
Family Planning and Fertility Decline in Africa: From 1950 to 2010

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Abstract

The study analyzes the links between family planning programs, contraceptive prevalence and fertility trends in sub-Saharan Africa. It is based on case studies of countries with demographic surveys. The study reveals a variety of situations. Some countries have completed their fertility transition, while others have reduced their fertility level rapidly in urban areas, but less so in rural areas. In some countries, fertility remained very high, or declined very little, in rural areas, when population policies and family planning programs remained insufficient or almost non-existent. The role of family planning programs in fertility decline is highlighted by contrasting countries with similar characteristics, one of which experiencing a sharp drop in fertility, while the other one is showing a small decline or no decline at all. In each case, the political, economic, and social context is presented in order to explain the differences between family planning programs and their outcomes. These case studies make it possible to draw conclusions about the conditions of fertility control in African countries.

Keywords: population policy, family planning, contraception, fertility trends, demographic transition, political environment, economic conditions, social situations, demographic and health surveys (DHS), sub-Saharan Africa

1. Introduction

The demographic transition is a universal phenomenon induced by new behaviors associated with economic development, technical progress, social change and population pressure. The decline in mortality creates an imbalance, unsustainable in the long run, which requires a decline in fertility in order to restore the demographic balance. In Europe and in countries of European settlement in North America and the Pacific, the fertility transition has been the result of individual initiatives, without state intervention, that is changing behavior of

couples. To give a classic example, that of Sweden, the level of fertility has not exceeded 4.7 children per woman since the 18th century, began to decline rapidly around 1870, reaching 2 children per woman around 1930, a date that can be taken as that of the end of fertility transition. After this date, fertility followed several cycles, up and down, around this average level. The fertility transition itself lasted about 60 years or two generations. The number of births balanced approximately the number of deaths by 1800 and this balance was practically restored around 1980, about 50 years after the end of the fertility transition. This model is fairly general for European countries, with the notable exception of France, where fertility decline occurred much earlier, beginning in the 18th century, and was very slow, since it lasted nearly two centuries. Historical demographic studies in Europe showed that the fertility transition was virtually unrelated to short-term socio-economic indicators and that it affected different countries at different levels of development, as measured by income per capita, level of education level or level of urbanization [1, 2].

Russia presents a different case because the state has begun to play an active role in the decline in fertility in this country. Available evidence suggests a small decline in fertility at the end of the 19th century, probably restricted to large cities. Then, after the troubled period of the Bolshevik revolution, fertility reached a peak in 1924. After this date, fertility started a steady decline, reaching a level of 2 children per woman in 1970, some 45 years after the beginning of the transition, after which it fluctuated upwards and downwards. What is important in the case of Russia is the voluntarist policy of the Soviet state, which authorized medical abortion as early as 1921, induced abortion being the main form of birth control in the USSR until 1990. This policy was above all a social and feminist policy aimed at ensuring greater freedom for women and encouraging them to work in industrial and agricultural production, and not a policy of population control in the Western sense. It was however interrupted at the time of the Second World War, in this case for demographic purposes [3–5].

In the Third World, fertility decline began most often after 1960, and is mainly the result of public policies, that is family planning programs. According to United Nations estimates, fertility in Asia fell from 5.67 to 2.24 children per woman between 1960 and 2010 and in Latin America from 5.95 to 2.20 children per woman during the same period, thus realizing the essential part of the transition of fertility in half a century. In sub-Saharan Africa as a whole, fertility declined only slightly during the same period of time, from 6.62 to 5.26 children per woman between 1960 and 2010 [6]. Africa is the last continent where the transition was delayed and remained largely unfinished by 2010. The consequences of this persistent high fertility are incalculable and will lead some countries to situations very difficult to manage, especially countries located in the Sahel and in Central Africa [7, 8].

The purpose of this study is to trace the history of family planning policies and programs and their impact on fertility and contraception in Africa, to highlight what worked and what did not work, and to document the reasons of successes and failures. The emphasis here is on rural areas, because demographic dynamics are different in urban areas which are much more advanced in the fertility transition. This study is intended for social scientists and policy makers, and therefore provides only few details on the demographic and statistical techniques that underlie the tables and graphs. These technical details are amply covered in other publications cited in text.

2. Brief history of population policies and family planning programs

An abundant literature covers the history of population policies and family planning programs in the world since 1950. A synthesis book edited by the World Bank summarizes the major stages of these programs, focusing mainly on Asia and America Latin [9]. A review published by the Rand Corporation provides a detailed analysis of family planning programs and their problems [10]. A recent article presents the challenges for the 21st century [11]. This section presents the main stages of this construction, important for understanding the African context.

2.1. Awareness and organization

The first voluntarist movements of birth planning, initially private initiatives, appeared in the United States and in England at the beginning of the 20th century, with activist women, most notably Margaret and Ethel Sanger and Marie Stopes, who installed the first clinics promoting birth control in New York City (1916) and in London (1921).

Awareness of the world population problem dates back to the years following the end of the Second World War, especially in the United States and in some European countries (England, Sweden), and it was from 1950 on that concerted efforts to develop and disseminate contraception and limit population growth were made.

Initially, extensive research was funded to develop modern contraceptives with maximum efficacy and minimal side effects, and best suited to the needs of couples. This research produced a long series of important technological innovations: contraceptive pills (1960), Intra-Uterine Devices or IUDs (1958, 1962, 1968), spermicides (numerous products), injectable hormonal contraceptives (1969), implants (1983), abortion pills (1988), morning-after-pills (1999), non-surgical sterilization (2002), etc. These innovations enabled the development of family planning programs and the spread of modern contraception worldwide. These new methods complemented previously known methods (abstinence, interrupted coitus or withdrawal, condom, diaphragm, sterilization, induced abortion, etc.) and facilitated the adoption of new behaviors. It should be noted here that these new contraceptive methods are the most widely used methods in Africa: five modern methods (injectable, pill, implant, IUD, condom) account for 90% of contraceptive methods used, among which almost half (42% of total) are injectables (source: Demographic and Health Surveys, or DHS).

It was also during this period that were founded the leading organizations responsible for disseminating modern contraception and monitoring its effects, such as the Population Council (1952), the International Planned Parenthood Federation (IPPF, 1952), the Pathfinder Fund (1957), as well as the specialized programs of large American foundations (Ford, Rockefeller, Hewlett-Packard, etc.) and of the American government (USAID). At the level of international organizations, the United Nations created in 1967 an agency specialized in population issues: the United Nations Fund for Population Activities (UNFPA). Other UN agencies will also participate in this movement in various ways: World Health Organization (WHO), UNICEF, World Bank, etc.

With the development of major family planning programs worldwide, many consulting firms and consulting groups, mostly American and financed by USAID, were created since the 1970s,

which played an important role in the establishment, management and evaluation of family planning programs, such as: Family Health International, Futures Group, PSI, JSI, MSH, Abt Associates, World Vision, etc. The programs were monitored mainly through demographic sample surveys, firstly the Contraceptive Prevalence Surveys (CPS) in the 1960s, then through more elaborate surveys: the World Fertility Surveys, or WFS (1972-1984), and especially the Demographic and Health Surveys (DHS), which have been in place since 1985 to date.

2.2. Major international programs

The first population intervention trial was conducted in the 1950s, in the form of a clinical trial with an intervention area and a control area, in the Punjab province of India, around the village of Khanna, in 1954–1959 [12]. India was the first country to officially adopt a family planning program in 1952. Following this trial, many family planning programs were implemented in most Third World countries, in Asia, Latin America, the Middle-East, North Africa and later in sub-Saharan Africa.

2.3. African family planning programs

With respect to modern contraception, very little was happening in Africa during the colonial period, that is, before 1960. At that time, the dominant doctrine was that the continent was under-populated, and that demographic growth, already strong at that time, though little documented, was conducive to economic development.

Awareness of the population problem began to change in the 1960s and 1970s with the emergence of the first population censuses, which showed an extremely high population growth, often between 30 and 40 per 1000, which clearly could not last for a long time. Let us recall that with a growth of 35 per 1000, a population doubles every 20 years, producing a multiplication by 32 within a century. The first population projections made by the United Nations Population Division (UNPD) and subsequent studies of the Futures Group (RAPID project) made it possible to ring the bell: it was clear that the continent would run to catastrophe if fertility remained at a very high level, or even increased, while mortality declined rapidly. Let us recall here that it takes almost a century to stop the devil engine of population growth. It was at this time that the first family planning programs were set up in Africa [13].

2.4. Major international conferences

Another factor that led to awareness and changes in the attitude of governments from pronatalist to neo-Malthusian was the holding of major international population conferences, held approximately every 10 years by the United Nations agencies, by major American foundations, or by other organizations [14, 15].

