DEMOGRAPHIC TRANSITION IN ETHIOPIA: EVIDENCES FROM 1990 TO 2016 ACHIEVEMENTS.

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ABSTRACT

Since 1990s Ethiopia has been experiencing demographic transitions as result of the country's efforts that have been made on reducing fertility and mortality rates through improving socio-economic changes. The study used data from research findings, policy documents, development plans and program reports, and analyses of censuses and surveys. Modern contraceptive use among women of 15-49 years rose from 4 percent in 1990 to 35 percent in 2016. The total fertility declined from 7.7 children in 1990 to 4.6 children in 2016. Life expectancy at birth rose from 46 years old in 1990 to 63 years in 2016. A range of legal, policy and institutional frameworks have been developed and implemented on population and gender equity, equality and the empowerment of women. Furthermore, continued efforts have to be made to reduce the population growth rate and total fertility and to improve the living conditions of the society.

Key words: *Fertility, Maternal, Contraceptives, Non Demographic Objectives, Child mortality*

1. INTRODUCTION

Demographical Transition (DT) is continual change of population indicators from initially stationary population characterized by high mortality and fertility rates to lower fertility and mortality rates (Bacci, 2017). During DT first mortality decline is followed by a fertility decline with, the eventual attainment of modern stationary low levels of fertility and mortality. This transition usually is accompanied by the development process that transforms an agricultural society into industrial and urban. During transition the population growth rate rises as the death rate declines while the birth rate remains high. The experiences of industrialized countries after 1960 have shown, however that replacement fertility is the lowest level of fertility, yielding rapid population ageing (Kohler et al., 2002). Demographical Transition can be seen as an initial stage for demographic dividend that is the economic benefit resulted from improved reproductive health, a decline in fertility, and subsequent shift in population age structure (Gribble and Jason, 2012). If properly applied, it will accelerate economic growth that is resulted from a rapid decline in a country's fertility. This is happened because of increasing working-age population and decreasing dependent-age population due to sustained lower fertility.

In recent decades, Ethiopia has made great strides in expanding access to education and health services that enable the country to accelerate the demographic transition and the use of demographic opportunities. Ethiopia's focus on children, maternal health and family planning has brought impressive results. Modern contraceptive use among women of 15-49 years rose from 4 percent in 1990 to 35 percent in 2016.These changes have fostered a total fertility decline from 7.7 children in 1990 to 4.6 children in 2016.Health improvements have also contributed to an increase in life expectancy and a decrease in infant and child mortality. Life expectancy at birth rose from 46 years old in 1990 to 63 years in 2016 (Ethiopian Science Academy, 2017). In Ethiopia there is slow demographic change that can reap a demographic dividend if policies and investments continue to be tailored to tap into this potential for economic growth and development (Andrew and Tomoko, 2008). This slow but encouraging indicator of DT has to be promoted and facilitated for the future appropriate utilization of demographic dividend. It supports to maximize the opportunity of using shifted age structure to contribute to the growth of the national economy (Louma, 2016). This led to reduction in the proportion of dependents per person at the household level and regional and national levels. However, the demographic

dividend is neither automatic nor guaranteed; countries must earn it by implementing policies and strategies that will not only accelerate rapid fertility decline, but also ensure that the resulting surplus labour force is well educated, skilled, healthy and economically engaged (Gribble and Jason, 2012; Louma, 2016). This study, therefore, reviews the progress made towards achieving the demographic transition and the consequence of the changes in Ethiopia.

2. METHODOLOGY

2.1. Description of context of Ethiopia

Ethiopia's total area is little more than 1.1 million km^2. Ethiopia is located in the Horn of Africa, close to the Middle East. Bordering Eritrea, Somalia, Kenya, South Sudan, and Sudan, and is landlocked country. With about 105 million people (2017) and growth rate of 2.4 percent per year, Ethiopia is the second most populous nation in Africa after Nigeria. Ethiopia is a predominantly agricultural country with more than 80% of the population lives in rural areas. Ethiopia is country where more than 40 percent of its population is below the age of 15. Higher economic growth brought with it positive trends in poverty reduction in both urban and rural areas. The share of the population living below the national poverty line decreased from 30% in 2011 to 24% in 2016.

