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Cover Design

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ISSN 2157-1252

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Global Majority E-Journal

Volume 9, Number 2 (December 2018)

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Giving Girls a Chance: Ending Child Marriage and Promoting Education in Georgia and Niger

Gabrielle Bremer

Abstract
This article looks at child marriage in Georgia and Niger. Though Georgia has improved their child marriage laws, 14 percent of girls nationwide are still getting married off before they are 18 years old. The percentage of child marriage is considerably higher in Georgia’s rural areas. Niger has the highest percentage of child marriage in the world, with 76 percent of girls getting married before the age of 18 years. This article analyzes the similarities and differences for child marriage in Georgia and Niger. It will also explore policies and precautions that can be taken to reduce child marriage in these countries.

I. Introduction
According to Girls not Brides\footnote{Girls Not Brides is a global partnership of more than 1000 civil society organizations committed to ending child marriage and enabling girls to fulfill their potential. For further details, see \url{https://www.girlsnotbrides.org/}.} (undated) each year, 12 million girls are married before the age of 18. That is 23 girls every minute. Nearly 1 every 2 seconds. These child marriages hinder a young girl’s chances to lead a successful life. “Child marriage is associated with a number of grave consequences for girls, such as social isolation, absence of reproductive control, and dropping out of school.”\footnote{See United Nations Population Fund (UNFPA) (2014), p. 3.} Georgia and Niger are combating the issue of child marriage by keeping girls in school and promoting delayed marriage. However, still too many girls get married before the legal age (18 years old) and they are typically the ones who drop out of school and have children before they are mentally and physically ready for having children.

Both countries have made some progress in achieving the third Millennium Development Goal (MDG) of promoting gender equality and empowering women. However, the United Nations Population Fund (UNFPA) (2014) reports that Niger still has an exceptionally high rate of child marriage, with 76 percent of girls marrying before the age of 18, and 26 percent marrying before the age of 15. In Georgia, far less, but still 14 percent of the girls are marrying before the age of 18, despite of Georgia’s law that makes it illegal to marry before age 18. Poverty, lack of education, and traditions contribute to girls getting married.
II. Brief Literature Review

There are many publications touching on child marriages in Georgia and Niger. With regards to Georgia, Jegorova-Askerova (2016) and the United Nations Population Fund (UNFPA) (2014) analyze child marriage rates and give recommendations on how to reduce the percentages of child marriage within that country. With regards to Niger, Malé and Wodon (2016) and McCleary-Sills, Hanmer, Parsons and Klugman (2015) focus on some of the consequences of child marriage.

- Jegorova-Askerova (2016) reviews child marriage in Georgia and the regulations that have been put in place in hopes of reducing the number of underage brides. Most girls are unable to finish a basic education before they are married off. Yet, traditional people do not see a problem with this. Another issue addressed is that no one knows which children are married because most of the child marriages are not registered in Georgia.

- A Report by UNFPA (2014) provides some statistics on child marriages in Georgia and warns the readers about the consequences of child marriage. It gives an overview of recommendations for reducing the number of child marriage as well as the laws concerning marriage and education in Georgia. The report proposes that the laws regarding education and marriage should be more heavily enforced. It also suggests mandatory classes on sexual reproductive health for girls in school.

- Malé and Wodon (2016) focus on the very high rates of child marriage in Niger. Child marriage rates have declined over the past 25 years but not rapidly. They also examine how child marriage is associated with lower wealth, lower literacy, little education, and higher labor force participation. The authors focus on girls living in rural areas because that is where most of the underage marriage happens in Niger.

- McCleary-Sills, Hanmer, Parsons and Klugman (2015) analyze the correlation between education and child marriage in low income countries (including Niger). They examine the social and structural barriers that keep girls from completing school. They also provide some recommendations to keep girls in school, like, providing scholarships, hiring more female teachers, and reducing the distance between schools.

III. Empirical Background

According to the Central Intelligence Unit’s World Fact Book, Niger is one of the least developed countries in the world. This assessment is based on Niger’s high food insecurity, lack of industry, high population growth, and a weak education sector. Niger mostly relies on agriculture and uranium. Agriculture makes up 44.3 percent of the economy while services make up 40.8 percent. Niger is a semi-presidential republic and gained its independence from France in 1960. In 2016,
Niger had the world’s highest fertility rate at close to 7 children per woman. Also, almost 70 percent of the population is made up of youth (ages between 0-24 years).³

Georgia is currently an upper-middle income country. However, like Niger, Georgia has a large section (50.9 percent) of the working population in agriculture, while the service sector employs 39.1 percent and the industrial sector employs 10.0 percent of the working population.⁴ As shown in Figure 1, following the collapse of the Soviet Union in 1991 and subsequent conflicts with Russia, Georgia’s GDP per capita declined by about three quarters (from $ 8,017 in 1990 to a low of $ 2,181 in 1994. Fortunately, it grew rapidly since, reaching a GDP per capita of $ 9,016 in 2015.

**Figure 1: GDP per capita (constant 2011 international $), 1990-2015**

[Graph showing GDP per capita for Georgia and Niger from 1990 to 2015]

Source: Created by the author based on World Bank (2017).

Unfortunately, as shown in Figure 1, Niger’s GDP per capita has overall stayed about the same for the last 25 years. In 1990, Niger’s GDP per capita was $906. It then decreased for the subsequent three years, reaching $798 in 1993. It stayed around $800 from 1994 to 2011, after which it increased to $902 in 2014 and then decreased again marginally to $897 in 2015.

The huge differences in GDP per capita between Georgia and Niger are also reflected in terms of differences in poverty between Georgia and Niger. Figure 2 shows that poverty increased drastically in Georgia after the collapse of the Soviet Union and subsequent economic and political conflicts with Russia. Hence, in 2001, nearly 50 percent of Georgia’s population lived below $3.10 a day, and 21 percent lived below $1.90 a day. Though poverty has been reduced since 2001, in 2014, 25 percent still lived below $3.10 a day, and 10 percent lived below $1.90 a day. On the other hand, as shown in Figure 3, poverty is still a major issue in Niger, despite the gradual decline since 1994. In 2014, 75.5 percent of the population still lived below $3.10 a day and 45.7 percent lived below $1.90 a day.

³ The information in this paragraph is based on the U.S. Central Intelligence Agency’s World Factbook, Niger and World Bank (2017).
⁴ World Bank (2017), based on latest data available for 2014.
Despite the low GDP per capita and high poverty rates, Niger has made impressive strides in increasing life expectancy, which (as shown in Figure 4) increased from about 36 years in 1970 to 63 years in 2015. In total, Niger has increased the life expectancy of its citizens by 27 years in 45 years. Georgia’s life expectancy has risen at a much more moderate pace. In 1970, the life expectancy was 66 years; in 2015, it had risen to 75 years. Hence, Georgia’s life expectancy has risen by 9 years in the last 45 years.
IV. Discussion

This discussion section examines a variety of arguments and possible explanations for child marriage. The first subsection provides a broad overview for why child marriage still exists today and why it is a problem. The second subsection reviews child marriage laws, while the third subsection examines adolescent fertility rates and access to contraceptives in Georgia and Niger. The fourth subsection discusses how education delays child marriage.

IV.1. Why Child Marriage Exists

Child marriage is a multidimensional problem that cannot be solved overnight. It will take years of hard work and perseverance, but in the end, a better life will be provided for young girls that wish to attend school. Before diving into the discussion, it is important to examine why child marriage exists in the first place. According to Girls Not Brides (undated), poverty, cultural traditions, and insecurity are the reasons why this practice still happens today all over the world.

Young girls in poverty are more likely to be married because their parents cannot afford the expenses of taking care of them. Giving away their daughter is also a way to “repay debts, manage disputes, or settle social, economic and political alliances.”5 Another reason why child marriage happens is because of gender inequality. In many developing countries girls are not valued as much as boys are. Most families think that sending their sons to school is a worthwhile investment, but they do not send their daughters to school.

During the 1990s, young girls in Georgia were married off because bride kidnapping was a prevalent thing in Georgia. Parents would marry their daughters early in order to prevent them from being kidnapped. This way, they were able to find their daughter a suitable groom instead of the alternative. Parents would go as far as to pull them out of school to prevent them from the

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possibility of being kidnapped. Since the laws have become stricter on kidnapping, the cases of abduction have decreased immensely.

While bride kidnapping rarely happens in Georgia today, the biggest problem with Georgia’s child marriage problem is that most people do not see this practice as a problem. As discussed in Jegorova-Askerova (2016), child marriages have been a widespread tradition for many years and Georgia’s child marriage laws are not widely enforced. Many people in the remote village areas in the mountains are unaware of the laws put into place and they are also ignorant to the physical and psychological health of the young girls who marry.

Child marriage is also seen as a traditional practice. In many cultures, when a girl starts to menstruate, people see her as a woman, who is now worthy of a husband. The next step is then to get her married so that she can become a mother. Most of the time these traditions go unquestioned because they are part of the culture. This adds another barrier for reform.

The risk of getting pregnant before getting married is another main reason for why some girls are married at a young age. Parents feel that it is in everybody’s best interest to marry young in order to preserve family honor. In areas of high violence and sexual assault, marriage is seen as the best precaution. In fragile states, child marriage is common because of the increased conflict and natural disasters.

IV.2. Legal Age for Marriage

A report by the UNFPA (2014) explains that anyone who is getting married under the age of 18 years old cannot give full consent and that child marriages are considered a violation of human rights and the rights of the child. Figure 5 illustrates the differences in marriage laws around the world.

**Figure 5: Marriage Laws Across the World**

![Marriage Laws Across the World](source: Khazan (2015). Arrows added by author.)
In Niger, the official minimum age for marriage is 15 years. However, children can get married even younger due to religious practices and by the will of the parents. Only recently has Niger taken action to improve the quality of life for young women by attempting to reduce child marriage. For instance, Barroy et al. (2016, p. 27) state that there was an effort to enact a law that would protect female adolescent students by having to obtain permission from a judge for a child to marry. However, religious leaders opposed this law and elected representatives refused to vote. Nevertheless, the President of Niger, Issoufou Mahamadou, has recently stated that child marriage will no longer be tolerated.6

In Georgia, the legal age for marriage is 18 years. However, most of the child marriages in Georgia are never officially registered. Therefore, the parents are typically not held accountable for marrying their daughters too early.

IV.3. Adolescent Fertility and Contraceptives

UNFPA (2014 p. 4) states that a reproductive health survey of Georgia found that “some 76.6 percent of married women aged 15 to 19 years used no method of modern contraception.” The reasons for not using contraceptives were related to pregnancy, fertility, or sexual activity. However, another reason may be that there has not been any exposure to contraceptive counseling and family planning. On the other hand, the survey found that ethnically Georgian women have higher access rates to contraceptive counselling than other ethnic groups in Georgia.

