



Economic Commission for Africa

Booklet on Population, Environment, Development and Agriculture (PEDA) Model

PEDA ADVOCACY BOOKLET:
Case Study: Cameroon



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ECA/FSSDD/01/13
November 2001

BOOKLET ON POPULATION, ENVIRONMENT, DEVELOPMENT AND AGRICULTURE (PEDA) MODEL

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Contents

INTRODUCTION..... 1

I. CURRENT SITUATION IN CAMEROON 1

 A. Population 1

 B. Environment..... 3

 C. Agriculture 3

 D. Food Security 4

 E. The Nexus Issues..... 5

II. POLICIES AND PLANS 6

 A. Holistic approach to development policies..... 6

 B. Implementation of policies 7

III. APPLICATION OF THE PEDDA MODEL 8

 A. Creation of scenarios for Cameroon..... 8

 B. Projection results 9

IV. CONCLUSIONS FROM THE CASE STUDY 13

REFERENCES..... 15

INTRODUCTION

Cameroon has enjoyed relative stability since independence. However, its economy was badly affected by the economic recession of the 1980s that most sub-Saharan African countries experienced. Since then, there was a steady increase of poverty that the recent economic recovering of the country could not alleviate. As an indicator, the life expectancy at birth has even decreased from 52.4 years in 1990 to 50 years in 2000. This is why poverty alleviation is the main objective of development policies in Cameroon. Such policies aim to reduce poverty by addressing its causes, among others: population growth, low level of education, low status of women in the society, low level of productivity, and natural resources degradation.



Cameroon

These factors affect the population directly and indirectly. Currently in Cameroon, as in other African countries, the poverty issue is analysed in the context of a sustainable development framework of inter-linkages between population growth, environment degradation and food insecurity. As Cameroon's economy slowly recovers, policy makers are faced with the crucial question – how will the population-environment-agriculture nexus impinge on future economic growth? To that end the PEDa model is valuable in demonstrating the likely medium- to long-term impacts of alternative national policies on the food security status of the population.¹

I. CURRENT SITUATION IN CAMEROON

A. Population

Cameroon had a relatively high population growth rate of 2.3 per cent in the period 1995-2000 (table 1). However, in the regional context this is not particularly high, with the average for central African countries being 2.6 per cent. The trend of the Total Fertility Rate (TFR) is a downward one from a TFR of 6.4 in the period 1975-1980 to 5.1 in the period 1995-2000. There is however a significant disparity between urban and rural areas. Data from the Demographic and Health Survey (DHS) of Cameroon show that this gap is increasing. The urban TFR in 1991 was

¹ This Advocacy Booklet is based on the study : «Population, agriculture et environnement au Cameroun : une analyse des interrelations et des politiques mises en œuvre » by Aka Kouamé, Samson Lamlenn and Gueye Abdoulaye. May 1999. Study requested by the Economic Commission for Africa.

5.2, which had decreased to 3.8 in 1998. The rural TFR had decreased from 6.3 to 5.4 in the same period. This trend is reflected in the increase in the use of contraceptives. Contraceptive use (modern methods) increased from 3.1 per cent to 7.1 per cent between 1978 and 1998 with a persistent gap between urban and rural areas. In 1998, 12 per cent of urban women and 4 per cent of rural women were using modern contraceptives. When broken down according to educational levels the differences are even greater.

Table 1

Population

Population growth rate	1985-90	2.9%
	1990-95	2.7%
	1995-2000	2.3%
Total Fertility Rate (TFR)	1975-80	6.4
	1985-90	6.1
	1995-2000	5.1
Modern contraceptive prevalence rate	1998	8%
Adult literacy rate		
Male	1985	70%
	1995	80%
Female	1985	50%
	1995	67%

Environment

Trade in forest products as % of total exports	1995-96	20.3%
	1997	17.5%
% of the population using bio-masse energy	1990s	80%
Bio-masse energy used in % of the total of energies used	1990s	64%
Regression of the forest land	1976-86	200,000 ha/an
of rain forest	1976-86	100,000 ha/an
Annual rate of deforestation	1980-95	0.6%