2.2 Research Methods

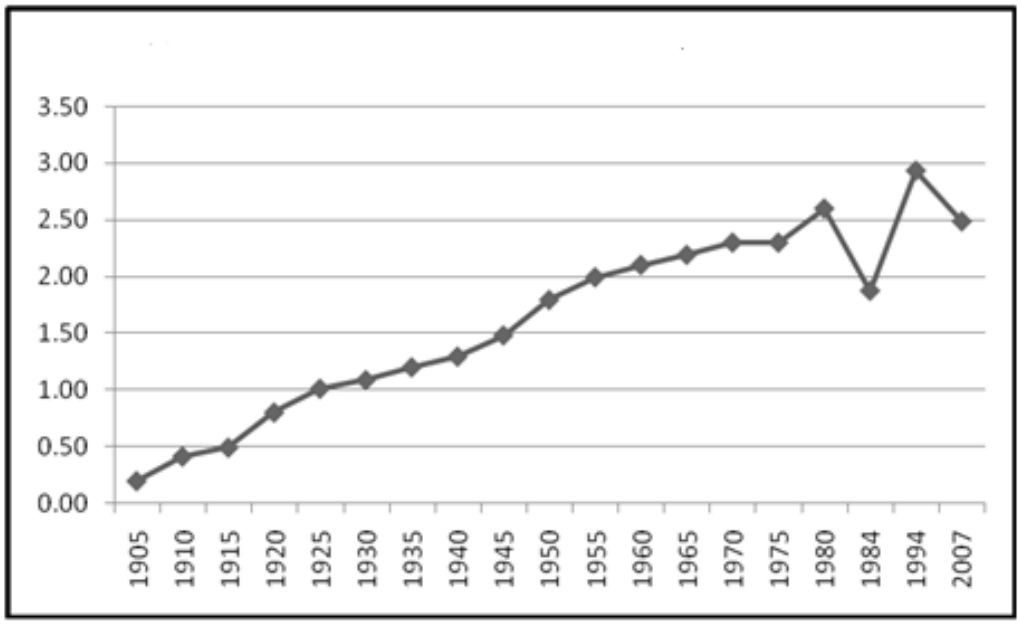
The study used secondary data from the, 1984, 1994 and 2007 Population and Housing Censuses, the 2000, 2005, 2011, and 2016 Ethiopian Demographic and Health Surveys as well as data from the United Nations Population Division and Population Reference Bureau (PRB). The analysis relies on simple descriptive statistics: frequencies and percentages. This has been complemented by a review of policy documents, research findings, development plans and program reports.

3. EVIDENCES OF ETHIOPIAN POPULATION CHANGES

3.1. Population size and growth rate in Ethiopia: The relationship between population growth and economic development is debatable. For instance; Simon (1996), stressed the positive side of population growth and distinguished human beings as the vital and most essential element for

economic development. On the other side, Furuoka, (2010) considered population growth has a role of mindreading economic development in that the rapid population growth provided relatively low benefit terms of the demographic dividend to economic development. Instead, the country had to pay a high price for its unchecked population growth. Population growth impedes economic development because the demographic overhead chokes up the economic progress and consumes a giant portion of the national income. Similarly, Thuku and Almadi, (2013) discussed as rapid population growth tends to depress savings per capita and retards growth of physical capital per worker. Recently others stressed population growth and other population issues showed be viewed in cultural context.

During 1980-85, Ethiopia's population was growing at the rate of 2.9% per year, and increased to 3.5% in 1990-95 (UN, 2015). In 1980s and 1990s, Ethiopia has been experiencing rapid demographic changes. The changes were the result of the worldwide improvements in food production and distribution as well as improvement in medical technology. During this time there was little change on fertility and mortality rates resulted in almost two folds population increase from 48.5 million in 1990 to 105 million in 2017 (CSA, 2012). Since 1995-2000, the population growth rate has been declining and in 2010-2015, Ethiopia's population growth rate was estimated at 2.5 percent per year (Figure 1). The available data indicated that over the past 100 years, Ethiopian population has grown by 6.7 times, approximately from 11 Million in 1900 to 74 million in 2007 (CSA,2008). At the beginning of the 20th century the natural increase was estimated at 0.2% per annum. The growth rate steadily increased from 0.2% in 1900 to 2.6% in 1980. The growth form is exponential during this period and the population size and its increase during the period (1900-1980) (figure1). The growth rate for the period between 1980 and 1984 shows deviation (rate decreased) from the actual trend. The declining trend for the period from 1994 to 2007 is perhaps because during this time the family planning and population control programmes were initiated in the country, especially in the urban centers. The population growth rates for the three censuses was estimated from the population exponential growth model, stands at 3.97% for the period 1984-94; and 2.29% for 1994-2007. Although, the size of the total country's population is increasing, the growth rate per annum in the country is showing declining trend.



Figue1 population size and growth in Ethiopia

3.2 Age dependency and structure

Age structure of a population is an important factor in population dynamics and proportion of a population in different age classes. A changing in age distribution has significant social and economic consequences. It has implication to the allocation of education, healthcare and social security resources to the young, old and other segments of the society (Birdsall *et al*. 2001). Currently there are more young people (aged 15-24 years) than ever before in the history of the world (UNFPA, 2003). This large cohort of young people is the result of the tremendous population growth that occurred primarily in developing countries during the 1950 - 1970s. This growth led to the current large cohorts of young people that dominate the populations of many developing countries (UNFPA, 2003).

