

Financial Investment for agricultural innovations development and food security in Benin

ADEGBOLA¹ P.Y., N. R. AHOYO ADJOVI¹, G. A. ZOFOUN¹, D. Y. ARODOKOUN¹, S. BELLO¹, U. A. ARODOKOUN¹

¹- National Agricultural Research Institute of Benin, Email: patrice.adegbola@yahoo.fr

- Agricultural sector is really important for Benin economy reinforcement, since it contributes to 32% of GDP, 75% to 90% to exports incomes, 15% to countries incomes and provides average 70% of employments (Sossou *et al.*, 2013). Since Benin's participation in the Maputo Declaration (2004), the country like other developing countries committed under the Comprehensive Implementation Program for the Development of African Agriculture (CAADP), to allocate at least 10% of its budget to agriculture sector. This goal was globally achieved since 2008, with an allocation rate of 12.63%, with a mixed situation, particularly in terms of investment in innovations through research and development programs. Those innovations aimed to improve transportation, storage and information infrastructure and/or regulatory frameworks are mostly applied to increase food production and improve food security (Adegbola, 2010). This policy brief showcases the evolvement of investments for Benin agriculture development.

● Funding to agricultural sector in Benin during the last 20 years

- Until to a recent past, there was no bank system reachable for small farmers (Floquet *et al.*, 1998). In fact, funding for research policies and agricultural development in Benin is provided by internal and external sources. The national budget represents the main internal resources, while the external resources are provided by the Technical and Financial Partners (TFP). There are also some private funds including investments made directly by or through non-state stakeholders such as Agricultural Professionals' Organizations (APO), Non-Governmental Organizations (NGOs) and the Private Sector. Since two decades, several reforms were implemented in Benin in order to improve investments (Ahojo Adjovi *et al.*, 2012).

Since 2011, the weight of the agricultural sector in the Country Budget is estimated at an average of 12.63% over the period, a level above the target of MAPUTO which is about 10%.

Low allocation of public finance to the agricultural sector

Although increasing in agricultural investments improve the level of consumption of agricultural goods and food security (Aho Adjovi *et al.*, 2012) those funding remain low. Over the past 10 years, the evolution of public budget for the agricultural sector can be divided into two periods. From 2003 to 2007, the initial budget allocated to the Beninese Ministry in charge of Agriculture, Livestock and Fishery has increased very slightly, while the General Government budget has evolved into net growth. The part of the budget allocated to the agricultural department has decreased from 6.6% in 2003 to 5.1% in 2007. The average rate of financial allocation provided by the Government for agricultural sector during this period was 6.13%, less than the 10% retained by the Conference of African State's Heads in Maputo in 2003.

Between 2008 and 2014, public budget for the agricultural sector was unstable with their lowest level in 2011. But, since 2011, it has increased from 138.11 million of Euros in 2011 to nearly 190.56 millions of Euros in 2014. The weight of the agricultural sector in the Country Budget is estimated in average at 12.63% over the period, a level above the target of MAPUTO which is 10%.

Agriculture expenditure, unstable and insufficient, regarding Maputo target

Over the last seven years, public expenditure in the sector has also evolved very unstably with their lowest level in 2011. But, with the measures taken by the Government which consist to gradually reduce the economic and financial recession occurred since 2010, the level of country spending in the agricultural sector has

Agricultural funds are unstable and decrease in some years while some reforms were committed and need to be reinforced. So funding should be increase from one year to the other in order to meet existing demand.

- started growing, from 38.87 millions of Euros in 2011 to almost 106.71 millions of Euros in 2014.
- Despite this improvement, the weight of the agricultural sector in public spending is estimated at 6.81% in average over the 2008-2014 periods.
- This level is also lower compared to the target of MAPUTO which is 10%.