- The International Conference on Family Planning Programs held in Geneva in 1965 was the first to show the impact of modern contraception on fertility trends in some Asian countries (South Korea, Taiwan), and to seek consensus on the issue.
- The World Population Conference held in Bucharest in 1974: this conference was the first arena of struggle between supporters and opponents of family planning policies. The opponents,

a minority represented by some Third World countries like Algeria and Argentina and some communist countries, supported the slogan: “the best pill is development.” Their argument was that economic development was a prerequisite for declining fertility, that is, economic growth must create the necessary and sufficient conditions for fertility control. In the following years, the experience of many Third World countries showed the opposite, that is that family planning programs could work well in very poor countries with low economic growth. However, this meeting resulted in the adoption of a global action plan (World Population Action Plan), a reference document used extensively thereafter. This very comprehensive document contains 109 recommendations covering all aspects of population, health and development policies which were later implemented in the world, including technical details such as data collection, assessment, training and research.

- The International Conference on Population held in Mexico in 1984: this conference was the first to express an almost unanimous consensus on the need to limit the number of births globally, and received the strong support of Western countries for family planning programs. On one hand, this meeting was an important step forward, because African countries endorsed the “Kilimanjaro Declaration,” which affirmed their support for family planning programs in the continent. On the other hand, the United States of President Ronald Reagan expressed opposition to induced abortion and to programs supporting abortion (Global Gag Rule).
- The International Conference on Population and Development (ICPD) held in Cairo in 1994, emphasized the public health aspects of contraception, introduced the concepts of “Reproductive Health” and “Sexual Health”, in the context of the fight against HIV/AIDS and other sexually transmitted infections. The conference insisted on the rights of women to control their reproduction and on their autonomy of decision. By focusing on the individual, this approach was closer to that of the pioneers of contraception, and avoided the pitfalls of the so-called population control approach that was dominant in the 1950s.
- The International Parliamentarians’ Conference on the Implementation of the ICPD, held in Strasbourg in 2004, continued along the same lines and saw a solemn commitment by parliamentarians from all over the world to continue to implement the ICPD Plan of Action.
- The Family Planning Summit held in London in 2012, under the aegis of the British government and the Gates Foundation, proposed to continue along the same lines, and to focus efforts on the lagging countries (69 countries were selected, including the poorest countries and many African countries), with the goal of universal access to contraception by year 2020.
- This conference was followed 5 years later (10–11 July 2017), also in London, by a new summit with the same actors, focusing on the needs of adolescent girls.

Of course, these large international meetings were complemented by a myriad of small conferences, seminars, scientific and political meetings on the subject since 1950.

2.5. Development of family planning policies and programs

The development of modern contraception and family planning in Africa follows overall the same patterns in most countries, with some local variants:

- Arrival of modern contraceptives, first in pharmacies and among private doctors.
- Establishment of private family planning associations, generally affiliated to IPPF, and opening of the first specialized clinics.
- Establishment of a national family planning program, first in urban areas and then in rural areas, usually supported by a strong international technical and financial assistance. At the beginning, these programs are based on fixed structures (hospitals, clinics, family planning centers), then on mobile teams that make home visits or even distribute contraceptives to women at home.
- Official adoption of a population policy, often with precise objectives (maximum number of children per couple, prevalence of contraception above a threshold, etc.).
- Development of programs as needed: development of integrated reproductive health programs, development of contraceptive mix, awareness campaigns (information, education, communication, or IEC), sex education in schools, adolescent awareness (peer group education), etc.

Thus, there is a wide range of situations in African countries, from countries who adopted a population policy and developed a family planning program early on, who were successful in funding and managing their programs, and who reached the whole population thanks to a good coverage of the fixed posts and of the mobile teams, to countries who started later, who invested little in the program or who mismanaged it, and who reached only a fraction of the national population. There is therefore a wide range of situations in fertility declines, which are presented below.

2.6. Legal and religious barriers

There are many ideological, legal and political obstacles to family planning programs, as will be illustrated in the case studies presented below. But there are a few specific obstacles that need to be mentioned with respect to African countries:

The French law of 1920: This law, passed on July 31, 1920, following the First World War and the demographic deficit that followed, prohibited “any propaganda on contraception or against the birthrate” and severely repressed induced abortion and its promotion. It was voted in the hope of raising the birthrate in order to have more soldiers in case of war, and to regain the numerical superiority of France as in the previous centuries. This law applied not only in metropolitan France but also in Algeria and in all the French colonies, where it remained in application after independence. This law was abolished only on December 28, 1967 in France (*Loi Neuwirth*). In Africa, countries concerned had to revoke this law before undertaking information and awareness campaigns on family planning. In many francophone African countries, it was not until the 1980s or 1990s that this law was abolished. The project to harmonize legislations in Francophone West Africa came even later. The model law on Sexual and Reproductive Health was adopted at the Abidjan Symposium on June 9, 1999 and subsequently implemented in the 10 countries concerned [16].

The position of the Catholic Church: in response to the secular movements and to the positions taken by the Anglican Church, the Catholic Church condemned modern contraception very early on, and on several occasions: encyclical *Casti Connubii* of Pope Pius-XI (1930), encyclical *Humanae Vitae* of Pope Paul-VI (1968), apostolic exhortation *Familiaris Consortio* of Pope

John-Paul-II (1981), and speech of Pope Benedict-XVI (2008). The position of the Catholic Church is essentially philosophical, therefore subject to adjustments, such as for example about the use of condoms. However, the Catholic Church allows certain forms of traditional contraception, defined as “observing the natural rhythms of woman’s fertility”, such as: periodic abstinence, cervical mucus, temperature method, etc.

The position of certain Islamist groups: Islam generally favors contraception for two reasons: to improve the health of mother and children, and to take account of economic constraints of the family. However, many Muslim schools of thought are opposed to sterilization and abortion. Moreover, some highly politicized groups are hostile to any population policy aimed at reducing the number of Muslims. These positions vary widely between countries, schools of thought, and periods [17].

2.7. Ethical and political debates

The spread of modern contraception and the introduction of family planning programs raised many ethical issues around the world, which have evolved considerably over the years [10]. The most important debates have been on induced abortion, on male and female sterilization, and on the side effects of hormonal contraceptives (pills and injectables in particular). These debates were fierce in countries where population policies were restrictive or even coercive (China, Indonesia), and in countries where financial incentives for sterilization were important relative to income levels (India, Bangladesh). These issues have little affected African countries, because induced abortion is still largely illegal (except in South Africa and Ghana) and because sterilization is still rare, whereas it is the most frequent method in Asia. In Africa, questions have been raised about injectable contraceptives (Depo-Provera), because they increase the susceptibility to the HIV virus causing AIDS [18, 19].

Furthermore, the 1960s and 1970s saw many debates and polemics on the question of the role of the developed countries, in particular the United States, in the promotion of family planning in the countries of the Third World. These actions were sometimes perceived as a form of “imperialist plot” or “cultural intrusion” in Asia, Latin America and Africa. These discussions virtually disappeared after the 1984 conference, the adoption of a broad consensus at the global level, and the paradigm shift toward reproductive health in 1994.

3. Trends in fertility and family planning in Africa

This section revisits previous studies and provides a general overview of fertility trends in African countries, separating urban and rural areas, because their population dynamics are different. There are even countries in Africa where fertility continued to increase in rural areas, while it was declining in urban areas for decades, such as Congo-Kinshasa.

3.1. Data and methods

It should first be recalled that no country in sub-Saharan Africa maintains a complete civil registration of births and deaths necessary for monitoring precisely changes in birth and death rates. For the purpose of estimating fertility levels and trends, sample demographic surveys,

based on representative household samples, were used, in particular the well-known Demographic and Health surveys (DHS), which collect maternity histories of women in their reproductive ages. These surveys are conducted approximately every 5 years, but are sometimes separated by 10 years or more, and data available in 2017 essentially cover the period before 2010.

DHS surveys and related data have been used to reconstruct levels and trends in fertility since 1950, separating urban and rural areas. The technical details of this reconstruction are presented in other documents [20–22]. In brief, annual fertility rates can be calculated for the 10 years prior to each survey, which allows long-term trends to be reconstructed, despite the large random fluctuations due to small samples (5000–15,000 women in general). This reconstruction has been done separately for urban and rural areas for 35 African countries, which comprise more than 90% of the continent's population.

DHS surveys also permit to reconstruct levels and trends in the use of modern contraception. The technique is somewhat different: trends were reconstructed by cohort (year of birth), which allowed reconstructing the trends by period (calendar year), again since 1950, and separately for urban and rural for 35 countries. The technical details of the calculations are presented in another document [21].

The Futures Group, a USAID sponsored consulting group, produced an indicator of the intensity of family planning programs, called the "Effort index," which is expressed as the percentage completed by the program in relation to an ideal of 100%. The indicator measures several parameters with 30 variables in three chapters: official policy, service activity, and program monitoring. This study is available at intervals of 5–10 years: 1972, 1982, 1989, 1994, 1999, 2004, 2009, which makes it possible to reconstruct the dynamics of the program efforts over a long period of time. The indicator is available for 37 African countries, but with some missing data [23].