Agriculture and Food security

Food production growth rate	1975-84	0.6%
	1985-89	1.5%
	After 1990	2.8%
Per capita food production index	1970	120.2
	1989-91	100
	1996	103.5
	1998	93.7
Daily per capita consummation of calories	1970	2280
	1987	2178
	1990	2199
	1997	2111
% of farms using tractors	1989-90	0.2%
% of farms using fertilisers	1989-90	1.7%
% of farms using improved-seed varieties	1989-90	57%
% of cultivated land irrigated	1989-90	0.2%

Despite all these facts, Cameroon's population is expected to increase further and at the current natural increase, it is likely to double by 2045 (medium variant). This is partly due to the fact that fertility rates are still significantly higher than mortality rates, and also due to population momentum resulting from the youthful population structure (Under age 15 represented 43 per cent of the population in 2000).

B. Environment

Cameroon presents an exceptionally environmental diversity that gives the country opportunities for long-term development. However, the current exploitation of natural resources is detrimental for their regeneration and the country risks jeopardizing its opportunity for a sustainable development (table 1).

The low level of general and technical education, the non-availability or insufficiency of safe water (43 per cent rural and 57 per cent urban population with access to safe water), the high population growth, and the subsistence labour activities, mainly agriculture and pastoral, affect the level of exploitation and exhaustion of the country's natural resources. The forest has been over-exploited by families and firms without monitoring and protecting actions. Deforestation has been done at a rhythm 10-times superior to the regeneration capacity. During the period from 1981 to 1990, Cameroon has lost 8 per cent of its forest, and in 1993 the country was still being deforested at an annual rate of 0.6 per cent.

Moreover, the environment has been negatively affected by an over-exploitation of the land - land fallow has been shortened, new lands are cultivated, detrimental agricultural practices are used, specially in the northern regions of the country - that endangers the natural resources of Cameroon and the eco-system of specific areas.

C. Agriculture

Cameroon had a population density of 31 people per km² in year 2000. This is higher than the average for central Africa. Moreover, this density presents high regional differences. If some regions are almost empty, others have a density higher than 100 people per Km².

At the same time, the level of technical education and the agricultural techniques employed are unsuited for intensive agriculture and as such land degradation is a serious problem. The economic recession was one of the main causes of the stagnation in agricultural mechanization and intensification. Tractor use did not increase since the 1970s and fertilizer consumption stagnated all over the period from 1979 to 1997 at a level of 5.5-5.6 kg per hectare of arable land (fig.1).

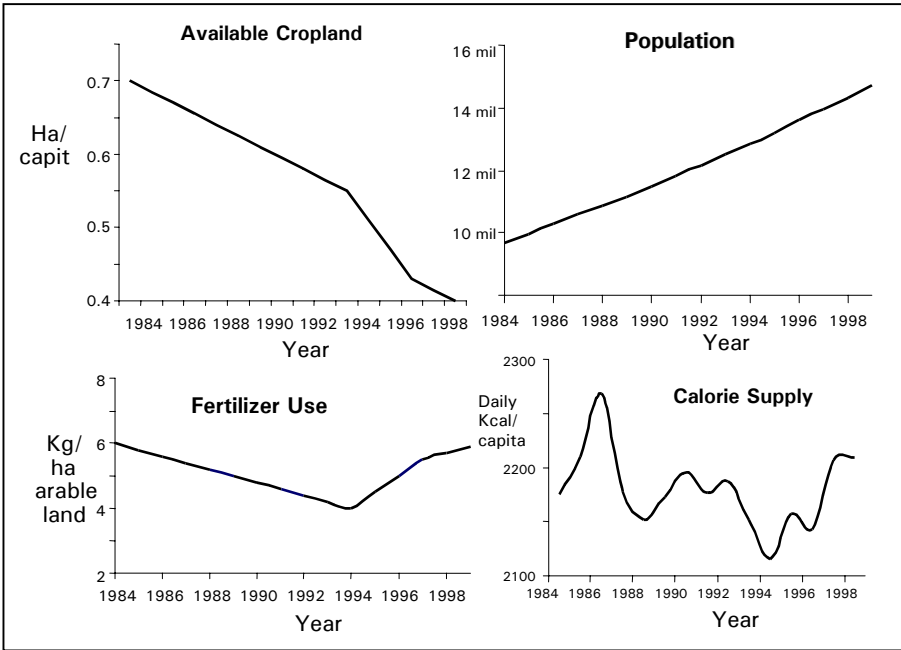
This was compounded by population growth and land degradation that resulted in a decrease in the amount of cropland available per capita from 0.68 in the period 1979-81 to 0.43 in the period 1995-97 (fig. 1).