Education on reproductive health is not part of the school curriculum in Georgia. Based on a reproductive health survey (referred to in UNFPA, 2014), only 3 percent of Georgian women aged 15 to 24 had learned about contraception in school before they reached the age of 18. Most of these young girls learned about sexual matters from their friends (31 percent) and their parents (26 percent). Unfortunately, most child spouses did not know anything about reproductive health or family planning when they got married. Most of the girls reported that they became pregnant soon after getting married. Most of the girls did not want to use contraceptives anyway because they are under an immense amount of pressure to have children to fulfill social expectations.

Figure 6 illustrates the percentage of women that use modern contraceptives in Niger and Georgia. This information is vague and scattered, but it is evident that Georgia has a higher percentage of women using contraceptives. In Georgia, women have more access to health care than women in Niger. Women in Niger are also expected to start having children at a very young age and because of this expectation, women aren’t allowed to have contraceptives.

Another reason as to why Niger’s contraceptive rates are very low is because it’s a predominantly Muslim country. Because of this, woman's knowledge about family planning is very limited and it depends on whether she lives in an urban or rural area and her socio-economic status. However, according to Potts, Gidi, Campbell and Zureick (2011), Niger has provided free contraceptives since 2002 and has made efforts to promote family planning. Regrettably, contraceptive usage remained low. In 2009, 11 percent of Nigerian women ages 15-49 were actively using contraceptive methods. Fewer than half of the 11 percent were using modern methods. The most common reason for not using contraceptives was menopause, the desire to have more children, or sterility.

Figure 6: Modern Contraceptive Prevalence for Women Ages 15-49

![Contraceptive Prevalence, Modern Methods (% of women ages 15-49)](chart)

Source: Created by author based on World Bank (2017).

Figure 7: Adolescent Fertility Rate From 1970-2015

![Adolescent Fertility Rate (births per 1,000 women ages 15-19)](chart)

Source: Created by the author based on World Bank (2017).

Figure 7 illustrates the adolescent fertility rate in Niger and Georgia from the years 1970 to 2015. As shown, Georgia has made a few improvements to keep the adolescent fertility down. In 1970, the rate was approximately 87 children born per 1,000 women. In 2015, this number dropped to
about 38 children per 1,000 children. This is due to the new child marriage laws and widespread knowledge about modern contraceptives. Unfortunately, this has not been the case in Niger because their fertility rates have not gone down much in the last 45 years. In 1970, the number of children born per 1,000 adolescents was 210. Then, in 2015, this number was 201. The number of children has fluctuated between 200-215 but has still remained almost the same in the past 45 years. The fertility rate has stayed the same because Niger has not made huge efforts to educate people on modern contraceptives or introduce laws to combat child marriage.

IV.4. The Role of Education

Education can prevent girls from marrying too young and give them the support they need to succeed in life. Smith, Paulson Stone, and Kahando (2012) explain that school dropouts is a reduction of opportunities for young girls since the girl must relocate to the husband’s village after marriage and start a new family. There is no hope of continuing an education after the increased responsibility of marriage. Dropouts lead to a young marriage but if girls stay in school then that is the best way to delay marriage.

McCleary-Sills, Hanmer, Parsons and Klugman (2015, p. 69) state that “[e]ducation is not only a human right, but also a powerful tool for women’s empowerment and a strategic development investment.” There is a clear correlation between women who are educated and women who were married young. Those women with an education tend to lead healthier and happier lives. This is due to having greater economic opportunities and a higher chance of getting out of poverty.

Jegorova-Askerova (2016) reports that there is a higher percentage of people with little to no education in the high mountain villages, which is where most of the child marriages take place. By educating these village areas, there is a possibility child marriage can be delayed. If people are educated on the dangers and barriers of child marriage, then Georgia can create a better life for these girls.

**Figure 8: Literacy rate, adult total (% of people ages 15 and above)**

![Literacy rate, adult total](image)

Source: Created by author based on World Bank (2017).
Figure 8 shows the total adult literacy rates available for Georgia and Niger. Georgia has an extremely high literacy rate, with 99.7 percent of the country being able to read for all three years such data is available. Hence, Georgia’s remaining child marriages cannot be due to uneducated girls or parents. This is in sharp difference to Niger’s low literacy rates, which have fluctuated between 15 and 30 percent for the four years (2001, 2005, 2012, and 2015) such data is available. Furthermore, as Figure 9 shows, there is a huge gender difference in youth literacy rates in Niger. In Niger, literacy rates for females are about half of males. In Niger, it is thought by many that girls do not have to go to school to learn how to read and write because they are going to get married and will be busy with taking care of family and children.

**Figure 9: Youth Literacy Rates in Niger (all available years)**

Source: Created by the author based on World Bank (2017).

For most children that marry between the ages of 15 and 17 in Niger, their marriage does not affect their primary education. However, some girls marry earlier so they have to drop out of primary school with no hope of attending a secondary school. Malé and Wodon (2016, p. 3) agree with this by stating:

Marrying between the ages of 15 and 17 tends to affect primarily secondary education enrollment or completion, and may not necessarily affect the completion of primary education.

But marrying even earlier can also prevent girls from completing their primary education.

Furthermore, girls who come from a lower socio-economic class and are from rural areas are more likely to marry early. In fact, Malé and Wodon (2016, p. 3) explain that rural girls are twice more likely to marry early than urban girls. One of the reasons why these girls are more likely to get married earlier is because their families cannot afford to support them anymore.
V. Conclusion

This article highlights some of the deep and complex issues of child marriage in Georgia and Niger. By giving attention to the dangers of this problem, we may come one step closer to abolishing child marriage and giving girls a chance to lead a life without worry of the psychological and physical dangers of this tradition.

While Niger still has an exceptionally high rate of child marriage, with 76 percent of girls marrying before the age of 18 years, Georgia’s child marriage rate has been reduced. Today, only 14 percent of the girls are marrying before the age of 18. Georgia has enacted laws to prevent the marriage of young children that discourage parents from marrying their children. Now, the only places that practice this tradition are the very rural areas and villages in the mountains of Georgia.

Finally, a joint United Nations Children’s Fund (UNICEF) and United Nations Population Fund (UNFPA) (2016) Press Release announced an accelerated program to end child marriage by 2030. The program will focus on increasing access to education and health care while also educating parents and the community about the dangers of child marriage. There will also be efforts to raise the minimum age for marriage to 18 years old. This program will span across twelve countries in Africa and the Middle East, where child marriage rates are the highest.

References


Risky Business: Agricultural Development and Environmental Consequences in Indonesia and Ecuador

Dorothy P. Hastings

Abstract
This article looks at the effects of agricultural development and its relation to deforestation and soil erosion in Indonesia and Ecuador. Indonesia’s rainforests are some of the most biodiverse and species rich areas on earth, but it has the third highest level of endangered and at-risk species in the world. Ecuador is currently the country with the highest number of at-risk species. Livestock and agricultural production are central to the economies of both Indonesia and Ecuador. Indonesia’s economy has changed from rural to urban in recent years, however around 30 percent of Indonesian land area is used for agriculture purpose. Although recent economic developments may have worked in reducing poverty, both Indonesia and Ecuador still suffer from high rates of rural poverty and low agricultural productivity. This paper examines how agricultural developments have led to deforestation and land degradation, destroying biodiversity, and how these countries are implementing new sustainable development policies.

I. Introduction
Indonesia and Ecuador are both extremely biodiverse countries, both are listed as one of the 17 “megadiverse” countries on earth.¹ Ecuador hosts more biodiversity per square km than any other country and Indonesia has been cited as the most species rich country on earth spread out over its 18,000 islands. Indonesia is the sixth largest producer of greenhouse gas emissions due to deforestation to make way for its palm oil and paper plantations. Both countries are largely affected by fragmentation, deforestation, pollution, soil erosion, and species extinction. Both governments, historically plagued by political corruption and land disputes, only recently began conservation initiatives due to international pressure. These conservation initiatives and sustainable agricultural development policies are aimed at increasing agricultural productivity for poor rural farmers who suffer the most from large plantations encroaching on their land. Many have been ineffective as

¹ See https://www.rankred.com/top-10-megadiverse-countries-in-the-world/.
both the Ecuadorian and Indonesian government still struggles with enforcement of laws and political corruption.

This article looks at agricultural production and its relation to environmental issues such as deforestation, soil degradation, and endangered species in both Indonesia and Ecuador, and will look at sustainable agricultural solutions. This article excludes urban centers and urban growth in both Ecuador and Indonesia and focuses only on rural areas and their contribution to agricultural growth and the ways in which they are affected by deforestation from large plantation companies.

Following this introduction, the next section reviews some of the prominent literature on agricultural development and environmental challenges in Ecuador and Indonesia. The third section provides some socio-economic background for both countries. Section IV discusses first the importance of agriculture specific to each country, then the issues of deforestation, soil erosion, and mangrove and peatland depletion, and lastly, the existing sustainable agricultural and conservation initiatives in each country. The last section provides some conclusions.

II. Literature Review

There is an extensive amount of literature on agricultural productivity and small farming in Indonesia and Ecuador, as well as the extent of the destruction in each country from companies such as palm oil growers, who cause deforestation and desertification. Even though some of these studies were written years ago, they are still useful in understanding the causes of Ecuador and Indonesian land degradation.

Southgate and Whitaker (1992) discuss the causes and conditions of soil and coastal erosion and deforestation in Ecuador. According to the authors, the causes of Ecuador’s environmental degradation are inadequate property rights and government policies, government interference in market forces, and poor investment in research. The authors look specifically at areas of Ecuador that have experienced rapid agricultural colonization resulting in deforestation, such as lowland Ecuador. Lastly, they discuss maricultural development in Ecuador, specifically the once booming shrimp industry, which has caused the displacement of mangrove swamps and overfishing.

Feintrenie, Laurène, Schwarze, Stefan and Levang (2010) discuss lading (rice cultivation), agroforests, and agricultural intensification and expansion in Indonesia. The study looks at the transformation of forests and agroforest to monoculture plantations focusing on three regions in Indonesia and small farmers’ land use decisions and conservation efforts in those areas. The authors concluded that economic factors such as commodity prices determined by the international market drive agricultural intensification and monoculture plantations, specifically rubber, palm oil and cocoa are more profitable than traditional agroforests and rice cultivation.