This study also refers to other sources of data, in particular to data on Gross Domestic Product (GDP) per capita gathered by Angus Maddison and colleagues, expressed in constant dollars (1990 International Geary-Khamis dollars) and converted to 2011 dollars [24].

3.2. Fertility trends in urban and rural areas

The reconstruction of fertility trends from demographic surveys shows firstly a marked increase in fertility in rural areas from 1950 to 1980, followed by a decline, from 7.05 to 6.08 children per woman between 1980 and 2010, that is 19.2% of the fertility transition from the maximum level to the level of 2 children per woman, considered as the end of the transition. The increase in the years 1950–1980 is due to the improvement of sanitary conditions and especially to the control of tropical and sexually transmitted diseases causing primary and secondary infertility. In urban areas, the increase in the first years is markedly lower, and the decline in fertility begins in 1976 (5.90 children per woman), reaching 3.96 in 2010, almost half the transition (49.7%). It should be noted that fertility control in urban areas probably started before 1976, and that without modern contraception, which was already noticeable at that time (10% prevalence), there would probably be an increase in fertility in urban areas as well (**Figure 1**).

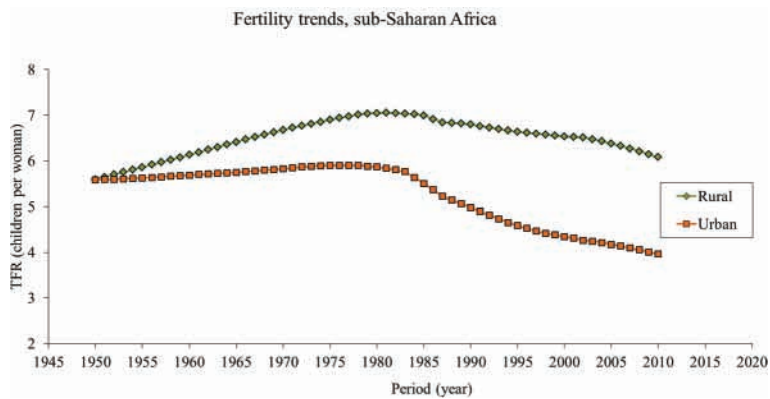


Figure 1. Trends in fertility in sub-Saharan Africa. Source: reconstruction from demographic surveys in 35 countries.

3.3. Trends in contraceptive use

Reconstruction of trends in contraceptive use, as measured by the proportion of women who have used modern contraceptives, shows a fairly consistent pattern. In urban areas, contraception appeared in the 1960s, but remained infrequent in the first decades, reaching the 10% threshold in 1974, and covered approximately half of women in 2005 (49.3%). In rural areas, modern contraceptive use started later and its increase was slower: the 10% threshold was reached in 1989, and it covered only 28.4% of women in 2005 (Figure 2).

3.4. Intensity of family planning programs (Effort index)

The evolution of the indicator of family planning programs, which measures both the efforts made and the program's operations, revealed a rather rapid rise between 1972 and 1999, followed

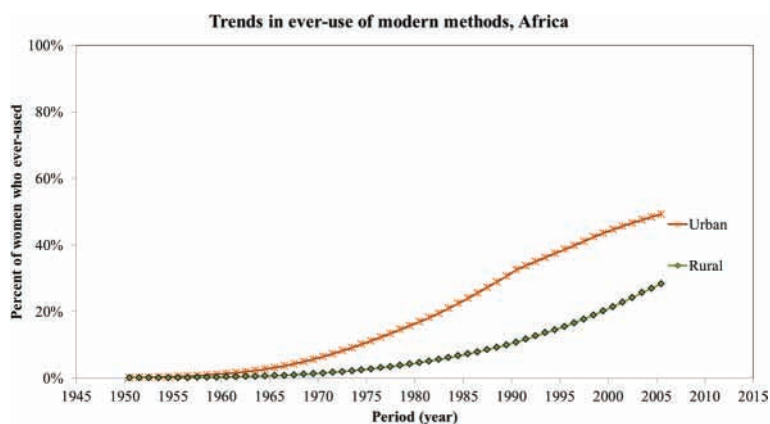


Figure 2. Trends in contraceptive use in Africa (proportion of women who have ever-used modern contraception). Source: reconstruction from demographic surveys in 35 countries.

by an apparent stagnation, which however has not translated into a decline in contraceptive prevalence (**Figure 3**). Ideally, one would have hoped to reach 90% in 2009, but the indicator remained at about half (45.6%). This national indicator corresponds to half of women covered by contraception, which can be compared to half of the fertility transition in urban areas, but hides the significant backwardness of the rural environment.

3.5. Socio-economic correlates

Most of the numerous studies on the socioeconomic correlates of fertility and contraceptive prevalence are carried out in cross-sectional analyses, that is to say, with data applicable at the time of the survey. They consistently show a correlation, at household level and at any given point in time, between socio-economic status (measured by level of wealth, or by level of education), contraceptive use and fertility level [25].

In contrast, longitudinal studies show different results at aggregate level, when the transition from natural fertility to the adoption of modern contraception is studied in response to changes in income, wealth and education over time. For example, an analysis of African countries between 1977 and 1999 shows that changes in per capita income and in level of education do not explain changes in fertility levels: most of the variations can be explained by changes in contraceptive use, age at first marriage, and urbanization, which follow other dynamics [21, 26].

3.6. Contraception and fertility in Africa

Finally, it should be noted that in African countries, at national level, the relationship between prevalence of contraception and level of fertility is surprising. Indeed, one would expect higher

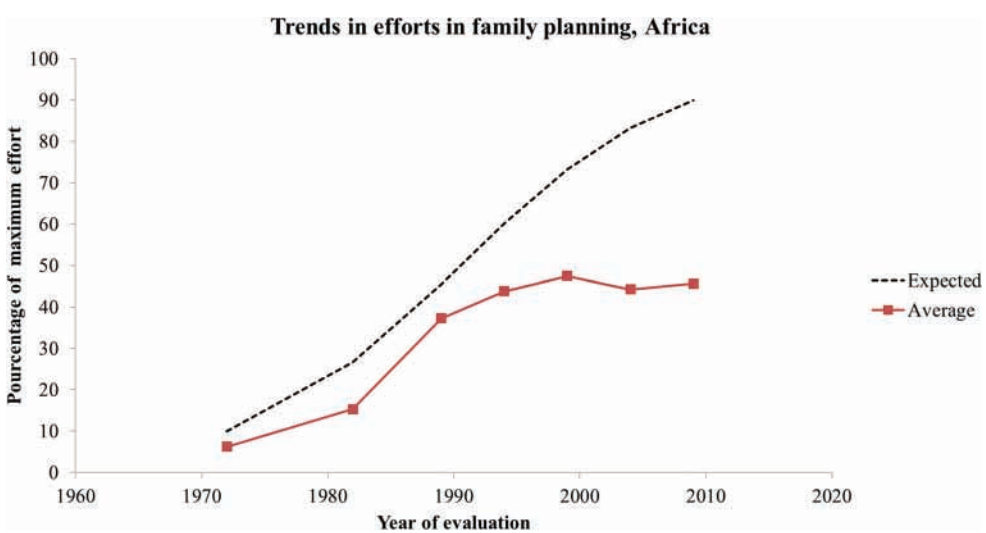


Figure 3. Trends in the intensity of family planning programs in Africa. Source: Futures Group: average calculated on 37 countries (some years are missing).

fertility levels if one considers only the prevalence of contraception. At the global level, it is estimated that without contraception some 7 children per woman are expected, and that 80% of contraception is needed to ensure complete control of fertility, or 2 children per woman. In Africa, however, fertility levels are well below the level expected from contraceptive prevalence, indicating that other phenomena, in addition to contraception, are not adequately measured by demographic surveys (induced abortion, separation of couples, traditional contraception, incomplete declarations, etc.). A detailed analysis of 32 African countries showed that the increase in modern contraception explains only about half of the decline in fertility (50.9% in urban and 41.4% in rural), the remainder being unexplained [27].

4. Case studies on fertility decline

This section presents some well documented and contrasting specific cases: cases of completed fertility transition, cases of rapid decline in fertility in urban areas, and cases of no significant decline in rural areas, in order to show the great diversity of situations among African countries.

4.1. Completed fertility transitions (national level)

According to United Nations recent estimates, only five countries or territories in Africa have completed their fertility transition at national level [6]. Only one is located on the continent: South Africa, a country which benefited from an excellent family planning program since 1974, and which is much more economically and socially advanced than other African countries [28–30]. It should be noted, however, that the case of South Africa is complex: marital fertility (after the first marriage) is now very low (of the order of 1.5 children per woman), and this applies to all racial and ethnic groups, but there are still significant pockets of premarital fertility, especially among adolescent girls and disadvantaged groups (Black/African, Colored), indicating incomplete fertility control and a deficiency in the family planning program [31, 32].

