



AFRICAN UNION
**INTERAFRICAN BUREAU
FOR ANIMAL RESOURCES**



PUBLIC INVESTMENTS AND PAYOFFS IN THE LIVESTOCK AND ANIMAL GENETIC RESOURCES IN AFRICA

Policy Brief: 8

KEY MESSAGES

Among issues raised concerning public investment in agriculture, livestock and AnGR that may have policy underpinnings are:

- *The need for strengthening data collection and monitoring and evaluation (M&E) for the purpose of demonstrating the effectiveness of previous investments.*
- *The need to directing advocacy at appropriate organs of governments, including ministries of finance and economic planning.*
- *The need to properly document the socio-economic impacts of livestock enterprises on value chain actors, and valuation of such impacts in monetary terms as inputs for advocacy.*
- *The need for the budget process that give due attention to proper analyses of current budgetary needs rather than just looking at the figures of the previous year. Explicit allocations to subsectors, including AnGR, to improve M&E which in turn can provide more reliable data for planning.*
- *In-depth analysis of the possible impacts of investments in particular subsectors on other subsectors. In the case of investments on importation and use of exotic breeds, the short and long term impacts on local adapted breeds ought to be assessed ex-ante prior to investments.*

INTRODUCTION

The African Union has placed a great emphasis on agricultural development as an engine for rural development and the wider economic sectors. As such the implementation of the Comprehensive Africa Agriculture Development Programme (CAADP) is a priority. The continental body seeks to encourage countries to honor their commitments under the Maputo Declaration that requires Governments to allocate at least 10% of their National Budgets in support of the Agricultural sectors in their respective countries. The backdrop of the Maputo Declaration is the observation that for Africa as a whole the average agricultural spending as a percentage of total spending was about 6.4%, 5.2% and 4.1% for 1980, 1990 and 2000, respectively.

In most of the countries in Africa, the livestock sub-sector is an integral part of the agricultural sector and the low public spending in agriculture affects the livestock sub-sector (Dorosh and Haggblade, 2003; Diao et al., 2010). Despite the multiple roles of the livestock sector to national economic development, public spending is reported to be particularly low (Anisimova, 2016). In 2010, the Ministers responsible for animal resources in Africa meeting in Uganda had the cause to express concerns about the low public and private investments in the animal resources sector and the low compliance rate in the implementation of the Maputo Declaration by Member States.

The low ranking of importance assigned to the livestock subsector denies the sub-sector of adequate public investments by governments. A primary contributing cause is said to be the inadequate primary and aggregated data on all aspects of the livestock sub-sector needed for economic planning and investment decisions. In response to this gap the AU-IBAR has in recent times set up a Framework to enable countries to monitor and conduct strategic analysis of the performance and opportunities for investments in the livestock sector. The Framework envisages that data collected, analyzed and consolidated can be reported to Ministerial meetings and to other stakeholders

Experiences from the livestock subsector in Africa also tend to establish that even the private financial institutions also do not make adequate investments in terms of credits/loans to the livestock subsector when compared with crop subsector. Within the livestock subsector, animal health and disease control appear to receive larger support than other areas such as the programmes maintaining species and breeds (conservation), characterization (understanding), development of breeds (genetic improvement programmes), and feeding and feeds management.

PUBLIC INVESTMENT IN AGRICULTURE AND THE LIVESTOCK SUB-SECTOR IN AFRICA

The available published information show that disaggregating what is spent on the livestock sub-sector within the agricultural budgets of countries in Africa is a complicated task (Akroyd and Smith, 2007). Yet, there is a widely held perception in most countries that livestock is not getting a fair share of the agricultural budget. It is argued that for a correct picture on public spending in the livestock sub-sector, their relative size within the agricultural sector budgets and the possible distribution among recurrent and capital spending need to be established as a basis for further analysis. Such an analysis was done, by the FAO, for 14 countries in the Southern Africa region (SADC) in 2010 (Agyemang and Han, 2010, FAO, 2014). The SADC Regional Agricultural Policy Framework (SADC, 2011) identified insufficient investment in agriculture and related sectors as one of the main causes of limited agricultural growth and food insecurity. Hence, financing flows to agriculture from both public and private sources have experienced a decline over time, while some countries have relied excessively on food aid. The analysis was undertaken to document the level of public spending on the Agriculture sectors and livestock sub sectors. Due to data limitations five countries namely Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe were included in the public spending analysis. Key findings from the analysis included the following:

- The combined yearly Gross Domestic Product (GDP) for the 14 countries within the region averaged over 5 years (2005-2009) was US\$ 399.7 billion. The range was from US\$ 1.54 billion (Lesotho) to US\$ 255.7 billion (South Africa).

