

# Demographic Explosion and Rural Development in Madagascar

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**Abstract:** The main theme of the article is demography and its possible links with rural development in Madagascar. To do this, studies supported by various specific documents were carried out, in the district of Antsirabe II, located in the region Vakinankaratra, in Madagascar, between the period of 2001 and 2018. In general, rapid population growth, brought about by a high and sustained fertility rate, is associated with higher poverty rates, low rates of primary education, and rates of infant and maternal mortality which remain high, each country or the regions concerned, as confirmed by the debates or concepts of demography but the related problem depends on the specificity of- of each country or the regions concerned, as confirmed by the debates or concepts of demography. So especially since Madagascar is one of the least developed countries (LDCs) in the world, despite its strong legendary potential which is not sufficiently. What's more, many development projects in black Africa have experienced partial or total failures. Thus, the various development theories that conceptualize "the links between demography and conceptualized rural development will be confronted with the reality of the Malagasy rural world. (Case of the District of Antsirabe II). So, in order to develop knowledge on the demography of development, this research aims to determine the demographic approach consistent with our rural development likely to reduce rural poverty and control demographic factors by integrating the impact of the population explosion on the process of rural development, the diversities of the demographic transition in Madagascar, and the primacy of demographic change over economic changes. The characterization of a real demographic approach to our rural development, by combining all these concepts, would make it possible to determine the "dimensions" of demography, supported by scientific information, on the sustainable development of our world. So, beginning with a brief reminder on local rural development, this article presents the demographic issue on the Malagasy rural development process. Although this process has already been the subject of several strategies, it is clear that in its components, demographics are among the poor relatives in the system. This encourages us to review the inextricable links between these two constituents, more precisely the impact of strong demographic growth on local rural development, by analyzing the case of the District of Antsirabe II, especially since according to the Mexico Declaration, to be realistic, development policies, plans and programs must take into account the inextricable links between people, resources, environment and development.

**Keywords:** Local Rural Development, Demography, Population, Resources, Environment

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## 1. Introduction

Admittedly, Malagasy rural development is the subject of several literatures and gives rise to debate, but it is necessary to give a little reminder of its concept and its challenges.

Rural development is a concept illustrating a global, collective and endogenous approach, which appeared in the 1970s in reaction to interventionist practices in regional planning, and developed, according to Neu Daniel [15], in

France in opposition to decisions development measures taken downstream by centralized administrations.

Also, the concept of rural local development was born in marginalized rural territories, which had fallen into disuse in the face of national measures, which is often the case in Madagascar.

As part of the common agricultural policy, in Europe, it is a comprehensive and coordinated approach to rural territories in their various components, including the social

(demography, services, etc.), economic and environmental section, and aims to better enhance the value of specific resources rural areas and make better use of the complementarities between town and country, which already constitute these challenges [9].

However, local rural development would be an instrument to oppose globalization and should make it possible to stimulate, build and consolidate local rural dynamics [5].

### ***1.1. Local Development Based on a Demographic Approach***

There is nothing paradoxical about studying rural local development from a demographic perspective, especially since the second would only be a sub-component of the first, and to a certain extent the two components could be complementary [13], since poverty is influenced by, and influences population dynamics, including population growth, age structure and rural / urban distribution [7].

In addition, some studies, including the results of a national survey to monitor the Millennium Development Goals (ENSOMD), have shown a certain population explosion in Madagascar, reached a fertility rate of 163‰, and constitute the one of the highest adolescent fertility rates in the world. This situation gives rise to some apprehension as to its impact on economic growth in general, and on local rural development in particular, in the case of the District of Antsirabe II, one of the most populated rural areas in the Big Island with a density of 187 inhabitants per square kilometer.

Recall that demographic growth or total population change is defined as the difference between the size of a population at the end and at the start of a given period (generally one year).

It can be expressed as the rate of change in the number of individuals within a population per unit of time and also for any species (animal or plant, for example).

It is broken down into two distinct parts, among others, natural increase and net migration.

From this perspective, the District of Antsirabe has stood out with its population growth rising from 287,218 in 1997 to 520,183 in 2018, resulting in an increase of 55.21% in 19 years [3, 4].

A demographic growth which is accentuated thanks on the one hand to the demographic investments relating to vaccinations or the coverage of basic health centers, one of the most important in Madagascar.

Economically, the District is much better off than other rural areas, since it benefits from often fertile soils, a temperate climate and proximity to markets, allowing a wide variety of productions: food crops, cereals, legumes, fruit trees, market gardens, milk, meat, fish farming, etc. The District is now the main production area for vegetables, milk, and temperate fruits in the country.