The other countries that have completed their fertility transition are islands, which have profiles distinctly different from other African countries: Mauritius, which has been the pioneer in this field among African countries and has fertility below replacement level since 1994; Reunion, which benefits from the French public health system; the Seychelles islands, and the Cabo Verde Islands. All have benefited from excellent family planning programs, excellent health services and a level of development well above the African average (**Figure 4**).

4.2. Rapid fertility decline in urban areas

In some countries, the fertility transition in urban areas is almost complete: three southern African countries: Botswana, Lesotho, and Swaziland, which are geographically and culturally close to South Africa, and who adopted family planning programs similar to that of their big neighbor; and two East-African countries: Kenya (discussed in more detail below) and Ethiopia. The decline in fertility in urban areas of the latter country, particularly poor and isolated, surprised many observers and was the subject of several publications [33]. These five cases are illustrated in **Figure 5**.

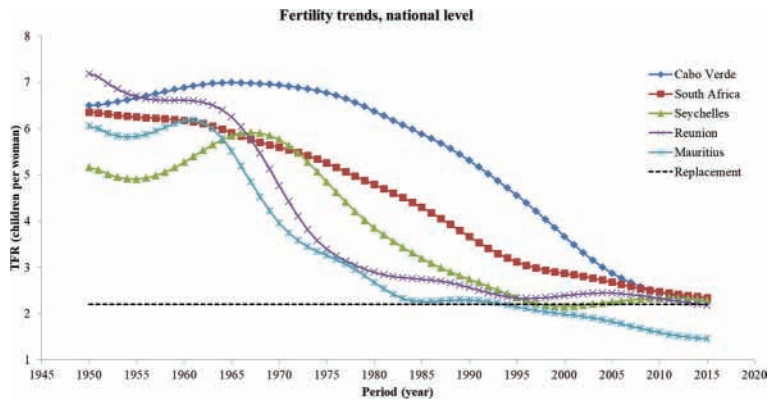


Figure 4. African countries which have completed their fertility transition. Source: United Nations, 2015.

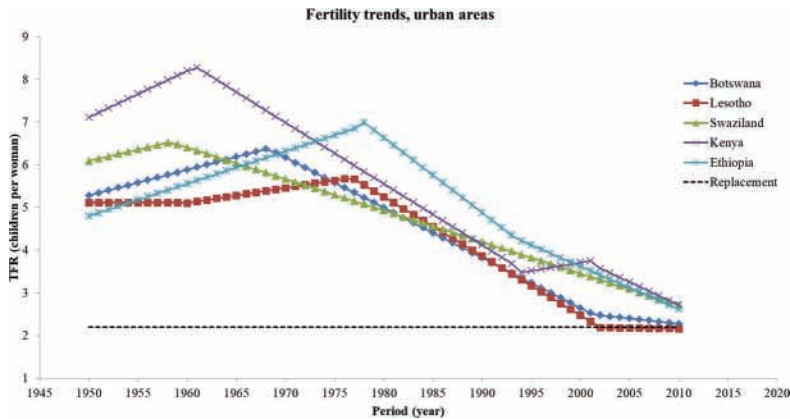


Figure 5. Selection of African countries having nearly completed their fertility transition in urban areas. Source: reconstruction from demographic surveys.

4.3. No decline in rural areas

At the other end of the spectrum are countries that have not yet begun their fertility transition in rural areas: these are two former Portuguese colonies that have gone through a period of difficult decolonization: Angola and Mozambique (discussed below), and three Central-African countries: Congo-Kinshasa (former Zaire, or DRC), Congo-Brazza (former RPC), and Cameroon (Figure 6). These five countries did not have effective family planning programs, and four of them (apart from Cameroon) experienced long periods of civil war, which severely disrupted the rural health system.

4.4. Other cases

These extreme cases should not hide the other cases, and the great diversity of situations in African countries in terms of fertility transition. Table A1 shows that fertility declines in urban

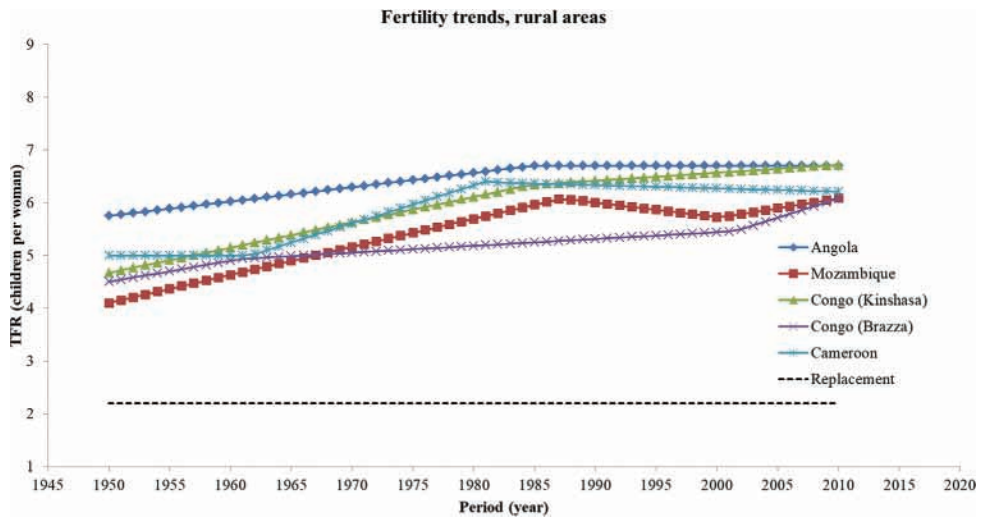


Figure 6. Selected African countries which have not yet begun the fertility transition in rural areas. Source: reconstruction from demographic surveys.

areas, as a percentage of the transition, ranged from 19% (Congo-Brazza) to 96% (Lesotho) with an average of 60%, and in rural areas it ranges from 0% (Angola, Mozambique, Congo-Brazza, Congo-Kinshasa) to 76% (Botswana), with an average of 29%. These large differences between countries are mainly due to differences between family planning policies and programs, as illustrated in the next section.

5. Contrasts between countries (rural areas)

This section presents striking contrasts between countries with fairly similar characteristics but very different demographic dynamics in rural areas due to differences in family planning policies and programs. These case studies cover various regions of Africa: Central Africa (Rwanda/Burundi), East-Africa (Kenya/Uganda), West-Africa (Ghana/Nigeria), Southern Africa (Zimbabwe/Zambia) and South-Eastern Africa (Madagascar/Mozambique). The aim of this section is to show the differential impact of family planning programs on fertility decline in rural areas, by comparing cases (successful country) with controls (country failing to control its fertility).

5.1. Rwanda and Burundi (rural areas)

Rwanda and Burundi are two neighboring countries located in Central Africa, with similar sizes (10.6 and 9.2 million inhabitants in 2010), very high population densities (403 and 332 inhabitants per km² in 2010), low urbanization (18.8 per cent and 10.6 per cent in 2010), low levels of income (1262 and 725 US \$ in 2011), and a similar level of ethnic composition (with two rival ethnic groups: Hutus and Tutsis). These two countries share the same colonial history

and were parts of the same Belgian colony, known as Rwanda-Urundi, until independence (1962). Their economic histories diverge somewhat: Rwanda experienced a period of growth from 1964 to 1986, followed by a severe recession from 1986 to 1997, then by a rapid recovery with strong growth from 1997 to 2013. Burundi experienced a period of growth after independence until 1991, but this was followed by a long recession, lasting until 2013. Both countries experienced a long period of political strife, economic downturns and civil wars.

The stories of population policies and family planning programs also diverge very markedly between the two countries. In Rwanda, modern contraception appeared in 1962. A first family planning program was launched in 1977, which resulted in a first decline in fertility (from 7.9 in 1977 to 6.4 children per woman in 1991 in rural areas). A new phase was launched in 1990 as part of a pro-active population policy, but its implementation was hampered by the period of civil war which culminated in the 1994 genocide and was followed by a period of recovery with an increase in marriages and births, so that fertility remained virtually unchanged during the 1991–2002 period. In 2003, the family planning program took on a new development, a well-organized and well-funded program, with home visits, and even a target of a maximum of 4 children per family. This program resulted in a dramatic decline in fertility, from 6.0 children per woman in 2003 to 4.1 children per woman in 2013 in rural areas [34, 35].

In Burundi, the developments were slower and later, and provoked more reticence and negative reactions. Awareness about the population problem did not appear until the early 1980s, following the 1979 census and the first RAPID population projection studies. The first official political position in favor of family planning and the first pilot project date back to 1983, but faced a frontal opposition from the Church, which in 1986 created a movement hostile to modern contraception (*L'Action Familiale*). This movement considerably hampered the first attempts to promote family planning at the national level (1987–1988). Moreover, family planning programs were severely disrupted by the civil war (1993–2000) and the subsequent political turmoil. A new impetus was given in 2011–2012, including the creation of “Family and Community Development Centers,” with strong support from UNFPA, but it is too early to see their effects since the last DHS survey was conducted in 2010 [36, 37].