D. Food Security

The food security situation of Cameroon partially results from the agricultural production conditions, amounting to the rudimentary character of cultivation techniques, which do not allow high agricultural returns. To these conditions should be added a tenure system which does not favour a fair access to the land for all, a weak agricultural credit system, as well as the difficult conditions of the flow of foods from sites of production towards existing markets.

Taken together, all these factors inevitably led to a decrease in the food production per capita (table 1) that compared to the annual production of the period 1970-1981 (base 100) was 90.9 in 1996. It also led to a decrease in the average daily supply of energy from 2,280 in 1970 to 2,111 kcal per capita in 1997 (fig. 1). This is below the minimum required for normal daily activity of 2,400 Kcal per capita. Moreover, 14 per cent of the children were underweight in 1990-1997. Based on these factors, it is a reasonable assumption that the food-insecure population has increased both in absolute and relative terms.

Figure 1

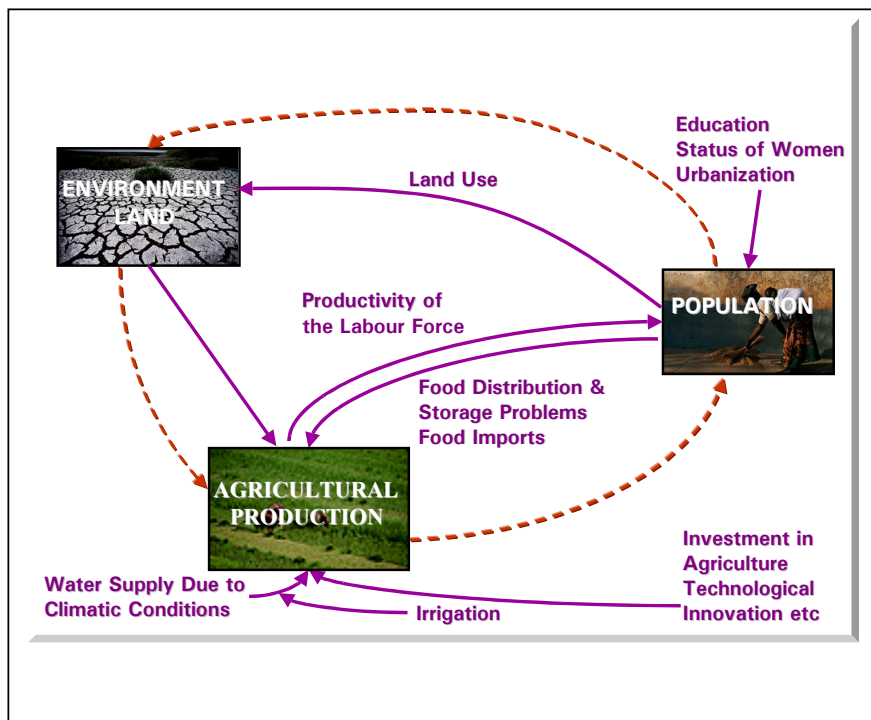


E. The Nexus Issues

A current hypothesis for explaining the high and increasing level of poverty considers that high fertility, poverty and low education are bound up in a web of interactions with environmental degradation and declining food production (fig. 2). This vicious cycle of poverty and non-sustainable development affect and is affected not only, by the use of non renewable natural resources, but also by the low level of development of the human resources that imply education, health and nutrition factors. If not broken this vicious cycle will lead to ever increasing land degradation and increases in the food-insecure population.

