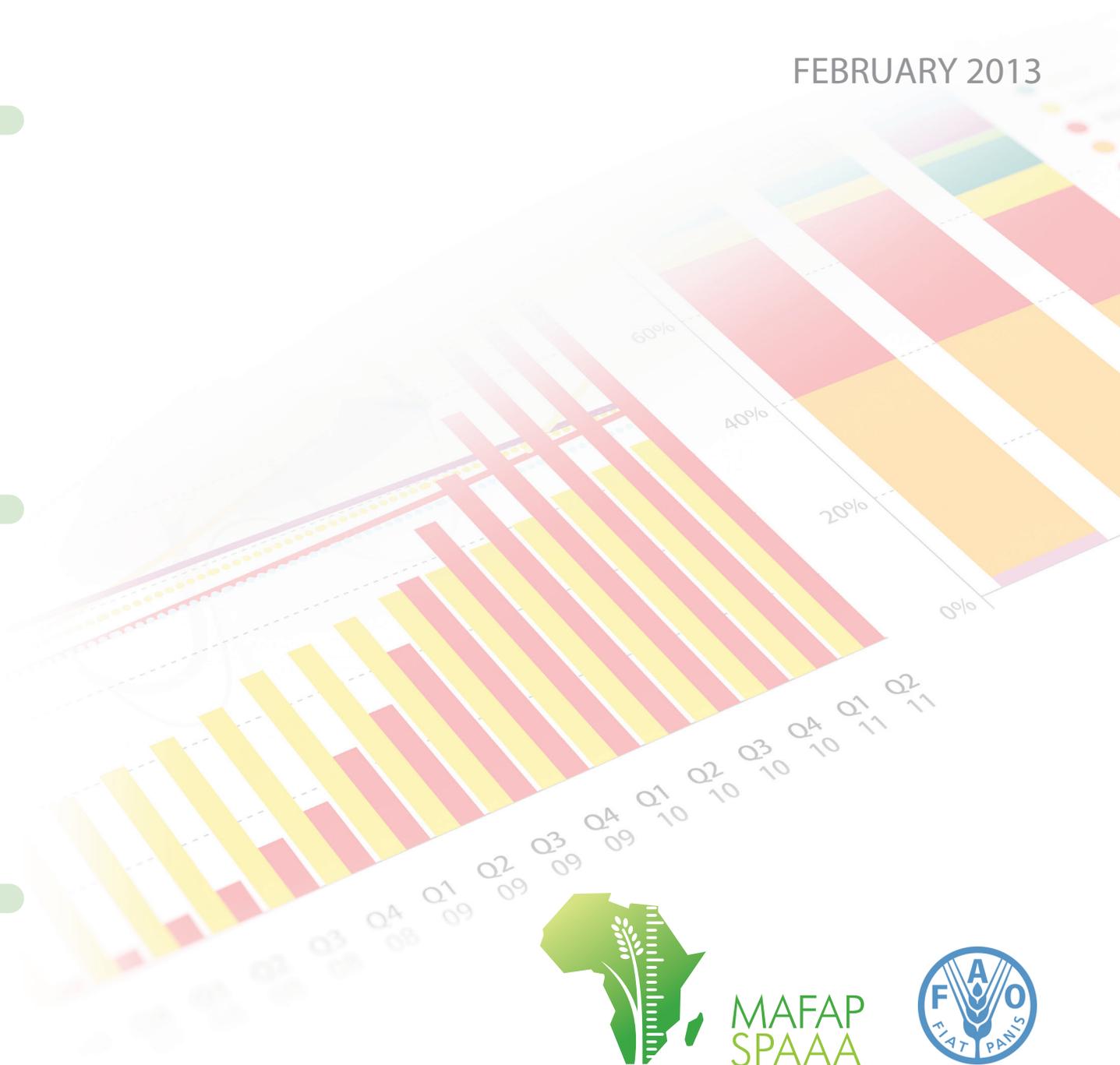


# MONITORING AFRICAN FOOD AND AGRICULTURAL POLICIES (MAFAP)

## REVIEW OF FOOD AND AGRICULTURAL POLICIES IN MALI 2005-2011

### COUNTRY REPORT

FEBRUARY 2013



MAFAP  
SPAAA



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## List of acronyms

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ACS	Agricultural capital stock
ADP	Agricultural Development Policy
AFD	French Development Agency
AfDB	African Development Bank
AOPP	Association of Professional Farmers' Organizations
APCAM	Permanent Assembly of Mali Agricultural Chambers
API	Investment Promotion Agency
AQMI	Al-Qaeda in Islamic Maghreb
ARD	Agricultural and rural development
ARS	Agricultural and Rural Sector
BCEAO	Central Bank of West African States
BMS	Malian Solidarity Bank
BNDA	National Agricultural Development Bank
CAADP	Comprehensive Africa Agriculture Development Programme
CET	WAEMU's Common External Tariff
CFDT	French Company for the Development of Textile Fibres
CMDT	Malian Company for Textile Development
CNOP	National Coordination of Peasants' Organizations
CPS/MS	Planning and Statistics Cell, Ministry of Health
CPS/SDR	Planning and Statistics Cell for the Rural Development Sector
CSCR	Strategic Framework for Growth and Poverty Reduction
CSLP	Strategic Framework of the Fight Against Poverty
DEA	Energy and Food Availability
DNDP	National Planning and Development Directorate
DNSI	National Statistics and IT Directorate
DPI	Development and performance indicators

ECOWAP	Regional Agricultural Policy for West Africa
ECOWAS	Economic Community of West African States
EDSM	Demographic and Health Survey
EIG	Economic interest grouping
ELIM	Light Integrated Household Survey
EMEP	Malian Poverty Evaluation Survey
FAO	Food and Agriculture Organization of the United Nations
FAPDA	Food and Agriculture Policy Decision Analysis Tool
FCFA	Franc of the African Financial Community
FEBEVIM	National Federation of the Cattle and Meat Sector in Mali
FNDA	National Fund for Agricultural Development
GFRA	Global Forest Resources Assessment
GRET	Professionals for Fair Development
HDI	Human development index
IER/ECOFIL	Sector Economics Programme of the Institute of Rural Economy
IFPRI	International Food Policy Research Institute
ILO	International Labour Organization
INSTAT	National Statistical Institute
LOA	Agricultural Orientation Law
MA	Ministry of Agriculture
MAFAP	Monitoring and Analysis of Food and Agricultural Policies in Africa
MDG	Market development gap
MEA	Ministry of the Environment and Sanitation
MEF	Ministry of Economy and Finance
MNLA	National Movement for the Liberation of Azawad
NEPAD	New Partnership for Africa's Development
NRA	Nominal rate of assistance

NRP	Nominal rate of protection
ODA	Official development assistance
ODI	Overseas Development Institute
OECD	Organization for Economic Co-operation and Development
OHVN	Office of the Upper Niger Valley
OMA	Observatory of Agricultural Markets
OMBEVI	Office of Malian Livestock and Meat
OPAM	Office of Agricultural Products of Mali
PAPAM	Fostering Agricultural Productivity Project in Mali
PAU	WAEMU's Agricultural Policy
PCDA	Agricultural Competitiveness and Diversification Programme
PDA	Agricultural Development Policy
PIP	Policy Intelligence and Preparedness
PNIR	National Rural Infrastructure Programme
PNISA	National Agricultural Sector Investment Plan
PO	Producer organization
PPP	Purchasing power parity
RDS	Rural Development Sector
RESIMAO	West-African Market Information Systems Network
RGA	General Census of Agriculture
SCAER	Agricultural Credit and Rural Equipment Service
SDDR	Master Plan for Rural Development
SIM	Market Information System
SLIS	Local Sanitary Information System, Ministry of Health
SOFA	The State of Food and Agriculture
TCSP	Policy Assistance Support Service
TFPs	Technical and financial partners

UNDP United Nations Development Programme

UNESCO United Nations Educational, Scientific and Cultural Organization

UNICEF United Nations Children's Fund

WAEMU West African Economic and Monetary Union

WDI World Development Indicators, World Bank

WHO World Health Organization

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## **Organization and partners**

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Implementation of MAFAP in Mali is being jointly handled by the Institut d'Économie Rurale – Économie des Filières (IER-ECOFIL) and the Cellule de Planification Statistique – Secteur du Développement Rural (CPS-SDR), with the support of the of the Food and Agriculture Organization of the United Nations (FAO). To carry out the work, a technical secretariat has been set in place in the IER-ECOFIL, while CPS-SDR was identified as the policy dialogue partner.

## Executive Summary

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This report provides an in-depth analysis of the impact of food and agricultural policies in Mali. It draws on technical notes that provide detailed analyses of eight agricultural products which account for 65% of the total value of agricultural production in Mali. The report also contains findings from an analysis of public expenditure on food and agriculture in Mali from 2006 to 2010. It looks at the combined impact of public expenditure and policies on incentives to production. Finally, the report looks at how well public expenditure and policy measures in the country are aligned, and if agricultural policies are consistent with overall objectives.

The evidence and analysis in this report are based on the Monitoring African Food and Agricultural Policies (MAFAP) project's rigorous methodology for measuring the impact of agricultural and food policies. The analysis was based on disaggregated data and is unique in its level of detail.

Policy recommendations, based on concrete evidence, are expected to contribute to policy dialogue in Mali and beyond. In order to make the findings more relevant for policy making, MAFAP work was carried out both by FAO and its partners in Mali: the Rural Economics Institute (IER) and the Ministry of Agriculture's unit in charge of planning and coordinating agricultural policies (CPS-SDR).

### Key messages

- From 2005 to 2010, producers of all the commodities analysed in Mali, except for cotton, received prices that were lower than what they would have been in a more enabling policy environment.
- Cotton producers benefit from strong policy support, and domestic prices have been consistently higher than international reference prices. Support is provided through a combination of fixed price policies and input subsidies.
- One fourth of the government's agriculture specific budget is spent on rice. Spending has centred on irrigation projects and input subsidies, which appear to have boosted production. However, rice producers have not received adequate price incentives. This is because policies such as import taxes and low retail prices, have focused on protecting consumers especially during the recent food crisis. Furthermore, producers are often not aware of the higher price their products may fetch in international markets due to a lack of market information and other inefficiencies. All these factors may have a dampening effect on rice production especially in the medium-term.
- Producers of staple crops such as sorghum and millet receive prices that are much lower than those what they would potentially receive using regional prices as a benchmark. Indeed, the government of Mali restricts exports of these products, which are grown by small scale farmers for their own use, in order to ensure food security. Furthermore, the government does not provide budgetary support to boost production and create marketing opportunities. The government promotes farmers' own consumption of staple crops, and consequently devotes a smaller share of its budget to food aid.

- Although cattle is Mali's third largest agricultural export, the cattle sector receives less than a tenth of the agriculture specific budget. With increasing demand in the subregion, cattle production and trade in Mali has a very high potential for growth which remains untapped. This is partly due to the lack of policy support.
- Producers in all commodity value chains, including cotton, would receive higher prices if structural inefficiencies were addressed by long-term policies. These inefficiencies include weak marketing infrastructure, traders' excessive margins due to producers' lack of information and organization, and high illicit taxes along trade routes. Developing better storage systems would allow producers to counter the effects of low seasonal prices and both stabilize and increase prices for most commodities.

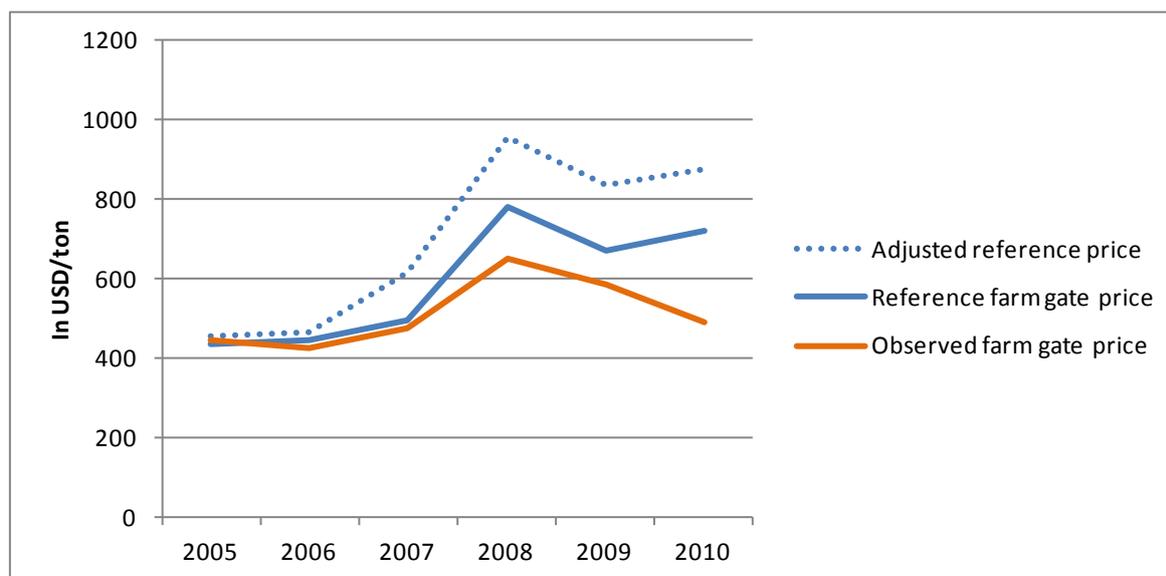
Public expenditure, agricultural policies and overall policy objectives are not sufficiently aligned. On one hand the government officially seeks to increase exports. On the other hand, tariffs on imported rice have been lifted, exports of staples have been restricted and cattle producers do not receive any support for exporting their products. Despite the stated objective of boosting rice production through input subsidies, the government does not support producers with price incentives.

## Key findings and recommendations

**Despite significant public expenditure aimed at boosting rice production, current policy environment keeps prices low for rice producers.**

Rice is Mali's main agricultural commodity in terms of volume with production reaching over 1.2 million tons in 2010. The government actively seeks to boost rice production to augment producers' income, meet domestic demand and make Mali a net exporter of rice. However, imported rice competes with local rice in national markets.

Since 2000, government policies have focused on two objectives: keeping prices affordable for consumers and providing support to producers to boost production. However, MAFAP analysis shows that these two objectives have only been partially achieved. Since 2007, prices have remained low for producers despite policy support through the *Rice Initiative*, an input subsidy policy launched in 2008. This is due to a combination of factors including measures to lower the price of imported rice after the 2007-2008 food crisis, inefficiencies along the value chain leading to high transport costs, and an overvaluation of the CFA franc against the US dollar.

**Figure 1. Policy support through prices for rice producers in Mali, 2005-2010**

Rice producers in Mali receive a price (observed price) that is lower than the price they would obtain in the absence of the consumer-oriented domestic policies (reference price). Removing inefficiencies in the rice value chain such as poor infrastructure and the weak organization of producers, would result in higher prices for producers (adjusted price).

#### Recommendation based on MAFAP analysis

In order for Mali to become a net exporter of rice, the government will need to boost rice production by providing better incentives to producers. These incentives will need to be balanced with policies aimed at keeping prices low for consumers.

**Policy support for cotton producers is strong but may not be sustainable. High levels of support for cotton may contradict other policies aimed at diversifying agricultural production.**

Cotton is the only commodity for which producers receive production incentives through high prices. Policy support for cotton has been strong for decades since it is Mali's main cash crop.

The Malian Company of Textile Development (CMDT), founded in 1974, is a semi-public company that manages the cotton value chain at all levels. It has helped subsidize cotton production by providing producers with cheaper, pre-financed input subsidies and equipment before the yearly agricultural season begins. The CMDT also fixes prices for cotton which allows producers to receive prices that are consistently higher than international benchmark prices.

MAFAP analysis revealed that although cotton producers were benefitting from high levels of support, ginning factories (i.e the CMDT) were losing out in the current system. This suggests that the CMDT has incurred debts in order to support cotton production. Strong support for cotton contradicts the objective of crop diversification officially pursued the government. Diversifying crop production would make the country less vulnerable to the fluctuation of the price of cotton in international markets, and less reliant on a sector whose productivity has been decreasing in recent years.