Table 1 summarizes the contrast between the two countries: the effort index of the family planning program was always higher in Rwanda than in Burundi since 1982, home visits were more frequent, and therefore the prevalence of contraception, and the fertility decline was larger. Regarding the rural environment, between 1980 and 2010, Rwanda achieved 56.3% of its fertility transition, while Burundi realized only 5.6%, a huge difference with multiple consequences (**Figure 7**).

5.2. Kenya and Uganda (rural areas)

Kenya and Uganda share a common colonial history, as parts of the British Empire, until independence (1963 and 1964 respectively). At this date, per capita income was equivalent in both countries. From an economic point of view, Kenya had first a favorable period with steady growth until 1990, followed by a period of recession (1990–2003) and then a new period of growth until 2013. Uganda followed a more tortuous path, disrupted in particular by the

		Rwanda	Burundi
Family planning	Effort index, 1982	23.0	10.5
(national)	Effort index, 1999	62.1	40.2
Contraception	Last survey	(2014)	(2010)
(rural areas)	Prevalence	46.7%	16.7%
	Home visit	21.5%	4.1%
Fertility	TFR, 1980	8.03	6.94
(rural areas)	TFR, 2010	4.64	6.67
	% Transition	56.3%	5.6%

TFR, Total Fertility Rate (number of children per woman).

Table 1. Comparison of fertility and family planning indicators: Rwanda and Burundi.

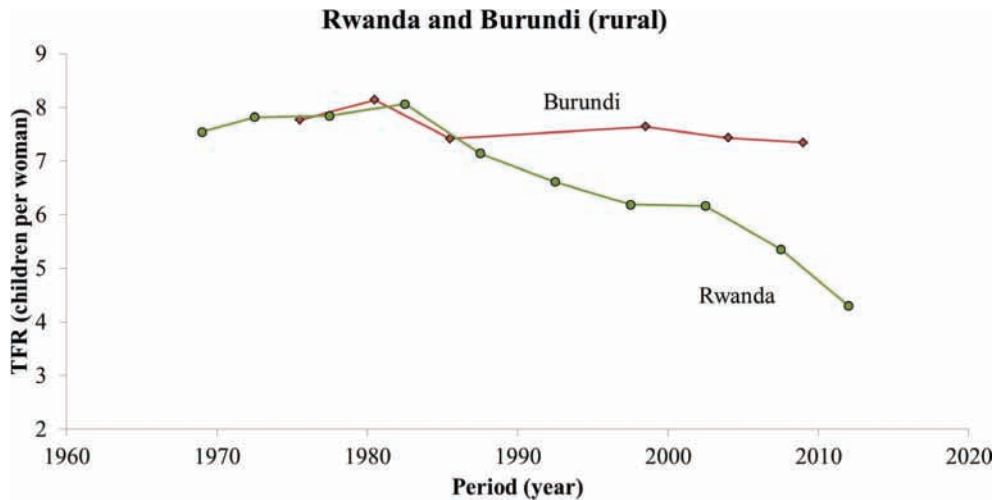


Figure 7. Comparison of fertility trends in rural areas: Rwanda and Burundi.

period of civil unrest and civil war which followed the seizure of power by Idi Amin Dada: severe recession between 1971 and 1986, then stagnation until 1991, followed by economic growth up to 2013.

Kenya held the world record in fertility at the time of independence, and was a pioneer for family planning in Africa. Modern contraception was introduced in Kenya in 1957 and the first clinics distributing modern contraceptives began in 1960. The Kenyan Family Planning Association (FPAK) was created in 1962 and the national family planning program was launched in 1967, the first national program in sub-Saharan Africa, then expanded in 1975. An official population policy was declared in 1984 and subsequently updated (1996,

2007, 2012). These policies and programs had virtually no opposition, neither from political authorities nor from religious authorities. Since the 1960s, family planning has grown steadily, first in public and private clinics and NGOs, and then through community-based health workers, outreach programs (Community-based distribution), improved communication (Information, Education, Communication program), and integrated reproductive health programs. All these programs have been generously financed by the Kenyan government and various international actors (bilateral aid, multilateral aid, international organizations, NGOs, etc.), in particular British and American, and have benefited from the advice of many international experts. The various contraceptive methods have remained essentially free, and are widely distributed and available to the general population [38, 39].

The development of family planning in Uganda was very different, and was considerably delayed by the political turmoil of the 1971–1986 period. Although modern contraception came very early (1957), as in Kenya, that the Ugandan association has officially existed since 1963, that the first family planning clinic was opened in the same year, and modern contraception was available in public hospitals as early as 1968, many obstacles impaired its development: opposition from traditional, political and religious leaders, and very strong restrictions on access (married women with at least 3 children and with the husband’s permission). Then, shortly after his coming to power, Idi Amin banned family planning in 1972, and drove out people of Indian origin, many of whom were doctors. It took about 10 years for the program to restart timidly: contraception became again available in public hospitals and clinics in 1983, adoption of a population policy in 1995, and especially a new start in 2004–2005 with the development of a major awareness campaign (IEC), followed by new actions in 2008 and 2015 [40].

The consequences of these different stories are impressive (**Table 2, Figure 8**). In rural Kenya, fertility declined considerably between 1980 and 2010 (53.3% of the transition), while it stagnated at high levels in rural Uganda, declining only in recent years (2003–2011). It should be noted, however, that in Kenya, the decline in fertility has not been steady: first slow between 1964 and 1981, then rapid until 1994, and then halted or even slightly increased for some

		Kenya	Uganda
Family planning (national)	Effort index, 1982	28.1	17.1
	Effort index, 1999	48.7	50.4
Contraception (rural areas)	Last survey	(2014)	(2011)
	Prevalence	50.9	23.4
	Home visit	6.8	8.7
Fertility (rural areas)	TFR, 1980	8.81	7.92
	TFR, 2010	5.18	6.80
	% Transition	53.3%	18.9%

TFR: Total Fertility Rate (number of children per woman).

Table 2. Comparison of fertility and family planning indicators: Kenya and Uganda.

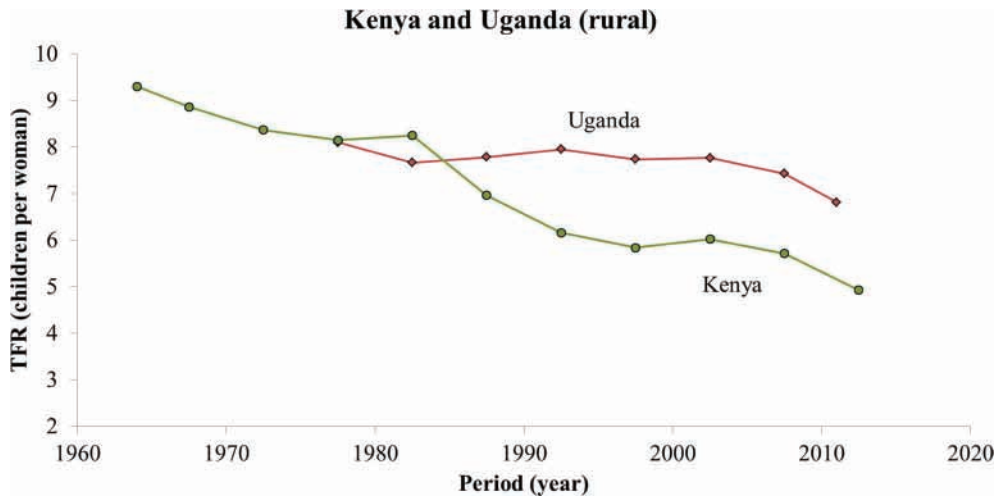


Figure 8. Comparison of fertility trends in rural areas: Kenya and Uganda.

10 years before resuming after 2004. This phenomenon of stagnation (fertility stall), which corresponds to the period of economic recession, was the focus of numerous academic debates but remains largely unexplained [41–44].

5.3. Ghana and Nigeria (rural areas)

Ghana and Nigeria, both located on the coast of the Gulf of Guinea in West-Africa, share a similar colonial history, as parts of the British Empire. The two countries had a fairly strong economy and a serious potential at time of independence (1957 and 1960 respectively). Both countries have a fairly high level of education and similar population structures with north/south opposition (savanna/forest and coast) which corresponds roughly to a cleavage between Muslims and Christians. But the divide between ethnic groups and religions is very strong in Nigeria, leading to fierce struggles and even civil wars (Biafra, Boko-Haram), while inter-ethnic or inter-religious tensions are very low in Ghana. The economy of Ghana had a favorable period until 1974, followed by a long recession of about 10 years, due to political instability and corruption of the “kalabule” years, followed by a period of steady and sustained growth (1983–2013), combined with political stability and sound economic policies. Nigeria’s economy, dominated by oil exports, has fluctuated greatly in response to fluctuations in international oil prices and to political instability of the country: growth up to 1965, recession at the time of the Biafra war, growth from 1968 to 1977, strong recession until 1984, followed by rapid growth until 2013.