Similarly, in Ethiopia with rapid growth rate of population and broad base a pyramidal shape, showing a preponderance of younger individuals, many of whom are of reproductive age. In Ethiopia age distribution indicates that the ratio between children, labor force, and old age population was 15:16:1 in 1990 and 14:16:1 in 2010 (Assefa, 2011). This shows that the high dependency ratio of children. It is projected that it will to drop to 9:17:1 and 4:11:1 in 2030 and 2050 respectively (Ibid). This will have a child dependency ratio of 0.85, 0.55 and 0.39 in 2010, 2030 and 2050 respectively while having an old age dependency ratio of 0.06, 0.07 and 0.10

from 2010 to 2030 and 2050 (Table 1). This indicates that the elderly population is growing; increasing the proportion mix of the dependent population. Despite the growth of the productive labor force, around 7% youth are unemployed while 25% of them are underemployed (Megquier and Belohlav, 2014) making saving and productivity still poor, that will create a problem for socio-economic development of the country. The dependency ratio in the country is high but declining slowly.

Table 1: Proportion of Children, labour force and the elderly and population dependency ratio in Ethiopia from 1990 to 2050

Year	Prop.<15	Prop.labour	Prop.elderly	chil.dependency	eld.dependency	Pop(mill)
1990	15	16	1	0.92	0.06	48
2000	16	16	1	0.93	0.06	66
2010	14	16	1	0.85	0.06	87.1
2030	9	17	1	0.55	0.07	137.7
2050	4	11	1	0.39	0.10	187.6

The Ethiopian population is characterized by a young age structure with a median age of not more than 18 years- a feature of rapidly growing population. A broad age distribution of Ethiopian population is presented for the past 50 years and the future 20 years based on observed data and the projections (Table2). The age structure of the Ethiopian population did not change much from 1960-2010 (Table2). Age structure of children population less than 15 years has remained high. It ranged between 44 and 45% for the most of the time except for 2010 where a high decline was observed. The proportion of the working group on the other hand declined from about 54% in 1960s to 51% in 2010, it then began to increase in 2005 and stood at 55% as the result of declining fertility. The proportion of elderly has increased by a little over1% during the period 1960 to 2010. According to Kate and Charlotte (2012) when youth are developing behaviors that will shape the rest of their lives, education and health and other programs need to address. It appears that the proportion of child under 15 will continue declining, if fertility decline continues in the future. Ethiopia will remain high proportion of child population for the next few years, if action on family planning is not taken in the future.

Table 2 age structure of Ethiopian population from 1960 to 2030

Year	Age<15	Age 15-59	60+
1960	43.5	53.8	2.6
1970	44.1	53.3	2.7
1980	44.5	52.6	2.9
1990	44.9	51.9	3.1
2000	45.8	51.0	3.2
2010	41.3	55.0	3.7
2020	40.0	55.8	4.2
2030	36.0	59.2	4.8

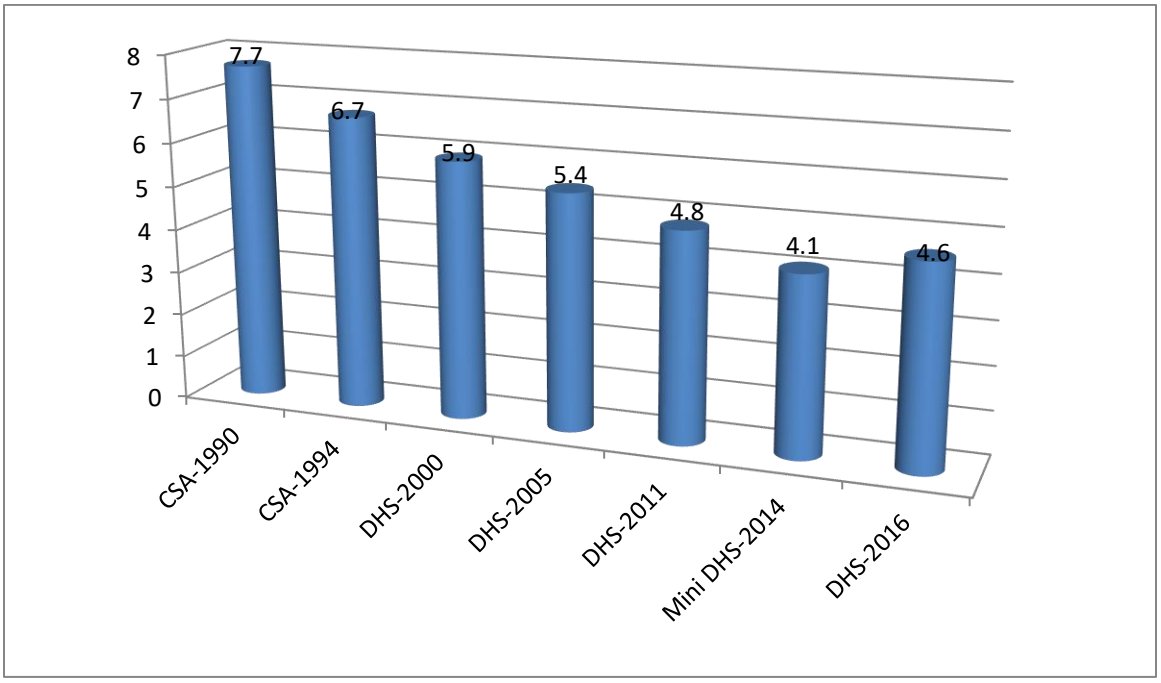
Source: CSO, (1972); CSA 1993; 1999; UN, 2012.