● **56% of Benin donors provide slightly more than 33% of the agricultural sector financing needs**

- Several funding of the agricultural sector was unstable over the years according to agricultural policies, interests and concerns of Technical and Financial Partners (TFP). However, agricultural sector remains one of the areas of concentration of TFP interventions in Benin. Over a total of 23 TFP involved in key sectors of Benin's economy, 13 are evolved in agriculture (MAEP, 2014). The contribution of TFP to public expenditure in the agricultural sector has also evolved, sawing tooth over the period 2003-2014. Some stakeholders has generally contributed to an average of 37.12% of the agricultural sector functioning expenses during the period.

● **Investments for research in agriculture, still below required levels**

- The National Agricultural Research System (NARS) is composed of several entities including Universities, NGOs, International Organizations, Extension offices, Agricultural Professionals

From 2002 to 2014, INRAB was funded by the government for 47.57%, by TFP for 27.07% and by its own contribution which represents 25.36% of the total budget.

Organizations (APO) and the National Institute of Agricultural Research of Benin (INRAB) which is the focal point of the system and ensures its Permanent Secretariat. This section focused on sources and means of agricultural research financing in Benin, is focused on INRAB.

Budget allocation and research funding sources

✚ **Contribution of actors**

INRAB funding is ensured by three (3) main sources: the Government, the TFP and the own resources derived from the commercialization of the Institute and its decentralized centers' goods and services. Among the TFP which support Benin agricultural research for several decades, one can find the Danish Cooperation, the German Cooperation, the World Bank and other Multilateral and Bilateral Partners.

The state Government in Benin, through the Ministry of Agriculture, Livestock and Fishery (MAEP), has contributed during the past decade, amounting to 47.57% for Research and Development of technologies, policies and measures for agricultural development, food security and nutrition and for increasing agricultural export earnings. TFP provide during the same period, 27.07% of the total budget of INRAB. The personal contribution of the institute capitalized during the period of 2002-2014 represents 25.36% of the total budget.

✚ **Instability of funding**

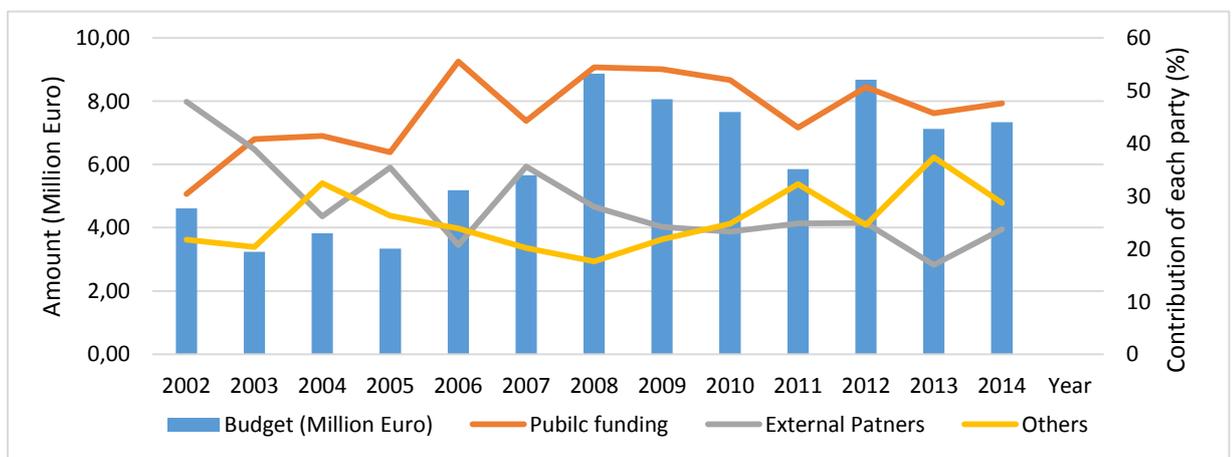


Figure 1: INRAB funding from 2002 to 2014

Source: INRAB Financial Resource

From 2002 to 2014, INRAB best performance in Budget Execution Rate (BER) was 79.39 % in 2011. So, an institutional diagnosis is required in order to initiate best reforms to correct this weakness.

