011). Figure 3 indicates drinking water sources alternatives and impacts.

It is consequent upon this that the private sector had to come in, though, un-invited. Although, the exact date of introduction of sachet/packaged water is not known, it was introduced to the Nigerian market in the mid-90s, started attracting nationwide attention from 2000 when the National Agency for Food and Drug Administration and Control (NAFDAC) registered 134 different packaged water producers. Today, they are so numerous (including registered & unregistered) that no one knows their population. In many parts of the country,

There is no doubt that the private sector has alleviated poverty and reduced the number of Nigerians that die of water-borne diseases. but, we must be very careful especially as regards quality control. Majority of the producers disregard quality which is deadly

In response to this in Nigeria at national and state levels, ministries and agencies have been charged with the responsibility of regulating and monitoring the activities of the public sector through the establishment of acceptable Nigerian Standard for Drinking Water Quality provision. Such agencies and ministries include among others, National Environmental Standards and Regulations Enforcement agency (NESREA), National Council on Water Resources (NCWR), Standards Organization of Nigeria (SON), NAFDAC, Ministry of Environment, and Ministry of Health among others.

### **SUSTAINABILITY OF WATER SUPPLY**

In spite of all the efforts put in place by the government, sustainability has not been achieved in water supply. Sustainability in a general sense according to <http://www.thefreedictionary.com/sustainable>, is the capacity to support, maintain or endure. Indeed, human sustainability has been related to the integration of environmental, economic, and social dimensions towards global stewardship and responsible management of resources. To this extent, our efforts should be geared towards providing portable water system capable of being sustained. In other words,