3.3. Total Fertility in Ethiopia

Fertility can drop due to interplay of both socio-economic and biological factors. For instance, the degree of women's empowerment can affect the acceptable number of children (Mason, 2001). Furthermore, when women enter the labor market, the opportunity costs of their time rise, and each additional child represents time away from work and income lost. When women gain power, they can bring fertility decisions more in line with their own preferences (Hirschman and Young, 2000). Additionally, when women are educated, their ideas about family life and childbearing often change. All of these mechanisms will lower the acceptable number of children (Eswaran, 2002; Hirschman and Young, 2000). When women gain access to information about prenatal controls through education, come to see them as safe, and can obtain them through larger freedom of movement, the costs of prenatal controls will fall (Mason, 2001).

In Ethiopia, Total Fertility Rate (TFR) according to 1994 census report was 6.7 children per woman. But it decreased from 5.5 children in 2000 to 5.4 children in 2005, and then decreased further to 4.8 children in 2011 and to 4.6 children per woman in 2016 (CSA (1993, 1994), EDHS (2000, 2005, 2011, 2016)). The country recorded the highest TFR in 1990, a TFR of 7.7 children per woman (CSA, 1993). Since then, however, it has shown declining trend. It declined from 7.7 children per woman in 1990 to 5.9 in 2000. TFR continued declining and reached 4.6 children per woman in 2016 (Figure 2). The decline was slow initially but later accelerated until 2011 but getting slower again. But according to Population Reference Bureau (PRB) report 2014 mini EDHS at 2015 total fertility rate of Ethiopia at 2014 was 4.1 children per woman. It decreases from time to time so it is good achievement even if there is another effort to reduce below this to

reach 4.0. TFR continued declining and reached 4.6 children per woman in 2016 (Figure 2).This change in TFR is related to policy and socio-economic mobilization at the country level that resulted in slow declining rate of TFR (Figure2).



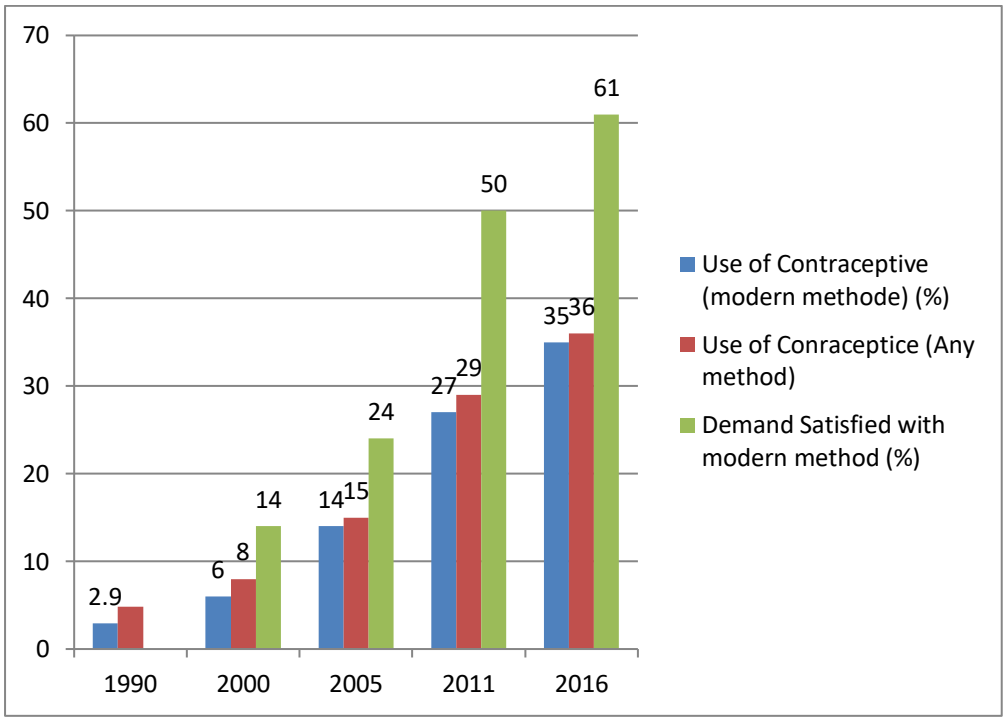
Source: (CSA, 1993, CSA, 1994, EDHS (2000, 2005, 2011, 2014 and 2016)