- The different funding has been very volatile from one year to another during the period (figure 1).
- In 2003 for example, INRAB funding was very low, with very low contribution of donors and a very modest contribution of incomes from the commercialization of products and services of its research centers. In opposition, there was a significant increasing in research funding by the government and the earnings coming from capitalization of INRAB's goods and services, with the best score in 2008.

- Despite these significant levels of funding for agricultural research, overall investments remain below the levels required to ensure the maintenance of viable programs, focused on current and future priorities. In almost all countries in sub-Saharan Africa in general and particularly in Benin, financing from public budget are insignificant in comparison to the prior needs of agricultural research.

INRAB's overall financial performances

- The overall financial performances apprehended here are in terms of Budget Execution Rate (BER) which is also the Consumption Rate (CR). INRAB registered for the period 2002-2014 an average BER estimated at 61.49%. This means that enough financial resources were unused during the period. The best performance was in 2011 which is marked by a CR of 79.39%. In contrast, the lowest performance was obtained in 2006 with a BER estimated at 42.43%, leaving an unused equity of 2.99 million of Euros.

Impact of financial investment in agriculture

- Investments in agriculture, impact all its sub-sectors such as crop production, livestock and fishing with strong positive effects on the economic and social development.

Contribution of investment in the agricultural productivity improvement

- The impact of investment in research and agricultural extension is appreciated, according to the point of view of agricultural performance induced, by various funding in crop production as presented in Table 1. It is globally noticed an

Investment for innovations development and or promotion has impacted positively agricultural productivity during the last 2 decades.

increasing yields of major crops from 1995 to 2014. Soybeans had the lowest rate (9.07%) while the highest one (146.10%) was found with pepper. In general, the average increase in yield of leguminous rate is the lowest; those for cereals, roots and tubers are at the middle and vegetables yield are the highest.

This increasing in agricultural productivity follows the development, the diffusion and the adoption of new agricultural technologies (improved varieties, specific chemical fertilizers, improved agricultural practices, etc.) and subsidizing agricultural inputs by the Government includes chemical fertilizers. However, issues like meeting both quantitative and qualitative producer's needs at the appropriate time (fertilizers tailored to specific agro-ecological zones) as well as the effectiveness of distribution channels continue to arise.

Table 1: Increased yields of major crops for the period 1995 to 2014

Crops	Yield average increased rate (%)
Maize	34.76
Rice	68.86
Cassava	53.74
Yam	44.73
Bean	14.65
Soybean	9.07
Tomato	74.95
Pepper	146.10

Source: Agricultural Statistical Division, Benin (2015)

Impact of agricultural expenditure on economic development

The impact of expenditure in the agricultural sector is appreciated here by improving agricultural performance and in fine by increasing the contribution of agriculture to the overall economic growth, and deficit reduction in the trade balance.

Contribution of agriculture to Gross Domestic Product GDP

Agricultural Gross Domestic Product (GDP) has grown steadily in recent years. Indeed, after the fall in the growth rate recorded during the period of 2008-2010, there was a revival of growth of agricultural GDP, which rose from 1.5% in 2010

The agricultural sector's contribution to GDP has evolved globally increasingly over the last years.

- to 6.5% in 2014, an increase of 5 points.
- However, efforts must be pursued to improve the growth rate of agricultural GDP, in order to realize double digits of National Economic Growth. Agricultural sector's contribution to GDP has evolved globally, in increasingly order over the last seven years with an average rate of 0.11%. However, it decreased by 0.7 points between 2011 and 2012 and by 0.5 points between 2013 and 2014.

➤ Contribution of agriculture sector to economic growth

- In Benin's economy like else countries in Sub-Saharan Africa, agricultural sector contributes significantly to the economic growth and induces the same time a performance of secondary and tertiary sectors by providing the raw materials essential for their overall development.