The various advantages supported by the recognized know-how of farmers and breeders and their ability to adapt to changes during the country's chaotic development trajectory finally constitute a base on which to build innovation.

However, even if the District of Antsirabe II is indeed one

of the most economically "active" rural areas in Madagascar according to Jean Michel Sourrisseau [3], it is clear that this activity does not develop these resources (substantial but poorly exploited) optimally and that its level of development could be much higher.

This is how the question arises whether population growth is affecting local rural development in Antsirabe District, so it is necessary to determine the link between these two variables [13, 14].

We would like to point out that the research carried out did not allow us to have documents that focus on the study of the problem of the link between the two constituents in the District of Antsirabe II, so we hope that the article can provide, on the one hand, more precision on this type of relationship, and on the other hand, related proposals in order to enhance the endogenous resources of this District [6].

This article therefore aims to identify the link that characterizes the relationship between the population explosion and local rural development in the District of Antsirabe II (continuation: methodological approach-presentation of results and their discussions).

### ***1.2. Literature Paper***

It is important to point out the existence of the work carried out previously by Malthus [1] or also by Ester Boserup [14], on the impact of demographic growth on economic growth, but it is clear that the result at The outcome of the debates is a bit controversial.

Certainly theoretical studies (Diagnosis of Vakinankaratra) [3] have been carried out on the socio-economic of the Region of Vakinankaratra, but they constitute general frameworks, which should be supported by specific and appropriate studies on the component Districts among others Antsirabe II, in order to make effective the objective of local development consisting in stimulating, building and consolidating local rural dynamics.

In fact, if two theses direct the debate on the study of population growth on economic growth (orthodox and pessimistic) at the national (macroeconomic) level, at the local rural level we will use the indicators of the SMDM strategy, which are adapted and closer to the reality of our rural local development.

## **2. Methods**

### ***2.1. Material***

The geographic framework of the study is the rural world of Antsirabe II District in the Vakinankaratra Region, considered one of the most productive and populated rural areas in Madagascar.

And this district has an area of 2241km<sup>2</sup> for an estimated population of about 333,279 inhabitants.

### ***2.2. Methods***

In order to be able to affirm or refute the thesis stipulating that "demographic growth constitutes an obstacle in the

development process”, case of the District of Antsirabe II – Vakinankaratra, we will use the method of the selection of indicators for monitoring policies and national strategies. The Mediterranean Strategy for Sustainable Development

(MSSD) was retained and adopted by the contracting parties to the Barcelona Convention at their fourteenth meeting in October 2005 in Portoroz.; for agriculture and rural development, there are four priority indicators.

**Table 1.** List of Indicators.

Strategic targets	Indicators
Diversify the rural economy through the development of non-agricultural activities	AGRP01 Ratio of agricultural population to rural population.
Combating desertification and the loss of productive land	AGRP02 Loss of arable and O revolution of the cultivated area.
Agricultural development and territorialre form programs	AGRP03 Share of budget allocated to sustainable rural development programs
Promote diversity and quality, increase added value through development, recognition and marketing	AGRP04 Proportion of quality agricultural products

The table shows that each indicator corresponds to a specific strategic objective in accordance with the Mediterranean Strategy, which resolutely engages the region in a process of sustainable development with a view to strengthening peace, stability and prosperity, taking into account the weaknesses and threats facing the Mediterranean world, but also the assets and opportunities.

### 2.3. Explanation of Indicators

#### 2.3.1. To. Ratio of Agricultural Population to Rural Population (AGR\_P01)

This indicator measures the share of the agricultural population in the rural population. It is expressed as a percentage. The objective is to diversify the rural economy by creating non-agricultural jobs and therefore reducing the indicator.

#### 2.3.2. Loss of Arable and (AGR\_P02) or Change in Cultivated Area

This indicator measures the change in the area of arable land according to the types of pressure or land use: desertification, erosion, salinization, artificialization, deforestation, abandonment of agriculture, etc. It is expressed in hectares. The objective is to reduce the loss of agricultural land through erosion, salinization, desertification, urbanization or other forms of abandonment.

#### 2.3.3. Proportion of Quality Agricultural Products Used by Agriculture (AGR\_P04)

It favors management practices rather than externally sourced production methods, taking into account that local systems must adapt to regional conditions.

### 2.4. Methodological Approach

In this section, we first determine the econometric model

used before presenting the estimation method, the data and the statistical characteristics of the variables.

The econometric model highlights the evolution of the total population, the ratio of the working population to the total population, the main products, the evolution of cultivated areas, and the funds allocated to the sustainable development program.