- The combined yearly Agricultural GDP averaged over 5 years was US\$ 28.0 billion. The range for the Agricultural GDP was from US\$ 0.152 billion (Swaziland) to US\$ 7.90 billion (South Africa).
- The corresponding range in the percent Agricultural GDP to the total GDP was from 2.5% (Botswana) to 60.3% (DRC). Excluding the dominant figures for South Africa, the 5-year average GDP and the Agricultural GDP, for the 14 countries, were US\$ 144 billion and US\$ 20.1 billion, respectively.
- For the years 2005 and 2009, the average total GDP for the 14 countries were US\$ 75.3 and US\$ 177.3 billion, respectively. The corresponding Agricultural GDP were US\$ 13.3 and US\$ 32.9 billion. Thus, the respective Agricultural GDP shares were 20.7% and 20.8% for the two years, 2005 and 2009.

The results from the five countries showed that the share of the public support to agriculture in relation to the overall budget was 6.7%. In comparison to Agriculture's contribution to GDP which was found to be 14.6% in the five countries and 26% in the region as a whole it was argued that the public spending on Agriculture in the region as a whole and in the five countries fell short from what would be expected from the basis of GDP contribution. The overall figure also fell short of the agreed 10% in the Maputo Declaration. None of the five countries reached the goal of 10%. This was in contrast to the Education Sector where the annual support averaged 16.5%, with Swaziland recording 22% followed by Madagascar with 17.4%. Public support to the Health Sector averaged 6.4%, very close to 6.7% support for Agriculture. Mauritius' public spending in the Health Sector averaged 8.7% and was nearly three times of the support to Agriculture which averaged 3.2%.

Similarly, public support to the Livestock sub-sector relative to the overall support to Agriculture estimated from a rather limited information from three of the five countries Zambia, Zimbabwe and Swaziland revealed an average 17.7% in 2009 with the highest livestock share of 26.5%. With a GDP share of 28% - 36% relative to the Agriculture GDP, it is clear that the livestock sectors did not receive adequate public support. In terms of the livestock share of the total budget for the five countries, this amounted to 1% or 16 times of the Education budget. The overall conclusion was that the percentages of the Agricultural budgets to total national budgets clearly revealed that in comparison with Agriculture's contribution to overall GDP, the public spending in Agriculture was much lower than expected. The same was found to be true for livestock. Thus, it was pointed out that there was a need for policy review and action to redress the disparities, to ensure continued contribution of agriculture and livestock to the economies in the region. These findings from the Southern Africa region are consistent with data from other regions. For example, in spite of the fact that Kenya's agricultural sector's contribution to national GDP is about 25%, the budget allocation to the agricultural sector in 2015/16 and 2016/17

were 2% and 1.33%, respectively. The corresponding allocation to the livestock sub-sectors were 0.49% and 0.82% (Kerosi, 2017). Table 1 shows for Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe the Mean Total GDPs, the Agricultural GDP and the Livestock GDP over the five years (2005 to 2009).

Table 1: Mean Total GDP (2005/2009), Agricultural GDP and Livestock GDP (X1000 US\$)

Country	Total GDP	Agricultural GDP	Livestock GDP in 2005
Madagascar	6,040,000	1574.5	306
Mauritius	7,130,500	412.0	105
Swaziland	2,337,000	152	10
Zambia	8,663,000	1568	243
Zimbabwe	5,584,000	840	-
Average	5,859,700	726,000	166,067
Total	29,298,500	3,630,000	664,268

Source: Agyemang and Han (2010)

Table 2 presents the comparisons of the agricultural and the livestock shares of the total National budgets in Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe over the five years (2005 to 2009).

Table 2: The present Agricultural and Livestock shares of the total National budgets in Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe over the five years (2005 to 2009).

	% of the Agricultural GDP to the Total GDP		% of the Livestock GDP to the Agricultural GDP	% of the Livestock GDP to the Agricultural GDP
	2005	2009	2005	2005
Madagascar	25.3	26.4	34.3	8.6
Mauritius	7.2	4.9	26.6	1.9
Swaziland	7.6	8.4	7.7	1.0
Zambia	13.3	19.1	42.2	5.6
Zimbabwe		19.7		
Average	14.8	15.7	27.7	4.2

Source: Agyemang and Han (2010)

Table 3 presents the relative spending (% of Total Budget) in agriculture and livestock for 2005 and 2007 in Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe.