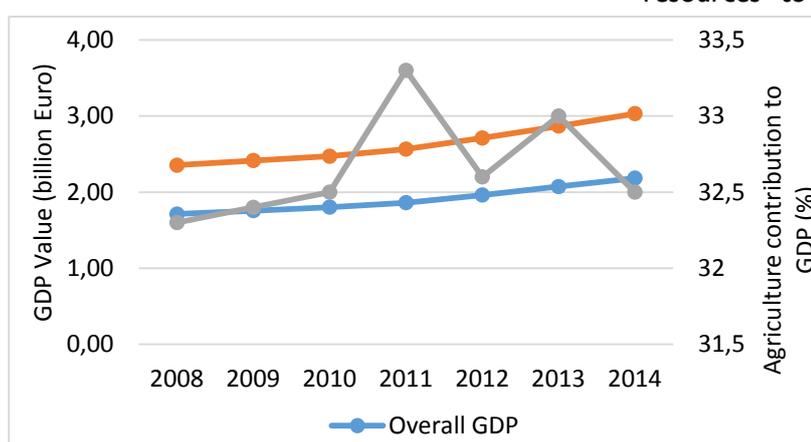


Figure 2: Agriculture sector contribution to economic growth

Source: INRAB Financial Resource Office

- The contribution of agricultural sector to economic growth has decreased from 2008 to 2010 and after, increased from 2010 to 2012, when it reached its highest level of 2.4% in 2013.
- This is mainly due to measures taken

by the Government to gradually reduce the previous food, economic and financial crises and then increase in agricultural production generally, and particularly the gradual increase in cotton production.

Conclusion and perspectives

During the past decades, efforts to increase budgetary allocations to the agricultural sector, although quite remarkable, are still far from meeting the necessary requirements. The budgetary resources allocated rate of country to agriculture, averaged 12.63% since 2008, which is above the 10% targeted by the Maputo agreements in 2004, has drastically dropped below 10% for effective public expenses and is only around an average of 6.81% over the same period. This current level of allocation of financial resources to the agricultural sector, although

commendable, shows that there is still a need to continue the efforts initiated by the government and TFP to increase such resources for research and agricultural development.

This is an important concern of agricultural research which has registered in recent decades, insufficient and inadequate investment.

Thus, harmonization of Benin's internal resources with those of development partners should occupy an important place. Also, in order to be more efficient, agricultural research policy should be in the future, focused on financing through less fragmented mechanisms than those previously known. PTFs are expected on these issues to strengthen the technical capacity and financial autonomy of research institutions.

Agricultural research policy should be in future, focused on financing through less fragmented mechanisms. TFP are expected on these issues to strengthen the technical capacity and financial autonomy of research institutions

Bibliographic references

- **Ahoyo Adjovi R. N., Djenontin J. A., Mensah G. A., 2012.** Evaluation of economic policy measures on poverty and food security in Benin: Analysis of the effect of improved agricultural investment. Technical Sheet, 8p. Legal Deposit N ° 6500, of December 31st, 2012, 4th quarter, National Library (BN) of Benin. ISBN: 978-99919-1-204 2.
- **Ahoyo Adjovi R. N., Djenontin J. A., Vikeye E., Mensah G. A., 2012.** What economic policy measures for the agricultural sector and the fight against poverty in Benin? Bulletin of Agronomic Research of Benin (BRAB), N°72, December 2012. Pp 37-48.
- **Floquet A., Mongbo R. L., 1998.** Producers in need of alternatives. Land degradation, restructuring of agricultural land and urbanization in Lower Benin, Weikersheim, Margraf, ISBN 3-8236-1287-5, 182 p
- **Sossou C. H., Lebailly P., Hinnou C. L., 2013.** Agricultural typology testing focused on financing agricultural production in Benin. Communication to be presented at the 7th Social Science Research Days INRA-SFER-CIRAD. Angers (Agro campus West - Center of Angers), France, 12 and 13 December 2013; JEL Code: D13-C14-Q12-Z13
- **Adegbola Y. P., 2010.** Economic Analyses of Maize Storage Innovations in Southern Benin. Thesis Submitted in fulfillment of the requirements for the degree of doctor at Wageningen University. ISBN 978-90-8585-639-9, 191 pages.