Demographic Pressure and Institutional Change: Village-Level Response to Rural Population Growth in Burkina Faso

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Abstract

This paper uses historical census data from Burkina Faso to characterize local demographic pressures, including population shocks associated with forced repatriation of migrants from Cote d'Ivoire, and internal migration associated with disease eradication in river valleys. We combine those data with a new survey of village elders, designed to document change over time and differences across villages in local public goods provision, market infrastructure and property rights. We hypothesize that higher local population densities are associated with more collective services and a transition from open-access to regulated land use, offering a village-level test of hypotheses advanced by Boserup (1965). Controlling for year and province fixed effects, we find that population shocks associated with proximity to Cote d'Ivoire and to river valleys are closely correlated with increased public services, infrastructure, religious facilities and markets. For land rights, we find only a common time trend across all villages.

Acknowledgements

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Introduction and Motivation

An unusual factor in Africa's 20th-century economic development was a relatively low initial level of average population density, and then unusually high rates of rural population growth over the last 30 years. As shown in Figure 1, Africa's year-to-year rate of rural population growth rose above that of Asia around 1975, peaked in 1990, and only recently has fallen below the highest levels ever seen in other regions. All regions have seen a rise and then fall in their annual rates of rural population growth, but in the post-1975 period Africa's growth rate rose more recently and reached a higher level for a longer time than that of other regions.

This project investigates the link between rural population growth and the local institutions and infrastructure needed for market development. We use spatial differences in migration exposure to test how village societies have responded to population pressure. Our central hypothesis is that recent increases in rural population densities are associated with wider spread of rural public services, infrastructure and local marketplaces, as well as a transition from open-access to regulated land use, including stronger individual property rights and more reliance on the rule of law to adjudicate disputes.

Our data come from Burkina Faso, a landlocked West African country of about 13 million people. As shown in Figure 1, Burkina Faso's rural population growth rate rose from 1950 to 2005 even more dramatically than that of Africa as a whole, to a peak above 2.5% per year. Burkina's rural population growth rate is projected to decline rapidly in the coming decades, but will remain well above zero until the absolute size of the urban population becomes large enough for its annual growth to absorb each year's increase in the country's entire population. Figure 1 shows that rapid growth in Burkina Faso's rural population was not uniform in time, with a temporary reversal in the 1980s that may have been associated with census errors discussed later in this paper, followed by a burst of catch-up growth and downward projections until urbanization is sufficient to achieve zero rural population growth around 2050.

Historically, Burkina Faso had large movements of rural people not only to its own cities, but also a large migration to coastal Cote d'Ivoire after colonization and particularly through the

1980s. A large number of those migrants were then forcibly repatriated following civil unrest in Cote d'Ivoire starting in the late 1990s. In addition, the donor-funded Onchocerciasis Control Program quickly eradicated river blindness, starting in the late 1970s and accelerating in the 1980s, leading to large population movements into river valleys. These demographic shocks affected villages across Burkina Faso in different ways depending on their location, offering two different exogenous shocks to rural population density with which to study the impact of rural demography on local institutions and infrastructural investments.

We hypothesize that changes in rural population growth change the payoffs from collective action, making it relatively more urgent to develop market infrastructure and institutions. This hypothesis follows Boserup (1965), who argued that rising rural population densities create incentives not only for farm-level adoption of more input-intensive techniques and "induced invention" of new technologies in response to factor scarcity as suggested by Hicks (1932), but also induced institutional changes to allocate newly-scarce natural resources more efficiently. As a result, rural population growth on fixed natural resources can have a Malthusian effect in the short run, but lead to institutional and technological innovation that facilitates growth in the long run. Modern analyses of this process were pioneered by Hayami and Ruttan (1971) for the U.S. and Japan, and tested in a large subsequent literature such as Olmstead and Rhode (1993). Only a few of these papers (e.g. Lin 1995) focus on the emergence and adoption of institutions; most ask how institutions affect technology adoption, such as Kazianga and Masters (2002, 2006). Focusing on rural demography also expands on our other previous work regarding the role of environmental factors in economic growth (Masters and McMillan 2001) and African policy choices (McMillan 2001, McMillan and Masters 2003). Here, we focus on changes in village-level institutions, testing how the governance of local resources and market infrastructure has responded to demographic change among local households.

Our focus on the specific challenge of *rural* population growth follows Johnston and Kilby (1975) among others. Most of the development-economics literature concerned with demography has focused either on demographic transition in the population as a whole (including the demographic "drag" or "dividend" from age structure emphasized by Bloom and Williamson, 1998), or the structural transformation in terms of output and employment shares (including the one-time "growth bonus" associated with shifting from a low productivity to a

high productivity sector as in Temple, 2005). Focusing on rural demography offers a distinctive new kind of explanation for Africa's post-independence economic decline, and strong grounds for optimism about its 21st-century prospects as institutions respond and the rate of rural population growth slows.

The motivation for our approach begins with an economic view of rural demography. Demographic accounting ensures that each locality's rural population growth is its' natural increase (births minus deaths, which in turn are determined by age structure as well as age-specific mortality and fertility), plus or minus each year's net migration. From an economic point of view, however, both fertility and migration are choice variables, and mortality may also be influenced by investment in health. Given this endogeneity, to identify a potentially causal effect of population requires an exogenous shock to rural population size that occurs with sufficient speed and magnitude to induce an institutional response before fertility and migration have time to adjust.

Our study design takes advantage of Burkina Faso's unusual demographic history, which includes two large waves of migration into specific rural areas that took place between the three most recent rounds of Burkina Faso's national census. One wave was a flow into areas where river blindness had previously discouraged settlement, and another was a flow into areas close to Cote d'Ivoire from which Burkinabe workers were forcibly repatriated. These two waves of migration sharply increased the rural workforce in areas that had previously had low population density for two different reasons: proximity to river valleys which had previously incubated river blindness, and proximity to Cote d'Ivoire which had previously hosted Burkinabe migrants. The first shock occurred mostly between 1985 and 1996 censuses, and the second occurred between the 1996 and 2006 censuses. We use these population shocks to help explain variation across villages in institutions and infrastructure, as recalled by focus-group interviews of village elders.

Our work contributes to an important gap in the literature on institutions and economic development indentified by Pande and Udry (2006) who argue that "the research agenda identified by the institutions and growth literature is best furthered by the analysis of much more micro-data than has typically been the norm in this literature." Specifically, we study the historical evolution of institutions in response to demographic pressure by focusing on diversity

across villages, in a setting with wide variation in exposure to clearly-exogenous demographic shocks. The closest antecedent is probably Grimm and Klasen (2008), who test for endogenous adoption of land titles at the village level on Sulawesi in Indonesia. Our surveys include land titles, but also consider a very wide range of other institutions, public services and infrastructure used for market exchange.

Though not the central focus of this particular paper, our survey data could also be used to analyze causal effects of institutions on economic outcomes. For example, Besley (1995) and others (see Pande and Udry for a summary of these studies) have found evidence that institutions significantly affect investment outcomes in rural Africa. For Burkina Faso in particular, Kazianga and Masters (2002) found that stronger cropland tenure was associated with more intensive soil and water conservation.

In the next section, we describe the major exogenous population shifts that might permit identification how how changes in rural population density affects public goods provision. We then turn to our empirical strategy, and a description of our data. In Section four we present and discuss our results. Section five concludes.

Historical Background

Since independence in 1960, Burkina Faso has experienced two major policy-induced changes in settlement patterns. The first began in 1974 when the Onchocerciasis Control Program was launched by the World Bank to control river blindness in seven West African countries: Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali, Niger and Togo. The second occurred from the late 1990s until 2002 when up to one million Burkinabe returned from Cote d'Ivoire to escape violence and a suspension of immigrants' rights in that country. Since our ability to draw a causal link between population growth and institutional change hinges on the extent to which these two events were exogenous to other influences on village population size, we describe the two shocks in more detail below.

The Onchocerciasis Control Programme

The Onchocerciasis Control Programme (OCP) was initiated in 1974 to control river blindness in West Africa, and is widely considered to be among the most successful public health

programs ever launched in Sub-Saharan Africa. Today, the disease is no longer considered a threat in the control zone, which has consequently attracted in-migration from other rural areas McMillan et al., 1993). To control the anticipated immigration to these newly attractive areas, the government of Burkina Faso created a special national agency – the Volta Valley Authority (AVV) – and gave the agency control of 75% of the river basins. Figure 2 shows these locations, and the "planned" villages to which it provided financial and institutional support. However, the pace of spontaneous settlement soon outgrew the ability of the AVV to finance and create sufficient numbers of sponsored settlements. As a result, there were sizable intra and interregional differences in the rate of new lands settlement. An evaluation of the OCP in Burkina Faso in 1993 concludes that government efforts to promote sustainable land use practices by official mandates were not successful but that village land management institutions that reinforced the capacity of local inhabitants to regulate access to land and other resources were far more likely to succeed.

Repatriation from Cote d'Ivoire

For more than three decades after independence from France in 1960, Cote d'Ivoire was an important destination for immigrants from Burkina Faso, offering peaceful stability and economic prosperity including rural work associated with opening new forests for cocoa production. The death of the autocratic ruler Felix Houphet-Boigny in 1993 ushered in a new era. His successor, Henri Konan Bedie, has been accused of sowing the seeds of ethnic discord by introducing the concept of "Ivorian-ness" in 1995 allegedly to deny Ivorian citizenship to his main political rival, Alassane Ouattara, thereby excluding him from office. Bedie insisted that Ouattara, a Muslim from the north of the country, was actually from Burkina Faso. Subsequently, attacks on people of foreign descent became increasingly widespread (Human Rights Watch, 2001). At that time over one quarter of Cote d'Ivoire's population had immigrated to the country since independence, the overwhelming majority of whom had come from Burkina Faso. As shown in Figure 2, the Cote d'Ivoire census of 1998 identified about 2.25 million Burkinabe living in Cote d'Ivoire, which was close to 20% of Burkina's total population at that time.