Austin, Mosnier, Pirker, McCullum, Fritz and Kasibhatla (2017) analyze the extent of deforestation in Indonesia that is due to oil palm plantations and evaluate the impact of the zero-deforestation commitments of some Indonesian companies. They specifically focused on deforestation in forests of Sumatra, Kalimantan, and Papua, which are where oil palm plantations are located, and offered the solution of future expansion into lands without deforestation. They found that while oil palm driven deforestation increased in Kalimantan and Papua, however overall the percent of plantations replacing forests decreased from 2010-2015. Oil palm plantations are increasingly expanding into non-forested lands making zero-deforestation commitments by palm oil growers and companies not as important in decreasing deforestation in some regions of Indonesia such as Sumatra.
Barrowclough, Stehouwer, Alwang, Gallagher, Mosquera and Dominguez (2016) study conservation agricultural techniques for small-scale farmers in Ecuador’s highlands. Authors collected data for five years in Bolivar Province, Ecuador in the Sierra region where they compared crop yields and cost of production for farmers using both conventional agricultural farming practices and conservation agricultural practices. In the five-year study, authors found that conservation agriculture yielded more crops, was less expensive, and protected soil from erosion. Economic benefits and protection from soil erosion made conservation agriculture attractive to small farmers, however it has largely not been adopted due to uncertainty and risk aversion.

Pan, Carr, Barbieri, Bilsborrow and Suchindran (2007) focus on deforestation in the Ecuadorian Amazon. The authors collected data from migrant colonist farm plots and found that an increasing population size significantly increased deforestation and an increase in population density increased agricultural expansion. They also found that farms further from urban centers had a lower rate of forest clearing. Their study also showed that forest clearing was necessary to claim the land and to grow subsistence crops, and overtime the land cleared was used to grow cash crops such as coffee.

### III. Socio-Economic Background

Indonesia is the largest economy in Southeast Asia and the 10th largest economy in terms of purchasing power parity in the world. It is the fourth most populous country in the world. Indonesia is a lower middle-income country, who’s national poverty rate has fallen to 11.3 percent in 2014, though rural poverty was with 14.2 percent for the same year nearly 3 percentage points higher. Indonesia has seen great improvements in poverty reduction mostly due to infrastructure development and nonfarm economic growth since the Asian Financial Crisis of 1997. However, Indonesia still faces challenges due to slow job creation, poor quality of schools and health clinics, and a high maternal mortality rate.2

Ecuador, which is an upper middle-income country, is one of the smaller countries of South America, but still the eighth largest economy in Latin America. It hosts a diverse range of climate and ecosystems. Ecuador’s poverty rate has decreased drastically since 2000 and in 2014 the national poverty rate was 22.5 percent, however rural poverty in the same year was 35.3 percent. Hence, poverty is much worse in rural areas, where the oil industry encroaches on native lands. Agricultural intensification causing soil degradation and land scarcity and the destruction of mangrove swamps along the coast have also increased poverty.

As shown in Figure 1, for both countries, GDP per capita has overall increased from 1990 to 2015. However, Ecuador’s GDP experienced a drop in 1999, due to a financial crisis after global oil prices dropped in 1997-1998. Since 2000, Ecuador’s GDP per capita rose, though fluctuations in international oil prices and natural disasters have affected GDP per capita negatively in some years. Like most other East Asian countries, Indonesia also experienced a financial crisis in 1997 but recovered in 1999 with economic and governmental reforms supported by international organization like the World Bank and the International Monetary Fund (IMF).

Despite the limited availability of data, Figure 2 shows that literacy rates of both Ecuador and Indonesia were increasing and reached respectively, 94.5 percent and 95.4 percent in 2015. Hence, despite Ecuador’s higher GDP per capita throughout recent history (i.e., since 1990), literacy rates

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2 This and the next paragraph is based on information provided by World Bank (2017).
have been higher in Indonesia, though only marginally (about one percent) currently, though by about 8 percent in 2009. On the other hand, in 1990, Ecuador had a considerably higher literacy rate than Indonesia. In 2015, the gender gap in adult literacy was 1.9 percentage points in Ecuador, while it was 3.2 percentage points in Indonesia. In 2015, government spending on education was 4.9 percent of GDP for Ecuador and 3.6 percent of GDP for Indonesia, which is interesting as Ecuador still has lower literacy rates than Indonesia.

**Figure 1: GDP per capita, PPP (constant 2011 international $) in Ecuador and Indonesia**

![Figure 1](image)

Source: Created by author based on World Bank (2017).

**Figure 2: Adult Literacy in Ecuador and Indonesia (all available years)**

![Figure 2](image)

Source: Created by author based on World Bank (2017).
As shown in Figure 3, life expectancy has steadily increased for both countries. In 2015, it was 76 years for Ecuador and 69 years for Indonesia. In the same year, maternal mortality for Indonesia was relatively high at 126 deaths per 100,000 live births, while it was relatively low (64 deaths per 100,000 live births) in Ecuador. In 2015, Ecuador’s population growth rate was 1.51 percent, while that of Indonesia was 1.21 percent. While both countries are currently experiencing rapid urbanization, 36 percent of Ecuador’s population still lived in rural areas in 2015, while in Indonesia, the rural population accounted for 46 percent in the same year.

![Figure 3: Life Expectancy (at birth, years) in Ecuador and Indonesia, 1970-2015](image)

Source: Created by author based on World Bank (2017).

IV. Discussion

IV.1. Agriculture in Indonesia and Ecuador

Central to understanding Indonesia’s agricultural development policies is knowing that Indonesia has been a transforming country since the 1970s and is projected to become urbanized soon. At this point, being a transforming country, means that although agriculture is no longer a main source of GDP growth, poverty remains to be mostly rural. As shown in Figure 4, the share of agriculture in GDP shows a clearly downward trend. In 2015, it accounted for 13.5 percent of GDP in 2015 (while industry accounted for 40.0 percent and services accounts for 46.5 percent of GDP).³

Even though 64 percent of Ecuador’s population live now in cities, given that urban poverty is far lower than rural poverty, most of Ecuador’s poor people (2.05 million) still live in rural areas (compared to the 1.66 million urban poor). Even though agriculture accounts currently (2015) for

³ World Bank (2017).
only 6.5 percent of GDP (industry makes up 33.8 percent and services make up 59.7 percent of GDP), agriculture is still the main source of livelihood for rural communities.  

Figure 4: Share of Agriculture in GDP in Ecuador and Indonesia, 1987-2015

![Graph showing the share of agriculture in GDP for Ecuador and Indonesia from 1987 to 2015.](image)

Source: Created by author based on World Bank (2017).

In 2015, Indonesia accounted for 53.3 percent of world palm oil production. It also is a major producer and exporter of rice, coffee, rubber, and cocoa. Rice provides the main source of income for small farmers, and employs 7.1 percent of the total workforce in the agricultural sector. Agricultural productivity growth has been slow in Indonesia, however the Indonesian Government along with the World Banks has developed a rural development strategy which includes strengthening property rights to land and reducing soil degradation, among other things. Agricultural productivity has also increased from agricultural mechanization. Developing environmentally sustainable techniques is important to the issue of productivity growth.

The large diversity of climates in different regions of Ecuador allow for cultivation of different agricultural goods. Large-scale production of cash crops exists in the coastal regions where coffee, palm oil, bananas, sugar, and rice are produced for export. Oil is Ecuador’s largest export and main industry, accounting for 40 percent of exports. Ecuador’s banana production is also important as Ecuador exports more bananas than any other country. Fishing and shrimp production in the coastal lowlands is also a main source of economic growth in Ecuador. Ecuador is the seventh largest producer of cacao, and around 90 percent of cacao is produced by smallholder farmers.

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4 The data in this paragraph is based or calculated by author based on World Bank (2017).
5 https://www.slideshare.net/GreenPalmOil/2015-global-palm-oil-production-by-country.
6 Barichello and Patunru (2009).
Ecuador has the highest deforestation rates in Latin America and 50 percent of the land is affected by soil erosion.\textsuperscript{7}

\textbf{IV.2. Deforestation}

Figure 5 shows the percent of land area in Ecuador and Indonesia that is capable of being plowed and used for crops. The graph shows that in Ecuador this land is decreasing while in Indonesia it is still increasing (largely due to deforestation, which more than compensates for the arable land lost due to a variety of reasons, including salination). In Ecuador, the western two-thirds of the country does not have much land sustainable for agricultural production and most of the lands already being used for crop production are the ones that are most suitable. However, the majority Ecuador’s increased crop production is from agricultural expansion into land that has limited agricultural potential, instead of increased agricultural productivity.

\textbf{Figure 5: Arable Share (as percent of total land area) Ecuador and Indonesia, 1970-2014}

\begin{center}
\includegraphics[width=\textwidth]{figure5.png}
\end{center}

Source: Created by author based on World Bank (2017).

Ninety-five percent of the coastal regions of Ecuador have already been deforested. The Ecuadorian Amazon is one of the most biodiverse areas in the world with thousands of species of plants and trees and hundreds of species of mammals and reptiles. According to a news report by the Green Commodities Programme (2017), more than 99 percent of the once forested land in the Ecuadorian Amazon is now used for agriculture, typically palm oil, coffee, or cocoa plantations. Deforestation of Ecuador’s Amazon region began during the 1970s oil boom and increased with agricultural expansion and illegal logging. Deforestation of the Amazon was due to a lack of fertile

\textsuperscript{7} This paragraph is based on information posted at: \url{http://www.new-ag.info/en/country/profile.php?a=2741}. 

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land in the western two-thirds of Ecuador, causing agricultural colonization in the Oriente\textsuperscript{8} and Amazon. Additionally, all of Ecuador’s oil reserves are located in the Amazon.\textsuperscript{9}

The government of Ecuador has plans to achieve a net zero deforestation by 2020 by providing financial incentives for conservation and recognizing the rights of indigenous people.\textsuperscript{10} However, in 2016 they started extracting oil from Yasuni National Park. Yasuni is one of the most biodiverse ecosystems on the planet hosting a variety of species that are endemic to Ecuador, however it also is on top of 20 percent of Ecuador’s untapped oil reserves.\textsuperscript{11} Currently protected areas are underfunded and do not consult or involve local tribes in their policy negotiations. Many mining and oil companies go unchecked in their encroachment on indigenous land or protected areas.

Indonesia suffers from a very similar situation. Indonesia contains the world’s third largest rainforest. With only 1 percent of the world’s land area, it contains 10 percent of the earth’s plant species, 12 percent of mammal species, and 17 percent of all known bird species. A third of all its native mammals are threatened. The Sumatran Tiger, the only surviving species of Indonesian tiger, is listed as endangered due to deforestation. Sumatran orangutans are listed as critically endangered by the International Union for Conservation of Nature (IUCN) red list,\textsuperscript{12} as 60 percent of their forest habitat was lost between 1985 and 2007. The biggest threat to their habitat are oil palm plantations that cover hundreds of square kilometers. A spatial land-use plan ratified in 2013 by the government of the Aceh province allows Sumatran orangutan habitat to be converted to plantations.\textsuperscript{13} Sumatran elephants have also become endangered due to loss of habitat and fragmentation by palm oil industries.