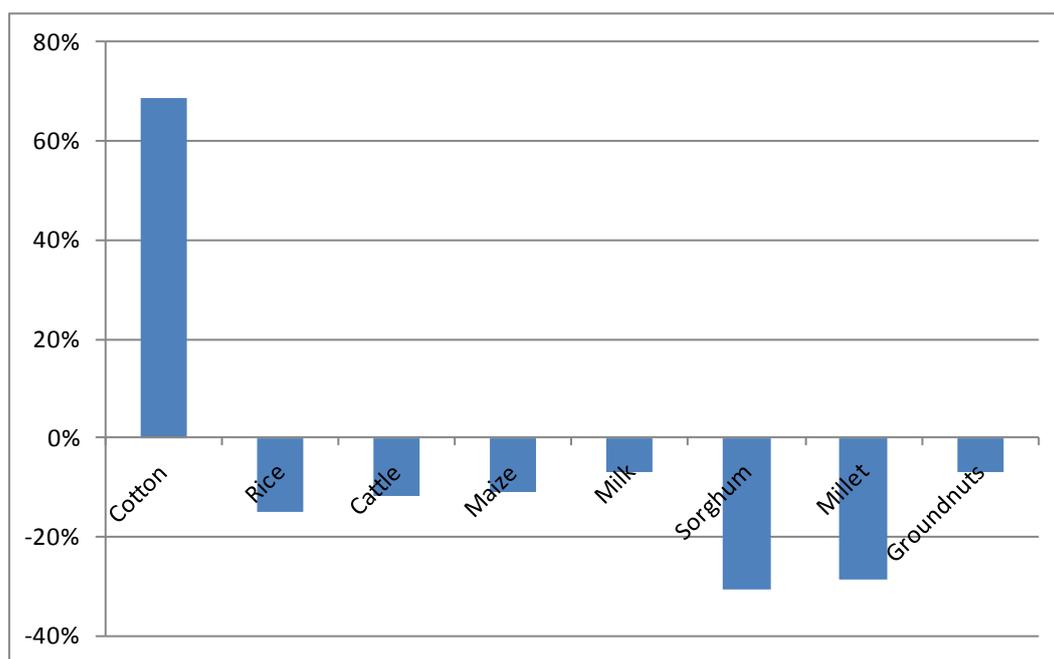
Although local cotton producers receive relatively high prices, MAFAP analysis shows that the cotton value chain is riddled with inefficiencies. However, the impact of these inefficiencies have so far been mitigated by strong short-term policy support. Nonetheless, this support may not be sustainable in the long-term especially since the CMDT has many debts and is in the process of becoming privatized.

Rice and cotton receive the lion's share of government support and spending. Other important commodities, such as maize and cattle, are neglected despite having a high potential for growth due to increasing demand in the subregion. Products such as fish, horticulture products and fruit (especially mango), have received external support from the World Bank-funded Agricultural Competitiveness and Diversification Project (PCDA), which contributed over five percent of the agriculture budget between 2005 and 2010. Since 2007, the government of Mali has however only invested a small part of its own budget on these products. For example, in 2010 total spending was less than one percent of what was spent on the Rice Initiative.

### Recommendations based on MAFAP analysis

While current public spending on agriculture focuses mainly on rice and cotton, it should be diversified. More support should be given to horticulture, fruit and cattle in particular, since these have a high export potential. Short-term measures, such as variable input subsidies or import tax lift, have received important political attention. Longer term measures, however, are also important for a sustained increase of production. They would include increasing incentives for production, raising producers' incomes through higher prices and decreasing vulnerability to external shocks by diversifying agricultural production.

**Figure 2. Support to producers of key agricultural products in Mali (average observed nominal rate of protection), 2005-2010, in %**



*Cotton producers have benefited from higher prices, when compared to international benchmark prices, thanks to strong policy support in the period from 2005 to 2010. On the other hand, producers of other commodities have received no price incentives to increase production.*

### **Significant efforts to improve production have not been accompanied by adequate support for marketing and trade**

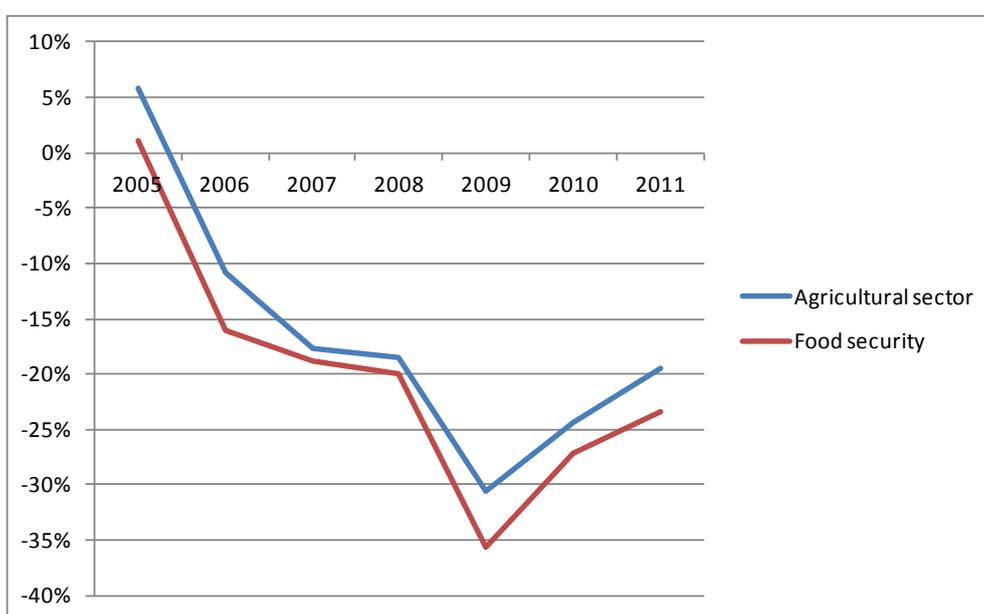
The government has invested heavily in increasing the production of rice and cotton. Both crops have received input subsidies worth more than twenty billion CFA francs, in addition to technical assistance, through the *Rice Initiative*. Maize, wheat, millet and sorghum producers have also received input subsidies, but on a much smaller scale. Cattle production has also received some support through various projects and programmes.

However, massive support to production for these commodities has not been accompanied by adequate support for marketing and trade. A lack of paved roads and insufficient markets have led to high transport costs. Value chains are also poorly organized, with excessive margins applied by wholesalers and numerous intermediaries. This causes domestic prices to be disconnected from international and regional prices. The lack of marketing opportunities was one reason producers and wholesalers did not benefit from high food prices in 2007 and 2008. Furthermore, prices for domestic rice producers diverged further from regional prices when the government lifted import taxes on rice. The government also restricted staple exports to encourage farmers to grow crops for their own consumption and food security, and help keep prices low for consumers. However, this has limited market opportunities and dampened prices in Mali especially when compared to neighbouring countries.

### Recommendations based on MAFAP analysis

Without a long term commitment from the Government to bringing down production and marketing costs for all commodities, producers will continue to suffer from relatively low prices. Concrete actions to improve prices would include addressing structural inefficiencies such as, traders' excessive profit margins, illicit costs and disorganised value chains. Furthermore, it is necessary to improve roads and market infrastructure and increase producers' access to market and price information. Medium-term consequences of measures such as import tax lift or export restrictions, should also be well thought out as they have direct effect on producer prices, and may jeopardize income and production incentives.

**Figure 3. Support to producers of agricultural products in general and products important for food security (Nominal rate of protection) , in %, 2005-2010**



*Domestic prices are disconnected from international prices due to structural inefficiencies along value chains. MAFAP analysis shows that producers did not benefit from the global price surge from 2007 to 2009. This is especially true for crops that are important for food security since the government restricted exports of staples.*

## Introduction

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The MAFAP project (SPAAA in French) aims to help African policy-makers and various development partners to ensure that policies and investments in agriculture and rural development focus on agriculture, the sustainable use of natural resources and strengthening food security.

From this perspective, the MAFAP project has conducted a thorough analysis of Mali's current agricultural and food policies, implemented in the light of the results of an analysis of the structure, level and composition of public expenditure, and of incentives and disincentives faced by different actors of the country's main agricultural value chains.

This report constitutes the first policy review of this project. The core of the report was drawn from ten technical notes that provide detailed and innovative analyses covering eight key products, which account for 65 percent of the value of agricultural production in Mali. These also absorb a large share of the Malian Government's expenditures and aid to agriculture and rural development. The ten technical notes are standalone results of the MAFAP project, and are available in addition to the report. These notes were written by MAFAP's local team in Mali, composed of young researchers and a senior coordinator. They were assisted by FAO's Rome team, including a full-time assistant based in Bamako. They also benefited from the help of several agricultural development stakeholders in Mali: ministry officials (Ministry of Agriculture, Ministry of Finance, Ministry of Livestock and Fisheries...), other researchers, and local FAO staff. This report has thus seen a lot of input from Malian researchers themselves, in accordance with MAFAP's medium-term objective, which is the full internalization of its methodology within a national institution.

This review is to be updated periodically as part of a biennial country report identifying key developments in the sector.

The report offers concrete results achieved with the implementation of a rigorous methodology for measuring the effects of agricultural and food policies and those of public expenditure in agriculture and rural development. The approach is novel: it has been used for the first time in Mali. The report thus provides new insights into the agricultural sector and rural areas of Mali<sup>1</sup>. It has established a baseline to support the dialogue on agricultural and food policies in Mali among key decision-makers and with development partners. Its utility may prompt policy-makers and partners to support the institutionalization of such work in Mali. Although it is true that the MAFAP project seeks to inform discussion on policy reforms, the project is not intended to advocate for particular reforms. Such changes must be endogenous, and if they do take place, must result from a dialogue on government policies among stakeholders in the country.

This report does not purport to be exhaustive. It is therefore desirable that the political dialogue also be supported by other inputs provided by various institutional players to arrive at a full perception of the situation of agricultural and food policies in Mali.

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<sup>1</sup> In 2003 and 2004, FAO conducted a study on the Role of Agriculture in Food Security, which examined the incentives for agricultural production, but with a substantially different viewpoint and methodology.

The report is structured into three main parts:

- the first part offers a description and analysis of the context of government policies in Mali through a selection of development and performance indicators (DPI), a description of the major decisions of government policies, and an analysis of the political economy of decision-making processes in the field of agricultural and food policies in Mali;
- the second part is the heart of the report. First, it describes the incentives and disincentives to production observed for the eight main products selected. Next, the level, composition and effectiveness of public expenditure and aid are analysed in detail. Finally, the consistency of government policies is addressed and discussed;
- the third part deals with a subject of specific national interest and will be different for each edition of the report. In this edition it is the analysis of constraints to investment at farm level in Mali.

The general conclusion summarizes the main results and findings from the application of the methodology and analysis, and offers recommendations for an enhanced political dialogue, more transparent and based on the facts. Its concluding paragraph also highlights the lessons learned from implementing the first phase of the MAFAP project in Mali in terms of strengths, weaknesses, opportunities and challenges for the sustainability of this type of periodic monitoring and analysis of agricultural and food policies.

## Part 1. CONTEXT OF FOOD SECURITY AND AGRICULTURAL POLICIES

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This section presents and analyses the development and performance indicators (DPI) common to all countries covered by the MAFAP project. The choice of a common group of indicators was made, in order to facilitate comparison between countries but also developments within the same country over time (see Table 1 below).<sup>2</sup>

### Mali in brief

**Encouraging macroeconomic performance combined with agricultural potential, contrasting with obvious handicaps in value chains structure, infrastructure investment and environmental risks.**

The good macroeconomic performance of the country over the past decade is mainly due to gold and cotton exports. However, the leverage of gold exports to the rest of the economy is not immediately obvious. The Malian agricultural sector, dominated by small family farms (68 percent) grew by 7.7 percent in 2010, and contributed 37 percent to the GDP in 2008. The agricultural trade balance of Mali has been in deficit since 1976 (Figure 5), and this period was marked by continual growth in the value of agricultural imports (except in 2003-2004 and 2006-2007). Grains, including rice and wheat account for 80 to 95 percent of the value of total agricultural imports. Cotton accounts for 92 to 97 percent of the total agricultural exports, but their value has declined steadily since 2003. Large distributional effects of the value added in the country have long characterized the cotton subsector. However, it has been facing a prolonged crisis.

Other subsectors have interesting possibilities including livestock, which could be better structured to become a huge economic driver in the country. In the vegetable and fruit subsectors, crops such as onions/shallots and mango also offer opportunities for diversification of production. In addition, good water availability, thanks to the Niger and Senegal rivers, offers the prospect of more intensive agricultural production. Good progress is already registered for rice and maize, with yield increases in recent years. These are encouraging advances towards agricultural income diversification, the latter being heavily based on the cotton sector at the moment.

Most agricultural value chains, however, encounter significant obstacles to investment, production, processing and marketing. The state has an important role to play, especially in relation to access to inputs that are seldom used (3.04 kg fertilizer/ha cultivated) and often difficult to obtain. The government has been investing heavily in this direction through input subsidies which have been increasing steadily since 2008, reaching 36 billion FCFA in 2012. Transport infrastructure, with only 24.5 percent of paved roads over the country for example, still appears insufficient to enable the dominant number of small producers to improve their income.

Improved performance of the agricultural sector also requires increased capacity building and strengthening the role of producer organizations (POs), which still lack the resources and skills to enable them to better support the farmers and develop the sector.

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<sup>2</sup> The data cited in this section are developed and referenced in the text of the report.

The agricultural GDP has been growing mainly through the expansion of cultivated areas, entailing increasing environmental risk, including land degradation, deforestation (6.2 percent between 2005 and 2010), and low resilience to natural disasters.

### **High stakes in terms of employment and income dynamics, urbanization and population explosion**

The dynamic economic growth of the country over the past ten years, approximately 5 percent per year, must be related to the high rate of population growth (3.6 percent per year between 1998 and 2009) to understand better the effects on the living standards of Mali. The average income per capita in purchasing power parity (PPP) stood at USD1 030 in 2010. Although the average per capita income has almost doubled and poverty has decreased by 12 percent since 2000, Mali remains one of the world's poorest countries, with 43.6 percent of the population living on less than a dollar a day in 2010.

Urbanization at a rate of 4.7 percent in 2010 – tripling in 50 years – is a major issue in terms of poverty and inequality. In the towns, incomes are higher than in rural areas but the lack of job security is still very marked, and income distribution is highly unequal for the entire population (Gini coefficient of 33 in 2010). Unemployment (8.3 percent in 2010) continues to rise under the coupled effects of urbanization and population pressure. Increasing amounts of people will be seeking work, and if this demand is not met, the country could face very high unemployment with inequality increasing further. In the coming years, GDP growth should still be driven by exports, which tend to benefit a minority of large retailers and large corporations. The prospects for improvement would probably increase by controlling population growth within the coming decades, and especially by fostering the development of a network of small rural and urban businesses, and stimulation of public employment (civil servants but also infrastructure works). The development of family farms has a central role in limiting the rural exodus: cities will not provide sufficient employment, while more than 70 percent of Malians still live in rural areas. Besides improving demand, the Malian Government should also focus on offer, promoting and supporting adequate training for soon-to-be workers.

### **High infant mortality and a deficient education system constrain the country's development**

Health represents a major challenge for Mali in the coming years. Diseases affecting rural populations have a very high cost on productivity and income. High infant mortality and low life expectancy are pushing parents to have many children, leading to division of income and food, although undernourishment in Mali, while still significant at 12 percent is relatively low compared to 27 percent in the rest of the continent. A progressive decline in mortality and morbidity, coupled with a reduction in fertility rates, could lead to enormous progress in all sectors of the economy and especially in the agricultural sector.