Peace and stability in Cote d'Ivoire came to an abrupt halt on December 24 1999 when the military, under the leadership of General Robert Guei, overthrew the elected government of Konan Bedie in the country's first coup d'etat. Although the coup was ostensibly prompted by soldiers' unhappiness over pay and conditions, it soon became apparent that, like Bedie, General Guei was also ready to incite ethnic and religious rivalries in order to remove political opposition. Continuing the theme of "Ivorian-ness", Guei introduced even stricter eligibility requirements for the 2000 presidential elections, once again excluding Alassane Ouattara on the basis of his alleged links with Burkina Faso.

Though exact numbers are difficult to come by, it is estimated that between 1999 and 2002 hundreds of thousands of Burkinabe were repatriated as a result of political unrest and worsening economic conditions in Cote d'Ivoire. They returned by rail, road and on footpaths, often but not always to their original villages.

Empirical Strategy, Data and Descriptive Statistics

Our evidence on village-level access to public services, infrastructure and institutions comes from a novel survey conducted for this project by the Burkina Faso Office of Agricultural Statistics in January through June 2010. This survey asked groups of village elders to discuss and describe the history of the facilities around them, recording the date of any changes in the distance to each kind of facility and any changes in property-rights arrangements. From those underlying observations, we construct a time-varying index of the village's proximity to public services, public infrastructure, religious services and markets, as well as a time-varying index of property rights over farm land. We combine these indexes with population estimates for each village from the Burkina Faso national censuses of 1986, 1996 and 2006, to test whether variance in population size can help explain variance in the provision of public services, infrastructure and institutions.

To overcome endogeneity between a village's amenities and its population size, we use each village's straight-line distance to any river from which Onchocerciasis could have been eradicated, and distance to the Cote d'Ivoire border from which migrants could have returned, as instruments for the village's population in each survey year. The result is a set of 2SLS regressions asking whether population shocks associated with changes in the attractiveness of

rivers and of Cote d'Ivoire are correlated with the spread of rural public services, infrastructure and market institutions. Our paper does not identify the mechanism by which more populated villages might attract more rural public services, infrastructure or market institutions: we are testing for reduced-form relationships, exploiting an unusual natural experiment in rural population density.

Our sample of villages consists of 747 sites that had previously been selected by the Office of Agricultural Statistics for their annual, nationally-representative agricultural survey conducted since the early 1990s. In this context, villages are very small, averaging about a thousand people. Their boundaries can change somewhat from decade to decade, as some households split off into new settlements. Our final dataset consists of 730 villages whose recorded names are the same across the three censuses and our new survey, at a correctly-recorded GIS location. We use year and region fixed effects for each of Burkina's 45 provinces, so as to focus on spatial variation across villages within relatively small administrative units.

The survey instrument is provided in the appendix. It was administered by experienced enumerators employed for Burkina's annual agricultural survey, whose structure is designed to accommodate new survey modules. The survey began by assembling a focus group of village elders and officials, who were asked a series of detailed questions regarding various types of public services, infrastructure, and institutions available to them. For each variable, we typically asked for its distance from the village and other salient characteristics, at present and in previous years, along with the date of any change. For example, the section on property rights poses the following question: Can land be sold in your village? If the answer to this question is yes, the interviewer then asks: since when could land be sold in your village? Questions posed in a way allow us to construct time varying indexes of public goods availability, from the point of view of the villagers themselves.

The empirical results in this paper focus on the travel distance in each census year to four kinds of amenities: (1) *Public Services and Utilities*, defined as the administrative office used to register births, any savings and loan facility, any fixed-line telephone, any mobile phone reception; (2) *Public Infrastructure*, defined as a road that is accessible by truck all year, a road accessible by truck seasonally, a bus stop, a primary school, a secondary school, and a health center; (3) *Religious Services*, defined as any church, mosque or temple; and (4) *Markets,*

defined as any market with storage facilities, any livestock market, or a private shop. Various other distances were also asked in the questionnaire, and these were selected based on response rates, retaining all questions for which over 700 of the 730 villages were able to provide unambiguous answers. These distance variables are aggregated in each of three ways. First, we consider the distance one must travel to have access to *all* the services in that category, which is the distance associated with the farthest service. Second, we consider the average distance to all of the services, i.e. the arithmetic mean of each distance. Finally, we consider the distance to *any* of the listed services, i.e. the minimum distance among them.

In addition to travel distance from the village to various public services, we also consider each year's value of a multidimensional index of property rights for land, based on four categories of questions. The first group of questions asks whether use rights over crop land is undefined, or held by individuals, families, or the community. The second category is related to land markets, asking whether land in the village has ever been sold or rented. A third category of questions referred to the management of land conflicts. We asked if a formal framework for dealing with land conflicts was used, and whether it involved a traditional authority or an elected authority. Fourth, we asked about the demarcation and regulation of pasture and forest land. We then follow the approach of Filmer and Pritchett (2001) and use principal component analysis to combine these variables into a single index. We define the index so that high values reflect more individualized rights and higher land market activity.

Table 1 presents the proportion of all observations with that type of property rights, and the average value of the multidimensional index among those observations. For example, rights over cropland are not defined in 14.4 percent of village-year observations, and for those observations the land-rights index has an average value of -0.220. The index is defined to increase with more individual property rights. Table 1 shows how increasingly well defined rights consistently translate into a higher overall index.

Descriptive statistics on all variables are provided in Table 2, as reconstructed for the census years of 1985 and 1996, plus current values for 2010 or the census year of 2006. Note that public services are consistently available more closely to villages in more recent years. Also, note that the average population of all surveyed villages grows from 1985 to 1996, but then falls in 2006. There is likely to have been systematic undercounting of the rural population in

2006, which is why the Burkina government is planning a new census now, several years ahead of its decennial schedule.

Estimating Equations and Results

Our estimation begins with a set of descriptive OLS regressions, showing the correlations between public services, infrastructure or institutions and village-level population, using the following specification:

$$i_{jk} = \alpha + \beta P_j + \delta X_j + \gamma_j + \varepsilon_{jk} \qquad (1)$$

where i is our measure of institutions or public goods *k* in village *j* from the survey data, and P is our measure of the total population in village *j* at year *t* from the census data. Following Boserup (1965), our hypothesis is that that $\beta_{vt}>0$, as larger populations create more pressure to provide more public goods and market friendly institutions.

Estimates of regression (1) are shown in table 3. In columns 1-4 the dependent variable is the maximum distance one must travel to have access to all services, infrastructure, religious services and markets. In columns 5-8, the dependent variable is the average distance one must travel to have access to these institutions and services. In columns 9-12, the dependent variable is the minimum distance one must travel to access at least one of them. Both the distances and population are expressed in natural log, so that the coefficients can be interpreted as elasticities. Our land rights index is shown in column 13.

We find that village population is generally but not always positively correlated with closer availability of public services (columns 1, 5 and 9), public infrastructure (columns 2, 6 and 10), religious services (column 3, 7 and 11) or markets (column 4, 8 and 12). There is also a trend towards closer availability over time. In column 13, we see only the time trend, and then only for 2006 as opposed to 1996.

Table 4 repeats the diagnostic OLS regression, with additional controls for the number of ethnic groups and number of clans in the villages. These are crude approximations of ethnic fragmentation which might influence the cooperation level within the population and overall

economic performance of the community (e.g. Alesina and La Ferrara, 2005). While there are small changes in the coefficients on population, the pattern is very similar to Table 3. Moreover, the coefficients on the number of clans and ethnicities are generally positive, implying that the more diverse villages have access to closer public goods and infrastructure. In the absence of any clear identification strategy regarding this diversity, however, in our preferred specification we drop number of clans and ethnic groups and focus on total village population.

Finding significant coefficients in OLS regressions is not surprising since causality could run in the opposite direction. For instance, it could be that people choose to locate in villages with closer access to public institutions and services, or that both are caused by something else. To overcome endogeneity, we use instrumental variables for population, so that the only variation we actually use are the population shocks associated with distance to rivers and distance to the border with Cote d'Ivoire.

The first stage regression of our 2SLS system is specified as follows:

$$P_j = \alpha_0 + \alpha_0 G_j + \alpha_0 M_j + \in_j \qquad (2)$$

Where G are variables determined by geography, namely log distance to rivers, and log distance to the border to Cote d'Ivoire.

The use of distance to river is motivated by the history of river blindness. For a long period of time, river blindness (onchocerciasis) prevented people from settling close to rivers, or significant population growth in villages which were settled. The eradication of river blindness allowed new settlements closer to rivers, and also removed a constraint on population in villages which were already settled near rivers.

Similarly, distance to Cote d'Ivoire is motivated by the history of migration from Burkina Faso. Starting in the late 1990s and culminating with Iviorian civil war in 2002, many Burkinabe migrants have been forced to return to their native villages or locations near Cote d'Ivoire. Our identification assumption is that distance to rivers and to the border with Cote d'Ivoire are associated with an exogenous shock to population, that influences the provision of public

services and infrastructure only via population (the exclusion restriction) and not some other channel.

In Table 5, column 1 we show the effect of distance to river on population, and the distance to the border of Cote d'Ivoire on population in column 2. In each case, the point estimate is significant at the one percent level. The estimates indicate that villages located further from rivers and from the border with Code d'Ivoire are less populated than other villages. Population is .13 percent higher in villages that are one percent closer to rivers than average. Similarly, population is .28 percent higher in villages that are one percent closer to the border with Cote d'Ivoire than average for each province and each census year.