Indonesia as the world’s largest producer of palm oil and produced 36,000,000 metric tons in 2016, a number that is growing rapidly.\textsuperscript{14} The goal of the Indonesian Palm Oil Association is to produce 40 million tons per year by 2020.\textsuperscript{15} The total area of palm oil plantations in Indonesia is around 11.9 million hectares and is expected to reach 13 million hectares by 2020.\textsuperscript{16} Small farmers manage about a quarter of Indonesian palm oil plantations. Switching from other agricultural products such as coffee or cocoa to palm oil as it is in high international demand and is thus more profitable is common for small farmers. It is estimated that small farmers will manage around 60 percent of Indonesia’s total oil palm plantations by 2030. Big private plantations produce over half of Indonesia’s palm oil. In October of 2015, there were massive forest fires in Sumatra and Kalimantan, where all of Indonesian palm oil is produced, resulting from slash and burn clearing techniques that destroyed around 2.6 million hectares of land.\textsuperscript{17}

\begin{footnotesize}
\begin{enumerate}
\item The Oriente is a region of eastern Ecuador, comprising the eastern slopes of the Ecuadorian Andes and the lowland areas of rainforest in the Amazon basin.
\item Goldman (2017).
\item Green Commodities Programme (2017).
\item https://www.iucn.org/theme/species/our-work/iucn-red-list-threatened-species.
\item Kuhn (2015).
\item Indonesia Investment (2017).
\item Indonesia Investment (2017).
\item https://www.theguardian.com/sustainable-business/2015/nov/11/indonesia-forest-fires-explained-haze-palm-oil-timber-burning.
\end{enumerate}
\end{footnotesize}
In 2016, Indonesian President Joko Widodo issued a five-year temporary stop on clearing land for new oil palm plantations, although the effectiveness of it has been dubious. Widodo wants to increase productivity of already existing oil palm plantations by reforestation and using more efficient farming techniques and technologies. The Indonesia Sustainable Palm Oil System was adopted by the Indonesian Government and the Ministry of Agriculture to reduce greenhouse gas emissions and to focus on sustainable practices in palm oil production. However, many small farmers do not have the resources or the training to practice sustainable farming. Similarly, in Ecuador, smaller farmers are subject to higher interest rates than larger farmers and are last to sell their products to the government at a reasonable price. They are not willing to invest in conservation tactics.

In both Ecuador and Indonesia, land disputes with locals and lack of clarity regarding land ownership have worsened deforestation. Companies often buy local land for low prices and leave them landless and without resources on which local communities depend. Indigenous communities are often not recognized as owning the land they live on. Hence, there is no protection of those lands or the livelihoods of indigenous communities. The Indonesian government also allows transfer of public forests to private lands which results in clearing for agricultural production and plantations.

**IV.3. Soil Degradation**

Almost 50 percent of Ecuador is susceptible to erosion and desertification affects much of the Western side of the country. Soil erosion decreases land productivity, and small-scale farming in the Andean region has been a main cause of this degradation. Under Ecuador’s Land Reform Law,

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18 Indonesia Investment (2017).
these rocky lands are considered idle and can be agriculturally colonized. Small farmers are not inclined to practice sustainable farming techniques and instead abandon their crop land when it has become unusable, and colonize other land for agriculture. Abandoned land is common in the Sierra agricultural region as soil has become almost totally degraded. The Andes Mountains are the region with the most soil degradation (with 70 percent affected by soil erosion). The main type of cultivation in these areas is corn.

Similar to Ecuador, Indonesian small farmers without incentive or access to technologies for sustainable farming degrade soil and then simply clear a new forest for agriculture land. Both increased flooding and decline in agricultural production as well as contamination of local water supplies are results of soil erosion from deforestation. In order to maintain productivity, agroforestry is encouraged to rehabilitate degraded lands. Several different agroforestry systems have been established and practiced for a long time in local communities in Indonesia, particularly in the eastern dry areas. Small farmers are often hesitant to adopt sustainable agricultural practices due to risk of failure, cost, and lack of education. However, land degradation keeps communities poor and malnourished with low agricultural productivity. Dry climate in eastern Indonesia also contribute to soil degradation, however it is worsened by over exploitation of the land.

IV.4. Wetlands

Indonesia has 23 percent of all mangrove ecosystems in the world and they are the most carbon-dense forests in the tropics. Indonesia has the fastest rate of mangrove destruction in the world, accounting for 6 percent of the total annual forest lost despite making up less than 2 percent of the country’s total forest area. Mangroves are converted into shrimp ponds in Sumatra or agricultural land in Java. Mangroves provide both food and income to local communities and their water supplies are also affected by oil spills and pollution of mangroves. Similarly, Indonesian carbon rich Peatlands, the largest in the world, are being destroyed to make way for industrial palm oil and timber plantations. Recent efforts at restoration, such as the 2016 Peatland Restoration Agency aimed at restoring 2 million hectares in five years, have been mostly ineffective due to lack of enforcement of laws and outdated, poor quality peatland maps that do not allow for management and conservation.

Ecuador is the world’s third largest producer of whiteleg shrimp which are produced in large ponds in the coastal mangroves, specifically the regions of Guaya, El Oro, Manabi, and Esmeraldas. Estimates of mangrove loss range from 20 percent to 50 percent of the coastline. The loss of both ecological services and everyday livelihood services of mangroves is detrimental to local communities. Wood is used to build houses as well as for fuel, and some plants are cut down because they have medicinal value. A lack of secure property rights in much of the coast of Ecuador allows for unrestricted access and resource depletion.

IV.5. Sustainable Initiatives

According to the Agriculture Sustainability Institute (2018) at the University of California at Davis: “Practitioners of sustainable agriculture seek to integrate three main objectives into their

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21 Barrowclough et al. (2016).
25 Vega and Beillard (2015).
work: a healthy environment, economic profitability, and social and economic equity.”

Ecuador’s government has been hesitant to adopt sustainable measures due to how dependent their economy is on oil production, and small farmers have also been hesitant due to a lack of education and no support from the government. National conservation programs to protect forests have fallen off due to lack of government funding, and the Ministry of the Environment cannot actively enforce deforestation laws and stop unsustainable and illegal practices such as slash and burn from occurring. The key to increasing agricultural productivity in Ecuador without agricultural expansion by deforestation is the introduction of higher yielding crop varieties and encouraging small farmers to adopt agricultural technologies.

Indonesian rehabilitation and conservation policies have cited the rural poor living in and around these forests as key actors in sustainable agricultural development that would also help them move out of poverty. Empowering these local communities has been the approach of government and non-government organizations in Indonesia. The focus has largely been on market-based conservation strategies, including incentives to get companies to become sustainably certified. Pressure has pushed companies in Indonesia to commit to zero-deforestation, however there is often inadequate support and oversight to enforce zero-deforestation production. One Indonesian NGO called Sawit Watch is promoting increased productivity of home gardens and alternative crops to diminish local’s dependency on palm oil. Producing rubber has also become an alternative for local communities because it is less labor-intensive and its price is not dominated by large companies.26

V. Conclusion

There is a clear link to rural poverty and unsustainable agricultural practices. The poorest areas of Ecuador are the areas that depend largely on agriculture, specifically indigenous people in the Amazon region and rural highlands. In Indonesia, the poorest regions are in Java and Sumatra, which is where the majority of mangrove deforestation and oil palm production occurs. It is no surprise that the people living in these rural areas also suffer from high rates of malnutrition. Although migrating to urban areas may seem like the only solution out of unemployment and poverty, if these governments invested more in small farmers and encouraged sustainable agricultural practices it would alleviate their poverty. Agriculture is important to rural communities not only as a source of income but also as a way to eat and produce for themselves.

To governments, commodity values of exports are often seen as more important than the value of ecological services. The rainforests and mangroves of Indonesia and Ecuador offer natural services such as protection from soil erosion, water sanitation, medicinal plants, and rich soil that is important in aiding against climate change. Their destruction and the loss of hundreds of species endemic to these areas cannot be undone. Although Indonesia plans to cut carbon emissions by 29 percent by 2030, previous failed initiatives have shown that the government has no interest in curbing palm oil production as their economy is so dependent on it. Similarly, in Ecuador, a new fervor for protecting Ecuador’s biodiversity seems not as important as the wealth that comes from oil exports. Ecotourism is a more environmentally conscious and still highly profitable venture for both Indonesia and Ecuador, however it is unlikely that either government will stop production of their most profitable industries.

26 This paragraph is based on Friends of the Earth, LifeMosaic and Sawit Watch (2008).
References

Agriculture Sustainability Institute (2018). Sustainable Agriculture Research and Education Program. Website Resource of the Agriculture Sustainability Institute at the University of California at Davis; available at: http://asi.ucdavis.edu/programs/sarep/about/what-is-sustainable-agriculture.


The Water Crisis in Ethiopia and Kenya: Being Locked Out of Water and Sanitation

Sofía Pérez Semanaz

Abstract
This article analyzes a major health issue in two developing countries: the water crisis in Ethiopia and Kenya, which is caused by millions of people being locked out from having access to safe water and sanitation. Ethiopia’s and Kenya’s high mortality rates are a direct result of water-borne diseases. This article examines the evolution of the water crisis in Ethiopia and Kenya by reviewing access rates, the evolution of infant mortality rates, the burden the collection of water puts on children and women, and the lack of education.

I. Introduction
In the industrialized countries, most people have easy and relatively cheap access to water and sanitation. Water is essential for life and is needed to ensure that our most basic needs are met. These basic needs ordinarily include having water for the purpose of drinking, food preparation, washing of clothes, hygiene, and sanitation. However, the lack of access to water has become a global health issue. Simply put, without access to clean water we cannot stay healthy. More fundamentally, without clean water, getting out of the poverty cycle is nearly impossible. Our global water crisis is easily illustrated by focusing on two developing countries: Ethiopia and Kenya.

As of 2015, Ethiopia had a population of 99.4 million, of which 42.7 million (about 43 percent) lack access to clean water and 71.6 million people (about 72 percent) do not have access to improved sanitation sources. In Kenya, which had a population of 46.1 million in 2015, approximately 19 million people (about 41 percent) still depend on unimproved water sources, such as ponds, shallow wells and rivers, and about 27 million people (about 59 percent) lack access to improved sanitation.¹

This article analyzes the water crisis in Ethiopia and Kenya. Following this introduction, the next section (Section II) provides a brief review of the literature, which is followed by some information

¹ The data provided in this paragraph is based on World Bank (2017).
on socio-economic data (Section III). Section IV examines the degree and some consequences of not having access to safe water and sanitation, before the last section provides some conclusions.