Figure2: *Trends of reduction in Fertility*

3.3 Family planning

Family planning (FP) programs has been emerged after World War II (Seltzer, 2002). Family planning is deciding the number and spacing of your children; through the use of contraception. It is an indispensable tool for the improvement of the health and well-being of mothers and their children (Nortman, 1985). Family planning is one of the major strategies of harmonizing population growth with socio-economic development through balancing family size with individual economic capacity (Nortman and Hofstatter, 1980). Family planning is measured by Contraceptive Prevalence Rate (CPR) that provides information on the coverage of contraceptives utilization in an area which is an indication of the proportion of women who have a lower risk of conception at a given time. Contraception is a good indicator of the extent to which couples have access to reproductive health services. In Ethiopia in 1990, only 3.9% of all women (4.8% currently married) of childbearing age were using a modern method of family

planning. In Ethiopia the past EDHS surveys revealed that the country level of CPR has shown remarkable increment from 8.1 percent in 2000 to 14.7 in 2005 and further to 28.6 percent in 2011. It showed 13.9 and 20.5 percentage point increments in the period 2005 to 2011 and 2000 to 2011, respectively. And in 2016 it reached 36 percent (Figure 3).Thus, both knowledge and use of family planning methods have increased significantly since the inception of the policy in 1993.



Source: EDHS (2000, 2005, 2011, 2016)

Figure3: *Trends in the percentage Contraceptive use and demand satisfied with modern methods.*

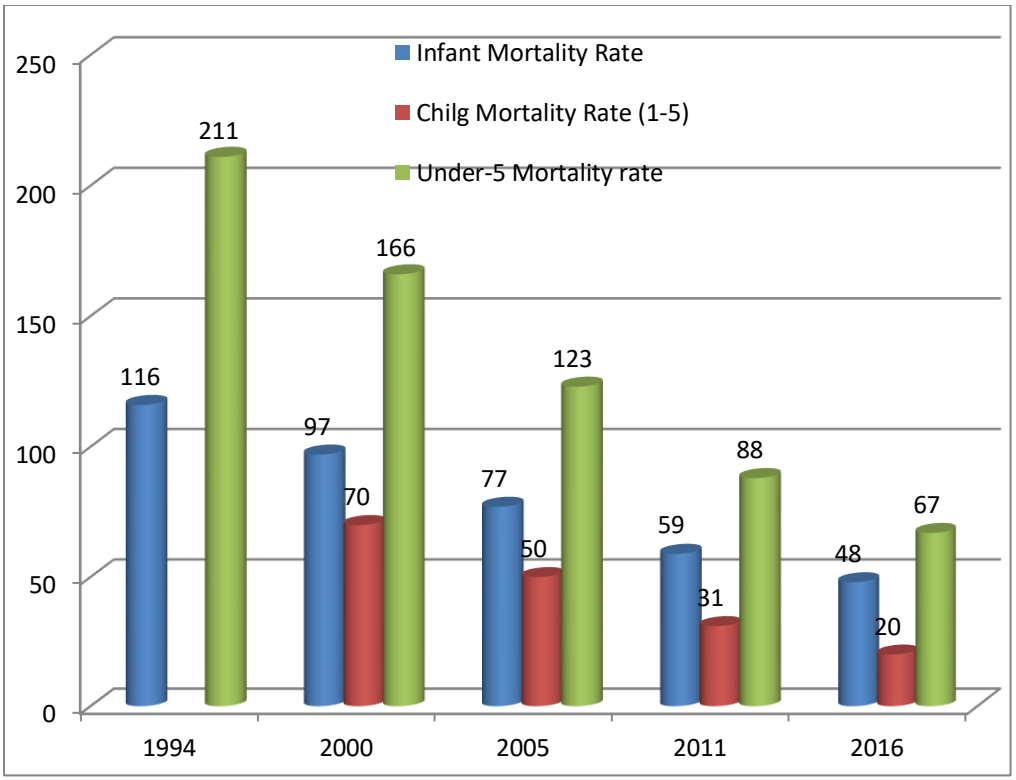
3.4 Reducing Maternal, Infant and Child Mortality Rate

The pace of mortality decline is related to economic progress, political progress, and health system at a nation level (Gai and Gottret , 2007). But countries with similar geography, wealth, under five mortality and maternal mortality levels have shown wide differences in health progress over the last 40 years (Verguet and Jamison, 2014). However, the direct relationship from maternal and child health improvements to the alleviation of poverty has long been recognized (Gai and Gottret 2007; Farag et al., 2013). One of the goals of sustainable development goal is to reduce the global maternal mortality ratio to less than 70 per 100 000 live

births and end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births (Gakidou et al., 2010). To achieve this goal health policy and impact of health interventions and social and environmental determinants on mortality has been known to change over time.