In column 3, we include both distance to rivers and distance to the Cote d'Ivoire border in the regressions. The sign of the coefficients remain the same. While distance to river is still significant, the coefficient of distance to the border becomes smaller and is no longer significant at the 10 percent level. However, the F statistic that the two coefficients are jointly zero is 15.14 (column 3, last row). Our preferred specification is in column 3 because we use more information than in ether columns 1 or 2. Furthermore, the F-statistic is well above the rule of thumb cut-off (e.g. Stock and Yogo, 2005), implying that weak instruments should not be an issue.

Table 6 reports the instrumental variable estimates for our preferred specification. The IVE results are even stronger than the OLS estimates in Table 3, as every type of public services, infrastructure, religious facilities and markets is closer to villages whose population is larger in predicted value associated with rivers and Cote d'Ivoire. The point estimates for these elasticities range from 0.4 to 1.4. In contrast, the land tenure index is not correlated with population shocks, although it is notably higher in 2006 than in previous years.

The estimated magnitude of population effects on the provision of public services, infrastructure and other amenities varies with the type of amenity and how distance is defined. The size of the effect size depends not only on these elasticities, but also the range of population changes that are predicted from the first stage regression. For example, in this case the mean value of predicted village population ranges (in logarithms) from 6.375 to 7.420, from the lowest

to the highest quintile of villages closest to rivers and Cote d'Ivoire. This difference amounts to an average of about 152 people per village. Given these elasticities, the magnitude of the effect from first to fifth quintile of predicted population difference is systematically larger than the decade's worth of increases observed from 1996 to 2006.

Conclusion

This paper uses migration shocks associated with proximity to rivers and to Cote d'Ivoire to test whether higher village-level population is associated with closer provision of public services, public infrastructure, religious facilities and markets. Our data on proximity to services and on land rights come from a new survey of village elders, designed to document change over time and differences across villages in local public goods provision, market infrastructure and property rights. We find a large effect of population on this kind of service provision, but find no effect for population on a multidimensional index of land rights.

The generalizability of our results are limited by the validity of our natural experiment. It is possible that proximity to rivers and to Cote d'Ivoire affect local public goods provision through channels other than village population size, for example if a village's proximity to rivers and to Cote d'Ivoire is also correlated with political influence or some other omitted variable that attracts both population and public services. Measurement errors could also contribute to our findings, for example if villages closer to public services had more complete enumeration in the censuses. And finally, reverse causality could have inflated our coefficient estimates, for example if the presence of public services reinforces the magnitude of the local population influx after Onchocerciasis control and repatriation from Cote d'Ivoire.

Future research may be able to address some of these limitations using our village-level dataset, or with new surveys in other regions affected by migration shocks. In particular, our finding controls for fixed effects across 45 provinces and 3 census years, and so refers to variance within relatively small administrative units over a relatively long period of time. Other surveys could

address links between population density and public goods at differing geographic and time scales, for example using historical data as in Jedwab and Moradi (2011).

One contribution of this paper is to demonstrate the use of village elders' recall data in constructing time-varying indexes of local public services, infrastructure and institutions, from the villagers' point of view. This involves asking about villagers' access to very specific amenities, and then aggregating those into indexes that capture variation in multiple dimensions. The correlations we find demonstrate the potential significance of this approach, as a way to overcome the limited availability of other ways to measure variation in public services, infrastructure and institutions over time and space.

In the particular setting of rural Burkina Faso, we find that variance in village population is closely correlated with village-level access to local public services and infrastructure. Our point estimate of effect sizes suggests that moving from the first to the last quintile of village population change associated with rural migration within Burkina is somewhat larger than a full decade in the time trend across Burkina as a whole. In contrast, we find no effect of village-level population on land rights, which showed only a common trend for all villages. This finding could arise because changes in land rights actually occur on a larger geographic scale or a slower time frame than we address in these survey. Future work could construct similar indexes on different geographic and time scales, both within and across countries, to address these questions.

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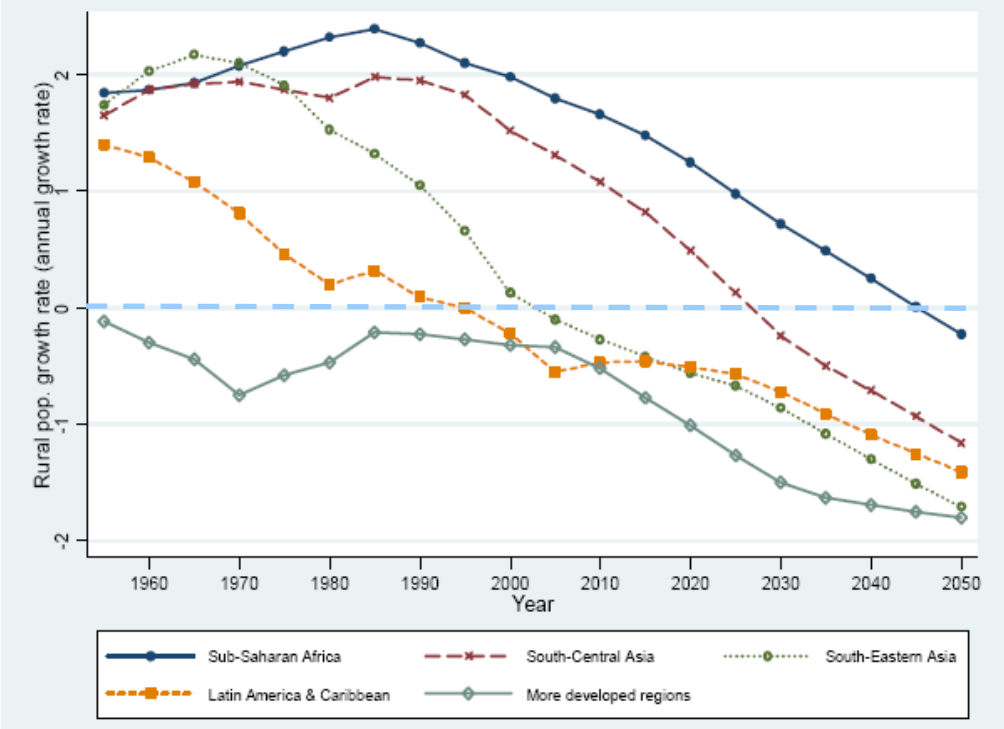
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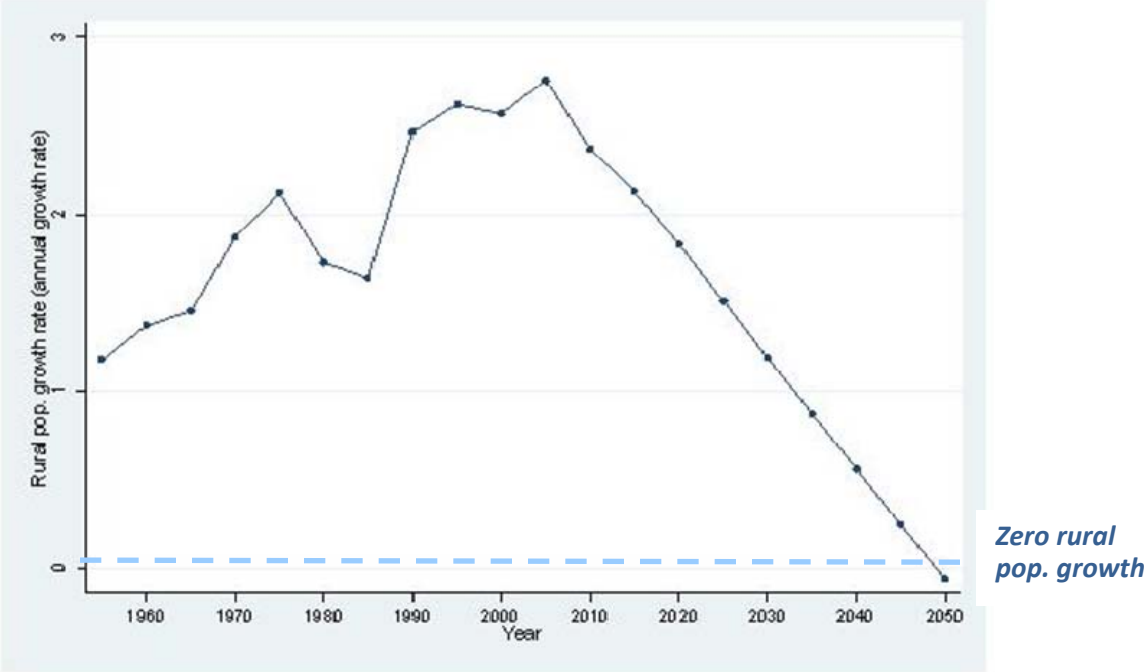
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Figure 1. Past and projected rural population growth, by region and country (1950-2050)