The history of family planning in Ghana is quite similar to that of Kenya, with an early start, sustained and steady development, and little resistance or barriers. Interest in family planning began shortly after independence, and in 1961 there was a Family Advice Center in Accra, the capital city. Apart from a short period (1964–1966), when President Nkrumah banned contraception,

the country committed itself early on to a voluntary population policy and was the first African state to sign an international convention on the subject in 1967 (World Leaders Declaration on Population). A national population policy was established in 1969, and in 1970 family planning structures were set up in hospitals and public health centers, as well as in private family planning centers. The family planning program developed regularly thereafter, with extensive awareness campaigns (1986) and regular updates such as integration into reproductive health (1994, 2006) [45, 46].

The history of family planning in Nigeria is different and has been marked by several major handicaps: lack of political commitment and recurrent political instability; on social grounds, strong resistance from traditional and religious authorities, especially Muslims in the north and Catholics in the south, as well as sexual taboos, rumors and frontal opposition to certain methods of contraception from selected groups; at organizational level, poor organization and mismanagement of the program, and in particular low reliance on community activities. However, family planning had started early, in 1962, with the creation of an association (Family Planning Council of Nigeria). As in Ghana, but later, a population policy was adopted in 1989 (National Population Policy for Development, Unity, Progress, and Self-Reliance), followed by an awareness campaign (1992), but they were not successful and did not have an impact as in Ghana, although an ambitious goal of four children per woman has been recently adopted. The family planning program was reactivated in 2004, then in 2012, but so far had only modest effects in rural areas [47–49].

As a result, the 2010 indicators differ widely between the two countries: rural Ghana achieved already almost half of its transition (43.3%), while rural Nigeria is still in its early stage (13.0%). In Ghana, all indicators are better: the program effort index, the prevalence of modern contraception, and home visits (**Table 3**). In Ghana, rural fertility declined steadily since 1980, while in Nigeria it has been irregular, fluctuating, and declining only since 2002 (**Figure 9**). In addition, it should be noted that demographic data in Nigeria are problematic, while they are of much better quality in Ghana. Furthermore, in urban areas fertility is low in Ghana (3.2

		Ghana	Nigeria
Family planning (national)	Effort index, 1982	17.8	12.8
	Effort index, 1999	46.4	33.6
Contraception (rural areas)	Last survey	(2014)	(2013)
	Prevalence	24.6	5.7
	Home visit	12.2	5.3
Fertility (rural areas)	TFR, 1980	6.95	7.25
	TFR, 2010	4.80	6.57
	% Transition	43.3%	13.0%

TFR: Total Fertility Rate (number of children per woman).

Table 3. Comparison of fertility and family planning indicators: Ghana and Nigeria.

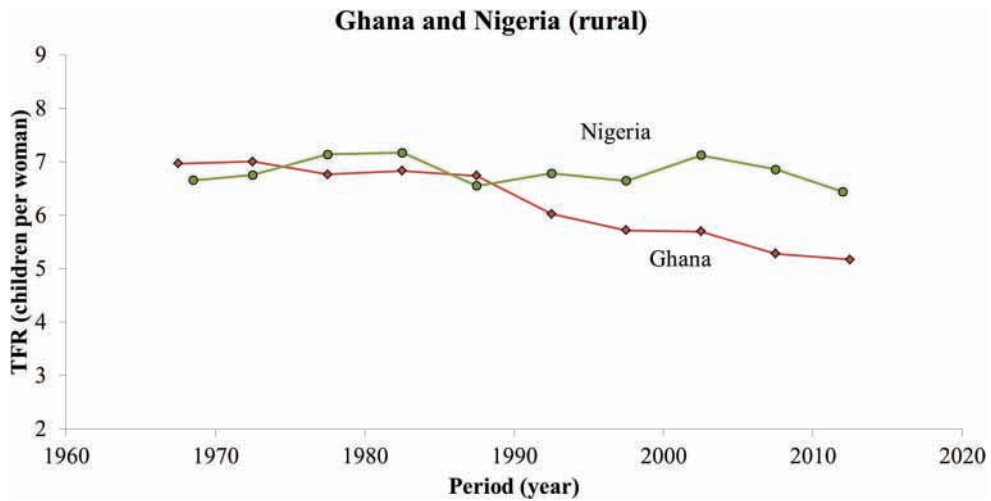


Figure 9. Comparison of fertility trends in rural areas: Ghana and Nigeria.

children per woman in 2010), while it remained abnormally high in Nigeria (4.9 children per woman in 2010), given the level of development and the level of education of the country.

5.4. Zimbabwe and Zambia (rural areas)

Zimbabwe and Zambia, two neighboring countries in Southern Africa, also share a common British colonial heritage, as Southern Rhodesia and Northern Rhodesia. However, their post-colonial stories diverge, like their economic performance and their family planning programs. Zimbabwe became independent late (1980), following a disturbing period of civil war. Power was taken by a very marked left-wing government, a single party (ZANU), and a highly controversial leader (Robert Mugabe). While economic growth was strong in the 1960s, it stopped during the period of struggle for independence and in the years that followed (1973–1998), before collapsing for about 10 years, a consequence of deleterious economic policies and social disasters. Growth has only recovered since 2010, but by 2013 GDP per capita was barely equal to that of 1960. In a very different situation, Zambia became independent in 1964, with no particular hardship at the time of decolonization. Its economic history is marked by a long recession since 1975, which followed the fall in copper prices on international markets, copper ore being its main export good. Growth did not resume until year 2000, and has been sustained since. The period of acute economic crisis (1975–1995) had many consequences: cuts in social budgets, departures of doctors (especially expatriates), and increased mortality of children [50].

In Zimbabwe, despite repeated political and economic crises, the family planning program has been a notable success, often cited as an example in Africa. It should first be noted that modern contraception has been available since 1953, although initially restricted to urban elites and expatriates. Family planning in Zimbabwe has not met with any marked opposition, even if some anti-colonial elites initially doubted its interest. Family planning began in

1965 with the creation of a National Association of Rhodesia and the establishment of the first specialized clinics (1967). It is important to note that the program relied very early on mobile teams (1973), on the distribution of modern contraceptives to families by specialized agents (Community-based distributors), and on information campaigns in schools (Youth Advisory Services). The new government set up at independence continued, unified and developed this pioneering work. The Family Planning Association was incorporated into the Zimbabwe National Family Planning Council in 1985 and became an important element in public health policy. Infrastructure was expanded, staff increased, and resources were sufficient, from national and international sources, to ensure a good geographical coverage. The system continued to function during the crisis years, despite the financial difficulties of the country, despite the departure of some medical staff, and despite the difficulties of supply and management [51, 52].

The case of Zambia is strikingly contrasting, while the country has benefited from a better economic and political situation than Zimbabwe. First, the position of political powers at independence was resolutely pro-natalist, as well as that of the main religious and traditional leaders. The government even went as far as to prohibit modern contraception and related literature in the first years after independence. Even women's associations (the Women's league) opposed it at the time. A first family planning association was founded in 1972 (Family Planning and Welfare Association of Zambia), but again faced a frontal opposition from the Family Life Movement of Zambia. The situation changed only after the Mexico Conference (1984), after which the government changed its position, adopted the Kilimanjaro resolution, and founded a new National Commission for Development Planning to coordinate efforts. A population policy was adopted shortly thereafter in 1989 (National Population Policy), integrated into the development plan and from there family planning spread throughout the country. Planning centers are set up in public hospitals and clinics, guides were developed in 1992 (Family Planning Policy Guidelines and Standards), and an awareness program was set up in 1994 (IEC). This program was updated several times (1996, 2006–2007, 2013), and integrates home distribution by specialized agents in the recent period. Although it has clearly stated goals (families with four children or less, 58% contraceptive prevalence) and if opposition from hostile groups diminished over time, the program has been slow to take off in rural areas [53, 54].

The contrast between the two countries is again striking: by year 2010, Zimbabwe achieved almost half of its transition in rural areas (45.6%), while Zambia experienced only a small decline (16.4% of the transition). Zimbabwe has better indicators in terms of efforts in family planning, and in the prevalence of contraception (**Table 4**). While Zambia made a serious effort to promote home visits, this effort is too recent to have had a significant impact. It should also be noted that fertility fluctuated in Zambia, following the economic crisis and recovery, while the decline has been steady in Zimbabwe, except for the recent period when it has stagnated since 2003: fertility trends showed even a surprising peak during the worst years of the economic crisis, probably due to a shortage in imported supplies of contraceptives, in particular pills and injectables, the most widely used methods in this country (**Figure 10**).

		Zimbabwe	Zambia
Family planning	Effort index, 1982	27.3	16.4
(national)	Effort index, 1999	59.9	44.6
Contraception	Last survey	(2015)	(2014)
(rural areas)	Prevalence	63.2	39.0
	Home visit	13.0	11.6
Fertility	TFR, 1980	7.52	8.11
(rural areas)	TFR, 2010	5.01	7.11
	% Transition	45.6%	16.4%

TFR: Total Fertility Rate (number of children per woman).

