

Deriving Niger's demographic and education future to 2062 with stakeholders: Which results?

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Extended Abstract

Introduction

At the last census of 2012, the population of Niger, one of the poorest countries in the world (2018 UNDP Human Development Index) was 17.1 million inhabitants. The most recent estimates show a population at around 22 million. This sharp increase is mainly due to the stagnation of fertility at a level above 7 children per woman for several decades; Niger has the highest fertility rate in the world. Independent of the timing and speed of the fertility transition, this fertility will generate a substantial and inevitable increase in the population in the medium term, until 2030-2040, representing a planning challenge for Niger's development.

The Nigeriens are mostly young, 58% and 70% of the population are under 18 and 25 years of age respectively. The social, economic, environmental and technological development of the country requires that this young population receives a good quality education. However, high population growth complicates the task of providing education for all, a problem also reflected in other public services. The future of Niger will largely be a reflection of the country's ability to meet the demographic and education challenge. While the government recognizes this fact, and has both demographic and education variables occupying a central position in the government strategy¹, it does not necessarily link the two. Moreover, the several entities in charge of foresight in Niger do not work in the long term (up to 2035), nor do they look at the different regions in both terms of demographic and educational development.

Within a project piloted by the Ministry of Planning, we have studied different future paths of demographic and educational development with the aim to inform policy, using multi-state population projection models. We show through projections of population by level of education – according to scenarios defined by the different partners at the government level – the different faces that Niger, and its eight regions (Agadez, Diffa, Dosso, Maradi, Niamey, Tahoua, Tillabéri and Zinder), could take in the future according to investments in the field of education and women inclusion.

Methodology

To capture the important impact of education on demographic parameters such as fertility and mortality – that has been demonstrated by the literature –, and to account for regional diversity, we use the multistate cohort component method to project the population of Niger by age, sex, education, labor force participation and region according to different scenarios for the period 2012-2062. The base-year information (2012) concerning population, fertility, migration, education (no education, koranic, incomplete primary, primary, lower secondary, upper secondary, professional, post-secondary education), and labor force participation is estimated from the 2012 census and the 2012 DHS data. Mortality parameters are derived from the UN World Population Prospects and differentials from the Wittgenstein Centre for Global Human Capital.

We used a mixed method to build the scenarios. Together with stakeholders and decision-makers in Niger (meetings in February, July and October 2018), we developed five qualitative narratives about the different futures possible for Niger to the 2062 horizon. These are:

1 – 'Trend' scenario: No major upheaval affects Niger. Past progress continues at a steady but slow pace.

¹ i.e. the Sustainable Development and Inclusive Growth Strategy (SDIGS) Niger 2035 document and the 2017-2021 Economic and Social Development Plan (PDES).

2 – ‘Rural development’ scenario: The primary economy is booming, in part due to effective public policies favoring the development of professional education. Family structures remain traditional and women still have many children. Resource regions retain workers, and regional industrial centers emerge. Due to disturbances limiting the action of the government policies, certain regions (Diffa, Tahoua and Tillaberi) remain behind.

3 – ‘Upturn’ scenario: Niger begins an unprecedented development process focused on raw materials, the manufacturing sector and processing, and marked by a strong intervention of the state, particularly in terms of economic development, infrastructure and family planning. The country is modernizing and industrializing rapidly, while access to primary and secondary education is becoming universal for both boys and girls, and post-secondary education is growing rapidly to meet the needs of the new industries. Niamey is consolidating its status as a metropolis, with increased job opportunities.

4 – ‘Evolving’ scenario: Development in two stages: Rural development until 2037 and then ‘upturn’ scenario until 2062. The result is strong urbanization and the development of the manufacturing sector, which is parallel to the development of post-secondary education and a rapid reduction in fertility.

5 – ‘Vicious circle’ scenario: Formal education collapses under demographic pressure and the state loses control of most sectors, no longer having the means to intervene and put in place effective policies. Progress in mortality are limited, especially among children. Rural areas are overcrowded. Some regions get bogged down in conflicts.

We have also added a variant ‘inclusion’ to scenarios ‘Trend’, ‘Rural development’, and ‘Evolving’ to show what difference removing the education gender gap at all levels of education would make. In a second step, the narrative elements of the narratives were transformed into quantitative assumptions about fertility, mortality, migration, and educational development, which are necessary to run the projections. In all scenario, labor force participation rates by age, region, and education level are assumed to be constant for men, and to progress with the decline of fertility for women.

Some results

Niger's population is growing rapidly in all scenarios (Figure 1). The 'vicious circle' scenario which imagines constant fertility in the next 50 years as well as the stagnation of education levels, results into a population of 131 million in 2062. In contrast, the ‘upturn’ scenario, in which fertility declines most rapidly in the context of a favorable conjecture, enables Niger to reach a population three times lower, i.e. 50 million inhabitants in 2062. The other scenarios propose intermediate routes for the future population of Niger. The 'trend' scenario translates into an increase of the population to 106 million in 2062, 91 million in the case of the 'rural development' scenario and 78 million for the 'evolving' scenario. When the scenarios take into account the inclusion of the girl, the population is actually 3 to 5% lower than in the reference scenario ('trend'). The impact is stronger in the case of the 'rural development' scenario. However, the main lesson of Figure 1 is that, with the exception of the upturn scenario, until 2032-2037, the population varies little between the different alternatives, with hardly more than 10 million population differences by 2035.