Panel A: Regional aggregates

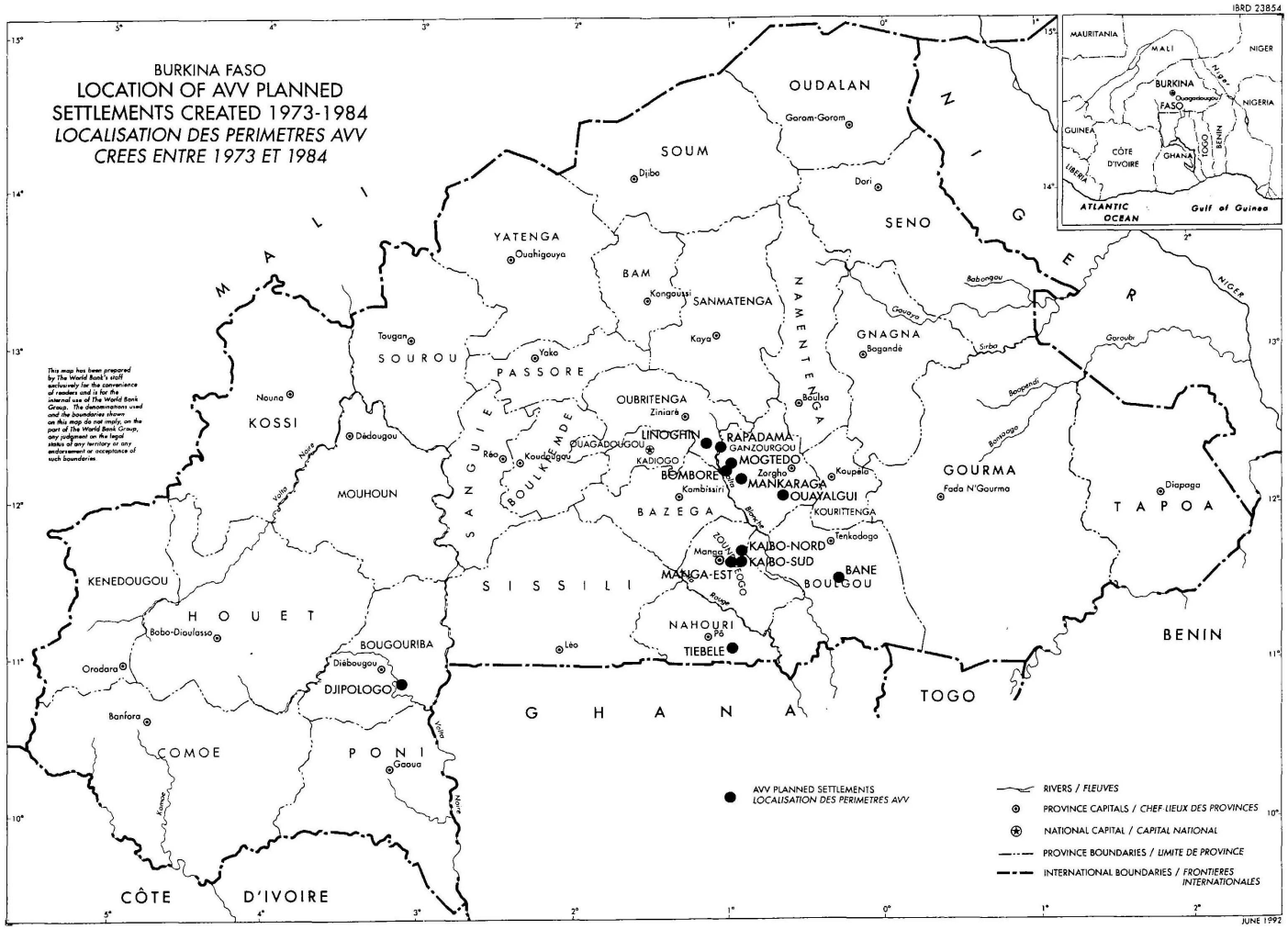


Panel B: Burkina Faso



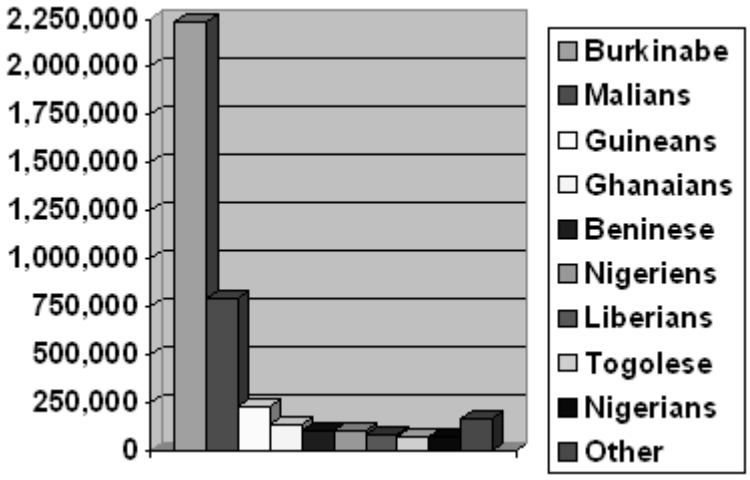
Source: Calculated from UN Population Projections (esa.un.org/unpp).

Figure 2. Location of Planned Settlements Associated with Onchocerciasis Control, 1973-1984



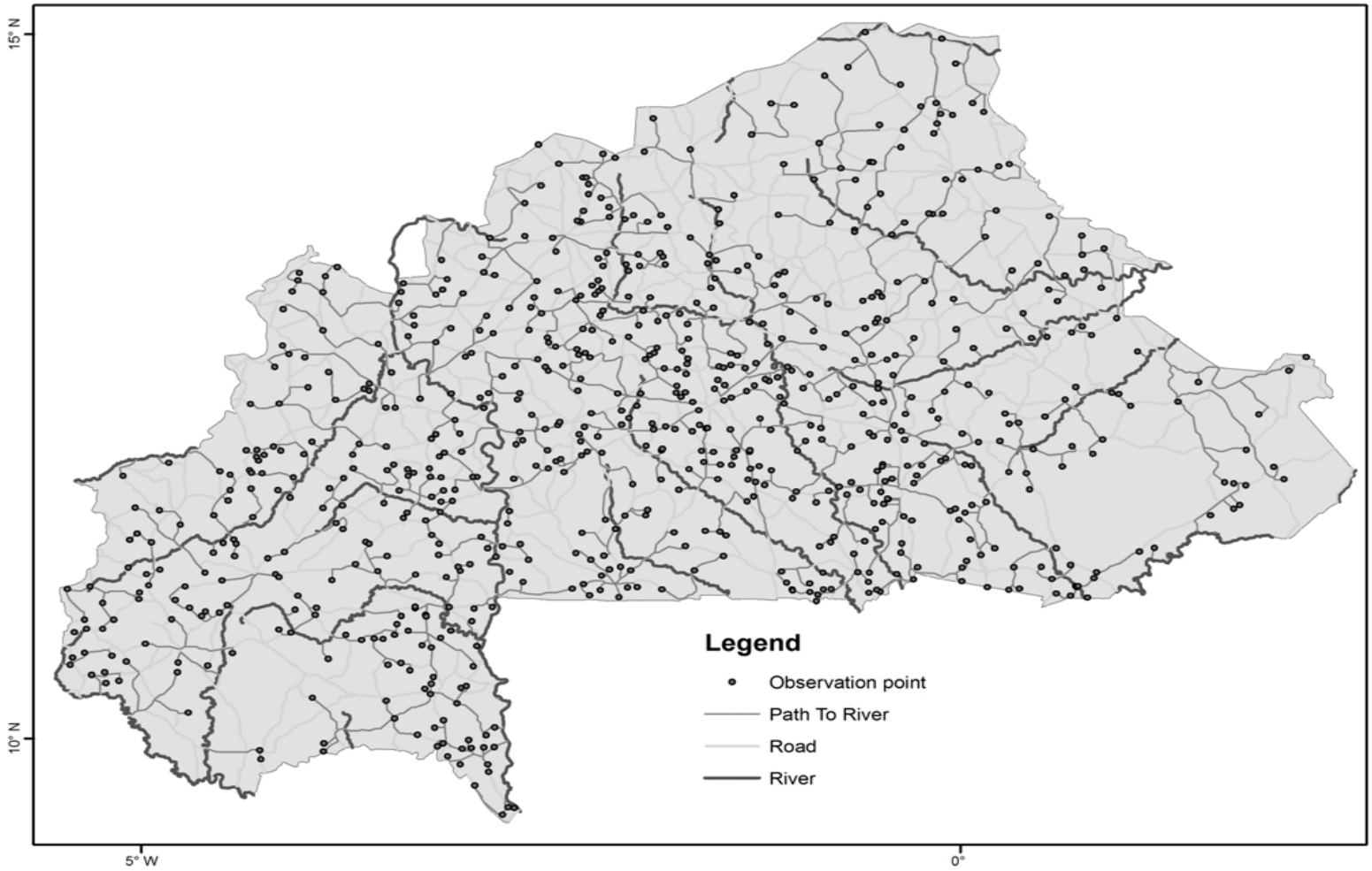
Source: Della E. McMillan, Jean-Baptiste Nana and Kimseyinga Savadogo, "Settlement and Development in the River Blindness Control Zone." World Bank Technical Paper No. 200, Series on River Blindness Control in West Africa. Washington, DC: World Bank, 1993.

Figure 3: Foreign Population in Cote d'Ivoire by Nationality, 1998 Census



Source: IRIN News, "In-depth: Cote d'Ivoire crisis" (November, 2002). Online at http://www.irinnews.org/IndepthMain.aspx?indepthid=38.

Figure 4: Location of Surveyed Villages and Rivers Used for IV Estimation



Source: Authors' calculations. Village locations are drawn from authors' survey data; river locations and paths from villages to rivers are calculated from IFPRI file data. Roads and travel paths are shown for illustration purposes only; data used for hypothesis tests are straight-line distances from the village to the closest river, and travel distance to nearest point in Cote d'Ivoire (at the lower-left of the map shown).

Table 1: Land tenure rights and index values (n=2,170)

Land Rights	Percentage of observations in sample	Value of aggregate land-rights index
Rights over crop land		
Not defined	14.4	-0.220
Communal	10.0	-0.219
Familial	59.9	0.011
Individual	15.7	0.325
Existence of sales or rental of crop land		
None	92.4	-0.069
At least one sale or rental has occurred	7.7	0.893
Role of traditional authorities in solving crop land conflict		
None	63.8	-0.852
Some	36.2	1.512
Role of elected authorities involved in solving crop land conflict		
None	81.9	-0.528
Some	18.1	2.409
Demarcation and regulation of pasture land		
No delimited pasture land	71.7	-0.114
Pasture land delimited, access not regulated	80.9	-0.066
Pasture land delimited, access regulated by tax or quota	19.1	0.304
Demarcation and regulation of forest land		
No delimited forest land	70.1	-0.170
Forest land delimited, access not regulated	15.9	0.319
Forest land delimited, access regulated by tax or quota	14.0	0.518

Source: Authors' calculations.