Presentation and Signs of the Variables: In this model, there are two types of variables, which are respectively, the dependent variable the population, and the explanatory variables among others, the share of workers in the population, production, cultivated area, the share of workers in the population total.

- The explained variable: the population (or its evolution).
- Explanatory variables: the share of workers in the population, production, cultivated area, and funds allocated to the sustainable development program.

### 2.5. Estimation Method: The Estimation Method Used to Estimate Our Model Is Software R

#### 2.5.1. Data Source and Statistical Characteristics of the Variables

The data were provided through surveys established in the various rural Communes of the District of Antsirabe II, and also from the databases of Instat (National Institute of Statistics) (2015-2020). (Diagnosis of Vakinankaratra, Monographs of Antsirabe II, 2011-2016 and 2018, DRAE...) [4].

These data are then compiled in EXCEL and imported into econometric software (R software) to be processed using the appropriate statistical tools.

#### 2.5.2. Results

Descriptive statistics

**Table 2.** Statistical characteristics of the variables.

	Total population	Active/pop%	Rice (tonnes)	Potato (tons)	Corn (tons)	Beans (tons)	Cultivated area (ha)	FDL (thousands of ariary)
Mean	383940	46,36	68755,66	58761,58	23194,25	6320,33	58002,75	35297361,67
Standard deviation	60010	0,562	24301	20796,55	10605,97	4495	40101,30	14687255,36
Sample variance	3601248028	0,316	590530877	432496665	112486619	20202564	1608114452	2,15715E+14
Minimum	296178	45,72	33300	1430	4440	180	27330	17442060
Maximum	489248	46,74	97305	83530	43590	12310	138485	53016250
Number of samples	12	3	12	12	12	12	12	6
Period	1997-2016	2009-2011	1997-2016	1997-2016	1997-2016	1997-2016	1997-2016	2009-2014

The statistical characteristics of the different variables and the results obtained in terms of mean, standard deviation of minimum and maximum values for the District of Antsirabe II. The table shows quite significant variations, as well as the standard deviations and the number of observations is

sufficient enough to carry out studies (period 1997-2018).

Table 2 shows quite large variations in the evolution of the variables. The standard deviations are relatively low and the number of observations is sufficient to make a study.

*Table 3. Correlation matrix.*

	Population	ACT/POP	RICE	Potato	Corn	Beans	Cultivated area	FONDS
Population	1	-0,94573	0,93837837	0,81049383	(-)0,109101353	(-)0,956953558	(-)0,710967405	-0,27953
ACT/POP	(-)0,9457300	1	(-)0,628	0,997912	(-)0,36048	0,575032	(-)0,57821231	-0,116528
RICE	0,93837837	(-)0,628	1	(-)0,63157	0,12411	(-)0,95111	(-)0,817347	0,845823
POTATO	(-)0,81049	0,99791217	(-)0,63157	1	0,465	0,77	0,5713	(-)0,0521
CORN	(-)0,109101	(-)0,3604889	(-)0,12411	0,465	1	0,009551381	(-)0,44733	0,96841
BEANS	(-)0,9569535	0,575032	(-)0,95111	0,77	0,00955	1	0,77509352	(-)0,879654
Cultivated Surfaces	(-)0,710967	(-)0,57821	(-)0,817347	0,5713	(-)0,44733	0,77509	1	0,8877
FUNDS (development program)	-0,27953	(-)0,116528	0,84582381	(-)0,052140	0,96841626	(-)0,879564	0,88777	1

The observation of this table is that the indicator of demographic growth is only positive correlated with a single variable, represented by rice production, on the other hand compared to other models, this correlation remains negative (the production of corn, beans, potatoes, the proportion of the active population to the total population and the cultivated area.

### 3. Results and Discussions

The table below shows the results of the estimate:

*Table 4. Regression results.*

Independent variable: population growth	Expected sign	
Rice production	+-	0,92183
Potato	+-	0,84940
Corn	-	0,55096007
Beans	-	0,94671617
Cultivated area	-	0,93636196
Ratio of economically active population to total population	-	1
Funds allocated to sustainable development	+-	0,35748006

The coefficients which have the expected signs or not, significant or not.

#### 3.1. The Active Population

The results show a negative and significant relationship. The coefficient relating to the active population is (1).

Everything else equals a one percent percentage increase in the general population results in a 1% decrease in the working population. It also means that the numbers of dependents are increasing at the expense of assets which will impact the savings of rural households in the District of Antsirabe II.