Analyses reveal that Cameroon could be confronted with the vicious circle of poverty if adequate measures are not taken to avoid it. Indeed, in spite of the enormous potential of natural resources that the country bears, Cameroon is not exempt from the food-insecurity problem. The demographic pressure, even if not at high levels as in other African countries, affects natural resources. Moreover, the agriculture sector compromises future development by its results and its methods of exploitation. Due to the rapid population growth, the level of food insecurity and the pressure on the environment can get rapidly worse if actions are not implemented.

A Schematic view of the vicious cycle



II. POLICIES AND PLANS

A. Holistic approach to development policies

The policy analysis indicates that the authorities are conscious of all these problems and that measures taken aim at facing them. During the last years, the Government of Cameroon formulated policies and different programmes to improve the prosperity of the population in a sustainable manner. The Government undertook to reform sectoral policies, including those concerning population, agriculture and the environment. While pursuing appropriate objectives for each of these sectors, these policies also aim at obtaining results in the two other sectors. It is the case for the population policy whose strategies concern both agriculture and environment. It is also the case for environment that tries, among others, to create the conditions of sustainable growth for agricultural production. The new agricultural policy will also contribute to demographic transition and to protection of the environment by improvement of tools, a favourable change for all levels of the population to their relationships with soils, and intensification of agriculture.

Since the 1980s, the Government was aware of the necessity for a decrease in population growth. At the beginning of the 1990s, a national policy on population was elaborated. Its objectives were not only decrease of population growth, but included also improvement of the quality of life of the population, targeting the basic needs for health, education and nutrition, alleviation of poverty and promotion of the status of women. The policy was formulated in a global view of human development taking into account the interrelations between population, agriculture and environment. These policies aim at helping accelerate demographic transition by extending family planning programmes, and by formulating programmes intended to reduce the demand for children.

The new rural development policy aims to fight food insecurity, alleviate poverty, improve productivity, improve the competitiveness of agriculture activities, and protect natural resources. It is officially stated that to balance the demographic growth, the country needs to adopt new production techniques in order to avoid degradation of the natural resources of the country. One of its strategies is to encourage exploitation and monitoring techniques able to protect natural resources, land, and forests. This agriculture and rural development policy provides technical and economic solutions for protection of the environment and for ensuring sustainable development of the country. Measures to increase the production of food crops include improvement of production conditions through reinforcement of the credit system, orientation of the production towards the food crops market, reduction of obstacles to the production flow, and adequate policies for pricing and marketing food crop products. They also concern improvement of the productivity of the traditional sector, thanks to the use of agricultural intensification techniques that reduce the use of human energy. The agricultural policy also tries to lessen obstacles connected to access to land for all.

Cameroon authorities are aware of the negative current trend of the environment situation. Therefore, they have finalized policies and programmes targeting protection of the urban and rural environments. Current policies aim to change

detrimental practices and ensure regeneration of natural resources for protection of the environment in a context of long-term sustainable development. In particular, the environmental policy aims at better managing natural resources and protecting bio-diversity, and this, among others, through protection of the forest, protection and development of pastures, protection and restoration of soils, renewal of forest resources (reforestation, regeneration, management of forest plantations), development of agricultural and pastoral techniques, and involvement of local populations.

B. Implementation of policies

All these finalized socio-economic policies integrate the population-environment-agriculture nexus in a perspective of sustainable development. From this perspective, the development policy of Cameroon satisfies the holistic approach emphasizing the Population-Agriculture-Environment interrelation. The success of all these policies will allow the country to overcome the impoverishment process of its population, and ensure sustainable development. Moreover, strategic plans have been formulated on population, agriculture and environment with specific goals set to alleviate poverty and ensure sustainable development.

Cameroon's policy makers, as evidenced by current policies, are aware of the whole context and of the interlinkages that result in poverty, environmental degradation and food insecurity. They know that if each sector may contribute to breaking up the vicious cycle, a comprehensive strategy viewing all these aspects together and recognizing their interdependencies is likely to be more successful.