II. Literature Review

There is abundant research on the water crisis in Africa. It is now clear that water scarcity in East Africa is a fueling conflict and it is hindering development. In Kenya and Ethiopia, for instance, dry seasons are growing longer and there is a rise in the competition of access to water. The studies on this subject are varied by topic and location. Naik (2016) is one of the many studies that covers the water crisis in the whole of Africa, Stevenson et al. (2012) focus on Ethiopia, Sreenivasan et al. (2015) concentrate on Kenya, while participants at the International Annual UN-Water Zaragoza Conference focused on some collaboration in the water sector between Ethiopia and Kenya.

Naik (2016) examines the water crisis in Africa individually and its root causes. According to his study, water is an issue that is connected to every condition of human development in Africa, including agriculture, education, economics, health, and peace and stability. In addition, he also mentions how Africa remains to be the world’s poorest and underdeveloped country due to many reasons. Some of those contributing factors are lack of access to clean drinking water, deadly disease transmissions (HIV/AIDS and malaria), corruption of governments that have immorally violated human rights, high rates of illiteracy, among others. Indeed, the article strongly suggests that the crisis is due to natural and human-made circumstances. The natural circumstance is global warming and climate change, increasing the physical aspect. On the other hand, the human-made circumstance is economic scarcity because people do not know how to utilize adequate sources of water. Furthermore, the article also mentions how in Central and West Africa they have decent freshwater; but in East Africa, North Africa, and Southern Africa, the water conditions are critical.

Stevenson et al. (2012) focus on the water crisis in Ethiopia. They associate women’s psychological distress to water insecurity, water collected, distance from water sources, unprotected water sources, and food insecurity. Beyond that, and most importantly, the article demonstrates how women’s health can be affected whenever they have the responsibility of traveling to get water supply for their family.

Sreenivasan et al. (2015) addressed the water crisis that Kenya faces, but illustrate how this country is acting upon this issue. The authors explain how there are many clinics in rural western Kenya that do not have access to safe water. This is a major issue because it can easily lead to waterborne diseases which have claimed the lives of many people. Notably, to address this issue, a program was implemented in 2005 that installed water stations for hand washing and drinking water in 109 health facilities and trained health workers on water treatments and hygiene. The implementation of this program was effective because everything has been maintained since then.

Participants of the International Annual UN-Water Zaragoza Conference 2012/2013 discussed some examples of successful water cooperation, one of which was the cooperation between Ethiopia and Kenya of Lake Turkana. Lake Turkana is located mostly in the Kenyan Rift Valley, though its far northern end crosses into Ethiopia. It is the world’s largest permanent desert lake and the world’s largest alkaline lake. The conference participants discussed how despite

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2 See UN-Water Decade Programme on Advocacy and Communication (UNW-DPAC) (2013).
collaboration on assessing the impact of climate change and drought, it has been difficult for the two countries to deal with implementation issues. Furthermore, there are some new emerging issues: the discovery of oil, which will complicate issues further.

**III. Socio-Economic Background**

Ethiopia is located in the Horn of Africa, which is in the tropical zone laying between the Equator and the Tropic of Cancer, with three different climate zones according to elevation. Ethiopia’s economy is based largely on agriculture, which accounts for 46 percent of the country’s gross domestic product (GDP). Approximately 85 percent of the population is engaged in agricultural production. Coffee production is Ethiopia’s largest source of foreign exchange and it has contributed significantly to the economy. However, Ethiopia as well as other countries in Africa face several issues that are challenging for the agricultural production of the economy, such as droughts, soil erosion, deforestation, and desertification. Since agriculture plays a major role in Ethiopia’s economy, it is essential for Ethiopia to address these environmental problems, so they can improve and keep developing as a country. 

Kenya is located in Eastern Africa with a climate that varies by location, from mostly cool every day to always warm/hot. The climate along the coast is tropical. The agricultural sector plays a key role in Kenya’s economy as it generates 26 percent of its GDP. However, water shortage, water quality, water pollution, flooding and other hazards are environmental issues that constantly affect the people of Kenya today. In addition, since Kenya is a dry country and it has uneven rainfall patterns, this climatic characteristic affects the availability of water. The two rainy seasons are, the “long rains” falling between April and June and the “short rains” between October and December. The typical annual rainfall is 5 inches in the arid regions and 76 inches around Lake Victoria.

![Figure 1: GDP per capita, PPP (constant 2011 international $) in Kenya and Ethiopia](image)

Source: Created by author based on World Bank (2017).

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4 The information provided in this and the next paragraph is based on the Nations Encyclopedia (n.d.) and the World Bank (2017).
As shown in Figure 1, though both Kenya and Ethiopia have increased their GDP per capita (in constant 2011 international dollars) between 1990 and 2015, both countries had a lower GDP per capita in 2003 than they had in 1990. Hence, there was overall no progress in terms of GDP per capita for nearly 15 years. From 1990 to 2015, Kenya’s GDP per capita increased by only $525 (from $2,376 to $2,901), while Ethiopia’s GDP per capita increased by $877 (from $652 to $1,530). Hence, Ethiopia has much more progress in absolute and especially in relative terms.

Figure 2 shows that Kenya’s life expectancy (in years) has been fluctuating, while Ethiopia’s life expectancy has initially been flat but slowly increasing since the mid-1980s. From 1970-1998, Kenya’s life expectancy was higher than in Ethiopia; after 1998, Ethiopia’s life expectancy was marginally higher than that of Kenya’s. In 1970, life expectancy for Kenya was 52 years and for Ethiopia it was around 40 years. In 2000, the life expectancy in Kenya dropped from 52 years to 49 years, while Ethiopia’s life expectancy kept increasing though time; from 40 years of life expectancy to finally 55 years in 2015.

![Figure 2: Life Expectancy at Birth in Kenya and Ethiopia, 1970-2015](image)

Source: Created by author based on World Bank (2017).

Data on adult literacy rates is scarce in Ethiopia and even more so in Kenya. For Ethiopia, adult literacy rates are available for only five years (1994, 2004, 2005, 2007 and 2015); for Kenya, adult literacy rates are available for only three years (2000, 2007 and 2015). Despite the limited data, Figure 3 shows that Ethiopia has made some progress in increasing its adult literacy rates from 28 percent in 1994 to 59 percent in 2015. On the other hand, based on the available data, Kenya does not seem to have made any progress. Literacy rates in Kenya decreased from 82 percent in 2000 to 72 percent in 2007, after which they recovered slightly, reaching 78 percent by 2015. Despite Ethiopia’s overall progress and Kenya’s overall deterioration, adult literacy rates remain much higher in Kenya than in Ethiopia.
IV. Ethiopia’s and Kenya’s Water Crises

Following the Resolution of the UN General Assembly in 2010, access to safe water and sanitation are generally considered to be basic human rights. Drinking unsafe water and lack of access to adequate sanitation is responsible for many water-borne diseases, many of which lead deaths from diarrheal diseases. Following some basic information on various access rates to water and sanitation in Kenya and Ethiopia, this section examines the impacts on health (especially infant mortality) and reviews the burden of collecting water has on children and women. It also examines some broader but related education issues, including the gender gap in education.

IV.1. Access to Water and Sanitation

Ethiopia’s and Kenya’s water crises are mainly due to these countries’ dry climate, though also to the limited governmental funding and assistance (Schemm, 2017). Figure 4 shows the national access rates to safe water in Ethiopia and Kenya from 1990-2015. While both countries have made progress, Ethiopia has made far more progress than Kenya, increasing its access rate by 45 percentage points (from 13 percent in 1990 to 58 percent in 2015), while Kenya increased its access rate by only 20 percentage points (from 43 percent in 1990 to 63 percent in 2015). Despite this progress, nearly half of Ethiopia’s population and more than one third of Kenya’s population do still no access to safe water in 2015.

Figure 5 shows the access rates to improved sanitation facilities for Ethiopia and Kenya from 1990-2015. This graph confirms that most people do not have access to improved sanitation facilities in both Ethiopia and Kenya. In Ethiopia, only 3 percent of the population had access to improved sanitation facilities in 1990. By 2015, that percentage increased to 27 percent. In Kenya, about 25 percent of the population had access to sanitation facilities in 1990 and that percentage increased to 32 percent in 2015. Again, Ethiopia has made much more progress than Kenya, but more than two-thirds of the population in each country had not access to improved sanitation in 2015.
Figure 4: Access to Safe Water in Kenya and Ethiopia, 1990-2015

Source: Created by author based on World Bank (2017).

Figure 5: Access to Improved Sanitation Facilities in Kenya and Ethiopia, 1990-2015

Source: Created by author based on World Bank (2017).
Both, Ethiopia and Kenya have experienced moderate urban growth during the last few decades. As shown in Figure 6, Ethiopia’s share of urban population has slightly increased from 8 percent in 1970 to 19 percent in 2015, while Kenya’s urban population increased from 10 percent in 1970 to 25 percent in 2015. Mentioning this, the rural population has decreased. In Kenya, the rural population decreased from 89 percent (in 1970) to 74 percent (in 2015), while it decreased from 91 percent (in 1970) to 80 percent (in 2015) in Ethiopia. The reverse applies to the urban population shares. Keeping these moderate rates of urbanization in both countries in mind, we now review the access rates to water and sanitation in rural and urban areas of Kenya and Ethiopia.

**Figure 6: Rural and Urban Population in Kenya and Ethiopia**

![Rural and Urban Population in Kenya and Ethiopia](image)

Source: Created by author based on World Bank (2017).

Figures 7 and 8 show the access rates for the rural and urban populations in Ethiopia and Kenya, respectively for safe water and sanitation.

- In Ethiopia, only 3 percent of the rural population had access to safe water in 1990, which increased drastically to 48.6 percent in 2015. With regards to sanitation, the access rate of Ethiopia’s rural population increased from close to zero percent in 1990 to 28.2 percent in 2015. With regards to Ethiopia’s urban population, the access rate to safe water increased from 83 percent in 1990 to 93.3 percent in 2015, while the access rate to sanitation increased from 21 percent in 1990 to 27.5 percent in 2015.

- For Kenya’s rural population, access to water increased from 33 percent in 1970 to 56 percent in 2015, while access to sanitation facilities increased by only 5.5 percent (from 24.2 percent in 1990 to 29.7 percent in 2015). For Kenya’s urban population, the percentage of access to water decreased by 10 percentage points (from 92 percent in 1990 to 82 percent in 2015) while access to sanitation facilities increased by 4.6 percentage points (from 26.6 percent in 1990 to 31.2 percent in 2015).
Figure 7: Access to Water in Rural and Urban Areas in Kenya and Ethiopia, 1990-2015

Source: Created by author based on World Bank (2017).