Education is another major challenge for the country's development. Although budget allocated to education has doubled between 1999 and 2010 (from 11 to 22 percent) the level of instruction, particularly in secondary education, remains low (40 percent in 2010), while higher education suffers from serious dysfunctions. Primary school enrolment has increased dramatically (80 percent), but the quality of education remains poor. Efforts are underway to revitalize the still insufficient agricultural training with investments in the country's Rural Polytechnic Institute, in various training centres and in the University of Segou. Better integration of girls in education and the provision of improved

medical care for women are also essential and urgent. The leverage of improved living conditions of women is important, through the positive effects it can have on education, child health and population growth, as well as business creation. Knowledge and trust in the future of the rural population will largely depend on health and education, two key components in creating the ability to have a medium to long-term vision for the population, while also having an understanding of existing opportunities and issues at stake.

Faced with the reality of a population with precarious living conditions, largely dependent on the growth of the rural economy, it appears essential for the government to have a better information base for its policy choices and directions for the socio-economic development of rural areas and agriculture in particular

**Table 1. Development and Performance Indicators (DPI)**

Fields	DPI #	Development Indicators and Performance (DPI)	Recent value	Africa benchmark	Global benchmark
<b>1. Macroeconomic performance</b>	<b>DPI 1</b>	Share of agricultural value added/GDP (MEF)	37% (2008)	13,29% (2009) (sub-Saharan Africa) (WDI)	2,76% (2009) (WDI)
	<b>DPI 2</b>	Growth of agricultural GDP (WDI)	7.7% (2010)	4,35% (2010) (sub-Saharan Africa)	2,74% (2010)
<b>2. Performance of agriculture and rural sector</b>	<b>DPI 3</b>	Share of agricultural land use (% national land) (DGPER)	33.6% (2009)		
	<b>DPI 4</b>	Share of agricultural exports/total exports, in value (IAP/MEF, FAOSTAT)	17.7% (2009)	8,78% (2009)	7,56% (2009)
	<b>DPI 5</b>	Value of agricultural imports/total imports, in value (IAP/MEF, FAOSTAT)	14.3% (2009)	13,08% (2009)	7,75% (2009)
	<b>DPI 6</b>	Share of small farms - less than 5 ha (General Agriculture Census, 2008)	68%		
<b>3. Input market and constraints for sector development and performance</b>	<b>DPI 7</b>	Fertilizer use, kg/ha on arable land (WDI)	3,04 (2009)	10,46 (2009) (sub-Saharan Africa)	122,13 (2009)
	<b>DPI 8</b>	Share of farms with a tractor (General Agriculture Census, 2008 )	1% (2005)		
	<b>DPI 9</b>	Doing Business Index on the extent of legal rights and credit information (WBI)	2 out of 6 (2012)	NA	NA
	<b>DPI 10</b>	Share of paved roads/total road network (WDI)	24.5% (2009)	18,3% (2004) (sub-Saharan Africa)	45,02% (2004)
<b>4. Environment and agriculture</b>	<b>DPI 11</b>	Share of total land used for permanent meadows and pastures	28.3% (2009)	30,62% (2009)	25,81% (2009)

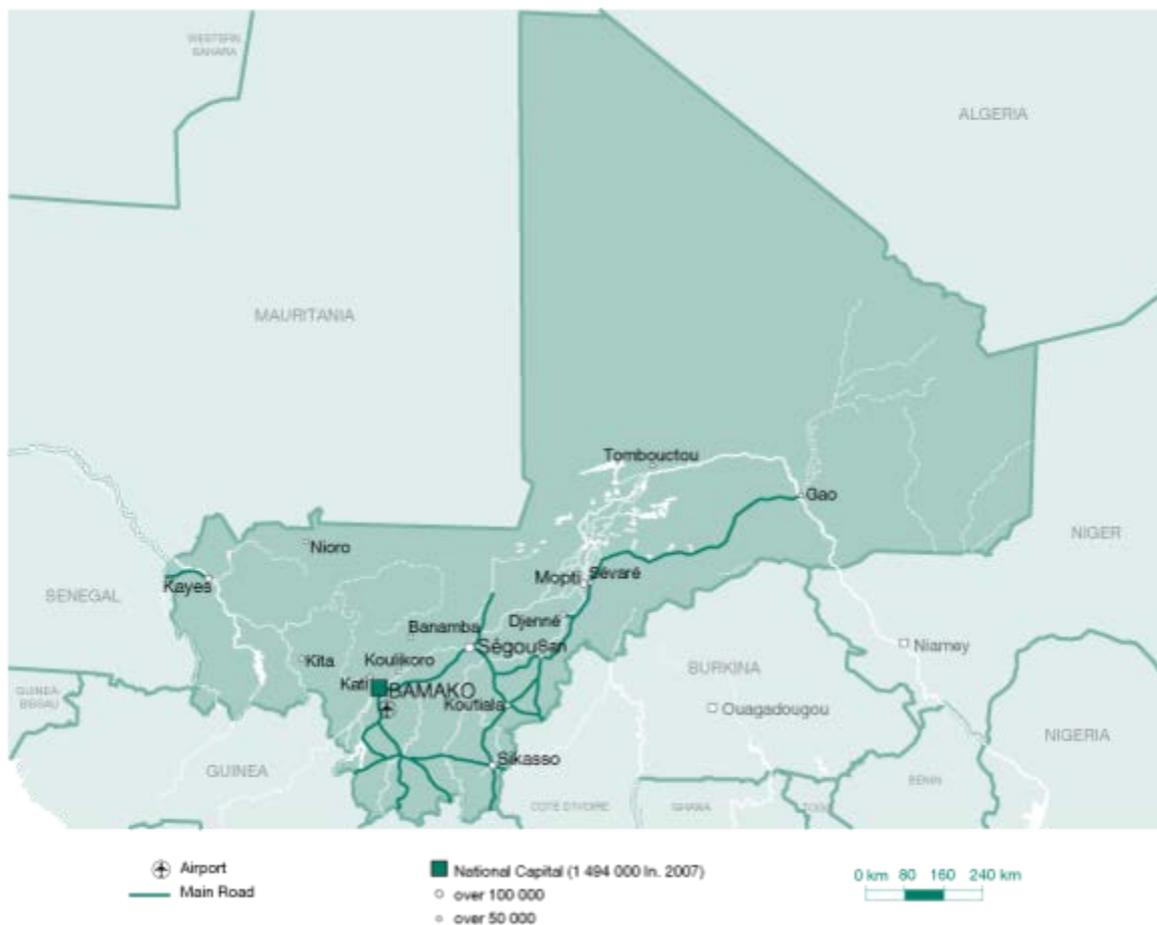
		(FAOSTAT)			
	<b>DPI 12</b>	Rate of deforestation (FAO GFRA)	6.2% (2005-2010)	0,5% (2005-2010)	0,14% (2005-2010)
<b>5. Demography</b>	<b>DPI 13</b>	Average population growth rate (INSD)	3.6% (2009)	2,5% (2006) (sub-Saharan Africa) (WDI)	1,15% (2006) (WDI)
	<b>DPI 14</b>	Mortality and birth rate (WDI)	Mortality: 45.6/1,000 population; Births: 14.29/1000	Mortality: 12,55/1000; Birth rate 37,44/1000 (2010)	Mortality: 8,18/1000; Birth rate : 19,59/1000 (2010)
	<b>DPI 15</b>	Total fertility rate (WDI)	6.36 births/woman	4,94 births/woman (2010)	2,46 births/woman(2010)
<b>6. Poverty, inequality and employment</b>	<b>DPI 16</b>	Share of the population living below the national poverty threshold (INSD)	43.6% (2010), rural: 50.6% (2010)	NA	NA
	<b>DPI 17</b>	Per capita gross national income (constant \$PPP 2005) (UNDP)	USD1030 (2010)	US\$1 966 (2011) (sub-Saharan Africa)	US\$10 082 (2011)
	<b>DPI 18</b>	Gini coefficient (UNDP)	33,02 (2010)		
	<b>DPI 19</b>	Unemployment rate (INSD)	8.3% (2010)		
<b>7. Migration and urbanization trends</b>	<b>DPI 20</b>	Rural population as proportion of total population (WDI)	67% (2010)	62,6% (2010) (sub-Saharan Africa)	49,3% (2010)
	<b>DPI 21</b>	Urban population growth rate (WDI)	4.7% (2010)	3,87% (2010) (sub-Saharan Africa)	2,00% (2010)
	<b>DPI 22</b>	Net migration rate (UNDATA)	-2.4/1000 (2000-2005)	-0.7 (2005-2010)	NA
<b>8. Food security and socio-sanitary conditions</b>	<b>DPI 23</b>	Human Development Index (UNDP)	0,309 (2010)	0,463 (2011) (sub-Saharan Africa)	0,682 (2011)
	<b>DPI 24</b>	Mortality rate for children under 5	191/1000 births (2009)	129 (2009)	58 (2009)

		(per 1000 live births) (UNDP)			
	<b>DPI 25</b>	Proportion of births attended by skilled health provider (UNDP)	49% (2006)	47,7% (2005-2009) (sub-Saharan Africa)	76,4% (2005-2009) (sub-Saharan Africa)
	<b>DPI 26</b>	Prevalence of undernourishment (FAO)	12% (2008)	23% (2006-2008)	13% (2006-2008)
<b>9. Education and gender</b>	<b>DPI 27</b>	Gross enrolment rate for primary education (UNESCO)	97% (2010)	99,86% (2009) (sub-Saharan Africa)	107,11% (2009)
	<b>DPI 28</b>	Adult literacy rate (% of 15-year-olds and over) (UNDP)	26% (2006)	61,6% (2005-2010)	80,9% (2005-2010)
	<b>DPI 29</b>	Gender inequality index (UNDP)	0,799 (2008)	0,610 (2011)	0,492 (2011)
	<b>DPI 30</b>	Rate of economic activity for women and men (UNDP)	Women: 38.1%, Men: 68.9% (2008)	Women: 62,9%, Men: 81,2% (2009)	Women: 51,5%, Men: 78,0% (2009)

## Geographical context

Mali, a continental Sahelian country with an area of 1 241 000 sq km, is located in the African tropics between 11 and 25° N and between 12° W and 4° E. It is bounded in the north-east by Algeria, the east by Niger, the south-east by Burkina Faso, the south by the Côte d'Ivoire, the south-west by Guinea, to the west by Senegal and the north-west by Mauritania.

Figure 4: Map of Mali



Source: OECD African Economic Outlook, 2011

Mali does not have direct access to the sea and is connected by road to the ports of Dakar and Abidjan (1 200 km from Bamako), Conakry (900 km), Lome and Tema (1 973 km). It is also connected to Dakar by rail, with very low traffic intensity, however, due to obsolescence of the railway line.

Mali is watered by the two largest rivers of West Africa: the Niger, 4 200 km long, including 1 780 km in Mali, and the Senegal, 1 800 km, of which 669 km flows through Mali.

The country has four climatic zones: the Sahara, Sahel, Sudan, and Sudan-Guinea.

**Table 2. Climate and mode of agriculture in Mali**

Area	Geographical location	Surface area (percent)	Precipitation (mm/year)
Saharan	North	51	<150 to 200
Sahelian	Centre	23	150/200
Sudanian	South	18	600 to 1200
Sudano-Guinean	Far South	8	> 1200

Source: Authors from Samake, Bélières, 2008

The territory is divided into eight regions, plus the District of Bamako. These regions are subdivided into 49 circles.

**Table 3. Administrative divisions of Mali**

Designation	Number
Region	8
Circle	49
Urban municipality	19
Rural municipality	684
Village or Fraction	11 234
District	1

Source: The figures in Mali, INSTAT 2009

Mali has 43.7 million hectares of arable, agroforestry and pasture lands with significant biophysical potential – 35 percent of its total area (MEA, 2011). Arable land, that is all the land suitable for agricultural use, covers about 11.5 to 21 million hectares, between 9.2 and 16 percent of the total land area (MEA, 2011).

**Table 4. Total and cultivated land in Mali, 2005-2010**

Country	2005	2006	2007	2008	2009
Total land area (1000km <sup>2</sup> )	1 241	1 241	1 241	1 241	1 241
Cultivated area (ha)	3 119 133	3 283 227	3 528 215	3 444 715	
Area planted (ha)	2 417	2 836	9 079	2 660	3 164

Source: The figures in Mali, INSTAT 2009, from CPS/SDR

Mali has good water resources. The Niger River flows northward through Mali to the desert margin before turning and passing into Niger. It forms an inland delta in central Mali covering 50,000 km<sup>2</sup>, about 6 percent of the total land area, and is a wetland with very specific characteristics. The country also has groundwater reserves estimated at 2 720 billion m<sup>3</sup>. From these resources, the irrigation potential of Mali was estimated at 2.2 million hectares (CPS DNSI, 2008). The very large amounts of water going into the present irrigation systems make it unrealistic to expect that all these 2.2 million ha can be irrigated. It is also unlikely that the waters of the Niger can be diverted to irrigate the so-called 960 000 ha potentially irrigable area of the Office du Niger (Samaké et al., 2008). The Senegal River in the West provides hydropower but serves only a small part of the irrigation areas in Mali.

Mali is endowed with significant mineral resources: gold, diamonds, copper, lead, zinc, iron, phosphate, bauxite, manganese, uranium, limestone, gypsum (Atkins, 2007). The country is currently the third largest gold producer in Africa (behind South Africa and Ghana), with an estimated production of 52 tons in 2010 (Reuters, 2012). The gold sector alone accounts for over half of Mali's exports, amounting to USD1 415.8 million in 2009 (Central Bank of Central African States). The reserves are now estimated at ten years of extraction (Malian Ministry of Mines, 2009). However, gold mining is a controversial issue with major pollution problems in addition to complaints related to poor working conditions, and the employment of children.

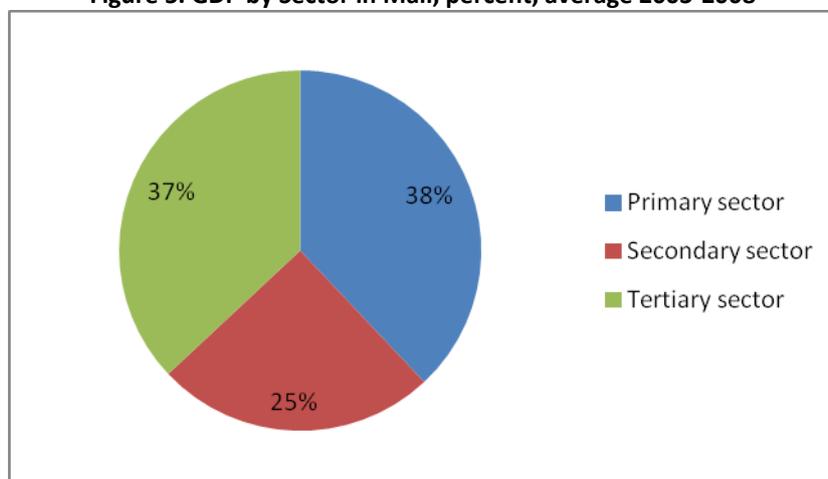
## Socio-economic aspects

### Macroeconomic performance

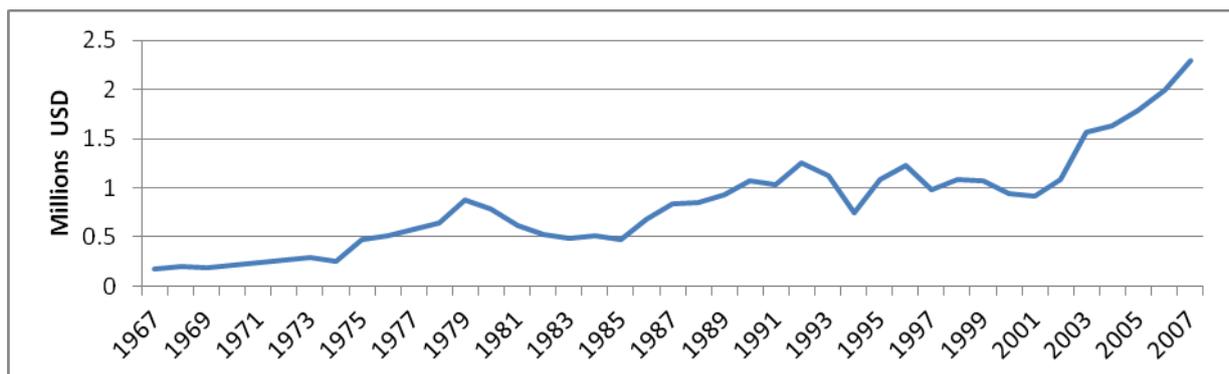
#### The good growth of Mali largely fuelled by the primary sector

Agriculture and the rural economy are central to the socioeconomic structure of Mali. This is true both from a macroeconomic point of view, with 37 percent of GDP (FAO, 2008) generated by the primary sector (see Figure 5), and from a microeconomic perspective, with about 80 percent of the population deriving its principal income from agricultural activities (Samake, Bélières et al., 2008a). The Malian economy relies heavily on agriculture, livestock and fishery related activities, with agriculture constituting the bulk of it. Agricultural value added is increasing steadily, with a sharp increase from 2002 (see Figure 6).