Nevertheless, the challenge facing Cameroon is the urgent implementation of these policies and strategies. This requires the will of the Government, sufficient allocation of resources, and an optimal allocation of these resources. The problem now is the multiplicity of needs compared with the limited financial and human resources available.

If we look at the projections and the current accomplishments, it seems that the country may be unable to bring all these policies to a satisfactory conclusion. Steady support from the international community is needed for guaranteeing sustainability of development in Cameroon. Moreover, policy makers should improve coordination among the different ministries and offices in charge of development sectors addressing the food security and sustainable development issues.

III. APPLICATION OF THE PEDAMODEL²

A. Creation of scenarios for Cameroon

The use of PEDAMODEL is aimed at demonstrating the impact of implementation of the strategic plans formulated by Cameroon policy makers and the achievement of their strategic goals in the context of the population-agriculture-environment nexus. The aim is also to compare this ideal achievement with an alternative reality based upon a continuation of current trends, in other words, a situation in which the policies may exist but are not implemented.

To illustrate the two cases, two scenarios have been created with the PEDAMODEL model. The first one, the Strategic Goals Scenario, is based on achievement of strategic goals by 2030. The second scenario, the Constant Rate Scenario, is based on 1995-2000 data that remain constant over the period. The values entered in PEDAMODEL are shown in table 2.

Table 2

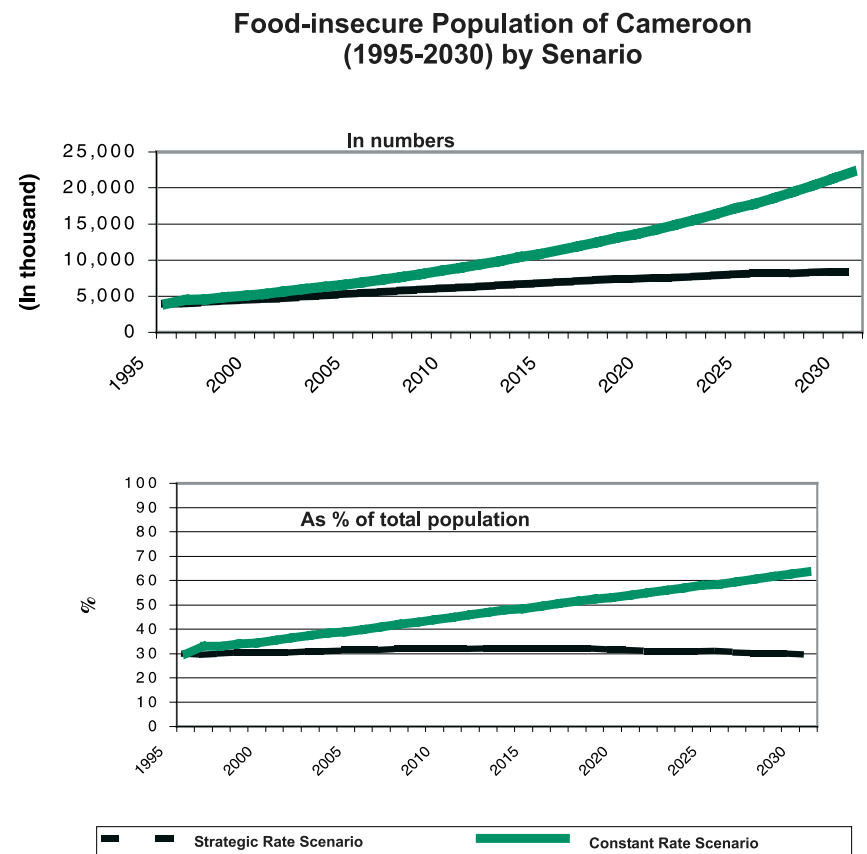
	Constant Rate Scenario	Strategic Goals Scenario		
POPULATION PARAMETERS				
Total fertility rates				
<i>Rural</i>	5.5		3.2	
<i>Urban</i>	5.0		2.9	
Life expectancy at birth	Male:49	Female:51	Male: 55	Female: 59
Total educational transition rate	Male:0.53	Female:0.63	Male:0.73	Female:0.84
Total transition rate from rural to urban areas	0.2		0.2	
FOOD SUPPLY PARAMETERS				
<i>Agriculture</i>				
Fertiliser use (% annual growth)	1		2.55	
Machinery (% annual growth)	1		2	
Technical education (% annual growth)	1		2	
<i>Environment</i>				
Changes in land quantity (% annual growth)	1		0.1	
Land degradation	0.02		0.02	
Water availability	1		1	
<i>Others</i>				
Loss of food	0.05		0	
Food import & export	1		1	
Urban bias factor	0.9		0.9	