Notes: Results shown in the first column are village elders' response to questions asked in local languages, translated by local enumerators from the French questionnaire reproduced in the appendix to this paper. Results in the second column are the average value of our calculated land-rights index for each category of village. The index is computed by principal components from the variables shown. Specific wording of each question is reproduced in the appendix, in questionnaire sections VIII (for crop land), IX (for pasture land) and X (for forest land). Not all questions were retailed for the land rights index, as we dropped those questions which fewer than 500 of the 730 villages were unable to answer unambiguously. Over the three years of data, this resulted in a total of 2,170 observations.

Table 2: Mean and standard deviations for all variables (n=2,121)

	Proximity of farthest source (km) (Distance to farthest site in each set)				Proximity to all sources (km) (Average distance to all services)				Proximity to closest source (km) (Distance to closest site in each set)			
Year	Public Services	Public Infrast.	Religious Services	Markets	Public Services	Public Infrast.	Religious Services	Markets	Public Services	Public Infrast.	Religious Services	Markets
1985	35.444	35.690	9.593	12.882	26.968	14.798	6.476	8.603	18.349	3.628	3.551	4.828
	[1.203]	*[1.232]*	*[0.592]*	*[0.782]*	*[0.775]*	*[0.483]*	*[0.390]*	*[0.428]*	*[0.602]*	*[0.307]*	*[0.298]*	*[0.267]*
1996	35.789	28.299	7.511	12.728	25.142	11.629	4.74	7.788	15.155	1.856	2.308	3.734
	[1.134]	*[0.978]*	*[0.408]*	*[0.734]*	*[0.706]*	*[0.376]*	*[0.265]*	*[0.381]*	*[0.530]*	*[0.211]*	*[0.228]*	*[0.249]*
2010	32.207	21.126	5.228	11.48	19.724	8.164	3.043	6.116	8.648	0.502	1.175	1.948
	[1.000]	*[0.785]*	*[0.330]*	*[0.606]*	*[0.541]*	*[0.279]*	*[0.193]*	*[0.274]*	*[0.413]*	*[0.083]*	*[0.137]*	*[0.174]*

Year	Principal-components index of land rights	Population of village (1000s)	Straight-line distance (km) to: Closest Flowing River	Cote d'Ivoire Border
1985	-0.096	1.593	23.766	461.39
	[0.045]	*[0.057]*	*[24.447]*	[26.923]
1996	-0.035	1.671	23.627	460.40
	[0.047]	*[0.058]*	*[24.972]*	*[27.497]*
2006	0.140	1.389	24.816	464.48
	[0.051]	*[0.090]*	*[24.046]*	*[26.521]*

Source: Authors' calculations, with standard deviations in brackets. Proximity measures refer to distances from the village to reach the closest site offering one or more of each set of collective resources: **Public Services** and Utilities (defined as the administrative office used to register births, any savings and loan facility, any fixed-line telephone, any mobile phone reception); **Public Infrastructure** (defined as a road that is accessible by truck all year, a road accessible by truck seasonally, a bus stop, a primary school, a secondary school, and a health center), **Religious Services** (any church, mosque or temple), and **Markets** (any open-air food market, livestock market, or private shop). Specific wording of each question is reproduced in the appendix; from the questionnaire as a whole, we retained only those those distance questions which more than 700 of the 730 villages were unable to answer unambiguously. The land-rights index is explained in Table 1. Population is computed from the Burkina Faso national censuses for 1985, 1996 and 2006. Straight-line distances are calculated from latitude and longitude geocode and IFPRI file data on location of rivers and the Cote d'Ivoire border.

Table 3: OLS regression results for public infrastructure and institutions on village-level population

	Proximity of farthest source (km)				Proximity to all sources (km)				Proximity to closest source (km)				Land
	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	rights
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Population	0.045*	0.003	0.153***	0.182***	0.041*	0.049**	0.145***	0.187***	0.108***	0.116***	0.125***	0.228***	-0.001
	[0.026]	[0.027]	[0.029]	[0.031]	[0.023]	[0.021]	[0.025]	[0.027]	[0.032]	[0.020]	[0.022]	[0.023]	[0.028]
Y=1996	-0.059	0.174***	0.127**	-0.030	0.025	0.193***	0.167***	0.034	0.191***	0.305***	0.225***	0.193***	0.063
	[0.051]	[0.051]	[0.063]	[0.064]	[0.045]	[0.041]	[0.054]	[0.056]	[0.056]	[0.047]	[0.051]	[0.054]	[0.059]
Y=2006	0.027	0.485***	0.493***	0.072	0.255***	0.538***	0.515***	0.222***	1.109***	0.611***	0.490***	0.628***	0.230***
	[0.048]	[0.050]	[0.062]	[0.064]	[0.043]	[0.041]	[0.052]	[0.054]	[0.060]	[0.043]	[0.047]	[0.051]	[0.061]
Constant	-3.29***	-3.18***	-2.44***	-3.20***	-2.97***	-2.71***	-2.14***	-3.03***	-2.69***	-1.40***	-1.50***	-2.64***	0.02
	[0.223]	[0.209]	[0.266]	[0.341]	[0.197]	[0.175]	[0.220]	[0.292]	[0.268]	[0.167]	[0.195]	[0.243]	[0.276]
Observ.	2,132	2,161	2,040	2,136	2,132	2,161	2,040	2,136	2,132	2,161	2,040	2,136	2,170
R-squared	0.097	0.147	0.233	0.220	0.116	0.220	0.265	0.225	0.230	0.234	0.232	0.235	0.217

Notes: Population and distance measures are in logs, with proximity defined as its additive inverse (-log[distance]), so that coefficients can be read as elasticities and a positive coefficient implies closer facilities. The regression also controls for 45 province dummies (not shown). Robust standard errors in brackets, and asterisks indicate significance levels at *** p<0.01, ** p<0.05, * p<0.1.

Table 4: OLS regression results for public infrastructure and institutions on village-level population and diversity

	Proximity of farthest source (km)				Proximity to all sources (km)				Proximity to closest source (km)				Land
	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	rights
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Population	0.027	-0.009	0.107***	0.144***	0.021	0.031	0.107***	0.150***	0.068**	0.100***	0.105***	0.192***	-0.003
	[0.025]	[0.026]	[0.029]	[0.031]	[0.022]	[0.021]	[0.024]	[0.026]	[0.031]	[0.020]	[0.022]	[0.023]	[0.029]
Clans	-0.001	-0.001	0.017***	0.013***	-0.000	0.001	0.013***	0.012***	0.008**	0.004**	0.006***	0.011***	-0.002
	[0.004]	[0.003]	[0.003]	[0.004]	[0.003]	[0.002]	[0.002]	[0.003]	[0.004]	[0.002]	[0.002]	[0.002]	[0.003]
Ethnicities	0.063***	0.044***	0.065***	0.057***	0.066***	0.050***	0.058***	0.061***	0.087***	0.028***	0.035***	0.063***	0.016
	[0.013]	[0.011]	[0.011]	[0.012]	[0.012]	[0.008]	[0.009]	[0.010]	[0.012]	[0.006]	[0.008]	[0.008]	[0.011]
Y=1996	-0.057	0.175***	0.134**	-0.026	0.028	0.195***	0.173***	0.037	0.196***	0.306***	0.229***	0.197***	0.064
	[0.050]	[0.051]	[0.062]	[0.064]	[0.045]	[0.041]	[0.053]	[0.055]	[0.054]	[0.047]	[0.051]	[0.053]	[0.059]
Y=2006	0.025	0.483***	0.487***	0.066	0.252***	0.534***	0.511***	0.216***	1.103***	0.608***	0.488***	0.622***	0.230***
	[0.047]	[0.050]	[0.060]	[0.063]	[0.042]	[0.040]	[0.051]	[0.053]	[0.059]	[0.043]	[0.047]	[0.050]	[0.061]
Constant	-3.27***	-3.16***	-2.38***	-3.15***	-2.94***	-2.68***	-2.09***	-2.98***	-2.63***	-1.38***	-1.48***	-2.59***	0.02
	[0.220]	[0.207]	[0.258]	[0.338]	[0.193]	[0.172]	[0.215]	[0.288]	[0.262]	[0.165]	[0.195]	[0.237]	[0.276]
Observ.	2,132	2,161	2,040	2,136	2,132	2,161	2,040	2,136	2,132	2,161	2,040	2,136	2,170
R-squared	0.121	0.157	0.273	0.243	0.150	0.241	0.302	0.258	0.268	0.243	0.247	0.271	0.218

Notes: Population and distance measures are in logs, with proximity defined as its additive inverse (-log[distance]), so that coefficients can be read as elasticities and a positive coefficient implies closer facilities. The regression also controls for 45 province dummies (not shown). Robust standard errors in brackets, and asterisks indicate significance levels at *** p<0.01, ** p<0.05, * p<0.1.