Figure 5. GDP by Sector in Mali, percent, average 2003-2008

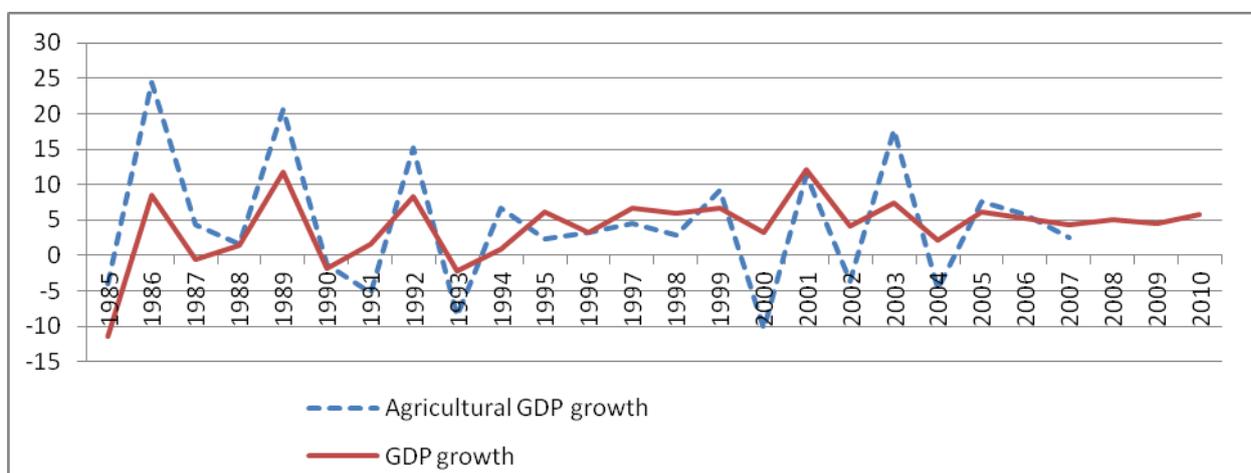


Source: Ministry of Economy and Finance of Mali, 2009

**Figure 6. Agricultural value added in Mali, million current USD, 1967-2007**


Source: World Bank, 2012

Growth in the primary sector has had a major effect on GDP growth over recent years (see **Figure 7**), with very large interannual variations and some years of negative growth.

**Figure 7. Annual growth in agricultural and total GDP in Mali, percent, 1985-2010**


Source: World Bank, 2012

However, a recent analysis by Bourdet et al. estimates the agricultural growth at an average 8.2 percent per year in 2006–2010, making agriculture the most dynamic sector over this period (see **Table 5**). It should be noted that in this analysis, the primary processing activities were included under industry and not under agriculture.

**Table 5. Growth rates by sector and GDP in Mali, percent, 1995-2010**

	1995-2001	2001-2006	2006-2010
<b>Agriculture</b>	3.3	4.3	8.2
<b>Industry</b>	10	4.2	0.1
<b>Services</b>	4.5	5.9	5.7
<b>Total</b>	6.3	5	4.9

Source: World Bank Africa Database and INSTAT, cited by Bourdet, Dabitao and Dembele, 2011

Agriculture is the engine of growth of the primary sector, far ahead of livestock, forestry and fishing (see **Table 6**).

**Table 6. GDP of the primary subsectors in Mali, percent of total primary sector GDP, 2005-2010**

<b>GDP</b>	2005	2006	2007	2008	2009	2010
Agriculture	58	60	59	64	64	66
Livestock	26	25	26	23	23	22
Forestry	14	13	13	11	11	11
Fishery GDP	2	2	2	2	2	2
Primary sector GDP	100	100	100	100	100	100

Source: INSTAT, 2011

The steady growth of the primary sector should not mask the weaknesses of the rural and agricultural sector in Mali. First of all, agriculture is extensive and largely unproductive. For example, in 2010, the sorghum yield in Mali was 1 ton/ha against 4.5 tons/ha in the United States (FAOSTAT). The low productivity of agriculture in Mali is due to a combination of factors including:

- dependency on weather conditions, with rainfall declining by 30 percent over the past 30 years (MEA, 2011), droughts and floods, and locust invasions
- lack of adequate production facilities, particularly in irrigation, and lack of access to inputs (land, fertilizer) and credit, which is blocking investment
- low levels of farmers' education, extension and agricultural research
- high transport and transaction costs
- poverty, fragile soils of low fertility, general deterioration of natural resources, persistent animal and plant diseases
- vulnerability to price volatility in the domestic and international markets.

Apart from the low agricultural productivity in Mali, the country's agricultural products are generally sold with little if any value added locally. The rural and national economy would gain significant benefit from increased local or in-country transformation of agricultural products; however, the present system allows the population to feed itself with cheap, raw cereals.

### **Performance of agricultural and rural development**

Production dominated by cotton and rice, with emergence of other promising sectors

Malian agriculture is characterized by the predominance of cotton as a cash crop and of food crops dominated by rice and coarse grains: maize, millet, and sorghum (Bricas, Thirion and Zoungrana, 2009). Cotton cultivation was supporting directly or indirectly more than three million people in its

heyday in the early 2000s. Cotton was the second largest export in 2010 (after gold), accounting for 2.6 percent of the GDP (OECD, 2011).

Seed cotton is processed and exported in the form of fibre. Its culture flourished in the 1970s, and cotton acreage and fibre exports have been increasing steadily. The cotton sector accounted for 46 percent of export earnings of the country between 1989 and 1994 (Diakite, Kone, 2010). However, cotton has been facing a major crisis since 2002, with lower yields since the mid-1990s due to declining soil quality, the use of the same varieties everywhere, entailing increased disease risk, and inadequate crop management practices. Thus, revenues of rural households and net margins have been stagnating since the early 2000s.

Grains are the other predominant agricultural products in Mali, particularly coarse grains. In 2007, they covered 72 percent of the cultivated areas in Mali (Samake, Bélières et al., 2008a). Rural households consume a large part of the production, and most of the surplus is sold on the domestic market. A small amount is exported to the subregions.

Rice and maize production in particular have been increasing: rice production was multiplied by 7.1 and maize production by 7.7 between 1960-1970 and 2000-2010 (FAOSTAT). This is partly due to the expansion of cultivated areas: 14 percent for rice and 40 percent for maize between 1995 and 2009 (CPS), and partly to the notably increased yields. According to official statistics, rice yields increased by 27 percent and maize yields 11 percent between 1995 and 2009 (CPS).

Millet and sorghum are essential crops for food security, providing around 35 percent of the daily calorie intake (FAOSTAT). However, millet and sorghum production has been increasing at a lower rate than maize and rice since the 1990s, while yields have stagnated.

The most important secondary crops consist of legumes and oilseeds, especially groundnuts, but also the Bambara groundnut (Voandzou), cowpea and soybean. Cowpea is often intercropped with cereals. In 2004, according to the agricultural census (CPS, 2008), the area under pulses accounted for between 8 and 18 percent of the average area cultivated per farm in central and southern Mali (Mopti, Segou, Koulikoro, Sikasso, Kayes). These crops are important as both food and cash crops, particularly in terms of nutrition.

### *Consumption centred on coarse grains and rice*

In general, food consumption in Mali is based around minimally processed products, with a substantial degree of consumption. According to FAO (2010), there are three dominant models of consumption:



Source: Photo by Peter Menzel. Hungry Planet Series

The first model refers to sedentary people, both rural and urban. It is characterized by the consumption of coarse grains (mostly millet and sorghum, but also maize and fonio), rice, legumes (cowpea) and oilseeds (groundnut). Coarse grains – mostly consumed as a paste or couscous – as well as rice, are combined with various sauces (okra, groundnuts and various plants). The consumption of rice is higher than that of other cereals in urban areas, in contrast to the rural areas. Complementary foods are tubers (yams, potatoes, cassava, sweet potato...), vegetables and legumes (used for the sauce that accompanies the grain), seasonal fruits (especially citrus and mango, available most of the year), and products such as shea nuts and monkey bread (fruit pulp from the baobab tree) (FAO, 2010). Bread and pasta are consumed as well, the latter especially by city dwellers. Meat and fish are also part of the diet, but are consumed in small quantities because of high prices.

The second model refers to pastoral populations, overwhelmingly in the north. This diet is centred on the consumption of milk (fresh or as clotted cream or cheese) and some red meat, which is consumed sparingly by breeders because of the value of their herds. Pastoralists also consume dry cereals, often obtained by exchange (barter) with farmers.

A third model refers to minority fisher peoples (dominated by the Bozo and Somono ethnic groups), whose diet is centred on fish, rice and millet.

**Table 7. Principal foods consumed in Mali, kg/person/year, 2007**

Products	Total
Millet	114,9
Sorghum	61,2
Rice	52,7
Maize	43,1
Meat	8,3
Fish	7,6
Sugar and sugar products	7,6
Potato	7,2
Peanut oil	6
Beans	5

Source : Malian Poverty Evaluation, 2003

***Cotton and livestock dominate exports, but the trade balance remains in deficit***

Malian agriculture in 2010 accounted for 30 percent of export earnings of the country (MEA, 2011). Cotton and livestock are the main agricultural exports of Mali in monetary value (Table 8), and in 2009, according to State Bank of West Africa, the second and third exports behind gold. The main imports (Table 8) are broken rice, palm oil, tea, and sugar (FAOSTAT), but food imports remain far below capital and oil imports in dollar value: food USD 342 million in 2008, capital 939 million and oil 583 million.

**Table 8. Main imports in Mali, quantity (tonne) and value (1 000 USD), 2010**

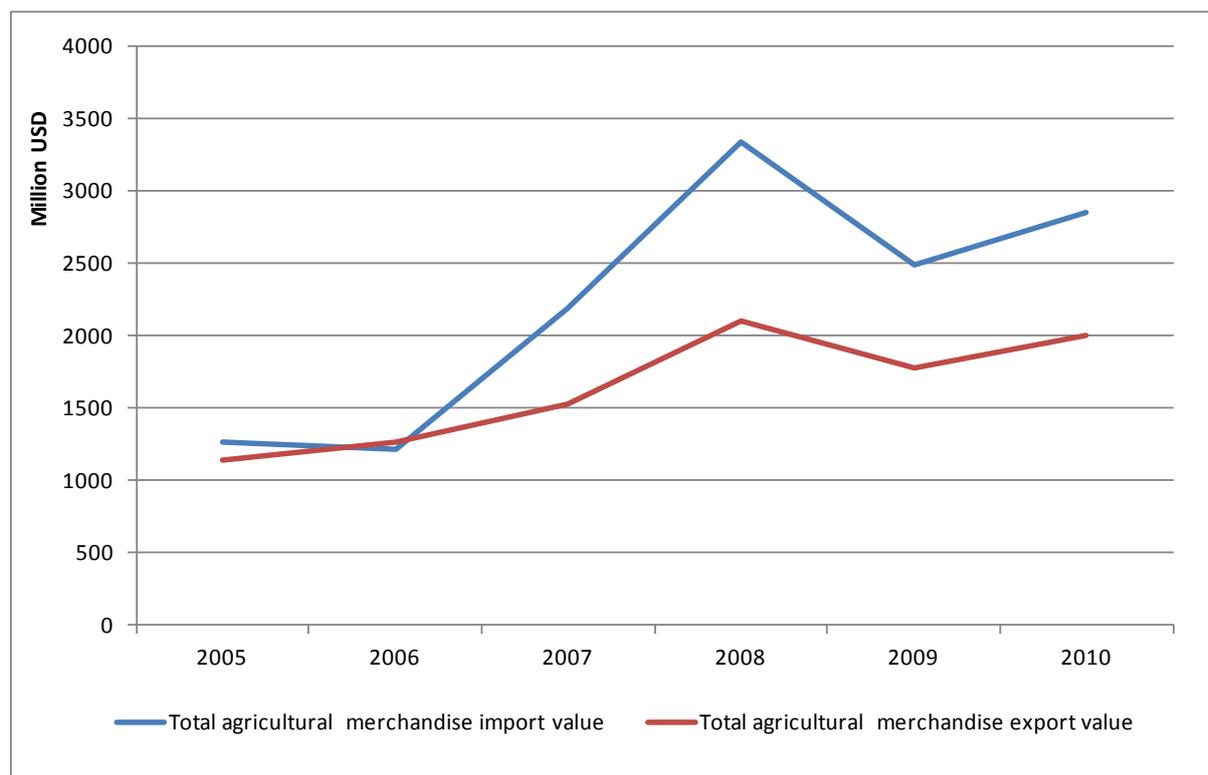
Products	Quantity (tonne)	Value (1 000 USD)
Food preparations	20 057	63 050
Broken rice	89 146	44 071
Palm oil	31 300	36 000
Tea	7188	27 711
Refined sugar	70 500	27 000
Milled rice	80 934	25 488
Whole milk powder	8388	25 417
Wheat	41 883	19 503

Source: FAOSTAT, 2012

**Table 9. Major agricultural and livestock exports from Mali, quantity (tonne and head) and value (1 000 USD), 2010**

Products	Quantity (tonne)	Value (1000 USD)
Livestock	150 000 (head)	80 000
Cotton fibre	58 431	73 243
Mango, guava and mangosteen	3 589	5 288
Skimmed cow's milk powder	5 050	2 764
Groundnut oil	2 000	2 500
Shelled groundnuts	3 000	2 400
Wheat preparations	3 002	1 882
Food, flour, malt extract	348	1 672
Oilseeds	1 970	1 610

Source: FAOSTAT, 2012

**Figure 8. Agricultural merchandise imports and exports of Mali, 1 000 US\$, 1961-2009**

Source: FAOSTAT, 2012

**Figure 8** shows that agricultural exports and imports of goods and food were equivalent until 2006; thereafter, the gap widened. This difference indicates a structural change in the economy or a change related to the food price crisis, which led to import support through various government measures.

The country is landlocked, making international trade more difficult. With regard to internal trade, the vast territory and poor infrastructure mean that local economies are poorly interrelated and that many villages are not accessible in the rainy season. An estimated 0.9 to 1.5 percent of all roads are passable throughout the year (Samake, Bélières et al., 2008a). The extent of the road network, however, grew by 44 percent between 1994 and 2008 to 21 333 km (National Directorate of Roads). Over the same period the fleet almost quadrupled to 18 842 vehicles.

**Table 10. Paved roads, percentage of the total road network in Mali, 1990-2005**

	1990	2000	2005	2009
<b>Share of paved roads (% of total roads)</b>	10.9	12.1	19	25

Source: World Bank, 2010

Transport and access are also hindered by red tape and incidental costs along major highways, with average informal fees of about USD 9.5/100 km, and by 14 stops per trip for goods transportation on Malian territory (USAID, 2011). These costs and delays undermine the competitiveness of the Malian economy.