Table 3: Relative Spending (% of Total Budget) in Agriculture and Livestock for 2005 and 2007 in Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe

Country	Agriculture (% of the Total Budget)		Livestock (% of the Total Budget)	
	2005	2007	2005	2007
Madagascar	9.5	6.7	-	
Mauritius	3.9	2.7	-	
Swaziland	7.0	8.2	1.0	0.7
Zambia	5.7	8.8	-	1.1
Zimbabwe	-	2.5	-	0.7
Average	6.5	6.6	1.0	0.8

Source: Agyemang and Han (2010)

Table 4 presents comparisons that have been made between the GDP shares and the budget shares for the Agricultural and the Livestock sectors for 2005 and 2009, in Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe.

Table 4: Comparisons between the GDP shares and the budget shares for the Agricultural and the Livestock sectors for 2005 and 2009, in Madagascar, Mauritius, Swaziland, Zambia and Zimbabwe

Country	Comparisons between the Agricultural GDP and the Total GDP				Comparisons between the Livestock GDP and the Agricultural GDP		
	2005		2009		2005		2009
	Budget %	GDP %	Budget %	GDP %	Budget %	GDP %	Budget %
Madagascar	25.3	9.5	26.4		34.3		
Mauritius	7.2	3.9	4.9		26.6		
Swaziland	7.6	7	8.4	9	7.7	14.3	8.6
Zambia	13.3	5.7	19.7	9.5	42.2		31.8
Zimbabwe	16.2		19.1	2,5	34		39
Average	13.3	6.5	15.7	6.9	27.7	14.3	26.5

Source: Agyemang and Han (2010)

The analysis, in terms of space occupied by agriculture (as indicated by percent of agricultural land), the percentage of people engaged in agriculture, the total contribution of agriculture to total GDP, etc., concluded that the sector was considered important for the region. Similarly, the livestock sectors in the countries of the region were found to be relatively vibrant, with increases in livestock populations from year to year, for most species in many of the countries. The production from regional livestock herds and flocks contributed to an estimated annual GDP of US\$ 7.34 billion which accounted annually for about 28% to 35% of the annual combined Agricultural GDP. The livestock GDP was also estimated to be 5% of the total GDP.

Thus, from the view point of the percentage of people engaged in agriculture, agriculture sectors' contribution to national and regional combined GDP and livestock contributions to Agriculture and the total GDP, it was concluded that there are economic justification for the governments to support these sectors in terms of budget allocations, at least in some proportions of their importance to the overall economy.

Investment on Animal Genetic Resources in Africa

In 2014/2015, AU-IBAR undertook an analysis on the status and development of animal genetic resources (AnGR) in Africa. The analysis included 42 countries and was part of a broader programme whose goal was to get countries to be effectively involved in the sustainable utilization of AnGR, and to carry out their functions in ways that ensure food security and improved livelihoods. As part of the analysis, information was sought from countries on the level and nature of investment on AnGR in their respective countries. Countries were asked if they had made significant investments and undertaken initiatives to import and use exotic AnGR, and to categorize whether the investments were very

significant, significant, not significant, and to state if there was no investment in that aspect of AnGR management. Countries were also asked to describe what have been the results and impacts of the initiatives (investments on import and use of exotic AnGR). The underlying issues the question sought to address were the quick drive to increase livestock productivity through the use of exotic AnGR and the huge negative consequences that exotic AnGR (live animals or semen) may have on local adapted breeds, through crossbreeding and breed replacement.

Crossbreeding involving exotic breeds and local/indigenous breeds has been identified as the single largest (in scope and duration) intervention in AnGR development and with longest impact on livestock populations. Consequently, investment on importation and use of exotic AnGR can be a good indication of the overall investment on AnGR in Africa. Investments on conservation of local AnGR is another good indication of overall investment in the sub-sector. However, planned crossbreeding involving exotic and local breeds could be part of conservation efforts that aim at “adding value” to the conserved breeds.

Investments and initiatives on the importation and use of exotic AnGR

Forty (40) countries provided information on the status of investments and initiatives on the importation and use of exotic AnGR in their countries. Seven (7) or 18% of the countries reported that very significant investments and initiatives had been made in the areas of importation and use of exotic AnGR (Table 5). Twenty (20) or 50% of the countries reported the investments and initiatives as significant. However, 10 countries reported that the investments and initiatives were not significant (Table 5). Three (3) countries (Liberia, Guinée and Djibouti) reported that no such investments and initiatives in support of importation and use of exotic AnGR had taken place. Table 5 presents the distribution of countries by level of investments on importation and use of exotic AnGR.