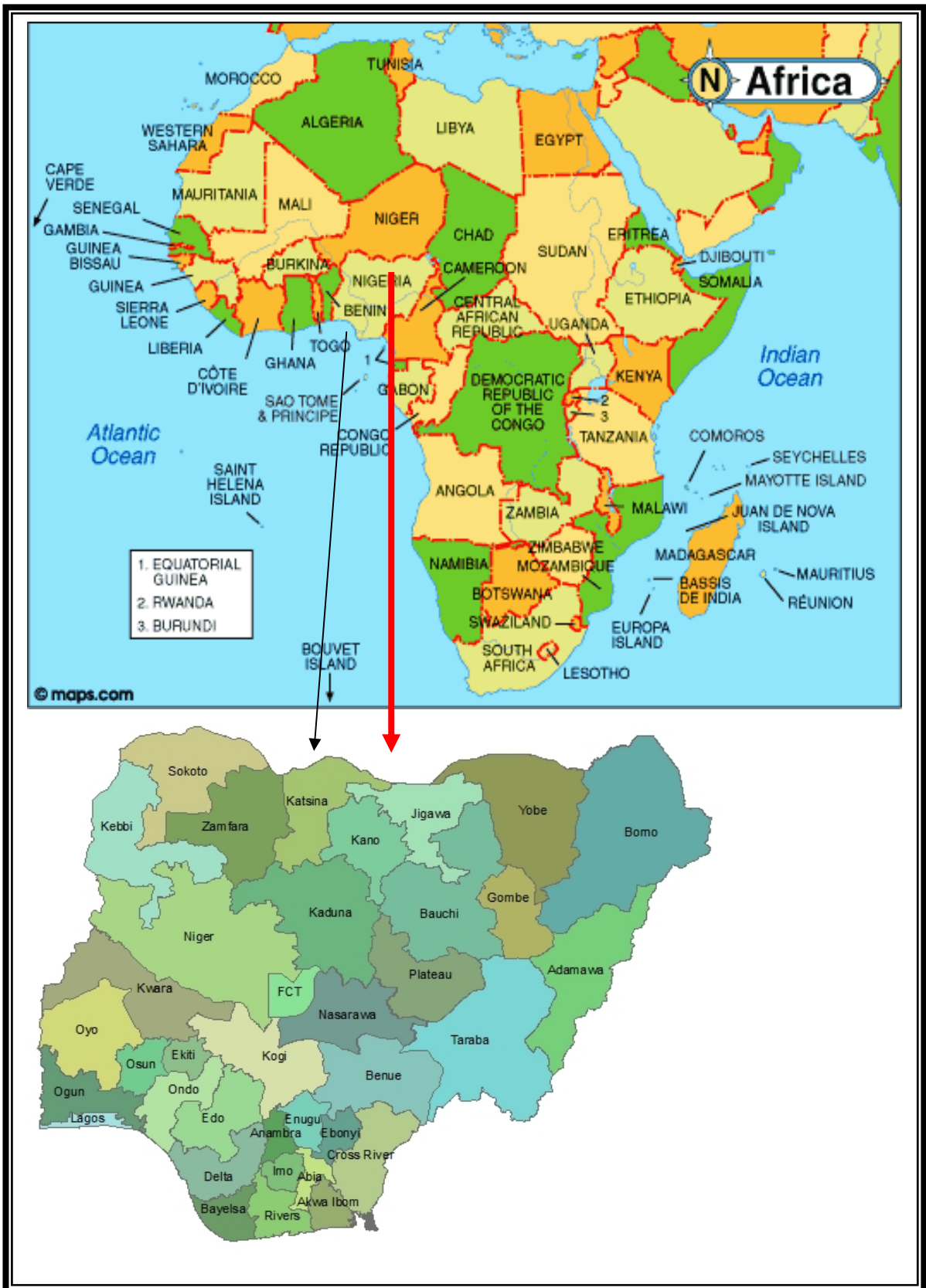


Figure 2: Map of Africa showing Map of Nigeria

safe, cost-effective, sustainable and environmentally friendly water sources are needed because water is such a necessary part of our lives.

This by no means would lead to sustainable development which is a mode of human development in which resource use aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for generations to come.

## **THE CASE FOR PPPP (4PS) AS A VIABLE OPTION**

### **Public-Private Partnership (PPP)**

Lack of public funds is often put forward as a limit to state activities. Thus, instead of financing infrastructural projects alone, the government increasingly looks to the private sector. However, there has been arguments in debates on privatization that state bodies are inefficient and that management concepts typical in the commercial sector should be used to achieve more cost-effective provision of public services. These factors taken together according to Asabi (2009), result in a shift away from the role of government as “producer” towards one of “quality assurer”.

PPP is defined as a sustainable effort between the public and private sectors, in which each contributes to planning and resources needed to accomplish a mutual shared objective (Alitheia, 2010). PPPs originated from the United Kingdom with the development of mines in an arrangement (known as the Public Finance Initiative) between the government and a merchant bank several centuries ago. The operation of PPP is illustrated in Figure 4. It is clear that people have little or no participation in the process.

The difference between PPP and other forms of provision of public services is that the ownership, risks and profits of the project are shared. Compared to providing the service directly, in a PPP arrangement, the government can concentrate on its core competences. The Government does not need to allocate experts of its own for the implementation of the project and is thus less intimately involved. Additionally, PPP's exhibit a trend away from conventional, tax-based financing approaches towards financing through contributions of individual users (Asabia, 2009).

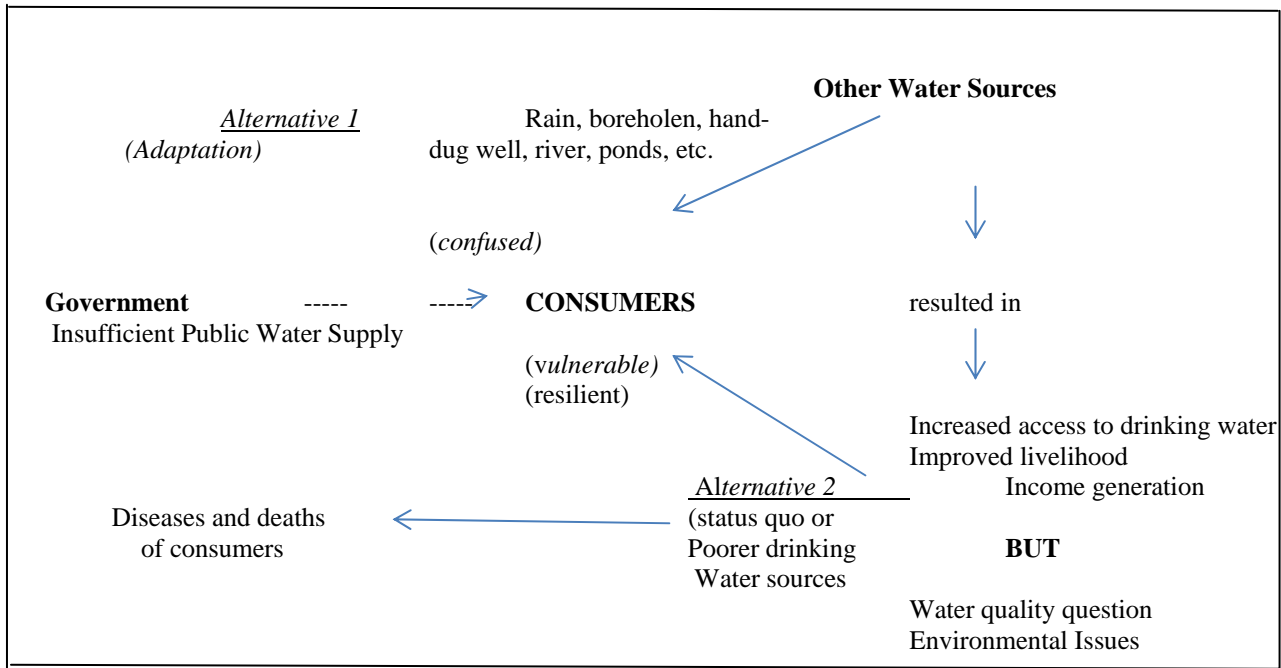
### **Public Social Private Partnership (PSPP)**

In view of the fact that water is a social good, PPP will likely need to be modified as proposed by Asabia (2009), to include extra mechanisms and criteria in order to function adequately in social services such as drinking water. Public Social Private Partnership (PSPP) is therefore a precondition for ensuring that a PPP with a social goal will assure and implement the public aims, agenda and tasks in the sense of community benefit, welfare etc.