Figure 8: Access to Sanitation in Rural and Urban Areas in Kenya and Ethiopia 1990-2015

Source: Created by author based on World Bank (2017).
IV.2. Implications on Infant Mortality

As detailed in Berman (2016), water-borne diseases (such as diarrhea and cholera) have become the leading cause of death in children under the age of five in Ethiopia. The same applies to Kenya, where water pathogen (causing cholera and diseases from parasitic worms) is a big problem. Sreenivasan et al. (2015, p. 873) explain how there are many clinics in rural western Kenya that do not have access to safe water, and this is an issue because it can lead to water-borne diseases and can claim the lives of many people. As a result, although Kenya has made progress, water-borne diseases are still an issue for the people who do not have access to improved sanitation, as well as in Ethiopia.

Comparing the data provided above on access to water and sanitation with Figure 9 below, shows a close correlation between a) increasing access to water and sanitation and b) a decrease in infant mortality. In 1990, Kenya’s infant mortality rate was 65.8 per 1,000 live births, which is when 42.8 percent of the population had access to water and when 24.6 percent of the population had access to improved sanitation. But in 2015, when 63.2 percent of the population had access to water and 30.1 percent of the population had access to sanitation facilities, Kenya’s infant mortality rate decreased from 65.8 to 35.5 per 1,000 live births.

In Ethiopia, the infant mortality rate in 1990 was 121.6 per 1,000 live births, which is when only 13.2 percent of the population had access to water and only 2.6 percent of the population had access to improved sanitation. However, in 2015, when access to water increased to 57.3 percent and access to sanitation facilities increased to 28 percent, Ethiopia’s infant mortality rate decreased to 41.4 per 1,000 live births, which is a reduction by about two thirds within 25 years. As Figure 9 shows, since 1980, Ethiopia has made far more progress than Kenya. Ethiopia still has a higher infant mortality rate than Kenya, though it caught nearly up with Kenya. Clearly, with further progress in access to water and sanitation to come, it is expected that infant mortality rates will reduce further.

Figure 9: Infant Mortality Rate (per 1,000 live births), 1970-2015

![Figure 9: Infant Mortality Rate (per 1,000 live births), 1970-2015](image)

Source: Created by author based on World Bank (2017).
IV.3. Implications on Women’s Development

Not having access to safe water means that people have to find their own ways to search for water. It is well documented that women and children have to spend many hours fetching water. For women in Kenya, collecting water is a challenging task every day. As documented in Wananchi (2017), in rural Kenya, approximately 26 percent of women and children spend one hour or more, 20 percent spend between 30 and 60 minutes, while 54 percent can get their water within 30 minutes. In urban areas, 78 percent of the households can collect water in 30 minutes, but 12 percent of households spend one hour or more.

To exemplify the daily water-related struggles in Kenya, a video documentary by Reid (2017) tells the story of Cheru, an about a 5-year-old girl, who lives in the Chepoyotwo village in rural Kenya and has to help her mother carrying water every day in a 4.27 miles long round trip, which takes 3 hours and 32 minutes one way.

Cheru’s mother, Monica, wakes up early. She makes her children tea, with goat’s milk. Cheru and her siblings drink tea and eat leftovers from their one meal a day. Monica checks why Cheru’s teeth are hurting. She hands Cheru the empty tea kettle. Cheru joins other children from the community with their empty water jugs. They take a well-worn path. The difficult journey begins. Cheru falls on the steep slope. The route follows a dry river bed. A dirty puddle gives Cheru a chance to wash her face. The water is contaminated. She rests with her sister in the shade. Cheru races to catch up [with the other children]. Cheru scoops dirty water into her kettle. Her sister joins her, while goats wait their turn. Cheru cries when the bigger kids take away her kettle. Aggressive camels are thirsty, too. Cheru’s kettle is full. It’s time to walk home. Heavy water jugs make the walk back much harder. Each child carries as much water as they can. The sun is scorching. Swirling winds blow sand in the children’s faces. The children make the walk every day, sometimes twice (Reid, 2017, transcript of video).

Similarly, in Ethiopia’s rural areas, many women and children have to walk up to six hours every day in order to collect water and they collect water from unprotected ponds that they share with animals. Stevenson et al. (2012) carried out a study in rural communities in South Gondar zone of Amhara regional state, in Ethiopia, which highlights the implications of the distance for getting water on women. Table 1 shows the demographic characteristics of participants and community water access conditions, which varies by season. It shows that 8 percent of women travel more than 60 minutes to a water source during the primary rainy season, which increases to 15 percent during the dry season.

Stevenson et al. (2012) also show that 18.5 percent of women said that they kept a girl home from school to help with the collection of water, which implies that the collection of water prevents children from going to school. Suriyaarachchi (2016) provides the perspective of a young Ethiopian girl named Aysha, who lives in a remote region of Ethiopia. Aysha must walk an eight-hour round trip every day in order to reach her closest river to get water. Given her situation, she is unable to attend school and does not have time to learn, play, or be a child. A website source of the Interamerican Network of Academics of Sciences (IANAS) (2013) shows that the burden of fetching water inhibits not only a female’s access to education, but also her income generation, and political and cultural involvement. If there is an increase in the accessibility of water, women will suffer less and will have the opportunity to become educated.
Table 1: Demographic Characteristics of Participants and Community Water Access Conditions (by kebele)

<table>
<thead>
<tr>
<th></th>
<th>Gind Atemen (n=59)</th>
<th>Qoma (n=59)</th>
<th>Lebet Eslam (n=76)</th>
<th>Medeb Gubda (n=88)</th>
<th>Sorous (n=42)</th>
<th>Total (n=324)</th>
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</thead>
<tbody>
<tr>
<td><strong>Household characteristics</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mean age of respondents (SD)</td>
<td>38 (12.2) (13.5)</td>
<td>39</td>
<td>40 (11.9) (13.3)</td>
<td>38 (14.7) (13.3)</td>
<td>43</td>
<td>39</td>
</tr>
<tr>
<td>Mean household size (SD)</td>
<td>5.6 (2.0) (2.3)</td>
<td>5.4 (2.4)</td>
<td>5.3 (2.0) (2.3)</td>
<td>4.9 (1.7) (2.3)</td>
<td>5.7</td>
<td>5.3 (2.0) (2.6)</td>
</tr>
<tr>
<td>Mean food insecurity score (SD) [scale 0-9]</td>
<td>1.9 (2.2) (2.6)</td>
<td>3.6 (2.9)</td>
<td>2.8 (2.3) (2.6)</td>
<td>3.0 (2.7) (2.6)</td>
<td>4.4</td>
<td>3.0 (2.6) (2.6)</td>
</tr>
<tr>
<td>Mean SRQ-F score (SD) [scale 0-29]</td>
<td>8.3 (6.3) (6.4)</td>
<td>10.6 (5.8)</td>
<td>9.3 (5.9) (6.4)</td>
<td>9.8 (5.6) (6.4)</td>
<td>13.4</td>
<td>9.9 (6.1) (6.4)</td>
</tr>
<tr>
<td><strong>Household WASH characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean water insecurity score (SD) [scale 0-24]</td>
<td>4.9 (4.5) (6.2)</td>
<td>11.0 (5.9)</td>
<td>6.0 (5.6) (6.2)</td>
<td>3.1 (3.8) (6.2)</td>
<td>9.0</td>
<td>6.3 (5.8) (6.2)</td>
</tr>
<tr>
<td>% households with latrine</td>
<td>85</td>
<td>51</td>
<td>75</td>
<td>32</td>
<td>52</td>
<td>58</td>
</tr>
<tr>
<td>Mean liters of water collected per person/day (SD)</td>
<td>10.5 (6.5) (11.0)</td>
<td>12.0 (6.5)</td>
<td>10.4 (4.3) (5.7)</td>
<td>10.9 (4.5) (5.7)</td>
<td>10.0</td>
<td>9.9 (6.1) (5.7)</td>
</tr>
<tr>
<td>% using unprotected drinking water source for drinking in rainy season</td>
<td>61</td>
<td>81</td>
<td>50</td>
<td>56</td>
<td>74</td>
<td>62</td>
</tr>
<tr>
<td>% traveling &gt;60 min. to primary rainy season water source</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>7</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>% queueing &gt;30 min. at primary rainy season water source</td>
<td>17</td>
<td>7</td>
<td>29</td>
<td>1</td>
<td>29</td>
<td>15</td>
</tr>
<tr>
<td>% using unprotected drinking water source for drinking in dry season</td>
<td>56</td>
<td>98</td>
<td>51</td>
<td>53</td>
<td>69</td>
<td>64</td>
</tr>
<tr>
<td>% traveling &gt;60 min. to primary dry season water source</td>
<td>10</td>
<td>44</td>
<td>3</td>
<td>8</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>% queueing &gt;30 min. at primary dry season water source</td>
<td>21</td>
<td>49</td>
<td>63</td>
<td>5</td>
<td>54</td>
<td>41</td>
</tr>
</tbody>
</table>

Source: Stevenson et al. (2012), Table 1.
IV.4. The Role of Education

Education is an essential factor to reduce the amount of water-borne diseases in both Kenya and Ethiopia. Not having enough understanding on clean water and water treatment makes them short sighted on the topic of water that could potentially cause diseases. In many developing countries, people use any water sources that are available to them and that is because of the lack of adequate resources and the lack of knowledge of the consequences of drinking contaminated water. This is a major issue that forces children to have to miss school to collect water, resulting in missed educational opportunities for children and women.

Figure 10 shows the percentage of primary net school enrollment in both Kenya and Ethiopia. Even though there is limited data for Kenya, the figure shows that school enrollment has been increasing in both countries, relatively quickly in Ethiopia (where it increased from 19.2 percent in 1994 to 85.9 percent in 2014) and relatively slowly in Kenya (where it increased from 62.3 percent in 1999 to 84.9 percent in 2012). Not only has Ethiopia made much more progress than Kenya, Ethiopia’s recent trend is promising, while Kenya’s recent trend indicates a slowdown in increasing net school enrollment.

![Figure 10: Primary School Enrollment in Kenya and Ethiopia (all available years)](source: Created by author based on World Bank (2017)).