Table 5: First stage regression results for IV estimation

Dependent variable: *Village population*	(1)	(2)	(3)
Distance to flowing river	-0.130***		-0.120***
	[0.025]		[0.025]
Distance to Cote d'Ivoire		-0.276***	-0.142
		[0.095]	[0.097]
Year==1996	0.083*	0.081*	0.083*
	[0.045]	[0.045]	[0.045]
Year==2006	-0.212***	-0.213***	-0.212***
	[0.046]	[0.047]	[0.046]
Constant	7.209***	8.595***	8.101***
	[0.154]	[0.629]	[0.628]
Observations	2,130	2,130	2,130
R-squared	0.176	0.167	0.177
F-Stat Inst			15.14

Notes: Column (3) is our preferred specification. Population and distance measures are in logs. Proximity to nearest river is straight-line distance, to capture flight time needed by the black flies that carry Onchocerciasis from the river to peoples' homes. In contrast, proximity to Cote d'Ivoire is travel distance, by roads, train or footpath. The regression also controls for 45 province dummies (not shown). Robust standard errors in brackets, and asterisks indicate significance levels at *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 6: IV regression results for public infrastructure and institutions on village-level population

	Proximity of farthest source (km)				Proximity to all sources (km)				Proximity to closest source (km)				Land
	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	rights
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Pop. shock	0.417**	0.658***	1.377***	0.555**	0.558***	0.968***	1.147***	0.707***	1.169***	0.471**	0.655***	1.121***	0.367
	[0.205]	[0.236]	[0.293]	[0.273]	[0.202]	[0.236]	[0.245]	[0.248]	[0.315]	[0.188]	[0.190]	[0.252]	[0.245]
Y=1996	-0.091	0.122**	0.045	-0.060	-0.019	0.119**	0.098	-0.008	0.104	0.271***	0.181***	0.122*	0.037
	[0.056]	[0.060]	[0.082]	[0.067]	[0.053]	[0.059]	[0.069]	[0.061]	[0.076]	[0.050]	[0.056]	[0.065]	[0.065]
Y=2006	0.103	0.623***	0.794***	0.154*	0.360***	0.734***	0.761***	0.339***	1.331***	0.677***	0.620***	0.835***	0.308***
	[0.068]	[0.081]	[0.114]	[0.092]	[0.067]	[0.081]	[0.096]	[0.084]	[0.102]	[0.065]	[0.072]	[0.089]	[0.082]
Constant	-5.82***	-7.63***	-10.8***	-5.73***	-6.48***	-8.95***	-8.99***	-6.57***	-9.89***	-3.81***	-5.12**	-8.71***	-2.48
	[1.389]	[1.608]	[2.020]	[1.895]	[1.373]	[1.599]	[1.687]	[1.711]	[2.145]	[1.290]	[1.300]	[1.722]	[1.663]
Observ.	2,093	2,121	2,000	2,096	2,093	2,121	2,000	2,096	2,093	2,121	2,000	2,096	2,130

Notes: First stage results are shown in Table 4. Population and distance measures are in logs. The regression also controls for 45 province dummies (not shown). Robust standard errors in brackets, and asterisks indicate significance levels at *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Estimated effect sizes of changes in population and time for public infrastructure and institutions

	Proximity of farthest source (km)				Proximity to all sources (km)				Proximity to closest source (km)				Land
	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	Services	Infrastr.	Religion	Markets	rights
Coefficient estimates													
Pop. shock	0.417	0.658	1.377	0.555	0.558	0.968	1.147	0.707	1.169	0.471	0.655	1.121	--
Y=1996	--	0.122	--	--	--	0.119	--	--	--	0.271	0.181	--	--
Y=2006	--	0.623	0.794	--	0.36	0.734	0.761	0.339	1.331	0.677	0.62	0.835	0.308
Effect size estimates													
Pop. shock: from first to last quintile	0.44	0.69	1.44	0.58	0.58	1.01	1.20	0.74	1.22	0.49	0.68	1.17	--
Time: from 1986 to '96	--	0.13	--	--	--	0.12	--	--	--	0.28	0.19	--	--
Time: from 1996 to '06	--	0.52	0.83	--	0.38	0.64	0.80	0.35	1.39	0.42	0.46	0.87	0.32

Notes: Estimated effect sizes are shown only where coefficients are estimated to be significantly different from zero at $p<0.05$ or $p<0.1$. Population shocks are illustrated as the difference between the means of the first and last quintiles of predicted population from our first stage regression. This turns out to be a difference of 152 people per village (exp [7.420] – exp[6.375]), where the mean predicted population of all villages is 1,030 people (exp[6.938]). The mean predicted population of each quintile, in log form, is 7.420, 7.140, 6.966, 6.786, and 6.375.

BURKINA FASO
Ministère de l'Agriculture de l'Hydraulique et des Ressources Halieutiques

DIRECTION GENERALE DE LA PROMOTION DE L'ECONOMIE RURALE

Direction de la Prospective et des Statistiques Agricoles et Alimentaires

ENQUETE COMMUNAUTAIRE

Nº	Eléments d'identification	Nom	Code
1	Région		|____|____|
2	Province		|____|____|
3	Commune		|____|____|
4	Type de localité 1 = urbain 2 = rural		|____|
5	Village / secteur		|____|____|____|
6	Latitude		|____|____|____|____|____|____|
7	Longitude		|____|____|____|____|____|____|____|

Nom du contrôleur : _____|__C__|____|____|

Date de l'interview : |____|____| |____|____| |____|____|
Jour mois année

Nom et visa du superviseur :_____

Date de contrôle : |____|____| |____|____| |____|____|
Jour mois année

Résultat du contrôle :……..…|____|
(1= aucun problème ; 2= questionnaire corrigé ; 3= questionnaire repris)

Nom et prénom(s) de l'agent de saisie A :_____|____|____|____|

Nom et prénom(s) de l'agent de saisie B :_____|____|____|____|

A combien d'années remonte l'établissement du village :….. |____|____|____|____|

Le Village est-il un village de colonie : (1=Oui ; 0=Non) :……. |____|

I. IDENTITE DES REPONDANTS

N°	Catégorie	Nombre pour chaque catégorie		TOTAL*
		Homme	Femme	
I.1	Autorités gouvernementales/Représentants de l'administration	|____|____|	|____|____|	|____|____|
I.2	Chefs de village	|____|____|	|____|____|	|____|____|
I.3	Délégués CVD	|____|____|	|____|____|	|____|____|
I.4	Chefs de terre	|____|____|	|____|____|	|____|____|
I.5	Chefs religieux (Imam, Pasteur, Prêtre….)	|____|____|	|____|____|	|____|____|
I.6	Responsables de Groupements/Associations	|____|____|	|____|____|	|____|____|
I.7	**TOTAL***	|____|____|	|____|____|	|____|____|

* A compléter après l'interview avec le groupe

II. COMPOSITION ACTUELLE DES COMMUNAUTES DU VILLAGE

N°	Questions	Réponse
II.1	Nombre approximatif d'autochtones revenus de la Côte d'Ivoire à cause de la crise ivoirienne	|____|____|____|____|
II.2	Nombre approximatif d'immigrants venant d'ailleurs	|____|____|____|____|
II.3	Nombre de groupes ethniques dans la communauté du village	|____|____|
II.4	Nombre de clans dans le village	|____|____|

III. POPULATION DU VILLAGE

NB : Pour cette partie, l'enquêteur devra se rendre à la préfecture ou à la mairie de la localité

N°	Questions		Réponse
III.1	Existence des documents du recensement de 2006 **(1=Oui ; 0=Non)**		|____|
III.2	Population totale en 2006		|____|____|____|____|____|____|
III.3	Population de plus de 15 ans	Homme	|____|____|____|____|____|____|
III.4		Femme	|____|____|____|____|____|____|
III.5	Population de moins de 15 ans	Homme	|____|____|____|____|____|____|
III.6		Femme	|____|____|____|____|____|____|
III.7	Existence des documents du recensement de 1996 **(1=Oui ; 0=Non)**		|____|
III.8	Population totale en 1996		|____|____|____|____|____|____|
III.9	Population de plus de 15 ans	Homme	|____|____|____|____|____|____|
III.10		Femme	|____|____|____|____|____|____|
III.11	Population de moins de 15 ans	Homme	|____|____|____|____|____|____|
III.12		Femme	|____|____|____|____|____|____|
III.13	Existence des documents du recensement de 1985 **(1=Oui ; 0=Non)**		|____|
III.14	Population totale en 1985		|____|____|____|____|____|____|
III.15	Population de plus de 15 ans	Homme	|____|____|____|____|____|____|
III.16		Femme	|____|____|____|____|____|____|
III.17	Population de moins de 15 ans	Homme	|____|____|____|____|____|____|
III.18		Femme	|____|____|____|____|____|____|

IV. VISITE D'UN OFFICIEL DE LA VULGARISATION AGRICOLE

N°	Questions	Réponse
IV.1	Quand a été la première visite d'un vulgarisateur à votre communauté ? *(Inscrire l'année ou xxxx si jamais)*	|____|____|____|____|
IV.2	Quand est-ce que la vulgarisation de proximité (ancienne formule) a cessé ? *(Inscrire l'année ou xxxx si jamais)*	|____|____|____|____|
IV.3	Quand est-ce que la vulgarisation nouvelle formule a commencé? *(Inscrire l'année ou xxxx si jamais)*	|____|____|____|____|
IV.4	Quand a été la dernière visite d'un vulgarisateur à votre communauté ? *(Inscrire l'année ou xxxx si jamais)*	|____|____|____|____|
IV.5	Combien de visites avez vous reçus au cours des 12 derniers mois ? *(Inscrire l'année ou xxxx si jamais)*	|____|____|____|____|

V. INFRASTRUCTURES CENTRALES : DISTANCES ET CHANGEMENTS

N°	Questions	Réponse	
		Distance (en km)	Année d'établissement
V.1	**Distance entre le village et l'administration centrale (pour les registres des naissances)**		
V.1.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.1.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.1.3	La situation antécédente	|____|____|____|	|____|____|____|____|
V.2	**Distance entre le village et la route praticable par car ou camion toute l'année**		
V.2.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.2.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.2.3	La situation antécédente	|____|____|____|	|____|____|____|____|
V.3	**Distance entre le village et la route praticable par car ou camion seulement une partie de l'année**		
V.3.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.3.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.3.3	La situation antécédente	|____|____|____|	|____|____|____|____|
V.4	**Distance entre le village et l'arrêt d'autocar/taxi brousse rural**		
V.4.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.4.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.4.3	La situation antécédente	|____|____|____|	|____|____|____|____|
V.5	**Distance entre le village et le bureau des caisses populaires**		
V.5.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.5.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.5.3	La situation antécédente	|____|____|____|	|____|____|____|____|