Table 4. Comparison of fertility and family planning indicators: Zimbabwe and Zambia.

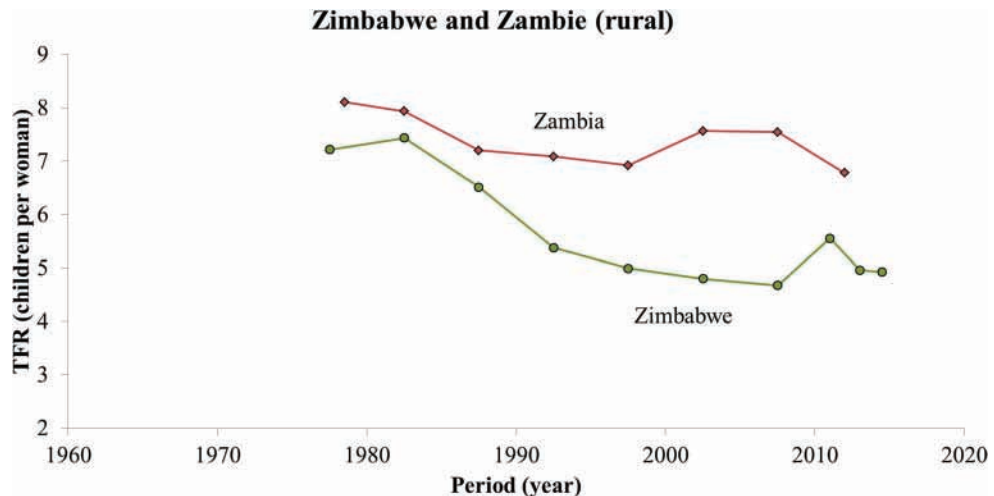


Figure 10. Comparison of fertility trends in rural areas: Zimbabwe and Zambia.

5.5. Madagascar and Mozambique (rural areas)

Madagascar and Mozambique occupy a special place because they are two countries located in the extreme south-east of the continent, on both sides of the Straits of Mozambique, geographically isolated and having a common characteristic of extreme poverty (GDP per capita of \$ 1390 and \$ 933 respectively in 2010). Their colonial history is different, the large island having been colonized by France (independence in 1960) while Mozambique was colonized by Portugal and became independent later (1975). The two countries faced a serious political and economic crisis shortly after independence (1973–1983 in Madagascar,

1975–1992 in Mozambique), although the crisis in Mozambique was longer and marked by a civil war. Both countries have seen their per capita income drop seriously over a long period of time (1972–2002 in Madagascar, 1973–1995 in Mozambique), and recovered with difficulty.

In Madagascar, family planning began fairly early, was not subject to any particular reluctance, except occasionally by the Catholic Church, and has always been supported by successive governments, despite repeated political crises. A family planning association (FISA or Fianakaviana Sambatra) was set up and active since 1967, and the program was supported from the very beginning by UNFPA. In 1987, the public sector became involved and, in 1987, family planning centers were set up in health facilities. A National Population Policy for Economic and Social Development (PNPDES) was adopted in 1990 and from that date progress was rapid. In addition to fixed structures, the country promoted mobile teams since the 1990s, and it allowed the distribution of contraceptives by mobile teams. The country followed major global developments and updated its program on several occasions: National Policy on Reproductive Health (2000), awareness programs (2003), social marketing (Strategic Pathway to Achieving Reproductive Health Commodity Security), Action Plan for Madagascar (2006), sexual education in secondary schools, clubs for adolescent reproductive health (peer education), etc. Over the years, the country received technical and financial assistance from many agencies and donors, particularly from USAID [55, 56].

The situation is quite different in Mozambique. From the outset, the FRELIMO government, of Marxist obedience, was hostile to birth control, and did not include family planning in its maternal and child health policy defined shortly after independence (1980). There was also considerable reluctance among the population. A first program was announced in 1978, and the first trials were carried out under the aegis of UNFPA in the 1980s, but they remained timid and affected only a small fraction of the population. Large parts of the country were at civil war, and in particular public health was no longer functioning in rural areas in the central part of the country. Following the 1992 peace agreement, a new impetus was given in 1999 when defining a “Population Policy for Mozambique” and the adoption of the Millennium Development Goals (MDGs), but this effort was hampered by a large-scale HIV/AIDS epidemic, which captured a big chunk of public health resources. New programs were implemented in 2010, as part of a new family planning policy, which involved home visits (*Agente Polivalente Elementar*) and campaigns with volunteers. But until then, family planning has remained the poorest part of public health in Mozambique, and as a result, the prevalence of modern contraception has hardly increased between 1997 and 2011, and even seems to have declined between 2003 and 2011.

The contrast between the two countries is therefore very clear (**Table 5, Figure 11**). Madagascar achieved almost half of its transition in rural areas (46.7%), while in Mozambique fertility remained at a natural level, with no significant decline. The efforts made by Madagascar were much more important, and the prevalence of contraception was almost four times higher in 2010. While home visits have developed in Mozambique, this occurred only recently, within the framework of the new programs, which is very different from the situation in Madagascar where home visits have been practiced for nearly 25 years.

		Madagascar	Mozambique
Family planning (national)	Effort index, 1982	8.6	16.4
	Effort index, 1999	64.0	39.2
Contraception (rural areas)	Last survey	(2009)	(2011)
	Prevalence	28.0	7.2
	Home visit	7.5	8.1
Fertility (rural areas)	TFR, 1980	7.55	6.76
	TFR, 2010	4.96	6.76
	% Transition	46.7%	0.0%

TFR: Total Fertility Rate (number of children per woman).

Table 5. Comparison of fertility and family planning indicators: Madagascar and Mozambique.

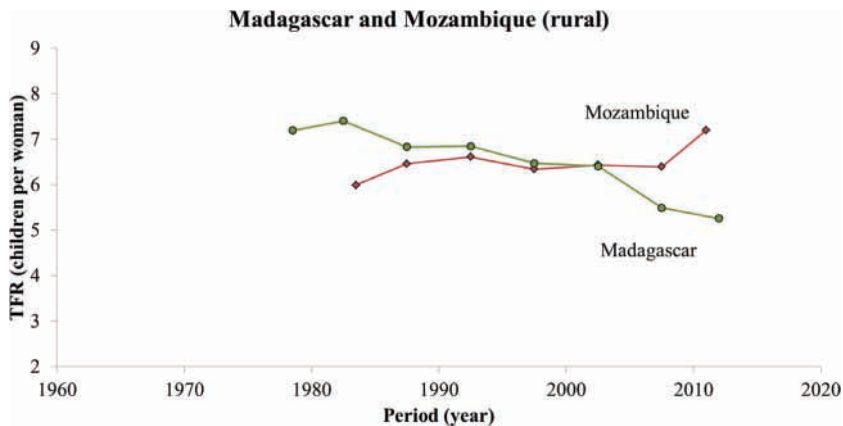


Figure 11. Comparison of fertility trends in rural areas: Madagascar and Mozambique.

	Indicator	Cases (5 countries in progress)	Controls (5 countries late in the transition)	Relative difference
Income per capita (GDP)	GDP, 1980	1985 \$	1723 \$	1.15
	GDP, 2010	1941 \$	2303 \$	0.84
	Growth rate	-0.1%	+1.0%	
Level of education	AYS, 1975	2.20	1.28	1.71
	AYS, 2005	5.19	3.58	1.45
	Changes	+2.99	+2.29	

Note: Income: GDP per capita in 2011 dollars, national data; Level of education: in average years of schooling (AYS), women aged 15–49, rural areas.

Table 6. Comparison of income and level of education between cases and controls countries.

5.6. Socio-economic correlates

Table 6 shows socio-economic correlates, women's per capita income and level of education, associated with cases (countries in progress) and controls (countries late in the transition). Both groups had equivalent income levels in both 1980 and 2010, with a small advantage for cases in 1980 and for controls in 2010, which ironically means that the control countries (lagging behind schedule) had better economic development between 1980 and 2010. For adult women's educational attainment, case countries had a small advantage in 1975, which they maintained over the years and even increased, but the differences remained small in relation to the large differences in fertility decline highlighted above. Therefore, these cannot be attributed to socio-economic differences.

6. Conclusions

In Sub-Saharan Africa, there is a wide range of situations in population policies, family planning programs and fertility control that reflect the diversity of ideological, political, economic and social situations, and even to a certain extent a diversity of epidemiological situations: some countries had higher natural fertility levels than others, and therefore had more problems to solve, which could take a longer time.