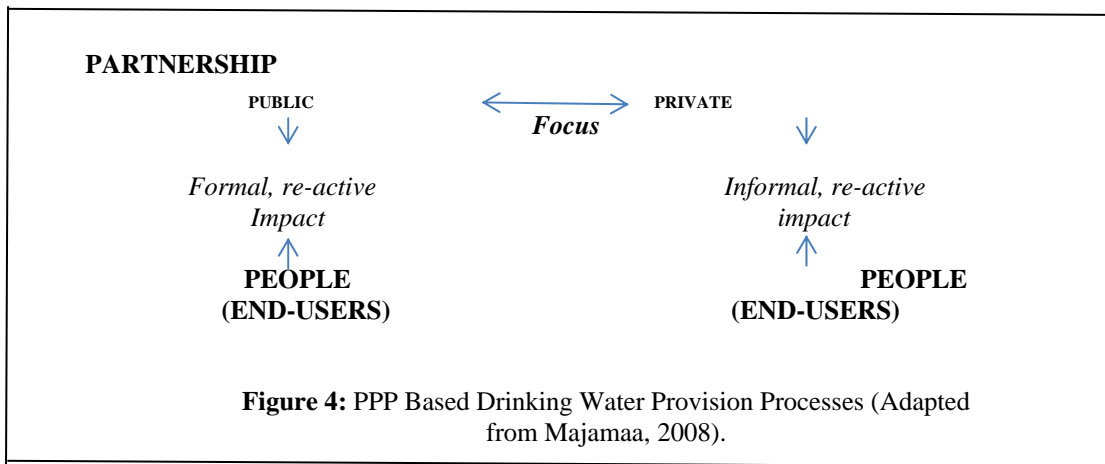
For target groups of disadvantaged people, PSPP's can mean the assurance of services that they need such as potable water provision. To summarize, application of a PPP model to fulfilling social aims for people in disadvantaged situations naturally leads to expansion of the PPP to a PSPP. It becomes a PSPP programmed when public aims such as the common good and welfare are being pursued.

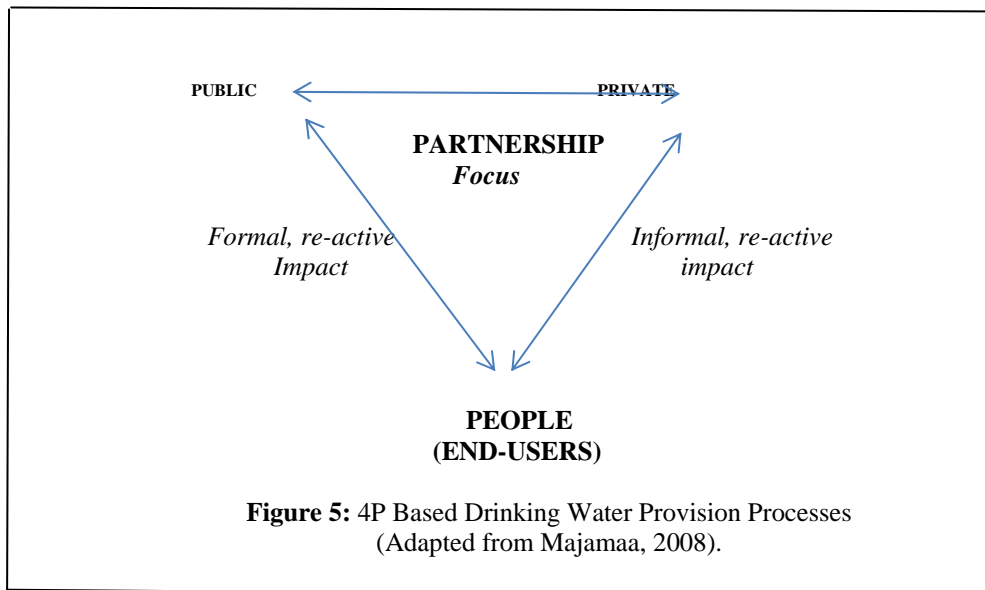
A distinction can be made between PPPs and PSPP. While PPPs are described as the arrangement being used to execute public tasks in general, PSPP has a narrow scope of providing social needs such as water. Figure 4 illustrates the process except that its utility is restricted to social goods in order not to disadvantage the people.