V.6	**Distance entre le village et la localité avec distribution d'électricité**		
V.6.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.6.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.6.3	La situation antécédente	|____|____|____|	|____|____|____|____|
V.7	**Distance entre le village et la localité avec le téléphone fixe**		
V.7.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.7.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.7.3	La situation antécédente	|____|____|____|	|____|____|____|____|
V.8	**Distance entre le village et la localité avec la téléphonie mobile**		
V.8.1	La situation actuelle	|____|____|____|	|____|____|____|____|
V.8.2	La situation précédente	|____|____|____|	|____|____|____|____|
V.8.3	La situation antécédente	|____|____|____|	|____|____|____|____|

VI.MARCHES VILLAGEOIS

N°	Questions	Réponse		
VI.1	**FREQUENCE DU MARCHE GENERAL**			
		Distance (en km)	**Fréquence** *1= chaque jour* *2 = tous les 3 jours* *3 = tous les 4 jours* *4 = chaque semaine* *5 = occasionnel*	**Année d'établissement**
VI.1.1	La situation actuelle	|____|____|____|	|____|	|____|____|____|____|
VI.1.2	La situation précédente	|____|____|____|	|____|	|____|____|____|____|
VI.1.3	La situation antécédente	|____|____|____|	|____|	|____|____|____|____|
VI.2	**TYPE DE SOURCE POUR ACCES A L'EAU DANS LE MARCHE GENERAL**			
			Type de source d'eau *1= robinet* *2 = borne fontaine* *3 = forage* *4 = puits* *5 = aucune*	**Année d'établissement**
VI.2.1	La situation actuelle		|____|-|____|-|____|	|____|____|____|____|
VI.2.2	La situation précédente		|____|-|____|-|____|	|____|____|____|____|
VI.2.3	La situation antécédente		|____|-|____|-|____|	|____|____|____|____|
VI.3	**HANGARS DANS LE MARCHE GENERAL**			
			Type de hangar *1= individuel* *2 = collectif* *3 = aucun*	**Année d'établissement**
VI.3.1	La situation actuelle		|____|-|____|	|____|____|____|____|
VI.3.2	La situation précédente		|____|-|____|	|____|____|____|____|
VI.3.3	La situation antécédente		|____|-|____|	|____|____|____|____|

VI.4	**ACCES A L'ELECTRICITE DANS LE MARCHE GENERAL**			
			Disponibilité *1= permanente* *2 = une partie de la journée* *3 = aucune*	**Année d'établissement**
VI.4.1	La situation actuelle		|____|	|____|____|____|____|
VI.4.2	La situation précédente		|____|	|____|____|____|____|
VI.4.3	La situation antécédente		|____|	|____|____|____|____|
VI.5	**FRAIS (NIVEAU DES TAXES DE MARCHE GENERAL)**			
		Période *1= chaque jour* *2 = chaque semaine* *3 = chaque mois* *4 = chaque année* *5 = chaque marché*	**Montant par période**	**Année d'établissement**
VI.5.1	La situation actuelle	|____|	|____|____|____|____|	|____|____|____|____|
VI.5.2	La situation précédente	|____|	|____|____|____|____|	|____|____|____|____|
VI.5.3	La situation antécédente	|____|	|____|____|____|____|	|____|____|____|____|
VI.6	**FREQUENCE DU MARCHE A BETAIL**			
		Distance (en km)	**Fréquence** *1= chaque jour* *2 = tous les 3 jours* *3 = tous les 4 jours* *4 = chaque semaine* *5 = occasionnel*	**Année d'établissement**
VI.6.1	La situation actuelle	|____|____|____|	|____|	|____|____|____|____|
VI.6.2	La situation précédente	|____|____|____|	|____|	|____|____|____|____|
VI.6.3	La situation antécédente	|____|____|____|	|____|	|____|____|____|____|

VI.7	**TYPE DE SOURCE POUR ACCES A L'EAU DANS LE MARCHE A BETAIL**			
			Type de source d'eau *1= robinet* *2 = borne fontaine* *3 = forage* *4 = puits* *5 = aucune*	**Année d'établissement**
VI.7.1	La situation actuelle		|____|-|____|-|____|	|____|____|____|____|
VI.7.2	La situation précédente		|____|-|____|-|____|	|____|____|____|____|
VI.7.3	La situation antécédente		|____|-|____|-|____|	|____|____|____|____|
VI.8	**HANGARS DANS LE MARCHE A BETAIL**			
			Type de hangar *1= individuel* *2 = collectif* *3 = aucun*	**Année d'établissement**
VI.8.1	La situation actuelle		|____|-|____|	|____|____|____|____|
VI.8.2	La situation précédente		|____|-|____|	|____|____|____|____|
VI.8.3	La situation antécédente		|____|-|____|	|____|____|____|____|
VI.9	**ACCES A L'ELECTRICITE DANS LE MARCHE A BETAIL**			
			Disponibilité *1= permanente* *2 = une partie de la journée* *3 = aucune*	**Année d'établissement**
VI.9.1	La situation actuelle		|____|	|____|____|____|____|
VI.9.2	La situation précédente		|____|	|____|____|____|____|
VI.9.3	La situation antécédente		|____|	|____|____|____|____|
VI.10	**FRAIS (NIVEAU DES TAXES DE MARCHE) A BETAIL**			
		Période *1= chaque jour* *2 = chaque semaine* *3 = chaque mois* *4 = chaque année* *5 = chaque marché*	**Montant par période**	**Année d'établissement**
VI.10.1	La situation actuelle	|____|	|____|____|____|____|	|____|____|____|____|
VI.10.2	La situation précédente	|____|	|____|____|____|____|	|____|____|____|____|
VI.10.3	La situation antécédente	|____|	|____|____|____|____|	|____|____|____|____|

VII.INFRASTRUCTURE DU VILLAGE

N°	Questions	Réponse		
		Distance	**Nombre**	**Année d'établissement**
VII.1	**Distance entre le village et les boutiques pour achat des provisions divers (sel, thé, sucre, etc.)**			
VII.1.1	La situation actuelle	|____|____|	|____|____|	|____|____|____|____|
VII.1.2	La situation précédente	|____|____|	|____|____|	|____|____|____|____|
VII.1.3	La situation antécédente	|____|____|	|____|____|	|____|____|____|____|
VII.2	**Distance entre le village et les puits collectifs pour l'eau potable**			
VII.2.1	La situation actuelle	|____|____|	|____|____|	|____|____|____|____|
VII.2.2	La situation précédente	|____|____|	|____|____|	|____|____|____|____|
VII.2.3	La situation antécédente	|____|____|	|____|____|	|____|____|____|____|
VII.3	**Distance entre le village et le puits à grand diamètre**			
VII.3.1	La situation actuelle	|____|____|	|____|____|	|____|____|____|____|
VII.3.2	La situation précédente	|____|____|	|____|____|	|____|____|____|____|
VII.3.3	La situation antécédente	|____|____|	|____|____|	|____|____|____|____|
VII.4	**Distance entre le village et le forage collectif pour l'eau potable**			
VII.4.1	La situation actuelle	|____|____|	|____|____|	|____|____|____|____|
VII.4.2	La situation précédente	|____|____|	|____|____|	|____|____|____|____|
VII.4.3	La situation antécédente	|____|____|	|____|____|	|____|____|____|____|

VII.5	**Distance entre le village et le Barrage collectif**			
VII.5.1	La situation actuelle	|____|____|	|____|____|	|____|____|____|____|
VII.5.2	La situation précédente	|____|____|	|____|____|	|____|____|____|____|
VII.5.3	La situation antécédente	|____|____|	|____|____|	|____|____|____|____|
VII.6	**Pont routier construit par le village**			
VII.6.1	La situation actuelle		|____|____|	|____|____|____|____|
VII.6.2	La situation précédente		|____|____|	|____|____|____|____|
VII.6.3	La situation antécédente		|____|____|	|____|____|____|____|
VII.7	**Passage piétonnier construit par le village**			
VII.7.1	La situation actuelle		|____|____|	|____|____|____|____|
VII.7.2	La situation précédente		|____|____|	|____|____|____|____|
VII.7.3	La situation antécédente		|____|____|	|____|____|____|____|
VII.8	**Magasin (utilisable) de coopérative agricole, d'ONG ou de Groupement Villageois**			
VII.8.1	La situation actuelle		|____|____|	|____|____|____|____|
VII.8.2	La situation précédente		|____|____|	|____|____|____|____|
VII.8.3	La situation antécédente		|____|____|	|____|____|____|____|