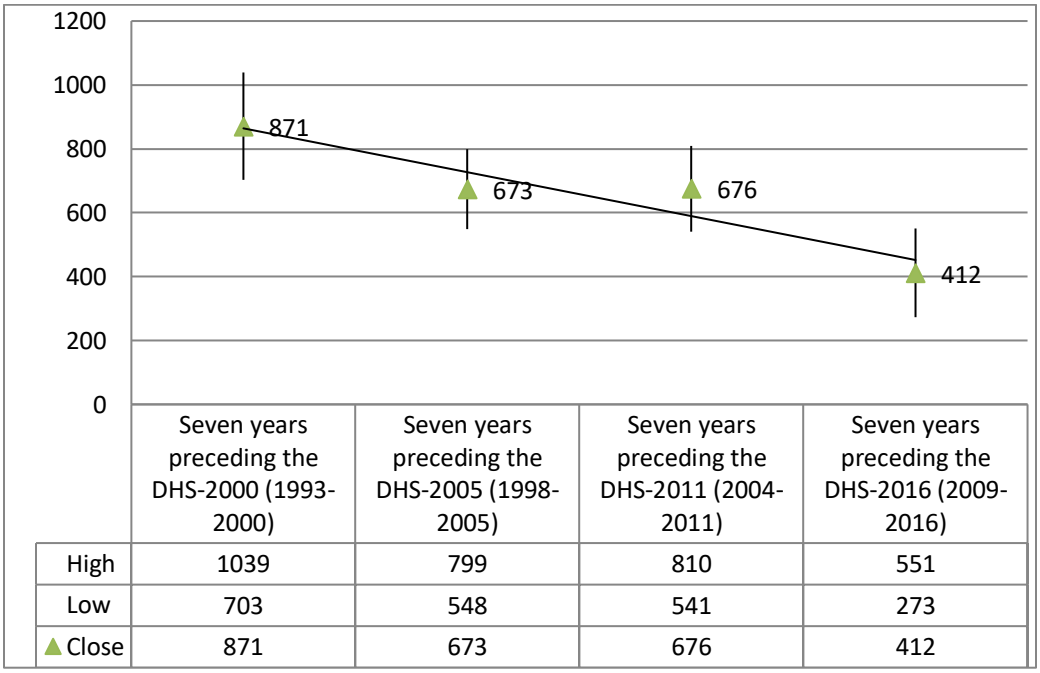
Similarly, during the past two decades, Ethiopia has taken great strides in reducing mortality, particularly for infants and children. As a result, the country has been able to trigger a demographic shift whereby more children survive to adulthood, initiating the first step of its demographic transition. Infant and under-five mortality began declining in 1985-90 but a more pronounced and much faster decline began after 1995. Infant mortality rate declined from 114 deaths per 1000 live births in 1990-95, to 97 in 2000 and to 77 in 2005 (Figure 4). It continued declining and reached 48 children per 1000 live births in 2016 (CSA and ICF International, 2000, 2005, 2011, 2016). Likewise, mortality of children under the age of five has shown significant and progressive decline during the same period. The data illustrated that the downward trend in infant, child and maternal mortality. This rate is often used as an important indicator of the status of health in a country.

Maternal mortality ratio was estimated at about 1400 maternal deaths per 100,000 live births in 1980-85 and about 1350 deaths per 100,000 live births in 1985-90. Since then, however, it has been declining steadily and for 2016, it was estimated at 412/100,000 (Figure 5). The Health Extension Programme (HEP), an innovative community based programme introduced in 2003 with the aim of creating healthy environment and healthy living, has almost certainly contributed to the decline in Ethiopia's annual maternal mortality rate (Karim et al, 2013, Gebrehiwot 2015).



Source: *EDHS (2000, 2005, 2011, 2016), CSA (Census-1994)*

Figure4: *Trends decreasing Infant and child mortality rate*



	Seven years preceding the DHS-2000 (1993-2000)	Seven years preceding the DHS-2005 (1998-2005)	Seven years preceding the DHS-2011 (2004-2011)	Seven years preceding the DHS-2016 (2009-2016)
High	1039	799	810	551
Low	703	548	541	273
▲Close	871	673	676	412