***Except for cotton and rice, very unstructured value chains and agricultural production centred on small family farms***

In the first twenty years after independence, the state adopted the model of a managed economy, with control over almost all levels in the agricultural sectors. The market has been liberalized since the mid-1980s, giving rise to a multiplicity of actors along the chain. Currently, production, processing and marketing are handled by private actors in all sectors except for the cotton industry, which is still administered by a single parastatal organization, the Malian Company for Textile Development (CMDT). The CMDT, founded in 1974, is a semi-public company, majority ownership is with the Malian Government. The government held a 60 percent stake until the beginning of the cotton crisis in the early 2000s; following the recapitalization it now holds an estimated 98 percent. Originally, CMDT administered all of the cotton value chain, and even engaged in rural development such as road building and literacy training, extension and farm advisory work, and development of other crops. Today it remains the sole cotton buyer, but has been subcontracting certain functions to producer organizations, such as collecting seed cotton. The CMDT was divided into four subsidiaries as part of a privatization process undertaken since 2001. The government launched an international tender for the sale of subsidiaries, but has not yet accepted the offers received.

Other crops are marketed with little or no local processing, except for rice in the Office of Niger, where the small-scale units owned by farms or traders do the shelling (threshing). The majority of product processing is done in small units or even manually. Gross revenues come mainly from family farms : 86 percent of farms are less than 10 ha. There is a relative concentration of land holdings: farms of more than 10 ha (14 percent) hold 48 percent of the cultivated land. However, large farms are owned by large families, and the average land area per person remains close to the national average, which is 0,4 ha/person. The average land area is indeed 0.83 ha/person for farms between 10 and 20 ha and 1.62 ha/person for farms over 20 ha (**Table 11**).

**Table 11. Distribution of farms and farmland by size classes in Mali, 2004**

	no plot	less than 1 ha	1 to 2 ha	2 to 3 ha	3 to 5 ha	5 to 10 ha	10 to 20 ha	20 ha and more	Total
<b>% of farms</b>	14%	18%	14%	10%	14%	18%	10%	4%	102 %
<b>% of the area</b>	0%	2%	5%	6%	12%	27%	27%	21%	100 %
<b>Average area per person, ha</b>	0.00	0.09	0.23	0.32	0.45	0.65	0.83	1.62	0.40

Source: Jean-Francois Bélières from the General Census of Agriculture (2004)

*Total farms 102% due to rounding errors*

Collectors, who may be independent or work for wholesalers, generally purchase agricultural products in the villages or at the weekly markets. Aggregators can also store these products. Wholesalers then buy products from collectors or aggregators and resell them to semi-wholesale and retail markets in large urban centres.

Most products are for the domestic market. Cotton is almost entirely exported, the textile industry in Mali being very small. Several other products, such as coarse grain, rice, mangoes, sesame, shea butter, are exported in different quantities depending on the year.

Wholesalers have considerable assets that enable them to purchase large quantities and to be the key links in the supply chains, albeit with low storage capacities. They prefer to leave the purchased grain in the village and collect and group it when they need it. The financial power of the wholesalers also enables them to lend money to the various industry players. Some actors play several roles, and the chains are still somewhat segmented.

Commercialization of agricultural production remains a problem in Mali. Most family farms are small; many are isolated, with poor access to local markets due to poor road infrastructure and the absence or obsolescence of transport vehicles.

Contracting between production and marketing actors is rare, and there are no large retail chains (Samake, Bélières et al., 2008a). Few private operators can sell large quantities. Producer organizations, increasingly important since 1992, are still too poorly organized and not yet able to integrate their members into the market economy. These difficulties are lesser for cotton and rice. Cotton is marketed by the CMDT; the cotton sector is vertically integrated. For rice, particularly in the area of Office of Niger, the concentration of production and market (mainly in Bamako) has promoted the development of the sector.

### Input market and major constraints to production

#### Multiple constraints to the development of agricultural production, related to the great difficulty of access to inputs, poor infrastructure and inadequate dissemination of information

Besides the marketing problems, there are constraints to production: poor and declining access to inputs, including fertilizers, pesticides, credit and land. Average fertilizer use declined from 34 to only 3.2 kg/ha between 2004 and 2009 (Table 12), while the extent of arable land increased by only 27 percent over the same period (APCAM, MSU, 2011).

**Table 12. Trends in fertilizer consumption in Mali, in kg/ha of arable land, 2004-2009**

	2004	2005	2006	2007	2008	2009
<b>Fertilizer consumption (kg/ha of arable land)</b>	34	11.2	13	8.1	7.6	3.2

Source: World Bank, 2012

In Mali, mineral fertilizers are imported, with the exception of Tilemsi phosphate, produced in small quantities. Organic manure is produced locally. It is used particularly on cotton and maize. Twenty-six percent of the cultivated land receives mineral fertilizer, 43 percent organic manure (Samake, Bélières et al., 2008a). Fertilizer imports declined slightly from 155 000 tons in 1995-2000 to 150 000 tons for the period 2000-2004 (Samake, Bélières et al., 2008a). Two fertilizer importers are supplying 97 percent of Malian market (Toguna Agro-Industries and Yara Industries). The distribution system is not integrated; fertilizer and fertilizer bags circulate through many intermediaries once they are imported, resulting in an increase in margins applied by the various operators. Fertilizer costs may

indeed account for 35-40 percent of gross income per ha for a producer (APCAM, MSU, 2011). Cotton growing areas and the rice area of the Office of Niger absorb over 80 percent of the imported fertilizer in Mali (APCAM, MSU, 2011). This is partly due to the fact that cotton producers have easier access to credit and thus to agricultural inputs.

The land issue is another factor constraining production development. The legislative and regulatory framework is inaccurate, incomplete and little known by farmers. Customary law prevails in rural areas, and conflicts over land ownership are many. This discourages producers from investing in their farms. The lack of formal title makes it difficult to use land as collateral to obtain credit; producer organizations and the state have been engaged in a process of reflection on the land for over ten years. Two studies were commissioned by the state in 2011, under the Agricultural Orientation Law, to diagnose the condition of farmland. This followed several initiatives, including the Land Observatory, from 1975 to 1980, financed by French Development Agency (AFD).

Poor access to credit and high interest rates are another major constraint to development of most family farms in Mali (see section on constraints to investment in agriculture, on p. 147). They generally do not have sufficient income to invest and expand production. In Mali only 4 percent of the farms are larger than 20 ha; these generally have easier access to credit. Financial institutions (including microfinance institutions) are not sufficiently spread over the territory, being concentrated in major urban areas, in irrigated areas and cotton. They charge very high interest rates (between 12 and 26 percent) with mainly short-term credit, and rather in favour of large landowners. Only 20 percent of family farms had contracted a loan in 2004 (Samake, Bélières et al., 2008a), and only 16.8 percent of rural households had recourse to credit in 2011 (INSTAT, 2011).

*About Credit, Doing Business* (World Bank, 2012) evaluates the sharing of credit information and the legal protection of borrowers and lenders in secured transactions, through two indicators. The index of the depth of credit information is based on the regulations relating to the scope, accessibility and quality of credit information through public and private records. The index ranges from 0 (poor) to 6 (good). The index on quality of legal rights evaluates the legal protection of borrowers and lenders, and assesses how laws on collateral and bankruptcy facilitate loans. The index values are between 0 and 10. High values indicate that the laws on security, interest and bankruptcy provide a secure legal environment for obtaining or providing loans. Mali has a low level of performance on these two criteria and the situation has not improved over the years (**Table 13**).

**Table 13. Development of indices of access to credit ranking *Doing Business* in Mali, 2002-2012**

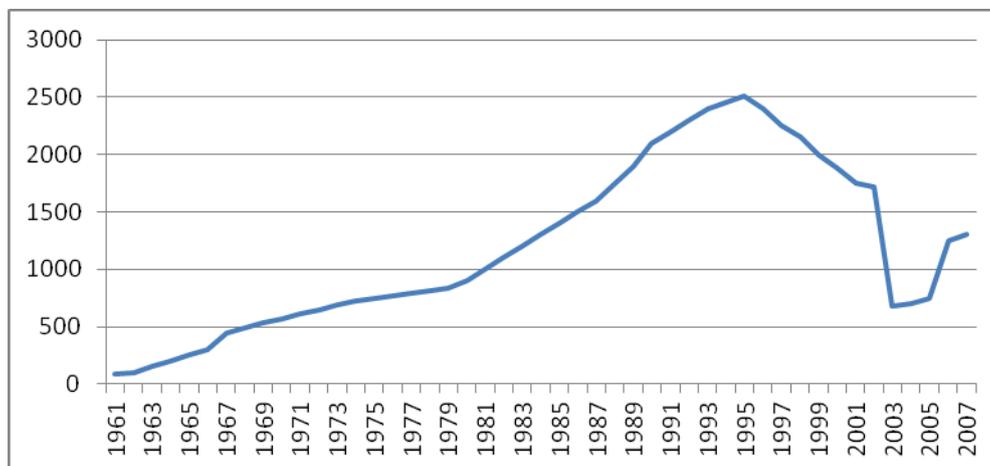
	2002	2006	2010	2012
Index of the depth of credit information (0-6)	1	1	1	1
Quality of legal rights related to credit (0-10)	3	3	3	3

Source: *Doing Business*, World Bank, 2012

Most Malian family farms do not have the means to invest in equipment to increase production and productivity: agriculture in Mali is based primarily on human labour. The equipment level is low.

According to the 2004 Agricultural Census, 54 percent of the farms owned a plough, 72 percent of the land was ploughed using animal traction and only 1 percent with tractors. The number of tractors was steadily increasing from the 1960s, to almost 2,500 in 1996 but rapidly declined to about 1,300 in 2007 (**Figure 9**).

**Figure 9. Number of tractors in Mali, 1962-2007**

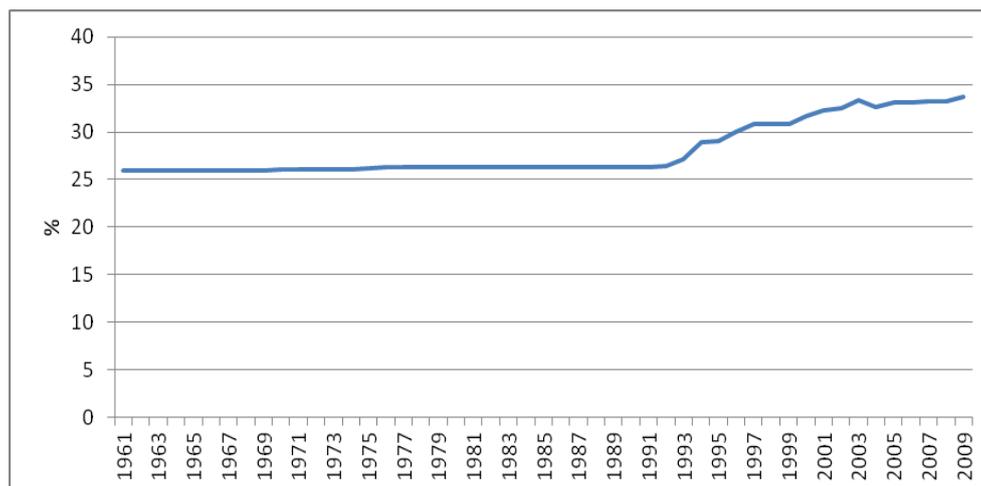


Source: World Bank, 2012

## Environment and agriculture

### The environment threatened by the development of extensive agriculture and poor agricultural practices

In Mali, as in many other countries, agriculture often appears in conflict with the preservation of the environment, on which it imposes significant constraints. Cultivated land covers 37 percent of the country (**Figure 10**), grazing is practised on 79 percent (Atkins, 2006), while 27.8 percent is reserved for permanent pasture (FAOSTAT). The largest increases in cultivated area have been for coarse grains but the expansion of the more intensively farmed rice and cotton crops and the extension of pasture overgrazing are leading to soil impoverishment, erosion and silting. Desertification has already led to loss of water points and fishponds, farmland and pastures. The loss of agricultural GDP due to land degradation is estimated at between 4 and 6 percent per year. Soil degradation has been reducing yields on cultivated land and the extent of potentially arable land (MEA, 2011).

**Figure 10. Agricultural land utilized in Mali, percent of total land area, 1961-2007**

Source: World Bank, 2012

**Table 14. Land reserved for permanent pasture in Mali, percent of total land area, 1960-2009**

Year	1960-1990	1990-2000	2000-2009
Land reserved for permanent pasture (% of total land area)	24.1	25.3	27.8

Source: FAOSTAT, 2012

Deforestation is widespread in Mali. An estimated 300 000–400 000 ha of forest is cleared every year, far in excess over the annual rate of forest regeneration (MEA, 2011). The rate of deforestation rose from 5.8 percent/year in 1990-2000 to 6.2 percent in 2005-2010 (**Table 15**) (FAO, Global Forest Resources Assessment, 2011). Bush fires and the collection of fuel wood and medicinal plant materials add to the effects of land clearing.

**Table 15. Deforestation in Mali, percent per year, 1990-2010**

Period	1990-2000	2000-2005	2005-2010
Deforestation rate	5.8%	6%	6.2%

Source: FAO Global Forest Resources Assessment, 2011

As shown in **Table 16**, the environment also carries threats to the agricultural world.

**Table 16. Major natural disasters in Mali, 1961-2004**

Year	1961	1974	1980	1984	2001	2003	2004
Natural disaster	Floods	Drought	Drought	Drought	Floods	Floods	Locust invasion

Source: Atkins, 2007

Rapid urbanization has placed new pressures on the environment, particularly around urban areas. Air pollution causes many respiratory ailments: 8 percent of children aged 6 to 11 months are victims of acute respiratory infections in Mali (MEA, 2011). The daily production of waste is estimated at 2 785 m<sup>3</sup> for the cities of Bamako, Kayes, Sikasso, Segou and Gao, only 40 percent of which has been evacuated to final dumps (MEA, 2011). The water quality is also deteriorating (MEA, 2011). According to the Ministry of Environment, the main causes are:

- uncontrolled domestic wastewater flows (32 000 m<sup>3</sup>/year in Bamako);
- industrial wastewater flows (800 000 m<sup>3</sup>/year in the Niger River);
- liquid sanitation waste flowing directly into the environment;
- negative effects of mining and farming.

Poor water quality has strong implications for public health and has a significant impact on the economy due to disease and lost productivity. In 2007 the agriculture and livestock sectors lost an estimated 4 percent of their value added due to water-borne diseases affecting workers (MEA, 2011).

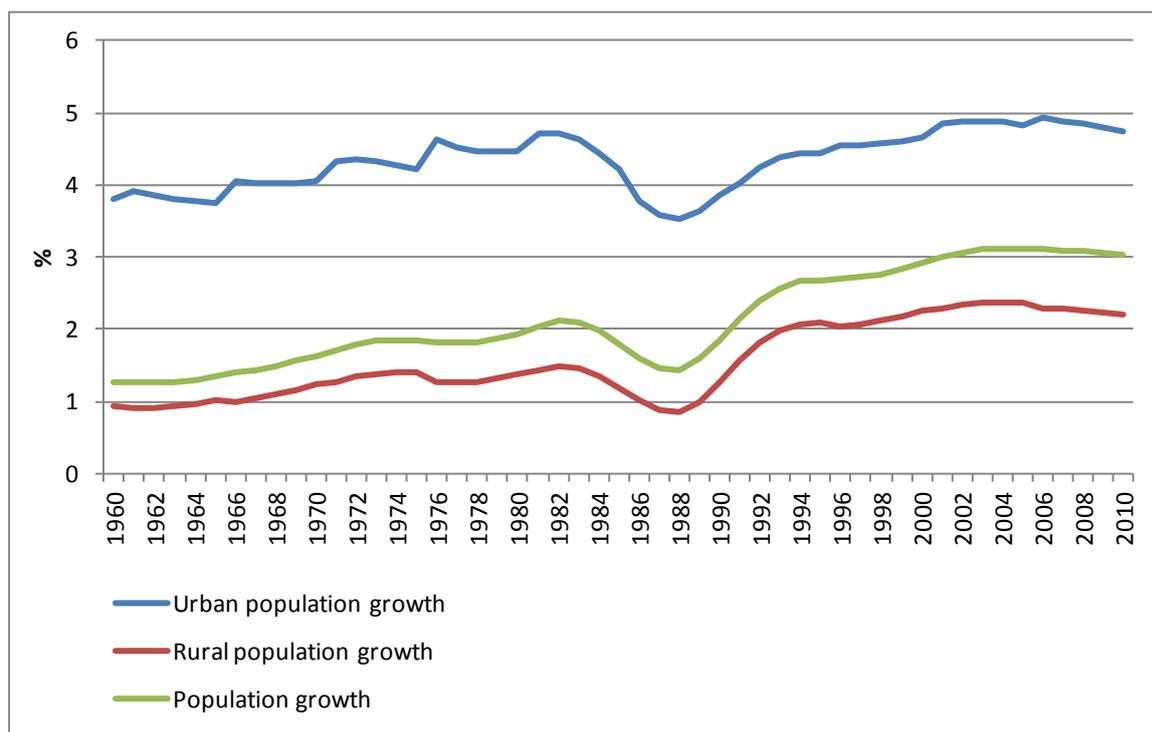
## Population

### Strong population growth driven by very high fertility

In 2011, the total population of Mali was estimated at 14 160 000 inhabitants (INSTAT, 2009). The average annual population growth after the 1998 census was estimated at 2.6 percent according to an average scenario. The general population census in 2009 showed that the annual growth rate had actually been 3.6 percent (INSTAT, 2009), while the World Bank estimated it at 2.75 percent (World Bank, 2012). Clearly, Mali has a rapidly increasing population, projected to at least double by 2035 to an estimated 33.9 million (World Bank, 2010).