VIII. DROITS FONCIERS SUR LES TERRES DE CULTURE

N°	Questions	Réponse	
VIII.1	**Type de droit appliquée pour les terres de culture** *(si la réponse est non, mettre des croix à année de début d'application)*		
		Type de droit appliquée (1=Oui ; 0=Non)	**Année de début d'application**
VIII.1.1	Propriété individuelle	|____|	|____|____|____|____|
VIII.1.2	Propriété collective-familiale	|____|	|____|____|____|____|
VIII.1.3	Propriété collective-communautaire	|____|	|____|____|____|____|
VIII.2	**Location, vente et prêts de terres de culture** *(si la réponse est non, mettre des croix à année de début d'application)*		
		Possibilité de transaction (1=Oui ; 0=Non)	**Année de début d'application**
VIII.2.1	Est-ce que la terre peut-être louée ?	|____|	|____|____|____|____|
VIII.2.2	Est-ce que la terre peut-être vendue ?	|____|	|____|____|____|____|
VIII.2.3	Est-ce que la terre peut-être prêtée ?	|____|	|____|____|____|____|
VIII.3	**Est-ce qu'il y a des terres de culture qui ont étés louées ?** *(si non à la question VIII.2.1, mettre des croix dans les bacs et passer à la question suivante)*		
		Location de terre (1=Oui ; 0=Non)	**Année de début d'application**
VIII.3.1	Louées à une personne autochtone	|____|	|____|____|____|____|
VIII.3.2	Louées à une personne étrangère	|____|	|____|____|____|____|
VIII.4	**A qui devrait-on demander permission pour louer ses terres?** *(cette question devra être toujours posée quelque soit la réponse de la question précédente)*		
		Personnes ressources *1= chef de famille* *2= chef de terre* *3 = conseil élu par la communauté* *4 = conseil élu par le gouvernement* *5 = aucune permission*	**Année de début d'application**
VIII.4.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
VIII.4.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
VIII.4.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|
VIII.5	**Est-ce qu'il y a des terres de culture qui ont étés vendues ?** *(si non à la question VIII.2.2, mettre des croix dans les bacs et passer à la question suivante)*		

		Ventes de terre (1=Oui ; 0=Non)	**Année de début d'application**
VIII.5.1	Vendues à une personne autochtone ?	|____|	|____|____|____|____|
VIII.5.2	Vendues à une personne étrangère?	|____|	|____|____|____|____|
VIII.6	**A qui devrait-on demander permission pour vendre ses terres?** *(cette question devra être toujours posée quelque soit la réponse de la question précédente)*		
		Personnes ressources *1= chef de famille 2= chef de terre 3 = conseil élu par la communauté 4 = conseil élu par le gouvernement 5 = aucune permission*	Année de début d'application
VIII.6.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
VIII.6.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
VIII.6.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|
VIII.7	**Est-ce qu'il y a des terres de culture qui ont étés prêtées ?** *(si non à la question VIII.2.3, mettre des croix dans les bacs et passer à la question suivante)*		
		Prêts de terre (1=Oui ; 0=Non)	**Année de début d'application**
VIII.7.1	Prêtées à une personne autochtone	|____|	|____|____|____|____|
VIII.7.2	Prêtées à une personne étrangère	|____|	|____|____|____|____|
VIII.8	**A qui devrait-on demander permission pour prêter ses terres?** *(cette question devra être toujours posée quelque soit la réponse de la question précédente)*		
		Personnes ressources *1= chef de famille 2= chef de terre 3 = conseil élu par la communauté 4 = conseil élu par le gouvernement 5 = aucune permission*	Année de début d'application
VIII.8.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
VIII.8.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
VIII.8.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|

VIII.9	**A qui devrait-on s'adresser pour résoudre un conflit foncier pour l'usage des terres de culture?**		
		Personnes ressources *1= chef de terre* *2 = chef ou conseil élu par la communauté* *3 = chef ou conseil nommé par le gouvernement* *4 = autre type d'autorité* *5 = aucune autorité*	Année de début d'application
VIII.9.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
VIII.9.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
VIII.9.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|
VIII.10	**Quelles sont les modes de propriété des terres de pâturages dans cette communauté** *(s'il n'existe pas de terre de pâturage, mettre des croix dans les bacs et passer à la question suivante)*		
		Personnes ressources *1= propriété individuelle* *2 = propriété collective-familiale* *3 = propriété collective-lignagère* *4 = propriété collective-communautaire* *5 = autre*	**Année de début d'application**
VIII.10.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
VIII.10.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
VIII.10.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|
VIII.11	**Combien de pistes à bétail y a-t-il dans le village** *(s'il n'existe pas de pistes à bétail, mettre des croix dans les bacs et passer à la question suivante)*		
		Nombre	**Année de début d'application**
VIII.11.1	La situation actuelle	|____|____|	|____|____|____|____|
VIII.11.2	La situation précédente	|____|____|	|____|____|____|____|
VIII.11.3	La situation antécédente	|____|____|	|____|____|____|____|

IX.DROITS FONCIERS POUR LES TERRES DE PATURAGE

N°	Questions	Réponse	
IX.1	**Existe-t-il des terres réservées pour le pâturage ?** *(si la réponse est non pour une situation donnée, mettre des croix à année d'établissement)*		
		Existence de pâturage (1=Oui ; 0=Non)	**Année d'établissement**
IX.1.1	La situation actuelle	|____|	|____|____|____|____|
IX.1.2	La situation précédente	|____|	|____|____|____|____|
IX.1.3	La situation antécédente	|____|	|____|____|____|____|
IX.2	**Quelles sont les voies d'accès aux pâturages ?** *(si la réponse est 2 (tout autre piste), mettre des croix à année d'établissement)*		
IX.2.1		**Voies d'accès** *1= pistes à bétail* *2 = tout autre piste*	**Année d'établissement**
IX.2.2	La situation actuelle	|____|	|____|____|____|____|
IX.2.3	La situation précédente	|____|	|____|____|____|____|
	La situation antécédente	|____|	|____|____|____|____|

IX.3	**Quels moyens existent pour limiter l'accès aux terres de pâturages ?** *(si la réponse est non pour une situation donnée à la question IX.1, mettre des croix dans la situation correspondante à cette question ci)*		
		Moyens de paiement *1= paiement d'une taxe par animal* *2 = paiement d'un autre type de taxe* *3 = contrôle du nombre d'animaux* *4 = accès illimité pour autochtones* *5= accès illimité pour résidents* *6= aucune restriction*	**Année d'établissement**
IX.3.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
IX.3.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
IX.3.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|
IX.4	**Qui est responsable pour gérer l'accès aux terres de pâturages ?**		
		Personnes ressources *1= chef de terre* *2 = chef ou conseil élu par la communauté* *3 = chef ou conseil nommé par le gouvernement* *4 = autre type d'autorité* *5 = aucune autorité*	**Année d'établissement**
IX.4.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
IX.4.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
IX.4.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|

X.DROITS D'UTILISATION DES FORETS (POUR LE BOIS, LES FRUITS, LA CHASSE ETC.)

N°	Questions	Réponse	
X.1	**Existe-t-il des forêts dans votre communauté ?** *(si la réponse est non pour une situation donnée, mettre des croix à année d'établissement)*		
		Existence de forêts (1=Oui ; 0=Non)	**Année d'établissement**
X.1.1	La situation actuelle	|____|	|____|____|____|____|
X.1.2	La situation précédente	|____|	|____|____|____|____|
X.1.3	La situation antécédente	|____|	|____|____|____|____|
X.2	**Est-ce qu'il existe des moyens pour limiter l'accès aux forets ?** *(si la réponse est non pour une situation donnée à la question X.1, mettre des croix dans la situation correspondante à cette question ci)*		
		Moyens de paiement *1= paiement d'une taxe par unité de bois 2 = paiement d'une taxe par autre moyen 3 = contrôle direct des entrées et sorties 4 = accès illimité pour autochtones 5= accès illimité pour résidents 6= aucune restriction*	**Année d'établissement**
X.2.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
X.2.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
X.2.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|
X.3	**Qui est responsable de la gestion de l'accès aux forets ?**		
		Personnes ressources *1= chef de terre 2 = chef ou conseil élu par la communauté 3 = chef ou conseil nommé par le gouvernement 4 = autre type d'autorité 5 = aucune autorité*	**Année d'établissement**
X.3.1	La situation actuelle	|____|-|____|-|____|	|____|____|____|____|
X.3.2	La situation précédente	|____|-|____|-|____|	|____|____|____|____|
X.3.3	La situation antécédente	|____|-|____|-|____|	|____|____|____|____|

XI.INFRASTRUCTURE D'EDUCATION ET DE SANTE

N°	Questions	Réponse	
		Distance	**Année d'établissement**
XI.1	**Distance entre le village et l'école primaire la plus fréquentée par les enfants du village**		
XI.1.1	La situation actuelle	|____|____|____|	|____|____|____|____|
XI.1.2	La situation précédente	|____|____|____|	|____|____|____|____|
XI.1.3	La situation antécédente	|____|____|____|	|____|____|____|____|
XI.2	**Distance entre le village et l'école secondaire la plus fréquentée par les enfants du village**		
XI.2.1	La situation actuelle	|____|____|____|	|____|____|____|____|
XI.2.2	La situation précédente	|____|____|____|	|____|____|____|____|
XI.2.3	La situation antécédente	|____|____|____|	|____|____|____|____|
XI.3	**Distance entre le village et le centre de santé le plus fréquenté par la population du village**		
XI.3.1	La situation actuelle	|____|____|____|	|____|____|____|____|
XI.3.2	La situation précédente	|____|____|____|	|____|____|____|____|
XI.3.3	La situation antécédente	|____|____|____|	|____|____|____|____|

XII.INFRASTRUCTURE RELIGIEUSES

N°	Questions	Réponse	
		Distance	**Année d'établissement**
XII.1	**Distance entre le village et l'église la plus fréquentée par la population du village**		
XII.1.1	La situation actuelle	|____|____|____|	|____|____|____|____|
XII.1.2	La situation précédente	|____|____|____|	|____|____|____|____|
XII.1.3	La situation antécédente	|____|____|____|	|____|____|____|____|
XII.2	**Distance entre le village et la mosquée la plus fréquentée par la population du village**		
XII.2.1	La situation actuelle	|____|____|____|	|____|____|____|____|
XII.2.2	La situation précédente	|____|____|____|	|____|____|____|____|
XII.2.3	La situation antécédente	|____|____|____|	|____|____|____|____|
XII.3	**Distance entre le village et le temple le plus fréquenté par la population du village**		
XII.3.1	La situation actuelle	|____|____|____|	|____|____|____|____|
XII.3.2	La situation précédente	|____|____|____|	|____|____|____|____|
XII.3.3	La situation antécédente	|____|____|____|	|____|____|____|____|