² The scenarios and outputs presented are produced with the Cameroon prototype of PEDAMODEL.

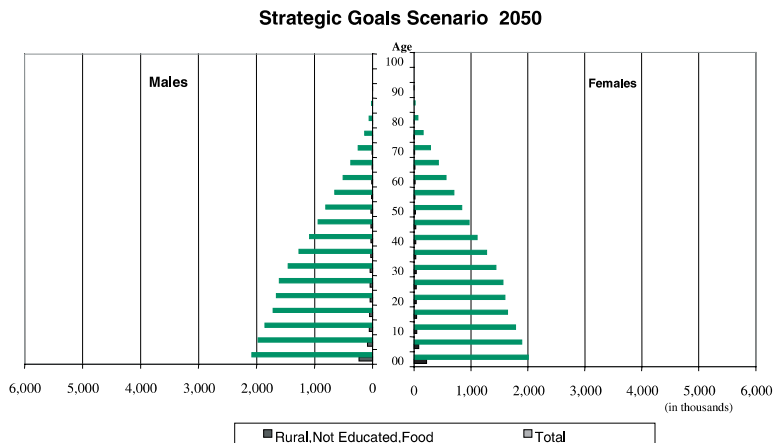
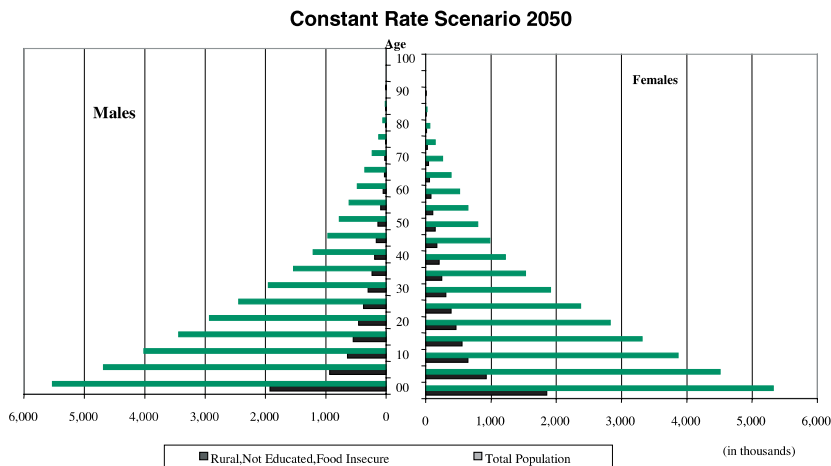
B. Projection results

The results are presented in different forms. First are the line charts from 1995 to 2030, comparing the two scenarios for the food-insecure population of Cameroon. Second, age pyramids in 2050 comparing for each of the two scenarios the part of the “Rural, Not educated, Food insecure” in the total population. Finally, line charts showing the trend from 1995 to 2030 for the two scenarios in the food production per capita and in the “Women Educated and Food secure” sub-population as a percentage of the women in total population.