The population growth is due to a birth rate of 45.62/1 000 in 2011 and a mortality rate of only 14.29/1 000 (WHO, 2011): health conditions have indeed improved while fertility has not dropped significantly. Despite a decline in the fertility rate from the late 1980s, it remains very high at 6.3 children per woman in 2010. Mali is the country with the second highest fertility rates in the world, after Niger (World Bank, 2012).

The growth of the rural population (67 percent of total population) remains particularly strong, 2.2 percent/year, even with continuing rural-urban migration (**Figure 11**, World Bank, 2012) Furthermore, the Malian population is extremely young. In 2011, 3.6 percent of the population was over 65 years old, 50.2 percent aged between 15 and 64, and 46.3 percent was under 15 years (INSTAT, 2011). These figures illustrate the importance of agricultural and rural development for the country's future.

**Figure 11. Growth of total, rural and urban population in Mali, %/year, 1960-2010**

Source: World Bank, 2012

## Poverty, inequality and employment

### Poverty declining but still widespread, great inequalities, and rising unemployment

Mali's population as a whole is very poor: 43.6 percent of the people live below the national poverty line, according to national statistics (INSTAT, 2011). In 2008, 51.4 percent of the Malian population lived below the UN poverty line (USD1.25 PPP/day), compared with 45.8 percent for West Africa (UNDP, 2010). The World Bank data, which are the most recent and most comparable, indicate a very low poverty rate: 16.4 percent below USD1.25 PPP/day, which casts doubt on the reliability of this figure (see **Table 17**).

National statistics show a marked decline in poverty between 2000 and 2010, while the population grew at a sustained rate around 3.6 percent (INSTAT, 2010). During the same period, the proportion of the rural poor decreased by 16.2 percent<sup>3</sup> (**Table 18**), but remained 10 to 7 percent above the national average and 20 percent above the proportion of urban poor. A similar picture emerges from **Table 19**, showing the perceived financial situation of rural and urban households.

<sup>3</sup> In 2010, the national poverty line was estimated at 165 431 FCFA per year, or 453 FCFA/day and 0.9 USD/day.

**Table 17. Population living below the national poverty line (USD 0.95) and USD1.25/day in Mali, percent, 2001-2010**

	2001	2006	2010
<b>Share of population living with less than \$ 0.95/day (INSTAT)</b>	55.6	47.4	43.6
<b>Share of population living with less than \$ 1.25/day (World Bank)</b>	25.8	18.8	16.4

Source: INSTAT, 2011, cited by Bourdet, Dabitaou and Dembele, 2011, and World Bank, 2012

**Table 18. Rural population living below the national poverty in Mali, percent, 2001-2010**

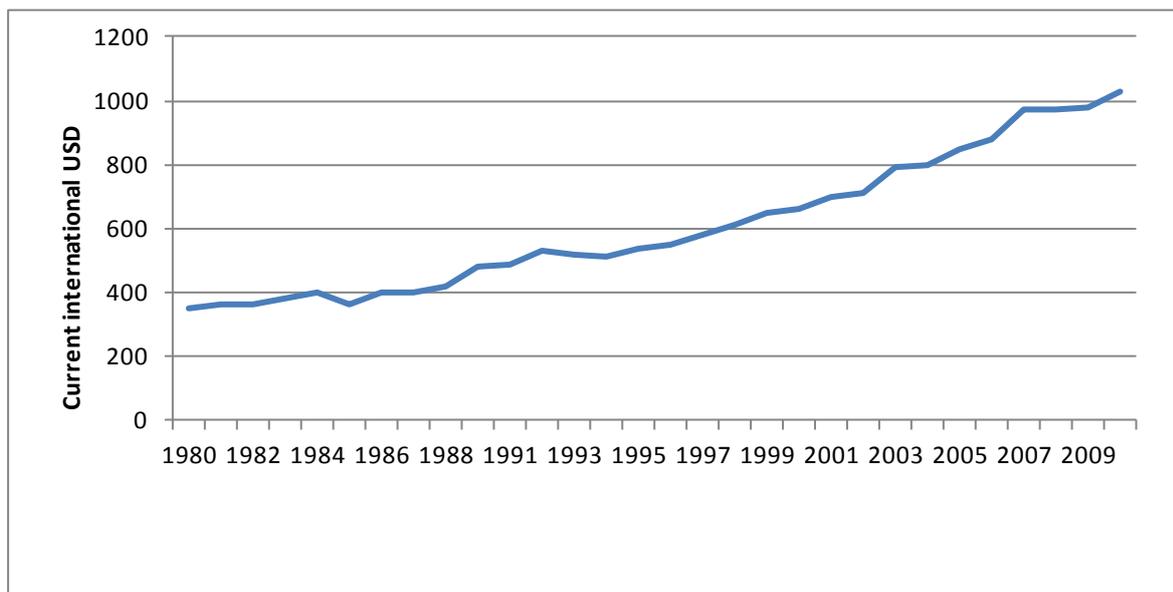
	2001	2006	2010
<b>Share of rural poor (%)</b>	66.8	57.6	50.6

Source: INSTAT, 2011, cited by Bourdet, Dabitaou and Dembele, 2011 and World Bank, 2012

Despite the overall decline in poverty, it is doubtful that the poorest would have benefited most from growth in Mali. Although the per capita income has increased steadily between 1980 and 2010, several studies (Gunther et al., 2007; PRSP DNSI, ODHD, 2007; GREAT, 2010) show that growth in Mali has had a low impact on reducing poverty. In relative terms, the middle and upper classes benefited more from growth than the poor. The World Bank (2004) and INSTAT (2011) have drawn different conclusions, however, saying that growth was pro-poor in absolute terms from 1994 to 2004 and in relative terms from 2006 to 2011 (Beaujeu et al., 2010).

Gross national income (GNI) per capita in purchasing power parity, despite its steady growth for 30 years, was only USD1 030 in 2010 (World Bank, 2012). For rural areas, the main reason for the low income is the omnipresence of small family farms and very small focus on consumption, with low productivity and the sale of raw products with low added value.

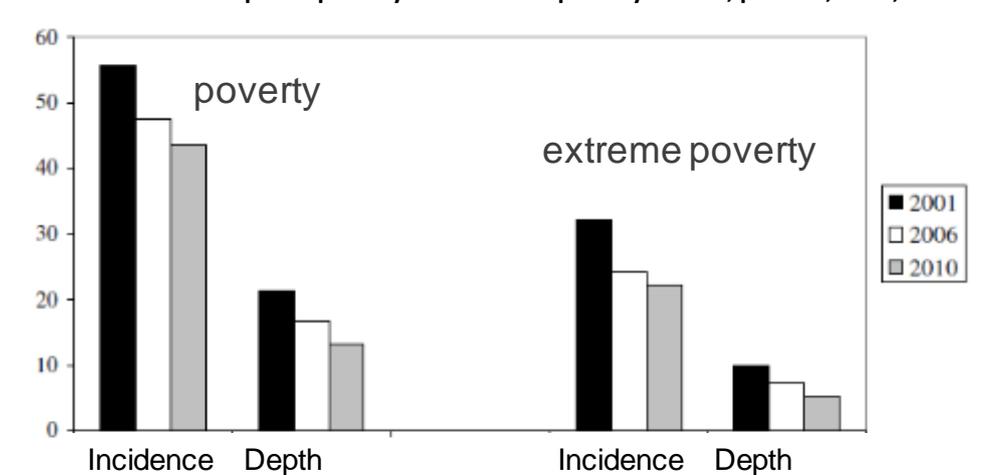
**Figure 12. Gross national income per capita in Mali in purchasing power parity, current USD, 1980-2010**



Source: World Bank, 2012

There is a lack of widespread development of agricultural sectors, offering no prospect of sufficient revenue to farmers. A 2004 study (OEF) showed that 39.4 percent of the employed were earning less than 21 000 FCFA (USD 46) per month in Bamako, against 49 percent in rural areas (Samake, Bélières et al., 2008a). Throughout the country, the proportion of poor is 50.6 percent in rural areas, against 30.7 percent in urban areas and 9.6 percent in Bamako (INSTAT, 2011). Poverty traps are strong, with 18 percent of Malian households and 20.3 percent of rural households driven into debt because of their low income and precarious situation. Fifty-six percent of rural households feel poor, just 5 percent more than estimated by the national poverty line, while 47 percent of urban households feel poor, compared with only 29.4 percent poor estimated by the national poverty line (INSTAT, 2011). An explanation for this strong statistical difference may lie in the precariousness of employment in large urban areas and greater consumption needs associated with urban life, greatly burdening income.

**Figure 13. Incidence and depth of poverty and extreme poverty in Mali, percent, 2001, 2006 and 2010**



Source: INSTAT (2011), cited by Bourdet, and Dembele Dabitaio

**Table 19. Distribution of rural and urban households in Mali by perceived financial situation, percent, 2006**

	Manage to save enough money	Manage to save some money	Barely manage to balance	Forced to dip into their savings/reserves	Forced into debt	Not Determined	Total
Urban	2.2	18.8	53.9	9	16	0	100
Rural	2.3	10.9	51.1	15.3	20.3	0.1	100
Total	2.2	14.8	52.5	12.1	18.1	0.3	100

Source: ELIM, 2006

The Gini coefficient for Mali went down from 50.5 in 1994 to 33 in 2010 (Table 20), an indication that inequality of income was reduced significantly over these 15 years. While the index is still relatively high for a country with widespread poverty, it is slightly lower than the average for West Africa: 42 (UNDP, 2010). In 2006, the income share of the highest 20 percent was 46 percent, while it was 6.5% for the lowest 10 percent (World Bank, 2010a).

**Table 20. Gini coefficient in Mali, 1989-2010**

Year	1994	2001	2006	2010
Gini coefficient	50.5	40	39	33

Source: World Bank, 2012

There is a clear inequality between men and women in the sharing of wealth. In 2010, 37 percent of women, against 21 percent of men received a monthly salary less than 29 883 FCFA (USD 66) which is the guaranteed minimum wage (MEFP, 2011).

The unemployment rate rose from 3.1 percent in 1997 to 8.3 percent in 2010 (MEFP, 2011). This rate appears to be stabilizing at a relatively high level for a developing country. The unemployment rate is lower in rural areas, estimated at 4.7 percent. This indicates that the labour market in cities has not been absorbing the massive and growing number of new workers in urban areas linked to the significant population growth and internal migration dynamics of the country. About 278 000 people had arrived on the labour market in 2010 (MEFP, 2011), and 430 000 will seek to enter in 2030.

**Table 21. Unemployment Rate in Mali, percent, 1979-2010**

Year	1976	1987	created in 1997	2004	2007	2010
Unemployment rate	1.79	0.82	3.1	8.8	9.6	8.3

Source: General Census of Population and Housing, 1976 and 1987, Observatory of Employment and Training, 1997 and 2004, Permanent Employment Survey of Households 2007 and 2010

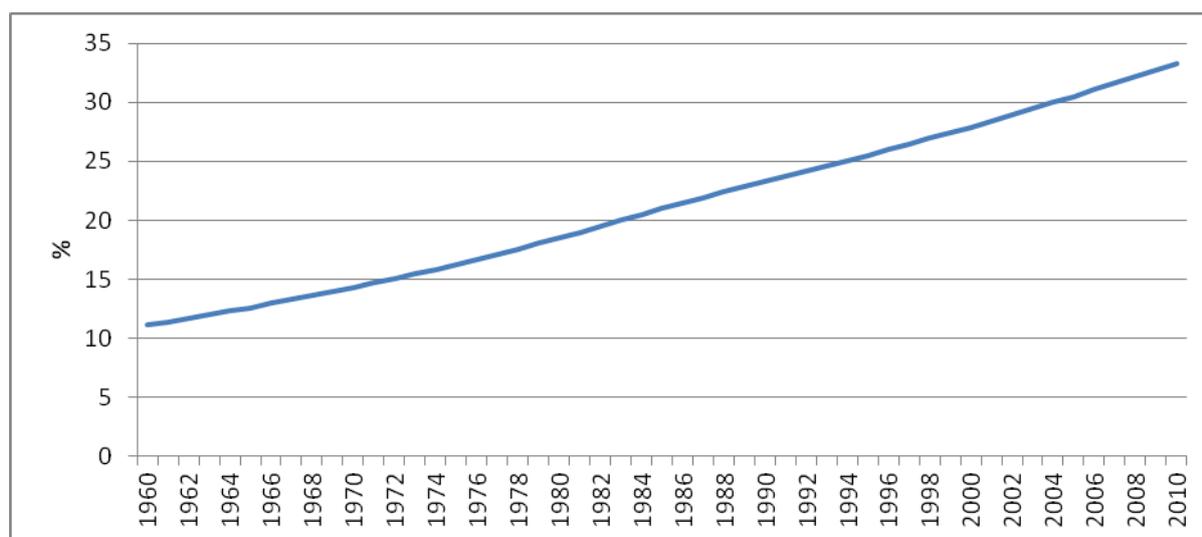
Working conditions are also difficult: a recent study shows that 90 percent of the population works under poor conditions (Bourdet et al. 2010) and very poor conditions according to the Composite Index of Quality of Jobs in Mali, based on criteria of the International Labour Organization (ILO). The only sector providing decent working conditions for the majority of its employees is the public sector, which only employs 2.9 percent of the Malian population, against 55.6 percent employed in the informal sector (MEFP, 2011).

## Migration and urbanization

### Migration dynamics leading to increased urbanization and a reduction of income poverty

The increasing level of unemployment in urban areas is largely explained by internal migration. Rural-urban migration and the people fleeing the desertification of the northern regions cause a rapid population increase in important urban centres. The urban population tripled between 1960 and 2010 (World Bank, 2012) to an estimated 33 percent of the total population, with 60 percent of the population concentrated in the triangle Sikasso-Bamako-Mopti in 2006 (Farvacque-Vitkovic et al., 2007). Although Mali is still undeveloped compared to other countries in the region, the very rapid urban growth (4.7 percent in 2010) should reduce the difference, with a projected urban population at 47.5 percent in 2024 (Farvacque-Vitkovic et al., 2007).