**Figure 3:** Drinking Water Sources Alternatives and Impacts (Adapted from Majamaa, 2008).





#### **Public-Private-People Participation (PPPP) for water sector**

Public-Private-People Participation is people oriented approach (Figure 5) where all stakeholders including government, donor agencies, private sector and civil society must work together to face the water challenge. The government under this arrangement must create an enabling environment to achieve this. It has been recognized that public participation in issues affecting welfare like water, brings about efficiency in service delivery. It goes without saying that the issues of subsidy to make water available to the poor needs to be approached and implemented differently. Consultation with stakeholders should be carried out to arrive at a mutually satisfactory arrangement. The priority should be to recognize that water supply is an economic activity. This is a challenge that must be faced with a persistent enlightenment campaign that needs to be supported by civil societies. The development of a PSP mechanism (service or management contract) for delivery of safe water is innovative and challenging.

Citizen's participation is an integral part of delivering safe potable water to the consumers according to Asabia (2009) because it ensures a feedback on customer opinion of service delivery and educates consumers on water issues leading to improved service.

This partnership system ensures the water utilities providers have appropriate knowledge of customer needs and priorities, improve performance and transparency and adapt to changing customer preferences through its customer care department officers working in collaboration with the Local Government Authorities at that level. This is illustrated in figure 4 which shows that the people have direct contact with the government (public) as well as the private sector.

#### **CONCLUSIONS AND RECOMMENDATIONS**

Water is unarguably earth's most precious resource. We all use water in various means every single day – life without water would not just be inconvenient, it would be impossible. Despite water's role as the most important resource, it is often unavailable in many areas of the world and is squandered away in places where it exists. Water distribution -

especially fresh or potable water - is very uneven across our planet. The issues associated with access to water are complex and varied. Because of its unique properties and importance in all aspects of life on earth, water should be regarded as a precious resource and conservation efforts should be a priority, hence the need to involve the people in its decision-making, execution and monitoring in order to ensure its sustainability as it has been proffered in this paper.

The provision of drinking water which is a social good should not just be left in the hands of the private sector but the people should be allowed to participate. It is to this extent that this study proposes PPPP as viable option for sustainable portable water provision in Nigeria. It is hope that it would among others,

- promote citizens participation.
- promote and defend the interest and ensure water supply to vulnerable and special needs groups, for example, hospitals, schools, prisons and markets through community management systems.
- promote and defend the interest of private customers and communities in the distribution services area (DSA) through continuous citizen's participation on service, performance and future improvements.
- strengthen service-oriented relations between the customers and the water utilities.

Indeed the efficiency and effectiveness of the PPPP mechanism have been proved as reported by Asabia (2009) in Lagos State and Cross Rivers State, and recent research indicates that Calabar City now experience constant water supply. Based on the above, this study thus presents the following recommendations:

- i. Governments at various levels should be encouraged to exercise political will to ensure that access to adequate drinking water is part of their development programme.
- ii. PPPP (4P) Model should be adopted. The people would be involved, they will know the cost of providing quality water, they will be sure of the quality, and will be prepared to pay the price. This translates to the fact that people are weary of the quality because of the activities of some unscrupulous water provider. The use of meter and pre-paid mechanism will be an advantage here. Additionally, water supply facilities should be handed over to the people for maintenance. In Ilorin, Nigeria, it was observed that boreholes that were attached to worship centres (Mosques) last longer than those that were left alone.
- iii. Regulatory bodies should ensure that all providers of potable water should be members of a corporate body so as to assist them in their operations. Such bodies must also have the people as members.
- iv. Regulatory bodies should involve the people in monitoring and create Public Relation Committees, which will be composed of distinguished members of the communities. This is because these set of people are closer to water providers and would be able to monitor them from time to time. This is similar to the Police Public Relation Committee (PPRC) and Special Marshals of Federal Road Safety Commission (FRSC) in Nigeria. The members complement the efforts of the main bodies which lack adequate staff.
- v. The role of the Consumer Protection Council (CPC) in the operation of PPPP should not be left out. They are to:
  - Receive complaints and or observed lapses and use appropriate Institutional Framework to ensure adequate correction.
  - Seek redress and compensation for aggrieved consumer or community as provided in the CPC Act.
  - Undertake awareness campaigns to enlighten consumers on their rights to safe and wholesome drinking water as generally provided for in the CPC Act.

The people should be sensitized in this respect.

Governments are globally searching for more effective ways to produce and maintain economic and social infrastructure facilities and better public services (Majamaa (2008), particularly to achieve sustainability in potable water supply. Public Private People Partnership is a viable arrangement for sustainable development.

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