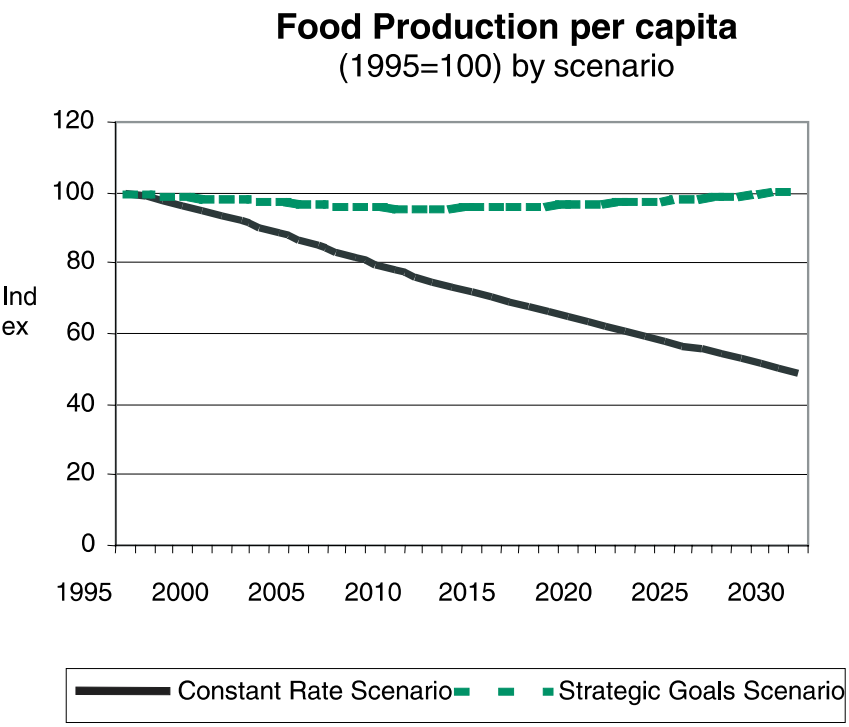
The line charts (fig. 3) show the number of the food-insecure population in Cameroon from 1995 to 2030, according to the two scenarios both in total and percentage of the total population. From the chart we can see that implementation of the strategic plans will effectively have a positive impact on food security both in absolute and relative terms. On the other hand, if the variables remain constant over the period, this will seriously affect the level of food insecurity in the country.



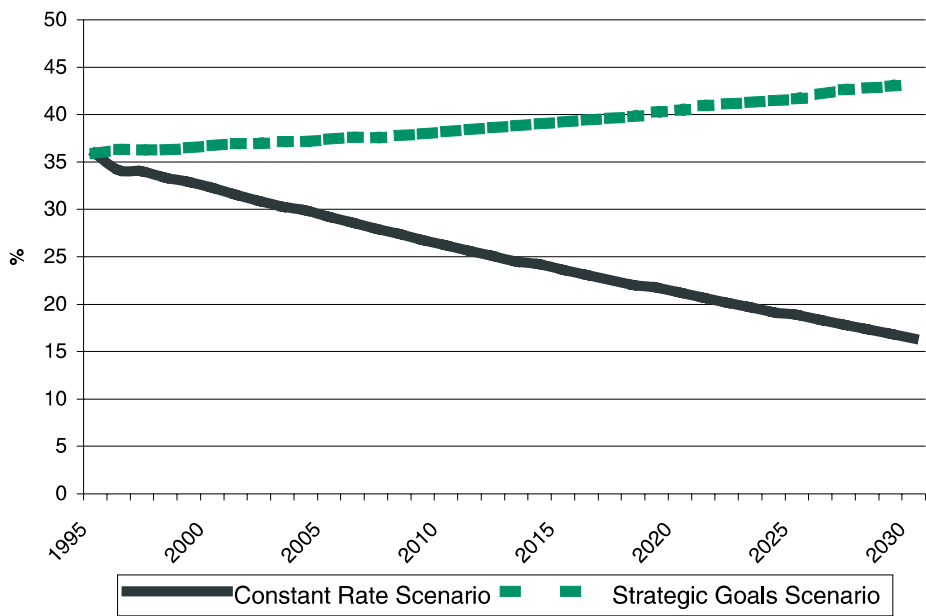
The age pyramids (fig. 4) consider, for the two scenarios in 2050, the total population and the “Rural, Not educated, Food-insecure population”. Comparison of the age pyramids indicates that with the achievement of the goals of the strategic plans, the country would be in the demographic transition (form of the pyramid). Moreover, the sub-group of the population “Rural, Not educated, Food insecure” would have substantially decreased.