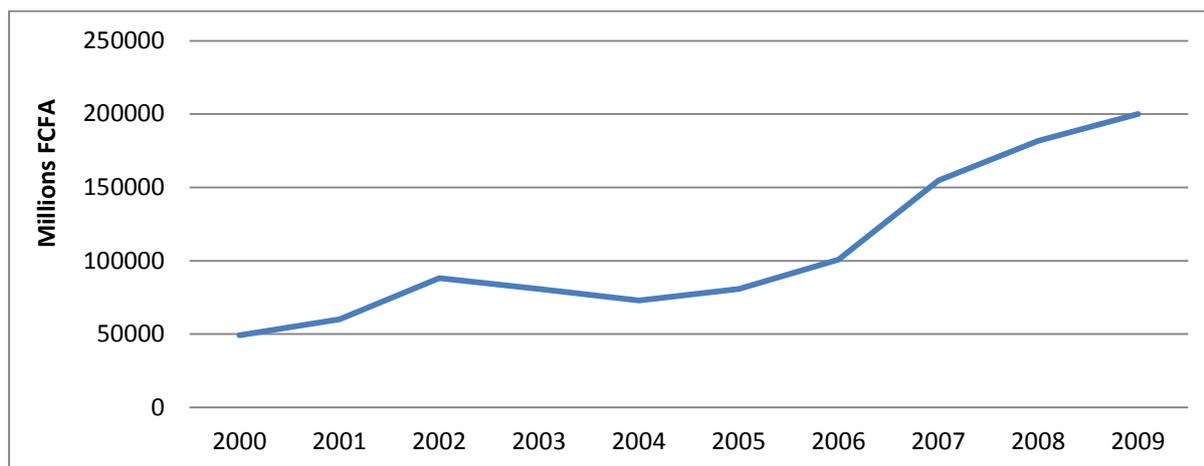
**Figure 14. Urban population in Mali, percent of total population, 1960-2010**



Source: World Bank, 2012

External migration also plays an important role in Mali, although net migration flows (number of emigrants minus the number of immigrants) in the last decade have been only half of those between 1975 and 2000 (Bourdet et al., 2010). An estimated four million Malians are living abroad, mainly in African countries, and some 500 000 in Europe. Expatriate Malians have a strong influence on the national economy, particularly in the Kayes region, which receives 41 percent of the remittances from abroad (Gubert Lassourd et al., 2010). The Central Bank of the States of West Africa estimated that in 2009, 200 billion FCFA (about USD 440 million) were sent to Mali by Malian workers abroad (Gonin and Kotlok, 2012). Remittances contribute 5 to 11 percent to reducing income poverty at national level and about 5 percent to reducing the Gini index (Gonin and Kotlok, 2012).

**Figure 15. Transfers to Mali by Malian workers living abroad, millions FCFA, 2000-2009**



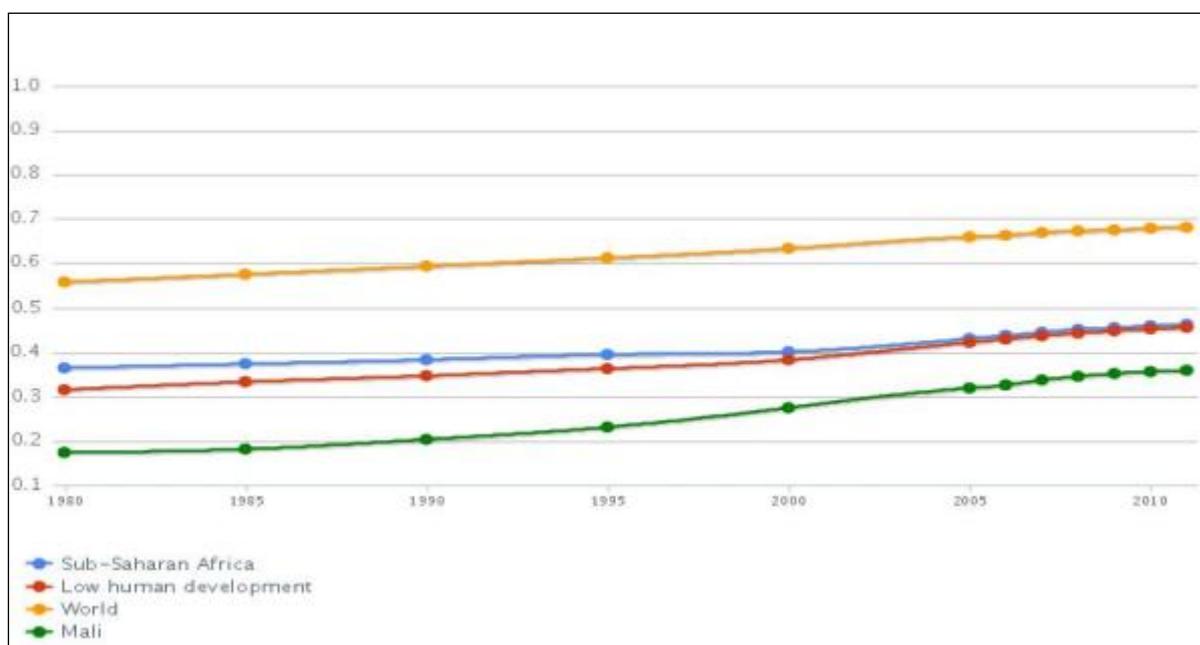
Source: BCEAO, cited by Gonin, P. and Kotlok, N., 2012

### Food security and health

#### Precarious sociosanitary conditions despite low rates of malnutrition and AIDS prevalence compared with African average levels

Poverty in Mali is not just monetary. The Human Development Index (HDI) of Mali was 0.309 in 2010, ranking 160<sup>th</sup> of 169 countries, and 32<sup>nd</sup> of 41 countries with low HDI (UNDP, 2010). A low growth rate of 2.34 percent was recorded over the period 2000-2010, and Mali's HDI remains less than half the world average of 0.624 (Figure 16).

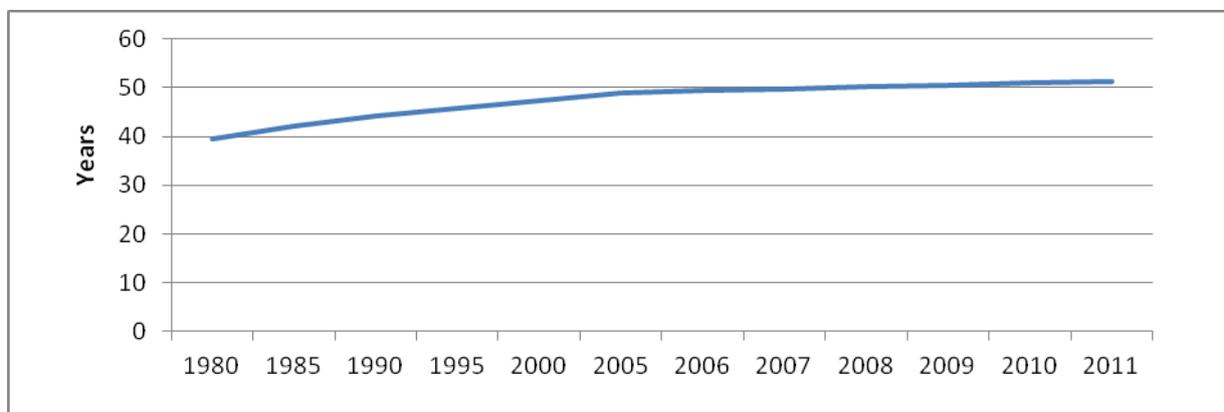
**Figure 16. HDI of Mali, sub-Saharan Africa, low human development countries and the world, 1980-2011**



Source: UNDP, 2010

Levels of health and sanitation in Mali are low and the progress made so far is so limited, in all areas, that meeting the Millennium Development Goals will be unlikely. Life expectancy at birth rose from 44.2 years in 1990 to 51.4 years (Figure 17) (UNDP, 2010), still below the sub-regional average of 57.7 years. Life expectancy at birth is reduced by the high mortality rate of children between 0 and 5 years (infant-child mortality): despite a 30 percent decline over the past twenty years, in 2006 it still was 191 per 1 000 births, compared with an average of 127 for Africa and 60 for the world (WHO, 2011). One positive development in child health is the strong improvement in the rate of child immunization. In 2001, only 48.7 percent of children were vaccinated against measles, rising to 68.4 percent in 2006 (UNICEF, 2008). Child health is closely related to maternal health, which is a major challenge for Mali. For example, only 49 percent of births were attended by a midwife or doctor, with an 8 percent increase between 2001 and 2006 (UNICEF, 2008). Contraception is used by 7 percent of couples. There are, however, some further significant improvements, such as the increase in prenatal care from 56.8 percent to 70.4 percent between 2001 and 2006 (UNICEF, 2008).

**Figure 17. Life expectancy at birth in Mali, years, 1980-2011**



Source: UNDP, 2011

The major disease in Mali is malaria: in 2008 it accounted for 38 percent of diseases recorded (**Table 22**). Acute respiratory infections and diarrhoea are the second and third disease, common in children. HIV is not prevalent in Mali, which has a prevalence rate of 10 per 1000 inhabitants between 15 and 49, close to the world average of 8 and well below the African average of 47. Tuberculosis affects 6.2 per 1 000 inhabitants, higher than the regional average of 4.7 and the world average of 2.

**Table 22. Leading diseases in Mali, number of cases and percent, 2008**

Diseases	Number of Cases	%
Severe malaria	1 326 639	38
Acute respiratory infections	435 813	13
Diarrhoea	183 057	5
Trauma	155 080	4
A HV	96 422	3
Other	1 259 637	36
Total	3 457 098	100

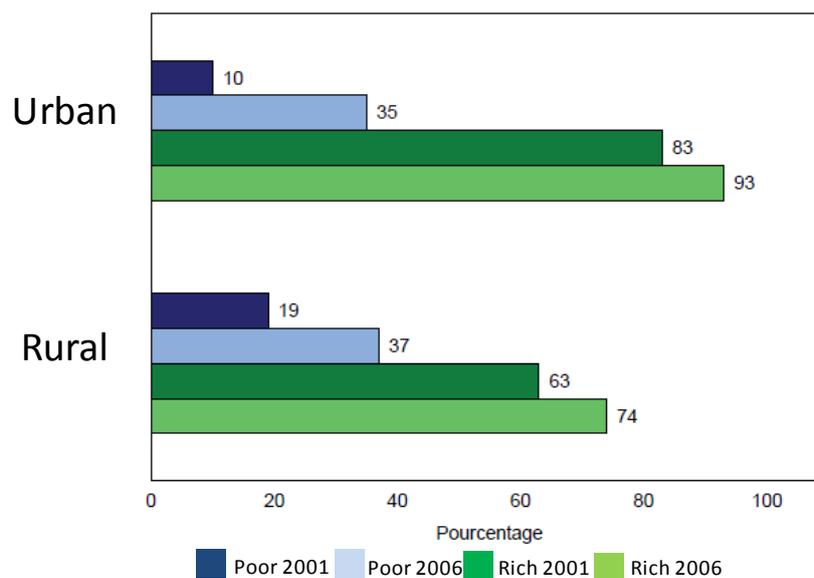
Source: Ministry of Health, Directory SLIS, 2008

**Table 23. Key figures for health in Mali, 2009**

	Mali	Africa	World
Life expectancy at birth	50	52	66
Adult mortality rate (per 1000 adults aged 15 to 59 years)	286	383	176
Mortality rate of children under 5 (per 1 000 births)	191	127	60
Maternal mortality rate	830	620	260
HIV prevalence (per 1 000 adults aged 15 to 49)	10	47	8
Prevalence of tuberculosis (per 100 000 population)	628	475	201

Source: World Health Organization, 2009

Inadequate sanitary conditions in the country are among the main causes of disease. Access to safe water remains a problem even though it improved sharply between 2003 and 2011, from 68 to 80.9 percent of the population (INSTAT, 2011). These figures from INSTAT should be compared with figures from the Demographic and Health Survey among households, which indicate that only 56 percent of the population had access to potable water in 2006. Rural areas are highly disadvantaged with only 77.5 percent having access to drinking water compared with 91.1 percent for urban areas (INSTAT, 2011). **Figure 18. Access to drinking water in Mali by rural and urban, rich and poor people, percent (EDSM-2001 and EDSM-2006)** shows similar and even larger differences between rural and urban, and particularly between rich and poor people.

**Figure 18. Access to drinking water in Mali by rural and urban, rich and poor people, percent (EDSM-2001 and EDSM-2006)**

Source: UNICEF, 2008

Other health indicators are poor: only 5.1 percent of households use flush toilets, while 60.3 percent of Malians use places not suitable for disposal of household waste and 72.5 percent discharge sewage into the street. The proportion of state budget allocated to health is low: 9.3 percent in 2009 compared with around 17 percent for most developed countries. One quarter of public expenditure on health is derived from external financing (WHO, 2011).

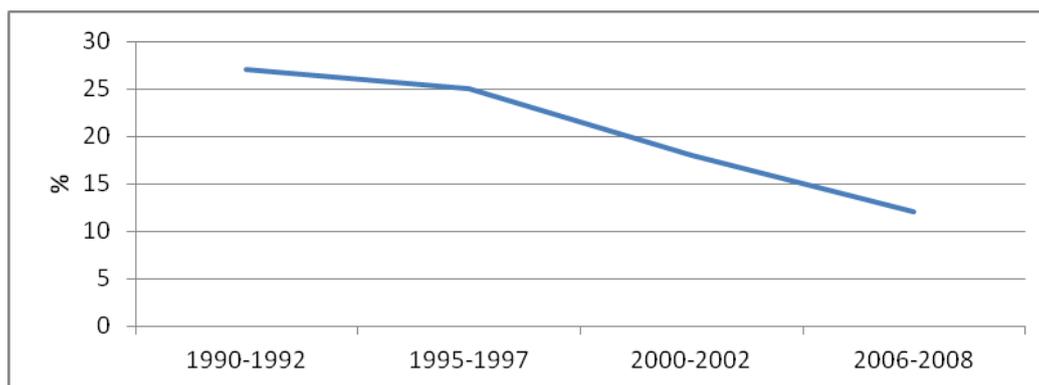
Food insecurity is another factor affecting health. The Food and Agriculture Organization (FAO) estimated that 2.4 million people were undernourished in Mali in 1990–1992, going down to 1.5 million, 12 percent of the population, in 2006–2008 (SOFI 2011). Although food insecurity in Mali is less prevalent than the average in sub-Saharan Africa (27 percent), this should not mask the nutrition problems facing the people of Mali.

Climatic hazards such as natural disasters, plagues of locusts and poor rainfall can cause production shortfalls, reducing availability particularly of cereals (millet/sorghum/maize), basic foods in Mali, but also of livestock. The people in the North and East are most vulnerable in terms of food availability, primarily due to weather conditions.

Access to food is the most important issue in food security. The large majority of the population is facing limited access because of low incomes. This is particularly true for the rural population, 57 percent of whom live under the national poverty line, with 81 percent of producers living under this poverty line. (Bourdet, Dabita and Dembele, 2010). The rural population is spending 43 percent of its income on food; urban people 38 percent (ODI, 2009). The rural population is particularly vulnerable to changes in grain prices. Physical access is also a constraint for people in remote areas of the northern region and north of Koulikoro. Stability of food security is itself compromised by the various shocks already mentioned which Mali is subject to: climate-related as well as economic (price volatility).

The nature of the diet is also of concern for an important part of the population. The Food Diversification Index, which is the proportion of food groups other than cereals and roots/tubers in Energy and Food Availability (DEA), was 30 percent in 2005 (FAO, 2010). Forty three percent of Malian households have a very poor consumption profile (FAO, 2010), rural households representing 77 percent of all households with this profile. This profile is characterized by a very poor diet based on cereals, especially millet and sorghum. These cereals are the main food item, accounting for 21.4 percent of household expenditure in 2006 (FAO, 2010). These difficulties prompted the government to implement a national strategy for food security by 2015.