Figure 11 shows the difference between males and females in net school enrollment. The left panel shows that compared to the late 1990s (when the gender gap was 13 percentage points), Ethiopia’s gender gap has decreased steadily until 2009 (when it was 3.6 percentage points) but has increased once again during the last few years. In 2014, the gender gap was 5.8 percentage points. This disparity is mainly due to the fact that young girls in Ethiopia need to work, like helping their
mothers with family responsibilities, such as collecting water. On the other hand, though Kenya has made far less progress than Ethiopia in terms of increasing the overall net primary school enrollment ratio, Kenya’s gender gap has been very narrow and at least since 2010, there is a solid and growing gender gap of girls overtaking boys.

**Figure 11: Female and Male Primary School Enrollment in Ethiopia and Kenya**

![Graph showing school enrollment by gender in Ethiopia and Kenya](image)

Source: Created by author based on World Bank (2017).

In Kenya, there is a school-based safe water and hygiene intervention program in 45 primary schools. O’Reilly et al. (2007) evaluated this intervention program in order to determine the impact on students’ knowledge and how parents adopt the practices their children learn. As part of their study, O’Reilly et al. (2007) surveyed 390 students and also their parents. The survey demonstrated that there was improvement on the students’ knowledge on water treatment and they also knew when they had to wash their hands. This type of intervention program demonstrates that they have a positive effect in improving the school and home environments because it can increase awareness, knowledge and most importantly, change the behavior of people related to water safety in schools as well as at home. These programs could develop and improve the access to safe water, and if effective, they reduce diarrheal diseases and will therefore also increase school attendance (O’Reilly et al. 2007).

In other words, due to the lack of some children going to primary school, they lack the education they need about water safety and contamination. Like with the example of the school-based water and hygiene intervention program, when children are not going to school, they cannot learn about this water crisis issue. When they do not learn and get this education, they cannot make changes in their homes and those families will keep on getting water-borne diseases just because they are collecting water and not getting educated about this issue and how to prevent getting sick.
V. Conclusion

Ethiopia has a lower GDP per capita than Kenya, but in terms of access to safe water and sanitation, Ethiopia has made significantly more progress during the last three decades than Kenya, in both rural and urban areas. Although that is true, the lack of access to water and sanitation facilities is still impacting both Ethiopia and Kenya in many ways, especially in health and education.

Far too many women and children still have to travel many hours in order to collect water, and in many cases, that water is contaminated by water-borne diseases. Despite progress, more than two thirds of the population do not have access to improved sanitation, in both countries. Although both countries have made progress in reducing their mortality rates, they should really keep focusing on the accessibility of water and sanitation when dealing with water-borne diseases, so they can reduce mortality rates, especially child mortality rates further.

In order to achieve this, it is very crucial for children who go to primary school to have education on water contamination and sanitation. The populations of both countries need to learn more about water and sanitation hygiene to further reduce water-borne diseases. This relatively simple solution of being educated is very important, because it will reduce the negative impacts of the looming water crisis, it will reduce the incidence of people drinking unsafe water and getting water-borne diseases. Education is the key in Ethiopia and Kenya.

References


School is Not Just for Boys: A Look at Girls’ Education in Egypt and Yemen

Isabella Grande

Abstract
This article looks at gender parity in the education systems of Egypt and Yemen. Although Egypt has seen an increase in the percentage of girls attending school, there are still a variety of constraints (including geography, culture and poverty) that prevent complete gender equality in schooling. Yemen is considered to have one of the widest gender gaps in the world, and although there have been sustained efforts to increase the percentage of girls in school, the same barriers that hold back Egypt have been difficult to overcome in Yemen. This article looks at how Egypt has gradually overcome most of the gender gap in schools and how Yemen attempted to combat the issue by examining specific barriers to educating girls.

I. Introduction
This article explores the nuances of female education in the Republic of Egypt and the Republic of Yemen. Over the past few decades, Egypt has adopted a variety of initiatives to promote girls’ education, which drastically increased the percentage of girls being educated. Yemen has also implemented initiatives and programs for girls’ education, but gender parity lags far behind Egypt and other countries.

This article is structured into five sections. Following this introduction, Section II provides a brief literature review, which is followed by some political and socio-economic background (Sections III). The discussion (Section IV) provides first some information on the degree and evolution of gender gap in literacy rates and school enrollments. It then reviews three specific hindrances to girls’ education: geographical constraints, cultural constraints, and poverty constraints. Both countries have tackled the gender gap in education in unique ways. Finally, the reasons for why girls’ education is important are explained, and this commentary offers reasons to why this topic of conversation is imperative.

II. Brief Literature Review
There is a huge amount of literature on issues related to girls’ education in Egypt and Yemen, especially in more recent years. However, girls’ education was already discussed in the literature some decades ago. Two of the relatively early contributions are Sultana (2008) for Egypt and Al-Mekhlafy (2008) for Yemen. Two of the more recent contributions are Megahed (2017) and Yuki
(2013), respectively covering Egypt and Yemen. The following are short summaries of these publications.

- A United Nations Children’s Fund (UNICEF) report written by Sultana (2008) details the standing of Egypt in regard to girls’ education. It describes the benefits the country has seen with regards to programs promoting gender equity, as well as the problems Egypt is still facing on this issue. The benefits to educating girls include less maternal deaths and—as is illustrated by a story about a young village girl—the empowerment of females. There are still concerns that impede the maximum success of the country’s programs. These include local beliefs and practices that a girl’s education will make her less desirable to potential grooms and that only boys should be educated because they alone can lift families out of poverty.

- Al-Mekhlafy (2008) gives an overview, starting in the 1960s, of the development and attitudes toward girls’ education in Yemen. The author begins by explaining that due to how rural Yemen is, using education as a form of development has always been difficult. In the 1980s, the country decided to fix the wide gap between student attendance in urban schools versus rural by employing an involved, integrated, multidimensional, and persistent approach. This plan worked for the most part, and they had narrowed the gap by 5.5 percent in 2007. Because it was still difficult to get attendance in rural areas, they started access programs that involved school construction, financial incentives, school supply kits, and more female teachers to provide role models. Despite its success, these programs are not sustainable. The author predicts that Yemen will need international support to overcome the education crisis entirely.

- Megahed (2017) describes the programs employed throughout Egypt, and the diversity of each educational opportunity. She mentions the country’s implementation of UNICEF’s ‘Girl Friendly Schools’ as well as their community school initiative. Both are targeted at school age girls, but the community initiative is specifically aimed at disadvantaged, rural females. The author also looks at Egypt’s response to the low literacy levels. She discusses their project called “Successful Transition to Work” which empowers rural women by teaching them how to run a business.

- Yuki (2013) includes a descriptive analysis of Yemen’s BRIDGE model. Yuki offers reasoning as to why it is successful in some areas and not in others. The BRIDGE program is essentially an effort to empower female students in pilot schools across Yemen. Phase 1 of the plan utilized a new school management model, and this lasted 3.5 years. Phase 2 was to support 70 schools in the Midwest of Yemen and 117 schools in the Southwest of Yemen through school improvement plans, but this phase was suspended due to security threats. Yemen has still not been able to reach phase 3, but it would be to facilitate and monitor initiatives and continue to review and improve. This model relies heavily on community engagement.

III. Political and Socio-Economic Background

The Arab Republic of Egypt is currently a lower-middle income country. With a population of 97 million, it is the most populous Arab country, of which about 90 percent identify with the Muslim religion. After the Tunisian revolution in 2010, Egypt’s opposition groups ousted then President
Hosni Mubarak, who served as the fourth President of Egypt from 1981 to 2011. In 2012, Egypt’s military assumed leadership until later that year, Mohammed Morsi won the presidential election. However, his government was greeted with more violent protests and in 2013, the Egyptian Armed Forces removed Morsi from power. Following the 2014 presidential election, the current President Abdel Fattah el-Sisi was elected. At the end of 2015, a new legislature was also elected, which resulted in the first permanent parliament since 2012.\(^1\)

The Republic of Yemen is currently a low-income country with an estimated population of 28 million, of which 99 percent are Muslim. It is a relatively newly established country that began as two nations (North Yemen and South Yemen), but became officially unified in 1990. Four years later, an attempt at succession by the South was stopped by the then national government, led by President Saleh. However, in 2007, President Saleh faced wide-spread demands for his resignation. When he refused, an Initiative by the Gulf Cooperation Council (GCC) proposed to give him immunity, which he at first rejected but eventually agreed. Yemen then launched a National Dialogue Conference to discuss the establishment of a new government. However, a group called the Houthis, was displeased by the conference’s outcome. The Houthis demanded that President Abdrabbuh Mansur Hadi resigns. Threatened by Houthis, who took over parts of the country, President Hadi fled in March 2015, but returned in September 2015, as Saudi-backed government forces recaptured parts of the country. Despite various ceasefire attempts, the country continues to be in a state of civil war between two factions: the incumbent Yemeni government (led by President Hadi), and the Houthi militia.\(^2\)

\[\text{Figure 1: PPP-adjusted GDP per capita (in constant 2011 international $), 1990-2015}\]

\[\text{Source: Created by author based on World Bank (2017).}\]

\(^1\) This paragraph is based on the CIA World Factbook – Africa: Egypt and World Bank (2017).
\(^2\) This paragraph is based on the CIA World Factbook – Middle East: Yemen and World Bank (2017).
Figure 1 above displays the differences in GDP per capita, adjusted for purchasing power parity (PPP), between Egypt and Yemen from 1990 to 2015. In 1990, Egypt reported an average of $6,014 per capita, and it steadily grew with only minor dips in the overall positive trend until 2015, when it reached an average of $10,249. In contrast, Yemen’s GDP per capita grew more steadily but at a very low rate until 2010, after which it dropped off due to the initial political crisis and subsequent civil war. Starting with a GDP per capita of $3,353 in 1990, it reached a maximum of $4,481 in 2010, but ended up with only $2,649 in 2015.

Figure 2 shows the life expectancy of citizens living in both Egypt and Yemen from 1990 to 2015. Both countries started with birth rates within 11 years of each other, and this rate continues until 2015. Egypt started at an average of 52 years, and in 2015, they had an average of 71 years. Yemen started at 41 years, and in 2015, had improved it to 64 years. Both countries have a steady incline in their life expectancy and have no declines in the data.

Figure 2: Life Expectancy at Birth (in years), 1970-2015

![Life Expectancy Graph](image)

Source: Created by author based on World Bank (2017).

Figure 3 shows the adult literacy rates for all available years for Egypt and Yemen. It shows that Egypt has made significant progress from 1976 to 2005, during which the literacy rates nearly doubled from 38.2 percent to 71.4 percent. However, Egypt has made very little progress since 2005, reaching a literacy rate of only 75.8 percent in 2015. Yemen had a far lower literacy rate than Egypt in 1994 (which is the first year such data is available for Yemen), but nearly caught up with Egypt in 2015, increasing its literacy rate from 37.1 percent (in 1994) to exactly 70.0 percent (in 2015).
IV. Discussion

Already some decades ago, Egypt and Yemen agreed to address the gender gap in education in order to make strides with their economy and their human development. Yemen started in the 1980s, especially via the so-called BRIDGE program, while Egypt started mostly in the 1990s, via the Girl Friendly Schools Initiative and the Education Enhancement Program. Following some illustrations of how the gender gap evolved in Egypt and Yemen, this section examines three key hindrances to progress: geographical constraints, cultural constraints, and poverty constraints.