The scenarios for each region generally reflect national observations on the inertia of population growth. The demographic future of Niamey is particular, mainly in relation to the mobility/urbanization factor. The scenario that would generate the smallest population by 2062 would be the 'rural development' scenario, because it implies that the regions develop the agri-food sector and keep their labor force in the origin regions. In this case, the population would increase from 1 million to 3.2 million between 2012 and 2062 mainly due to natural increase. The population of Niamey would be substantially increased in the case of the 'upturn' scenario, from 1 million in 2012 to 10.5 million in 2062 as the city would become a metropolis and a magnet for the population of the regions having reached high levels of education. The ‘trend’ scenario also leads to a substantial increase in the

population of the capital in 2062. Increasing women's participation in school and on the labor market in the 'trend' scenario would result in a higher population: 8.2 million in 'trend' vs. 9.6 million in 'trend inclusion' scenario since women with education are more likely to move toward the capital.

The significant potential changes that we have highlighted in terms of total population are both the consequence and the cause of profound changes in the educational levels of the population. The trend scenario sees a sharp increase in the absolute population in all levels of education, but especially at primary, secondary and professional levels, and higher - the average growth rate being over 6% over the whole period 2012- 2062. It is particularly important for professional education (+ 8%), which is in the focus of educational policies in recent years and could absorb a large part of the population to attend school in the near future. This is also the case in the 'rural development' scenario which foresees an increase in professional skills to meet the development needs in the primary sector. This increase would also result in an increase in the population with higher levels (spillover effect).

Population growth is also visible within education categories. Even within the most ambitious scenarios for schooling, the population with incomplete primary education or no education continues to increase in absolute terms, even if it progresses more slowly than in the past. If 'inclusion' variants do not have a substantial effect on population growth within each level of education, they influence the educational attainment of the population. Thus instead of 20% with a primary education and beyond in the trend scenario, a closing of the gap (scenario 'trend inclusion') would allow an increase up to 24% in 2037, and up to 48% in 2062 (instead of 42% with the 'trend' scenario). This same improvement is found for the other scenarios with an 'inclusion' variant. If we look at the distribution of the population, by level of education, it appears that apart from the 'vicious circle' scenario, the share of the population with little or no (primary incomplete) of education decreases considerably among the population aged 15 and over. It actually goes from 83% in 2012 to 35-64% in 2037 according to the scenario and to 11-37% in 2062. This decrease goes hand in hand with an increase in the population with secondary or higher education, already within the scenario 'trend' but even more so in the other scenarios and especially the 'upturn' scenario. In this case of rapid development of schooling, more than 50% of the 25-39-year-old Nigerien population would have a secondary education in 2037 -- and more than 85% in 2062. The 'trend' scenario caps it at 35% in 2062. Note that the increase is also visible at the intergenerational level by comparing the cohort of 25-39 and 40+ cohorts. In 2012, the difference is minimal: only 6% of 25-39 year olds have secondary or higher education compared to 3.7% for the older generation aged 40 and over. This is indicative of stagnation for higher levels. On the other hand, in 2037, the difference widened, by the setting up of a voluntary policy of increase of the levels of education.