The case studies presented here provide guidance for defining the conditions for successful family planning and fertility control:

1. *On the political standpoint:* political will and commitment of the state to establish, operate and develop family planning programs is the first condition for success. If the state does not support the program at national level, or if it puts obstacles to the operation of private associations, the program has little chances of success. This political will is first of all ideological: the government must be convinced of the desirability of family planning (at least as a right to reproductive choices), and of a neo-Malthusian policy. The government needs to have the necessary charisma to get the message across to the different actors of public health and social action. In the event that the government is still pro-natalist, whatever its motivation, it will be reluctant to make efforts in family planning. However, these attitudes have changed over time, and by 2010 very few African governments still assert pro-natalist positions, while these were predominant in 1960. Another condition for the smooth functioning of programs is political stability, economic growth, and continuity in population policy during the inevitable changes of political regime. When the country is in a period of political turmoil, civil war or severe economic recession, progress in family planning can be halted or even reversed. However, it should be noted that some countries (such as Zimbabwe and Madagascar) have managed to survive periods of political unrest and economic recession by continuing to make the family planning program work, notably through continued support from international aid.
2. *On the social standpoint:* in some countries, the first programs have been subjected to strong reticence, or even frontal oppositions, by various social, religious, traditional or family groups.

In other countries, on the contrary, the transition from a traditional regime (without birth control) to a modern regime (with contraception) has been smooth and with the consent of all social actors. These dynamics are complex, and often specific to each country. Thus, in some cases, Muslim or Catholic religious groups opposed family planning, while in other countries they let things evolve without intervening. It should be noted at the global level that no religion has been an insurmountable obstacle to the development of family planning and birth control, and that some Muslim countries (such as Iran, Bangladesh, Indonesia, Tunisia) as well as some Catholic countries (in Latin American countries, or the Philippines) are considered to be models of rapid transition. In some countries, rumors about the side effects of some contraceptives have hampered their spread. Again, these are groups of activists who developed for different reasons in some countries, but not in others. In most cases, information campaigns can help to narrow down these problems, but this may take a long time. In addition, some forms of contraception, well accepted in other countries, are problematic in many African countries, especially sterilization and induced abortions. These ethically legitimate oppositions should not be a brake on birth control if alternatives exist, that is if the supply of contraceptive methods is abundant, diversified and adapted to the needs of couples. Finally, certain legal provisions have been problematic in some countries, notably the 1920 law prohibiting the promotion of contraception that was in force in the countries of French colonization at the time of independence. This law has been revoked in most countries, but this has taken a long time in some cases.

3. *On the organizational standpoint:* organizing the family planning program is important, and some programs have been poorly designed, poorly implemented, and poorly monitored. The programs that have worked best are those that have targeted the entire population through fixed posts and mobile teams, through public centers and private centers, and which have provided a continuous supply of contraceptives, free products, and which ensured a diversity of contraceptive methods. To the technical questions of management, one could add the question of the relationship with the population, very important in the case of mobile teams (client centered approach). Especially in the extension phase of the program it is important that new clients are welcomed properly, that the information given is simple and precise, that the rights of women are respected, especially confidentiality. This is especially the case for adolescent girls, for whom efforts have been insufficient, even in advanced countries such as South Africa. Moreover, it seems important that the program be stimulated regularly by new multiform actions. The programs that have worked best have been updated regularly, approximately every 10 years, with awareness campaigns, health education, sex education in schools, distribution of new products, and so on. Finally, an important element to obtain a large demographic impact is to cover the entire population, including women who do not come spontaneously in medical consultation. As such, the programs that seem to have had the greatest impact are those that included home visits, motivation visits (information, awareness), and home delivery of contraceptives [57]. In some new programs, the distribution of injectable contraceptives is done through home visits by trained personnel [58].
4. *Funding:* funding family planning programs has rarely been a problem in the past 50 years. Indeed, abundant international resources were available and distributed generously to all countries that requested it. These sources come from international organizations (UNFPA,

World Bank, UNICEF, European Union, etc.), bilateral aid (United States, European countries, Japan, etc.), international federations, American foundations (Ford, Rockefeller, Gates, etc.), and many intermediary actors. This international aid has made it possible not only to provide free contraceptives, but also to finance a significant part of the operation of the programs on the ground.

5. *Population receptivity*: the fertility transition is essentially a paradigm shift for families, from a situation of “natural fertility” to a situation of control of offspring at a low level, the ultimate norm being two children per couple. This radical social change is gradual, on average over two generations, that is to say over periods of 60 years, sometimes faster (as in South Africa or Mauritius), sometimes slower. The receptivity of the population therefore evolves over time, starting from a negative attitude toward a positive attitude. This transformation can take place at different levels of development. It is moving faster in urban areas, where changes are faster due to economic development and social change (income levels, production and consumption structures, educational levels, information, mass media, family models, etc.). But it can also be realized in rural areas, even in societies that are still fairly traditional. The examples presented above illustrate this point for Africa, as has been amply demonstrated for Asia and Latin America a few decades ago. Ethnographic arguments often opposed to family planning and in favor of a maximum number of children (such as the place of the child in traditional societies, the contribution of children to family production, insurance for old age, etc.) do not resist a dynamic analysis of situations. As soon as couples understand their interest in having fewer children, they quickly adopt these new behaviors, even in traditional societies.
6. *Socio-economic correlates*: contrary to what is often stressed in the press and in international circles, low levels of economic development, income, wealth and education are not definite obstacles to the adoption of birth control. Some programs work very well and have a significant impact even in poor countries, where women have low levels of education and little autonomy. This has been well documented in Asia, the Middle-East, North Africa and Latin America in the past, and appears to be the case in sub-Saharan Africa, as illustrated by some of the countries presented in this study (Ethiopia, Madagascar, Rwanda).

This study gave little consideration to the different epidemiological situations. In particular, the HIV/AIDS epidemic has several possible interactions with contraception and fertility. On the one hand, the virus itself induces a decrease in fertility by a biological effect. On the other hand, the fight against AIDS has led to an increase in condom use in many countries. In the case studies presented above, it appears that these interactions had no impact on the fertility transition: in three cases (Rwanda/Burundi, Kenya/Uganda, Ghana/Nigeria) the epidemiological situation of HIV was comparable in the case and control countries. In the case of the comparison between Madagascar and Mozambique, the situation was rather the opposite of what one would have expected, because HIV was rare in Madagascar but frequent in Mozambique. Even in the Zimbabwe/Zambia comparison, there was slightly less condom use in Zimbabwe (3.2% women) than in Zambia (4.2% women), while the first country was slightly more affected by HIV than the second (prevalence of 15.2% and 13.3% respectively). The impact of epidemiological situations seems therefore negligible compared to the functioning of family planning programs.

Finally, population pressure in general, and competition for land in rural areas in particular, may have played a role in the more or less rapid adoption of birth control. This is probably the case in Kenya, Rwanda and Madagascar where population pressure is high, but probably not in Ghana or Zimbabwe where it is moderate. Moreover, the contrast between Rwanda and Burundi shows that population pressure is not decisive in itself, while population policies and family planning programs explain the differences between the two countries.

The demographic outlook for sub-Saharan Africa is therefore not as bleak as it is often presented. It is likely that populations will increase considerably in most countries by 2100, creating unsustainable situations of overpopulation in many cases. However, the analysis presented above shows that this evolution can be modulated, if family planning efforts continue, if countries lagging behind are targeted, if enough financial resources are mobilized, if all actors are actively involved (state structures and NGOs), and if family planning programs are well-organized and well-managed and affect all population strata. The line drawn by the 2012 London Summit seems to be the right one, and should be followed with diligence. If the declared goal of universal access to contraception by 2020 is achieved, the decline in fertility could be faster than that currently foreseen by the United Nations for African countries.

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A. Annex

Country	Urban (% of transition)	Rural (% of transition)
Angola	53.2	0.0
Benin	41.6	34.6
Botswana	93.9	75.7
Burkina-Faso	65.5	20.6
Burundi	28.4	5.6
Cameroon	52.7	4.2
Central-African Rep.	36.9	9.8
Chad	24.4	6.2
Comoros	53.7	45.0

Country	Urban (% of transition)	Rural (% of transition)
Congo-Brazza (RC)	18.6	0.0
Congo-Kinshasa (RDC)	28.0	0.0
Cote d'Ivoire	68.3	27.6
Ethiopia	87.6	31.9
Gabon	60.4	14.6
Ghana	72.8	43.9
Guinea	59.6	18.5
Kenya	88.6	58.8
Lesotho	95.7	54.9
Liberia	58.7	10.0
Madagascar	76.5	46.7
Malawi	63.4	29.2
Mali	38.9	26.2
Mozambique	39.9	0.0
Namibia	74.7	48.8
Niger	42.8	9.2
Nigeria	40.0	13.0
Uganda	60.5	18.9
Rwanda	73.1	56.1
Sao-Tome & Principe	65.9	50.5
Senegal	64.3	31.2
Sierra Leone	52.8	15.9
South Africa	~100	~100
Swaziland	84.2	64.9
Tanzania	69.5	19.7
Togo	67.3	36.0
Zambia	61.6	16.4
Zimbabwe	75.3	45.6

Note: Percentage calculated as: $1 - (\text{TFR}_{2010} - 2)/(\text{TFR}_{\text{max}} - 2)$.

Table A1. Percentage of achievement of the fertility transition in 2010, by country (source: Reconstruction from demographic surveys).

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