IV.1. Degree and Evolution of Gender Gap in Literacy and School Enrollment

Building on Figure 3 above (which showed the total literacy rates for the two countries), Figure 4 shows the female and male literacy rates for Egypt (left panel) and Yemen (right panel). Both countries had huge gender gaps some decades ago. In 1976, 53.6 percent of the Egyptian males were literate, while only 22.4 percent of the Egyptian females were literate. Hence, in 1976, Egypt’s female literacy rate was less than half of Egypt’s male literacy rate. While the gender gap declined over time, Egypt’s female literacy was still 15.6 percentage points below Egypt’s male literacy in 2015.

In 1994, Yemen’s female literacy rate was less than half of Yemen’s male literacy rate. Though Yemen’s gender gap also decreased, it decreased far less than that of Egypt. In 2015, Yemen’s gender gap was still 30.1 percentage points, with 85.0 percent of the males being literate but only 54.9 percent of the females being literate.
Given that it may take decades for literacy rates to improve and gender gaps to disappear, Figure 5 provides the available data on net primary school enrollment in Egypt and Yemen. It shows that Egypt has actually eliminated the gender gap in primary school enrollment by at least 2012, while there remains a considerable gender gap of more than 10 percent in Yemen. However, as Figure 6 shows, neither Egypt nor Yemen have eliminated the gender gap in tertiary education. Egypt has narrowed the gender gap in tertiary education to 1.3 percentage points, while Yemen’s gender gap is still huge, with female tertiary school enrollment being less than half of male tertiary school enrollment in 2013.
IV.2. Three Key Hindrances to Achieve Gender Parity in Education

IV.2.a. Geographical Constraints

Egypt has had a remarkable upward trend in regard to girls in school, but this change was very recent. In the 1990s girls’ enrollment in primary school was low, and many believed it was primarily due to the rural nature of Upper Egypt. Policymakers decided to implement practical changes to the education system that could make a significant difference. It was called the Education Enhancement Program, and it increased the number of schools in rural areas, funded community awareness campaigns, and gave girls who had dropped out of school a second chance at primary school. By 2003 this program was being implemented in 15 governorates.³

Yemen’s progress, though not as dramatic as Egypt’s, has been particularly remarkable considering the country is one of the world’s poorest countries. Many policies have been implemented to ensure that school is not just for those who can easily afford it, and the expansion of education projects have helped reach the poor in rural areas. In the 1990’s, low-cost standardized schools were introduced, and this helped increase the amount of schools available.⁴ This was a helpful response to the issue because three-quarters of the Yemeni population live in remote, rural communities, so access to schools can be scarce.

One program called BRIDGE (Broadening Regional Initiative for Developing Girls’ Education), was also used to promote a female friendly school atmosphere in rural communities, they did this by building girl’s restrooms and extra classrooms. It had many organizations funding its success, but ultimately the project was not sustainable. The BRIDGE initiative was modeled after the Girl Friendly School (GFS) Initiative, which had been successful in Egypt. However, the GFS Initiative was financed by the Egyptian government, which made it a more long-term option than Yemen’s

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³ Iqbal and Riad (2004).
⁴ Education for All (2010).
BRIDGE program.\textsuperscript{5} Egypt also had an initiative focusing specifically on vulnerable girls in hard-to-reach communities, called the Community School Movement. With the help of UNICEF, the Community Schools Movement had become established in 1992 in three governorates. It gained nation-wide recognition by 2000. Hence, it was then rolled out to seven Governorates, which had an education gender gap between 2.5 percent and 15.7 percent.

Figure 7 depicts out-of-school children in Yemen’s governorates by number (using a red dot) and as a percent (using gradients of orange). Although it may seem contradictory to see a large dot on a lighter colored governorate, it is important to keep in mind that the governorate could have an enormous population. According to the United Nations (2018), Abyan, Hajjah, Hudaydah (Al Hoodaidah), and Lahj are Yemen’s most rural governorates, and according to this graph, those are several of the governorates that also have the highest number of children out-of-school.

Figure 7: Out-of-School Children in Yemen’s Governorates


\textbf{IV.2.b. Cultural Constraints}

In countries like Egypt and Yemen it is still common for girls to take on what society details as female responsibilities, such as housework and childcare, and due to the fact that child labor does not include the use of domestic labor, female children are regularly ignored when examining statistics. Understandably this is an impediment to their education. A study done in Egypt showed that girls typically do not start household duties until they are about ten. This means that they could attend primary school, but until the recent decade they did not. It is argued that reasons for this was that parents saw no point in paying for school if they would end up just taking on household roles or simple chores.\textsuperscript{6}

In the past few years, the rate of girls continuing on to secondary school has grown to almost 100 percent in Egypt, and it is important to look at how this happened in order to study and predict

\textsuperscript{5} Yuki et al. (2013).
\textsuperscript{6} Assaad, Levison and Zibani (2010).
how female education may evolve in countries that are less developed than Egypt, such as Yemen. Similar to Egypt, Yemen experiences many of the same cultural constraints, but the belief that women should not go to school and instead get married is the main reason why their education is cut short. In Yemen there are very strict gender roles, and there is an immense amount of pressure put on young girls to have children. Understandably, this is a reason some girls may drop out of school.\textsuperscript{7}

In recent years, both countries have seen a decline in the number of young girls who are married and the fertility rate for younger children has also gone down significantly. Despite this, there are still about 5 percent of female teenagers giving birth in Egypt and 6 percent in Yemen. These cultural constraints, while improving in terms of girls being allowed to go to school, do not encourage them to use their education after school. In fact, it is likely society will give them worse working conditions, even if they did go to school, simply because of their gender.

While there is insufficient data for Yemen, Figure 8 shows the evolution of females in vulnerable employment as a percent of female employment in Egypt. Vulnerable employment means that these women lack formal work and may be working in dangerous conditions. It shows that the percentage of women with vulnerable employment among the female workers is about twice the percentage of men with vulnerable employment among the male workers. While the percentage for male workers remained relatively stable around 20 percent from 1997-2015, the percentage for women declined shows some declining trend from 1997-2002, after which it increased sharply and then remained around 45 percent from 2004-2015.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure8.png}
\caption{Female and Male Vulnerable Employment (as percent of employed) in Egypt}
\end{figure}

One might argue that the one reason for these increasing percentage of females with vulnerable employment is due to the fact that employment of women has increased. However, given that this

\textsuperscript{7} Mehrass et al. (2017).
data is provided as a percentage of employed women (not of all women), the increase in women working does not explain this increase. On the other hand, discrimination against women does. Women typically also lack a voice in their work setting and, because of their gender, earn less than men.\(^8\) If these women continue to be given worse working conditions and less money for their labor than men, the entire community suffers.

Figure 9 depicts the adolescent fertility rate per 1,000 women ages 15-19 in Egypt and Yemen from 1970-2015. In 1970, Egypt reported that 132 out of 1,000 teenage girls gave birth, and in 2015 this dropped to 51 per 1,000 teenage girls. Though Yemen’s adolescent fertility rate was with 170 out of 1,000 teenage girls nearly 30 percent higher than that of Egypt in 1970, by 2015, Yemen caught nearly up with Egypt, reducing its adolescent fertility rate to 61 per 1,000 teenage girls.

**Figure 9: Adolescent fertility rate (births per 1,000 women ages 15-19)**

\[\text{Adolescent Fertility Rate} \]
\[(\text{births per 1,000 women ages 15-19})\]

Source: Created by author based on World Bank (2017).

**IV.2.c. Poverty Constraints**

Figure 10 depicts the evolution of poverty in terms of the poverty headcount ratio at $1.90-a-day and $3.20-a-day for all available years. It shows that Egypt has made some progress with reducing poverty, though the progress is far from linear. As of 2015, only 1.4 percent of Egypt’s population lived below $1.90-a-day, though 16.1 percent still lived below $3.20-a-day. Though data is scarce for Yemen, the available data for 1998, 2005 and 2014 shows a clearly increasing trend in poverty, for both, the $1.90-a-day and the $3.20-a-day headcount ratios. And with the current civil war raging in Yemen, many more people are living in abject poverty today.

\(^8\) International Labour Organization (2010).
The poverty constraint to girls’ education goes hand in hand with the geographical constraints many girls face as rural poverty is overall higher in rural areas than in urban areas, in both, Egypt and Yemen. In Egypt, the most rural and most poverty-stricken areas are in Upper Egypt.\(^9\) In Yemen, the rural communities in the governorate of Amran suffer from the worst poverty in the country.\(^10\)

In order to combat both, low female school enrollment and poverty, Egypt introduced the Education Enhancement Program, which reached out to the poverty-stricken schools as well as the rural schools, which in many cases overlapped. The Educational Enhancement Program dropped textbook requirements for girls in grade 1 to grade 6, in order to keep the costs down. They also gave cash incentives to families who sent their girls to school.\(^11\) Yemen also had a similar approach. In 2007, the World Bank partnered with the Yemeni government to help fund a rural, female teacher project that resulted in the training of 550 teachers in order to offer girls a role model.\(^12\)

V. Conclusion

Overall, Egypt and Yemen have made headway in procuring a brighter future for girls. They have implemented a variety of programs that are improving girls’ education. However, the difficulty will lie in ensuring these programs are sustainable. Egypt has allocated more funds than Yemen for the advancement of girls’ education. In Yemen, although initial efforts have been made, the government will have to continue to initiate community projects to push the message that educating girls is the right things to do.

\(^9\) Mohamed (2016).
\(^11\) Iqbal and Riad (2004).
\(^12\) World Bank (2010b).
Education is the best way to change a community for the better. It offers a plethora of benefits, not only for women, but the whole society. Educating girls delays child marriages and child birth which in turn allows girls to earn money and build self-esteem. Educating girls lowers the risk for domestic violence, and it also lowers the risk of HIV/AIDS, which leads to an overall healthier population. Educating girls has also shown to help lifting families out of poverty.

Egypt is an example of how initiatives, like the Education Enhancement Project, can work to improve girl’s education. Egypt has achieved full gender parity in net primary school enrollment and is on track to also reach gender parity in tertiary school enrollment. Yemen can learn from Egypt as Yemen faces similar hurdles Egypt faced some years ago.

References