Table 5: Distribution of Countries by Level of Investments on Importation and Use of Exotic AnGR

Category of Investment	Country making investment
Very Significant	Benin, Botswana, Gabon, Lesotho, Kenya, Comoros
Significant	Algeria, Burkina Faso, Burundi, Capo Verde, Congo, Cote d'Ivoire, Eritrea, Madagascar, Malawi, Mauritania, Mozambique, Namibia, Niger, Rwanda, Sao Tome, Senegal, Seychelles, Tanzania, Togo
Non-Significant	Cameroon, DRC, Ghana, Guinea Bissau, Mauritius, Mali, Nigeria, Sierra Leone, Sudan, The Gambia
No investment	Liberia, Guinea, Djibouti

On the impacts of the initiatives, thirteen (13) or 33% of the countries indicated that the impacts had been very significant (Table 6). Included in the 13 were five (5) of the seven (7 or 71 %) of the countries which mentioned that investments were very significant. These five countries were Botswana, Gabon, Lesotho, Comoros and Uganda. Another

five (5) countries (Burundi, Côte d'Ivoire, Namibia, Senegal, Rwanda), of the 13 reported that very significant impacts had indicated significant investment and initiatives (Table 6). Ten (10) or 25% of the countries reported that only moderate impacts, whereas 16 or 40% of the countries reported that impacts were not significant (Table 6). One country (Congo) reported negative impact from the investments made on the importation and use of exotic AnGR. In addition to the listed positive impacts, Kenya also reported some negative impact with respect to a systematic replacement of locally adapted breeds. Botswana also reported the slow erosion of the country's indigenous AnGR over the years due to indiscriminate and uncontrolled cross breeding, caused by the importation of exotic AnGR. Table 6 present the level of impact and payoffs from investments made on importation and use of exotic AnGR.

Table 6: Level of impact and payoffs from investments made on importation and use of exotic AnGR.

Level of impact from Investment	Country making investment
Very Significant	Botswana, Burundi, DRC, Cote D'Ivoire, Gabon, Lesotho, Comoros, Ghana, Namibia, Uganda, Senegal, Rwanda, Sudan
Significant (moderate)	Algeria, Capo Verde, Congo, Niger, Tanzania, Togo, Zambia, Eritrea, The Gambia, Kenya, Mozambique
Non-Significant	Benin, Burkina Faso, Cameroon, Djibouti, Guinea, Guinea Bissau, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Nigeria, Sao Tome, Seychelles, Sierra Leone
Negative	Congo

Examples of impacts of investments and initiatives on the importation and use of exotic AnGR

In West Africa, Ghana gave instances which the Ministry of Food and Agriculture (MOFA) brought in some exotic AnGR. This was when commercial pig farmers, operating intensive and semi-intensive systems, were given improved exotic breeding stock, mainly Large White from Europe to help improve on productivity. Improved Djallonké rams from Côte d'Ivoire were also made available to participating out-grower farmers for crossing with the local Djallonké ewes which contributed to increase birth, weaning and adult weights. Semen of Friesian cattle was imported and used on local Sanga cows to improve on the milk production of the Sanga and also ensure that the crossbreds adapt to the harsh environment. The latter project was reported to be largely successful. Based on that success a peri-urban dairy project was consequently undertaken in which participating cattle farmers had their local cows artificially inseminated with Friesian semen. The F1 generation animals were kept under zero grazing by the farmers and when they calved, the Government Amrahia Dairy Farm bought the milk and collected it from the farms for processing. This programme was said to have had its challenges including logistical problems, particularly in the transport of semen, irregular supply of semen and missed heats. Senegal reported that many of the programmes on the use of artificial insemination based on semen of exotic breeds were funded by the Government to improve the milk

and meat production of local breeds. This initiative was reported to have resulted in the increase of the use Artificial Insemination, the development of the dairy farms in peri-urban areas, the creation of a National Center for Genetic Improvement, the coming into existence of many mixed dairy cattle genotypes, which had resulted in an increase of local milk production.

In East Africa, Uganda listed impacts including the fact that the country's capacity has increased from being a net milk importer to a net milk exporter. Export of exotic dairy cattle to Rwanda and Tanzania (especially Friesian and Jersey, and crossbreds) was cited as a positive impact. The investments had also helped Rwanda to avoid importation of meat for the domestic market. The country exports one day old commercial chicks. For Comoros the increase in production of milk from 2 liters to 15 liters/day in cattle, the doubling of weight of the carcass to 200 kg, the significant reduction in calving intervals, were reported to have resulted from investments and initiatives in the importation and use of exotic AnGR. In sheep and goats breeding, the net increase in the weight of the carcass, the reduction in age at first parturition and the dramatic reduction in mortalities were all associated with the investments. In poultry, the adaptation of the breeds that were introduced and their crosses with local breeds had led to very significant increase in the carcass weight and the number of eggs laid and subsequently marks the improvement in the income of the women in the sub-sector.