#### 3.2. The Main Products

Apart from the rice production, which is displayed with a positive sign, the other products are found in the opposite direction (negative). This means that the growth of the

population encourages the rural areas to make efforts to compensate for the loss. 'food shortage hence this trend illustrating that a population growth of 1% corresponds to an increase in rice production of 0.92%.

However, the opposite effect is observed in other products, since a growth of 1% of the population leads to a general decrease of 0.50% for all products, except rice, potatoes (0, 56%), corn (0.55) and almost 1% for beans (0.94).

This result can be explained by the absence of a product diversification program in the District, in order to compensate for the food shortage, and despite the growing rice production, the District still has a deficit of tens of thousands of people, tons of rice.

#### 3.3. Arable Land Cultivated Area

This drop in production on other varieties can be explained by the decrease in cultivated areas as a whole as the population increases.

Also, a population growth of 1% leads to a decrease in the cultivated area of 0.93% as a whole.

The reason could be explained by the increase in the area of rice at the expense of other products or simply the loss of arable land (Diagnosis of Vakinankaratra).

#### 3.4. Funds Allocated to the Sustainable Development Program

The funds allocated to the program show a negative sign, meaning that they do not keep up with the growth of the population, since a 1% increase in the population in the long term, generally corresponds to a decrease of 0.25% of the allocated funds, between the period of 2009-2014.

### 4. Conclusions and Recommendations of Economic Policy

This article aimed to assess the impact of strong population growth on local rural development in the case of

Antsirabe II District.

To do this, we refer to the SMDM model (2005). The estimation technique used is R: software.

The hypothesis that high growth negatively influences rural development is partly verified in the District of Antsirabe II because, as estimates show, the ratio of economically active population to total population is negative [1]. In addition, the other coefficients relating to production, for the most part, apart from that of rice, are all negative.

Strong demographic growth, like that of the District of Antsirabe II, is not beneficial for its development, and cannot be advantageous if it is not supported and accompanied by other economic measures such as:

A policy of facilitation of agro-food businesses in order to have more added value to agricultural products in this area (reduction in unemployment rates and the number of inactive people - independence) [8];

Attractive policy of India in order to have more investment in this area, in terms of agriculture, accompanied by a more flexible fiscal policy [10];

A policy relating to the strengthening of physical capital is desired, in order to enhance the value of natural capital and endogenous resources through infrastructure investments (roads, dams, etc.) [12];

The establishment of a demographic policy, aimed at accelerating the demographic transition in the District in particular and in the Region of Vakinankaratra and in general, in order to benefit from the demographic dividend [2, 11].

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## References

- [1] Daniel Rutherford. 2011. Population (Les trois approches de Malthus pour résoudre le problème démographique) [Malthus' three approaches to solving the demographic problem].
- [2] Esther Boserup. 1992. Croissance démographique et économique en économie ouverte [Population and economic growth in an open economy].
- [3] Jean Marc Sourrisseau-Patrick Rasolofo 2016- Diagnostic Territorial de la Région de Vakinankaratra [Territorial Diagnosis of the Vakinankaratra Region].
- [4] Antsirabe II District, Monograph 2011-2016-2018.
- [5] ALVERGNE C. (2008). The paths of territorial governance, DIOP, Amadou (ed), Local development, territorial governance: Issues and perspectives, Paris, Karthala, pp 127-145.
- [6] JEAN-BAPTISTE GRISON Ressources locales et développement territorial dans les très petites communes: un potentiel en question [Local resources and territorial development in very small municipalities: a potential called into question].
- [7] UNFPA-Population et pauvreté- [Population and Poverty] (2014).
- [8] BACKGROUND PAPERS-2016-Agriculture and rural development in Madagascar.
- [9] BADIANE SL (2008). The challenges of local development, Review.
- [10] BLANC-PAMARD C, MILLEVILLE P., GROUZIS M., LASRY F., RAZA-NAKA -2007 - The structural implications of liberalization on agriculture and rural development. Case of Madagascar. Report, Antananarivo.
- [11] "BENEDICTE GASTINEAU: 2006 Madagascar the demographic transition will still be long.
- [12] Jean-Michel SOURISSEAU, Jean-François BELIERES, Robin BOURGEOIS, Patrick RASOLOFO, Mamy SOUMARE, Nathalie BOUGNOUX. Imagining the future of territories to guide policies: the case of Vakinankaratra in Madagascar.
- [13] Bénédicte Gastineau-2006 - Demography and environment in Madagascar.
- [14] ESTHER BOSERUP,. Agrarian evolution and demographic pressure (1971).
- [15] Neu Daniel-2003: Local development and decentralization: points of view.