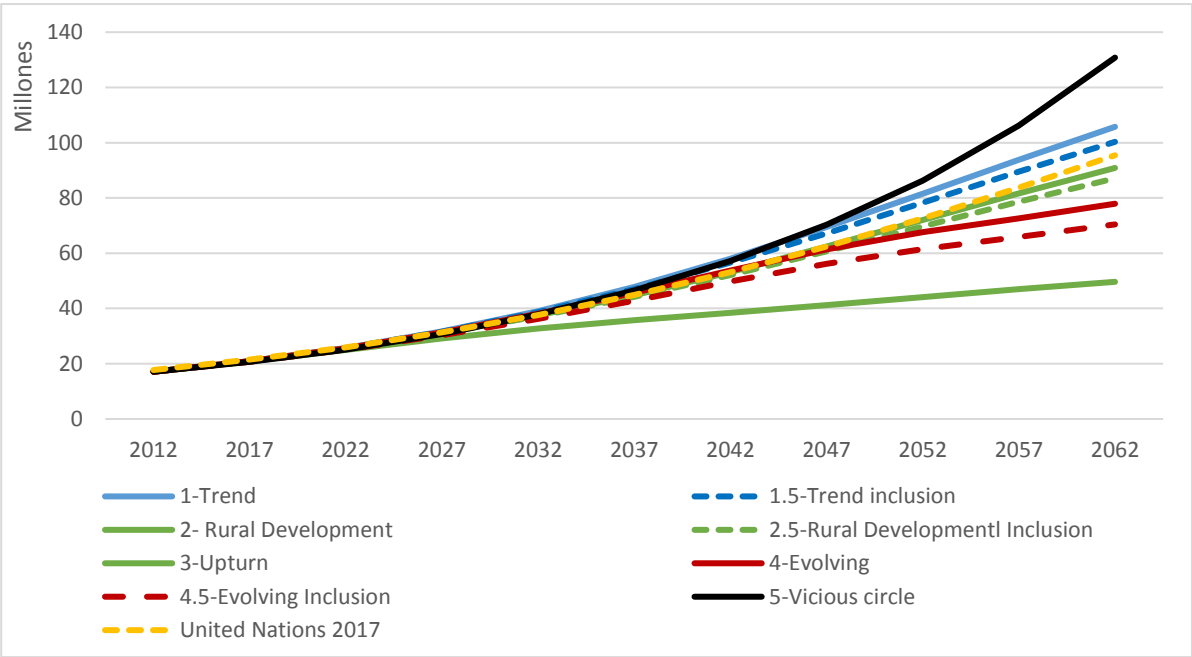
When we looked at the economic dependency ratio of Niger (the inactive population on the active one), in 2012 there were 2.6 times more inactive than active people. This ratio changes little in the 'trend' and 'rural development' scenarios until 2037, then starts declining - a little faster for the 'rural development' scenario - to reach respectively 1.3 and 1.2. The economic dependency ratio in the 'upturn' scenario starts to decline rapidly in the early years, and stabilizes at just under 1 by 2047. While the demographic dependency ratio of the Niamey region stood out favorably compared to other regions, its economic dependency ratio is not much different from the national average. Indeed, its lower activity rates, for both men and women, outweighs its more favorable age structure due to lower fertility. As a result, in 2012, Niamey's economic dependency ratio was 2.8, slightly above the national level of 2.6. In 2062, according to the 'trend' scenario, regional differences will narrow, and ratios will vary from 1.2 to 1.4. Niamey (1.28) then falls below the national average (1.34), having the advantage of the migratory contribution of young active adults. In the rural development scenario, the economic dependency ratios projected in 2062 are 0.1 to 0.2 points lower than the trend scenario in all regions, except in Niamey, where it is higher (1.6). This scenario provides for greater retention of young adults in the region, thus eliminating one of the main assets of Niamey in the trend scenario. The 'upturn' and 'evolving' scenarios, on the other hand, generate much lower economic dependency ratios in 2062 - less than 1 in all regions.

The reduction of fertility has a double effect in improving the economic dependency ratio, by reducing the proportion of children and by increasing the activity level of women. In 2012, the proportion of women in the labor force was 31%. In all scenarios with the exception of the 'vicious circle', this proportion increases sharply and reaches a little over 45% in 2062, but the pace of progression differs. The contribution of women to the labor force is indeed much faster in the 'upturn' scenario, in which they exceed 40% of the active population by 2027. This greater participation of women contributes to reduce the relationship of economic dependence.

In addition to its gender composition, the labor force in Niger will also change in terms of its composition in education. While only 16% of the workforce had completed primary education in 2012, this proportion will increase remarkably in all scenarios, except for the 'vicious circle'. In the 'trend' scenario, the progression is constant and reaches 60% in 2062. In the other three scenarios, the proportion of those with at least one primary education increases significantly more rapidly, exceeding 60% between 2037 and 2042, and then continuing progression to levels ranging from 78% ('rural development' scenario) to 89% ('upturn' scenario). Thus, although the 'trend' and 'rural development' scenarios have similar trends in the relationship of economic dependence, workers are much more educated in the latter. Since productivity is strongly correlated with education, a more favorable demographic dividend can be expected in the 'rural development' scenario than in the 'trend scenario'.

While the feasibility of the scenarios is not measured in this exercise, it is clear that one determining and limiting factor will be the availability of resources in terms of budget, infrastructures, and number of teachers. Based on a baseline assumption derived from Education Policy and Data Center data on public expenditure on education and the per capita GDP estimates provided by INS, we calculated the total costs of developing education involved by the implementation of the different scenarios. While all scenarios show an obvious increase of costs, whether due to population growth in the 'vicious circle' scenario or to increase in enrolment in all other scenarios. Logically, the 'inclusion' variant is more expensive than the variant without inclusion in the 'trend' and 'rural development' scenarios, which makes sense because more girls would be enrolled at all levels. On the other hand, the 'evolving inclusion' scenario turns out to be less expensive than the 'evolving' scenario after 2047. This is explained by the lower fertility of educated women, which reduces the rate of population growth. This phenomenon is also visible in the 'upturn' scenario, which is expensive at first, but becomes less so by a smaller youth population.

Figure 1. Total population, Niger, 2012-2062, several scenarios



Source: Authors 'calculations, and United Nations medium scenario (Source: United Nations, 2017)