Source: *EDHS (2000, 2005, 2011, and 2016)*

Figure-5: *Maternal Mortality Rate per 100,000 live births*

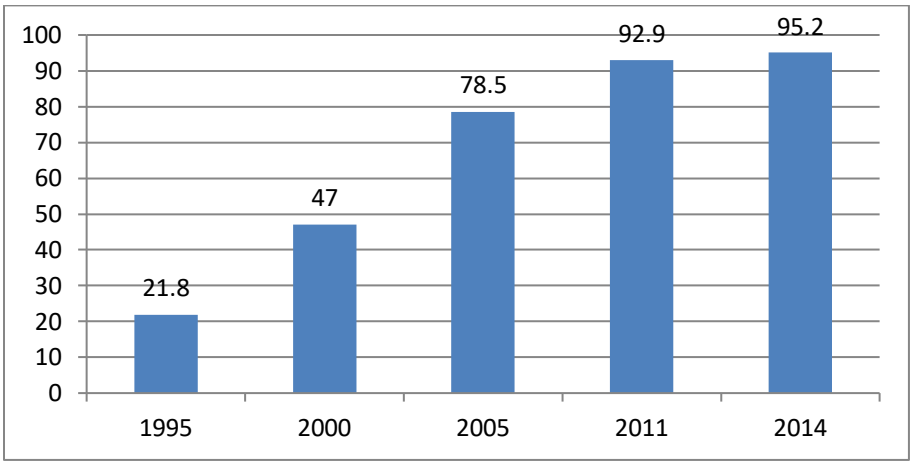
3.5 Actions taken for population change achievements

3.5.1 **Increasing Female participation at all level of education system**:

Studies have shown that the level of education of the mother is a crucial element in the success of activities aimed at reducing fertility rates, improving health and reducing mortality, particularly infant and child mortality (Cleland, 1987). In addition, it has also been shown that greater participation of women in non-traditional roles of economic activity, greater access to health care and subsequent decline in infant and child death rates influence the level of birth rates, and have played a part in their declines (Vavrus and Larsen, 2003). In Ethiopia, many girls, especially those who came from poor families or lived in rural or remote areas were not able to attend to school. Following the launching of an Education and Training Policy (ETP) in 1994 with goal of cultivation of citizens with an all-round education, girls enrolment has increased (TGE, 1994).Within the framework of ETP, the first five year Education Sector Development Programme (ESDP-I), intended as the first part of a twenty-year plan, was adopted in 1997. The main thrust of ESDP is to improve quality, relevance, equity, efficiency and to expand access with emphasis on primary education in rural and underserved areas, as well as to promote education for girls (FDRE, 1996).

Ethiopian Education and Training Policy has promoted girls' education at all levels and contributed to fertility decline and to economic growth because it prepares women for nontraditional roles outside the home. More-educated women also have better chances of obtaining loans and financial support to grow small businesses (Currie and Moretti, 2003). Gender Parity Index (GPI) is the ratio of female to male Gross Enrolment Rate (GER) has shown change. Gender parity indices in Ethiopia which was 0.84, 0.90 and 0.94 at primary level, and 0.7, 0.63 and 0.76 at secondary level, in 2005, 2007 and 2011, respectively (Appleton,1996). In the case of girls, especially at the secondary levels –helps delay marriage and first pregnancy. As the countries experience a demographic dividend, they will need to adapt education policies in response to their changing labor market needs. Gross Enrollment Ratio (GER) is the number of pupils (irrespective of age) enrolled at a particular grade level as a percentage of the corresponding school age population officially belonging to that particular school level. Accordingly, Gross primary school enrollment is the percentage of total enrolment in primary schools, irrespective of age, from the corresponding primary school age population, officially categorized as primary,

aged 7-14 years. The primary school enrollment ratio for Ethiopian girls depicts increasing trend (Figure 6).