Moreover, achievement of the strategic goals will slightly increase food production per capita (fig. 5) compared to the level of 1995, whereas the constant trend would mean severe deterioration by this indicator of food security. In addition, achievement of the strategic goals will improve the level of the “Educated and Food-secure Women” sub-population (fig 6), as shown in the line charts. These factors will also have a positive impact in breaking the vicious cycle of poverty and environment degradation.



Women: Educated, Food Secure in Cameroon
(1995-2030) by scenario
as % of Women Total Population



Displaying the results of the two scenarios side by side dramatically shows the advantages of working towards achievement of the strategic goals and the dangers of leaving the current situation as it is. Implementation of the strategic plans and achievement of the strategic goals will have a positive impact on food security, poverty alleviation, and on sustainable development of the country.

IV. CONCLUSIONS FROM THE CASE STUDY

Cameroon is already facing a sustainable development problem. The fact that part of the population is food insecure implies among other things, that increase of the food supply is below the demographic growth. Even if, in spite of the high rate of demographic growth, Cameroon still does not suffer from demographic pressure, the agricultural practices and the excessive exploitation of the forest have affected its natural resources considerably. The process of degradation of the environment has already begun. Therefore, even if the situation of the country is not yet critical from this point of view, it is not very good, and would eventually compromise the food security of the country.

Cameroon is typical of many countries that have passed laws and formulated policies that either directly deal with or take into account the nexus issues. The Government has formulated various policies and programmes in order to improve the welfare of the population in a sustainable manner. All of these policies and programmes affect or are affected by the nexus issues. Thus, Cameroon policy makers are aware of the population-environment-agriculture nexus, and the country's policies already satisfy the approach of the nexus. There seems to be no need to convince the authorities of the importance of this theory but advocacy is needed with regard to implementation.

Nevertheless, though important, the formulation of strategic plans does not automatically lead to their successful implementation. It is one matter to formulate policies and another to implement them. So far as the holistic approach is supposed to act on several fronts at the same time, and in a context of scarcity of financial resources, will the country have the necessary resources to achieve the objectives of these policies in a satisfactory way? Current evidence indicates that the laws and policies have not been implemented vigorously enough to tackle the fundamental issues seriously. In an economy such as Cameroon's, which is slowly recovering from a long recession, resources are scarce and competition is keen. The population-environment-agriculture issues must compete with other issues that may present an equally convincing case for limited funds.

Through PEDAs, we have demonstrated that the implementation of the strategic plans, already formulated by the country, will indeed have a positive impact on food security and on the standard of living in Cameroon. This is especially true when the weakest sub-group of the population, the "Rural, illiterate, food-insecure", is considered. Both in absolute and relative terms, this population will decrease if the strategic goals are met. The sharp increase in this group in the constant scenario is a clear warning to Cameroon policy makers that complacency is not an option in this context. The PEDAs scenarios demonstrate the centrality of

the nexus issues to economic recovery and the overall welfare of the population both due to the impact of their own sectors and also their influence on other sectors. In the case of Cameroon, policy makers can be assured that their strategic plans are effective. By implementing them, the country would be on the right track for sustainable development.

The objective of utilizing the PEDDA model in the Cameroon case study is thus to advocate for more resources allocation to face up to the challenges presented and also to initiate the necessary political will through demonstration of future scenarios. It can be used by policy makers within the nexus sectors in order to demonstrate their commitment to sustainable development planning and to advocate for more resources from people who may be far removed, in the traditional sense, from population-environment-agriculture issues. This case study could also be used by civil society groups at the national level to advocate for sustainable development. It can also be used by experts to further spot light the negative synergy arising from the interconnections of population growth, environmental deterioration and declining agricultural production. Through the use of PEDDA, experts could also suggest that investing in education now could have bigger impacts on food security in the medium-long run than investing in food imports.

In the case of Cameroon we should now see if enough resources are available for the implementation of the strategic plans. Cameroon policy makers should ask: “Within our strategic plans and in a context of limited resources what are the most cost-effective methods for ensuring sustainable development?” However, this is a question that cannot be answered by PEDDA.

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