In Southern Africa, Lesotho stated that for the improvement of the wool and mohair quality, it has imported wool Merino sheep and Angora goats from South Africa. Other imported animal genetic material included breeding stock for dairy cattle and pigs, as well as semen. As the result of these imports the country now produces 0.14% of the wool and 14% of the mohair of the global production and that Lesotho has become the second most important mohair producer in the world after South Africa. For Botswana, commercial livestock production was reported to have significantly increased over the years, because of the improved performance of crossbreds. This resulted from the use of improved exotic AnGR. It was further stated that this has also made it possible to maintain the beef export market for a long time. The literacy rate of the population was reported to have increased because people were able to pay school fees for their children and even took them through tertiary education. The negative impact although not yet quantified, was said to be the gradual erosion of the country's indigenous AnGR over the years due to indiscriminate and uncontrolled crossbreeding activities.

In Central Africa, Cameroon reported that the results of the Government investment in the importation of exotic breeds were less conclusive, in the sense that the outcomes from the crossing between local breeds and exotic breeds had not been sustained. It is difficult to understand the impact of the initiatives.

For North Africa, Algeria is where most of the investments were made in dairy cattle, and to a lesser degree in goats, the impacts on milk production had been only moderate. Mauritania reported that the importation of bulls semen for the improvement of milk production of crossbreds had shown significant results to the extent that it has encouraged the Government to establish additional breeding stations in different regions of the country.

In summary, of the 40 countries which provided information on investments and initiatives in support of importation and use of exotic breeds by their governments, as high as 37 or 93% of the countries reported such investments and initiatives had taken place. Twenty seven or 68% of countries qualified the investments as very significant or significant. The high percentage of countries which had made investment may reflect the importance the countries attach to, and believe in this aspect of AnGR management. For the countries selected for in-depth information on the impacts from the investments and initiatives, most of them reported on positive impacts, not only on livestock productivity, but improvement in socio-economic status of people who owned the imported exotic breeds. Although some negative impacts were mentioned by some countries, on the balance the list of positive impacts was much longer than that of the negative impacts.

SETTING THE POLICY AGENDA

The lessons from the analyses on public spending on agriculture and livestock in the SADC countries reported in this paper show that there are various levels of challenges and problems associated with the processes and the tracking of public spending on livestock sectors. Among the problems and causes are:

- The inclusion of livestock budgets as part of the agriculture budget making it difficult to extricate the real amounts allocated to livestock sub-sector.
- Lack of dis-aggregation of livestock budgets into various sub-activities, for example health, feed development, AnGR development, making it difficult to gauge the efficiency in each sub-sector
- Weak monitoring and evaluation of livestock projects which results in Livestock Departments of Ministry of Agriculture not able to demonstrate that its spending can be effective, in part because of difficulties in presenting results yearly, due to long gestation periods of livestock projects.

For the Study on AnGR conducted by AU-IBAR in 2014/15, the following were noted.

- Information on monetary investment was not asked for, therefore impossible to estimate public funding on AnGR per se.
- Impacts from investments were generally not expressed in monetary terms.
- Not much indications that the improvement in socio-economic conditions observed for livestock owners and families, and on the general populations were used for advocacy

with policy makers, in ways that could bring more support for the sub-sector.

- The possible negative impact on local AnGR arising from importation and use of exotic AnGR was not specifically asked for, and only a handful of MS provided some information on the subject.

POLICY OPTIONS AND RECOMMENDATIONS

Finding the proper balance between GDP contribution and expenditure levels would obviously benefit from policy initiatives. For investment in AnGR, both public and private support would be needed to quicken the pace in closing the gap between the needed investments and what are previously available in most countries. Policy options include:

- Deliberate actions by governments to increase budgetary provisions to agriculture and related sectors, and within the sector increase livestock's share relative to its contribution to Agricultural GDP.
- Provide enabling policies that promote livestock enterprises within the agriculture sector, paying attention to policies that encourage private sector driven value chain development strategies.
- Deliberate actions by public and private investment in all aspects of AnGR management, from supporting efforts to understanding what resources are available and their special or attributes (characterization), developing and maintaining (conservation and use) and supporting capacity building and the creation of conducive policy and governance environments, targeting all actors in the livestock value chains and production systems, in ways that trigger increased production, value addition and marketing among entrepreneurs. The goal will be to reduce the need of continued public support to the sub-sector in the long run.

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