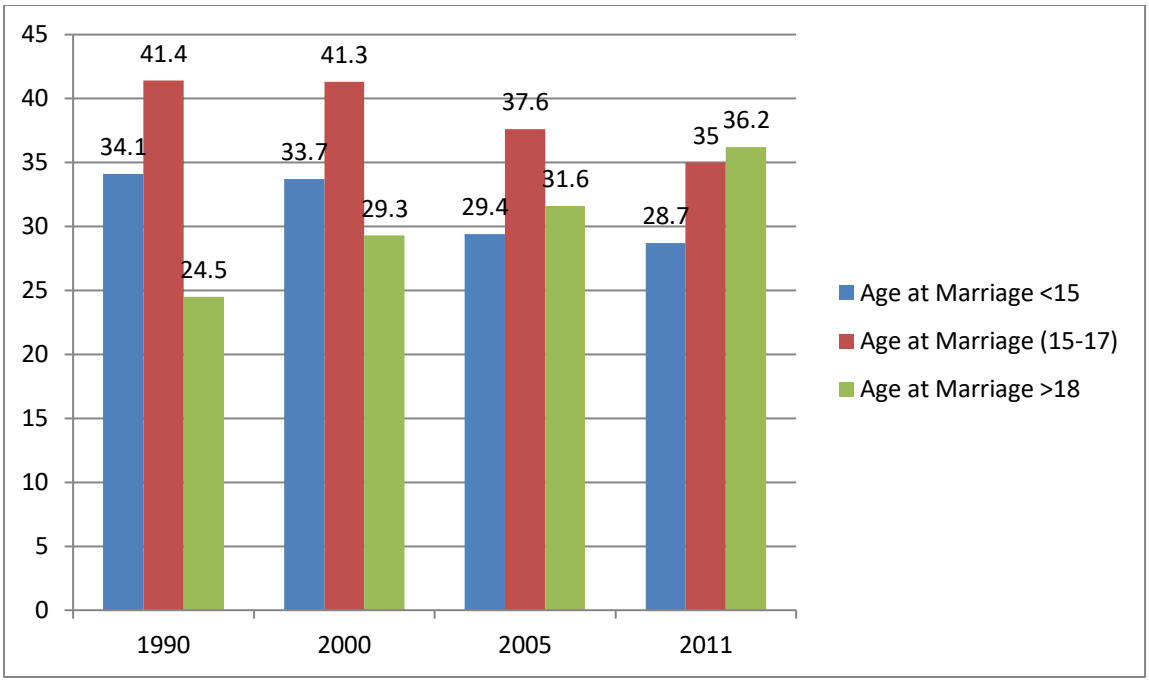


Source: MoE (2011).Educational Abstract Annual Abstracts EDHS (2000, 2005, 2011 and 2014)

Figure-6: *Trends and Levels in Primary Gross Enrollment Rate (GER) of Ethiopia* ***girls*** *by year*

3.5.2 Increase in minimum age at marriage

Early marriage contributes to higher total fertility as women marrying earlier tend to both have children earlier and bear more children over their lifetime than if they had married later (Kim, 2010). In 1990, in Ethiopia, among ever married women aged 15-49, 34.1% had married before age 15, and the proportion married before age 18 was 75.5% (CSA, 1993).The family law increase age at first marriage, to 18 years to reduce TFR (FDRE, 2000). In addition, several local as well as international NGOs have been working to bring behavioral change and forestall the practice of early marriage. Because of these efforts, the proportion of ever married women who got married before age 15 decreased by only 5.4 percentage points between 1990 and 2011 and those married between ages 15-17 years decreased by only 6.3 points from 41.4% to 35.1%. The proportion of those who got married after age 18 increased by 11.7 points from 24.5% to 36.2% in 2011. The median age at first marriage increased from 15 years in 1990 to 16 years in 2000 and it has not shown any change since then (Figure7).



Source: *CSA, (1993), CSA and ORC Macro, (2001, 2006), CSA and ICF International (2012)*

Figure 7: *Percentage distribution of ever married women by age at marriage*

3.5.3. Gender equity, equality and the empowerment of women

Gender equality, equity and the empowerment of women is a fundamental prerequisite for the attainment of sustainable development and fertility decline (Women UN, 2014). In order to tackle practices that militates against gender equity, equality and women empowerment, extensive law revision exercises were taken over the years that brought the country's laws in conformity with its international and regional commitments. The revised labor law protects women's rights in employment both within the public and private sectors and provides for measures ranging from maternity leave and occupational safety to affirmative action during recruitment and promotion and increased women's bargaining power in employment. The revised penal code forbids different forms of violence and harmful traditional practices including child marriage, abduction and female genital mutilation/cutting. A National Action Plan on gender equality was developed, institutional structures were established and initiatives were taken by the Government to create women's associations at various levels, all with the objective of protecting and promoting the rights of women and ensuring their independence and wide participation in the social, economic and political domains. Steps were taken to encourage the formation of women's association in platforms such as trade unions and professional associations

with a view to creating a critical mass of women leaders. As a result of all these initiatives, significant progress has been made in improving female participation in education, increasing representation in parliament, facilitating access to sexual and reproductive health services, and reducing the prevalence of harmful practices such as female circumcision and adduction.

As consequence of this mobilization, the percentage of circumcised women dropped from a high of 80% in 2000 to 74% in 2005. A study carried out in 2011 found that 23% of girls aged 0-14 years had been circumcised (CSA and ICF International, 2012). Similar studies also confirmed that women abduction declined from 23.3% in 1997 to 12.7% in 2009. Similarly, women access to political power and decision making improved significantly and the representation in parliament increased from 2.7% in 1995 to 7.7% in 2000 and to 27.8% in 2010. The key domain in which little significant progress has been made over the years is female participation in the formal labor force. Female participation increased from 66.5% in 1994 to 67.3% in 2007, less than 1 percentage point increase over a period of 13 years and the ratio of female to male labor force participation increased from 0.74 to 0.81 (FDRE, 2013).

4. CONCLUSION

In Ethiopia programs and policies have been formulated and implemented for the last 3 decades. This had made partly the families to choose fewer, healthy children when they know that each child has a better chance of surviving. After the policy was launched in 1993, some of NGO and government sectors are providing FP and RH services integrated with other development activities. As the result of this, fertility, infant, under-five and maternal mortality have declined significantly in Ethiopia. Female participation in education and labour force increased. A range of legal, policy and institutional frameworks have been developed and implemented on environmental security and on gender equity, equality and the empowerment of women. Legislative measures were also taken to remove harmful traditional practices. Despite the progress made, yet further work is required to match Ethiopian population growth with economic development and environmental sustainability.

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