**Figure 19. Proportion of undernourished in Mali, percent of total population, 1990-2008**



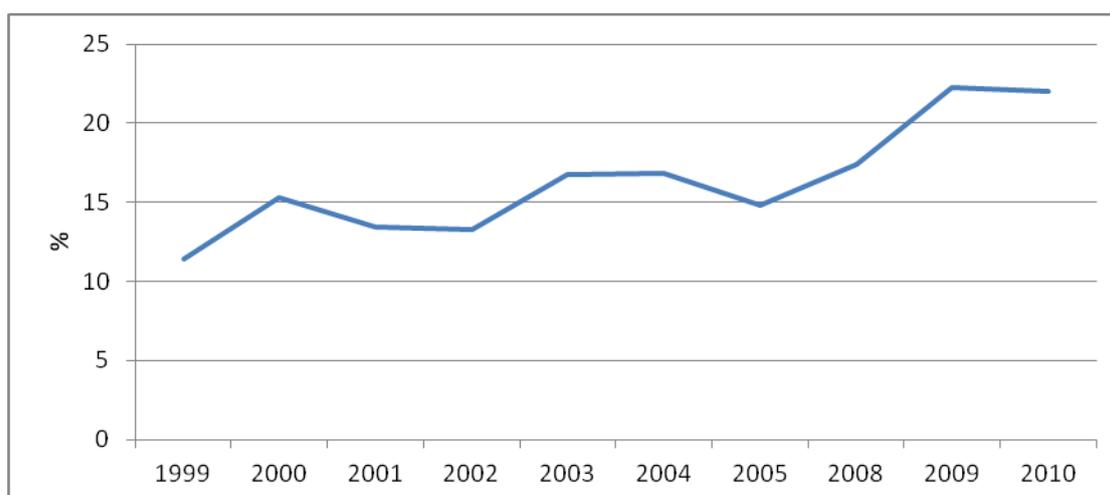
Source: FAO, 2012

## Education and gender

### Access to basic education increased but multiple problems in the education system

Education in Mali, as in many developing countries, has been showing a sharp increase in quantitative indicators, while the quality remains low. Mali has been investing heavily in education; the share of education in the budget doubled from 11 percent in 1999 to 22 percent in 2010 (Figure 20).

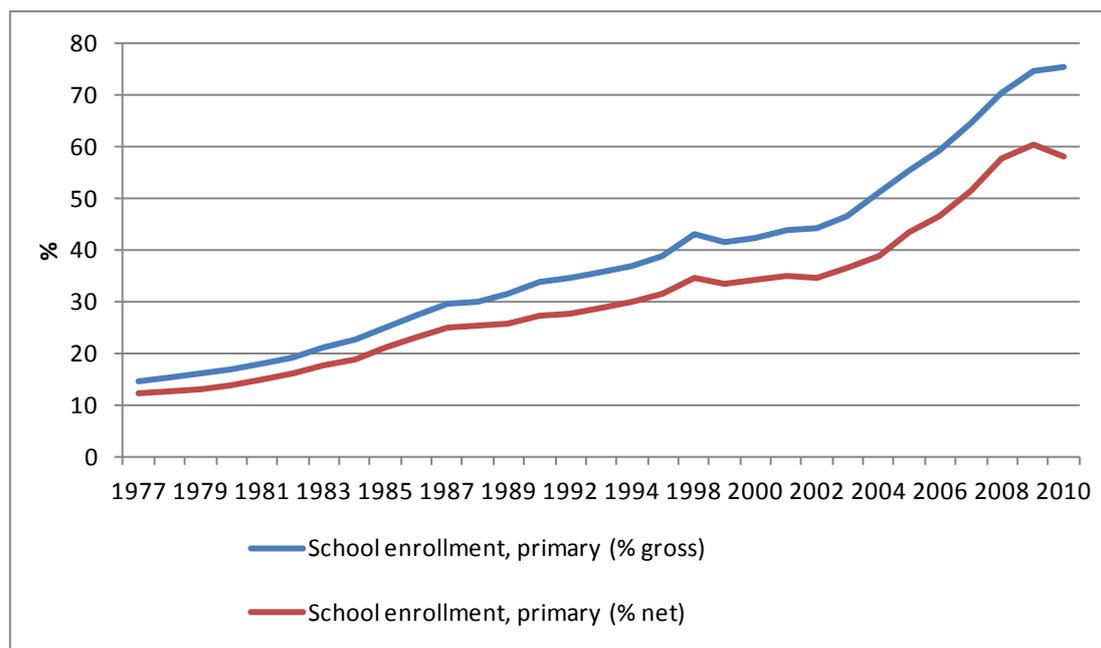
**Figure 20. Budget allocated to education in Mali, percent of national budget, 2000-2009**



Source: World Bank, 2012

The gross enrolment rate<sup>4</sup> in primary school increased markedly, particularly since the implementation of the Ten-Year Education Development (PRODEC), which targeted a gross enrolment rate of 95 percent by 2010 (**Figure 21**). This objective has not been reached, but the enrolment rate soared fourfold from the 1990s. The net ratio is much lower, falling to 65 percent in 2010 (UNESCO, 2010). The gross enrolment rate in secondary education is also low, 39.4 percent in 2010 (net 31 percent), while the gross enrolment rate in higher education is 5.8 percent (World Bank, 2012). Only 55.4 percent of all children complete primary school (2011) while 43 percent of students who entered complete high school (2010) (APCAM, MSU, 2011).

**Figure 21. Gross enrolment rate in primary and secondary schools in Mali, percent, 1971-2011**



Source: World Bank, 2012

Thus, despite increased access to basic education, significant problems lie in the system's ability to produce future skilled workers. The quality of education is low: less than half the teachers in Mali have received adequate training (Pearce et al., 2009), and the classes are overcrowded, with an average of 51 students per class (UNDP, 2010). This constraint is likely to increase with the continuing population growth; the number of 7 to 15-year-olds will increase by around 43 percent between 2008 and 2020 (APCAM, MSU, 2011).

Corruption practices are common within the system, especially for the allocation of marks. A visible consequence of the current failure of the Malian education system is the lowest rate of adult literacy in the world: 26 percent in 2006 (UNDP), compared with 50 percent in West Africa (Table 24). In higher education, the University of Bamako is malfunctioning, having seen a decade of frequent strikes by students and professors that undermine the quality of the teaching. Also, with its budget

<sup>4</sup> Net enrolment rate is the number of students in the age range intended for the school enrolled as a percentage of all children in that age range. Gross enrolment rate also includes students outside that age range who are enrolled.

based on external financing, it faces the risk of cancellation of sectors or stages of education when such funds are withdrawn.

**Table 24. Adult literacy rate in Mali, percent, 1976–2006**

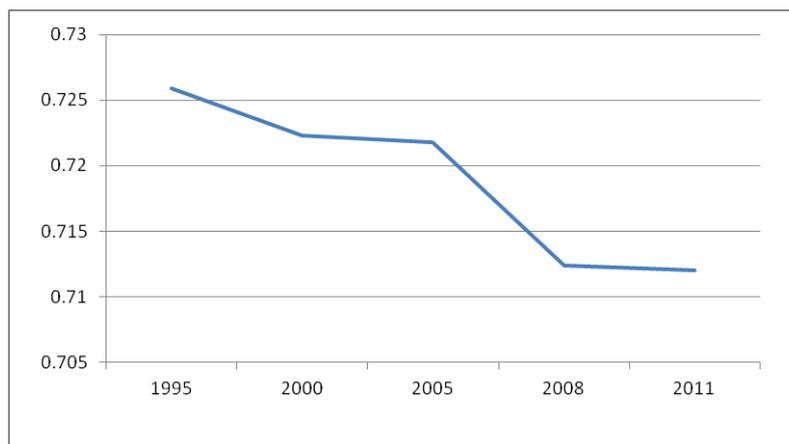
Year	1976	1998	2003	2006
<b>Adult literacy rate (% of people aged 15 and over)</b>	9.4	19	24	26.1

Source: World Bank, 2012

In 2010, the government announced the creation of the University of Segou to decentralize education and relieve the University of Bamako. The University of Segou was inaugurated in January 2012. The state wanted to provide this university with an agricultural faculty giving classes in agronomy, agricultural economics and rural sociology. This shows a desire to revitalize agricultural education, while the prestige of the Rural Polytechnic Institute and Applied Research Katibougou (IPF/IFRA) weakened, enrolment declining from an average 5 000 in 1990 to 600 in 2008. Several agricultural training centres also exist (APCAM, MSU, 2011).

There are inequalities in access to education, urban/rural and male/female. In 2006, the attendance rate in primary schools was 88 percent in urban areas against 49 percent in rural areas (CPS/MS, 2002). The attendance rate of 65 percent for boys and 54 percent for girls shows gender inequality, but the enrolment of girls has been catching up with an 11 percent increase between 2001 and 2010, compared with 4 percent for boys (CPS/MS, 2002).

Gender inequalities are severe in Mali (Figure 22). The UNDP index of gender inequality ranges from 0 (no inequality) to 1 (extreme). The index for Mali was 0.799 in 2008, worse than the African average of 0.735, which is considerably higher than the global average (0.560). The country is ranked 160<sup>th</sup> out of 169 countries. Other indices assessing gender inequalities are the Global Gender Gap Index, with Mali 127<sup>th</sup> out of 134, and the Social Institutions and Gender Index, with Mali 99th out of 102 (APCAM, MSU, 2011). Although the Constitution accords women equal rights with men, this is not the case in practice in the strongly traditional Malian society. Female circumcision is still widespread and forced marriages before age 15 remain common, especially in rural areas. Access to land and credit remains notoriously more difficult for women. The revision of the Family Code, originally planned to improve the status of women, ultimately backfired. Promulgated in January 2012, it endorses inequalities such as the fact that the man is considered the head of the family. Living conditions for women are systematically worse than for men: in the field of health and education as mentioned above, but also in food security, household chores or employment. The participation rate of women in employment was 38.1 percent in 2008, compared with 68.9 percent of men (UNDP, 2011). Women held only 10 percent of the seats in Parliament in 2010 (UNDP, 2011). This reveals the low potential of women to drive change in the country, since political institutions represent the catalyst for that change in Mali, through their institutional and financial leverage.

**Figure 22. Index of gender inequality in Mali, 1995–2011 (absolute inequality = 1, no inequality = 0)**

Source: UNDP, 2011

## Context of agricultural and food policies

### Key strategies and government priorities for agricultural and rural development

#### A progressive unification of legislative frameworks, strategic and operational agricultural development in Mali

The Government of Mali has sought to develop a model of redistributive growth and high added value, taking into account macroeconomic realities, in an evolutionary sequence of five-year frameworks (Figure 20). The **Strategic Framework for the Fight against Poverty** (PRSP) was set up in 2002 for five years, and replaced in 2007 by the **Strategic Framework for Growth and Poverty Reduction** (CSCR), which framed and supported the implementation of these broad strategic directions for the period until 2011. The latter describes the policies and programmes that the country intends to implement so as to "promote growth at an annual rate of 7 percent and reduce poverty" (Ministry of Agriculture, 2007), and accelerate progress towards achieving the Millennium Development Goals. One of the three pillars of CSCR is to strengthen the productive sectors of the economy, with particular emphasis on the rural and agricultural sector (APCAM, MSU, 2011). The specific guidance by the CSCR SRA can be summarized in the following areas:

- Value addition, diversification and better marketing of rural products;
- Water availability and water control;
- Financing of agriculture;
- Access to inputs;
- Protection and preservation of the environment (urban and rural);
- Access to land;
- Plant protection;
- Technical supervision and accountability of rural producers (Ministry of Agriculture, 2007).

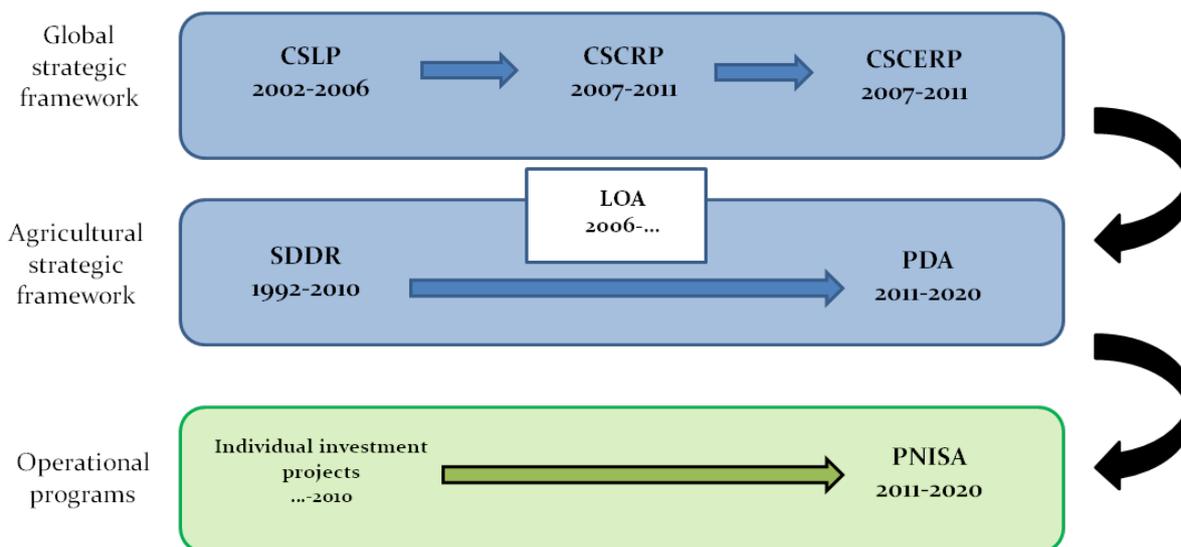
The CSCR expired in 2011 and was replaced by the Strategic Framework for Growth, Employment and Poverty Reduction (CSCERP), planned for the period 2012-2017. The policy guidelines specific to rural and agricultural development have been formulated in a more precise framework, the foundations of which were laid in 1991 at the Convention of the Countryside. These have resulted in

the Master Plan for Rural Development (SDDR), adopted in 1992 and renewed for the period 2000–2010. This scheme was presented as the "framework of action in rural development" (La Chapelle, 2011), an "instrument of consensus between government, producers, civil society and all development partners around the political sector". However, if the SDDR was formulating general objectives, priority action programmes and mechanisms to support planning for the sector, it was never translated into a budgeted action plan (Ministry of Agriculture, 2007).

In 2006, the Malian Government adopted an Agricultural Orientation Law (LOA), with the objective to "determine and conduct the long-term policy of agricultural development in Mali" (GRET, 2005). The LOA covers all economic activities of the agricultural sector, rural and suburban, aiming to make this sector the engine of the national economy, and to promote "sustainable, diverse, modern and competitive agriculture, placing farmers in the centre of the process " (GRET, 2005). The LOA therefore advocates restructuring and modernization of agriculture and medium and large family farms, making them competitive and integrated into the subregional economy, and boosting employment in rural areas. This requires a distancing and disengagement of the state through decentralization and privatization, and greater consultation with stakeholders in the sector. The LOA has been implemented in accordance with the Common Agricultural Policy of ECOWAS and NEPAD CAADP's recommendations.

The strategic framework of the LOA, intended to replace the SDDR, which expired in 2010, is the Agricultural Development Policy (PDA) from 2011 to 2020. The PDA is the subject of the first article of the LOA: the PDA should translate its vision in a "concrete and quantified" way. The PDA is intended to be more unifying and more operational than the SDDR. This is why a tool for planning and monitoring/evaluation was developed; the National Agricultural Sector Investment Plan (PNISA), which will bring together all national investment plans, programs and projects, and interventions in favour of the agriculture and food sector in Mali.

Several other strategies and major programmes for different fields of activity (sanitation, energy, AIDS, rice...), are also integrated within the PDA.

**Figure 23. Strategic agricultural policy frameworks and operational programmes in Mali**

Source: Authors from MAFAP, 2012

### Priority agricultural policies focused on increasing grain production and disengagement of the state from the management of the cotton sector

The Malian Government and the technical and financial partners are investing substantially in the agriculture sector, with the intention of turning it into the main development driver for the country. Total government expenditures to the rural and agricultural sector increased by 82 percent between 2004 and 2010 (MAFAP, 2012) and the share of the total budget for agriculture is more than 10 percent, as expected in the Maputo Declaration of 2003.

The government's priority in terms of agricultural policy, beyond the more general objectives mentioned above, is to increase the country's grain production by 30 percent for 2013–2014 (London Economist Intelligence Unit, 2011). Through this increase the government aims to strengthen national food security and provide better returns to producers. The aim is also to improve the trade balance by increasing exports and making Mali a net exporter of grains and the "breadbasket of West Africa", an ambition dating from the colonial period. The government multiplied input subsidies for agriculture from FCFA 13.6 billion in 2009 to FCFA 31 billion in 2012 (Ministry of Agriculture, 2012), through the Rice Initiative, launched in 2008, and since extended to wheat and maize, cotton, millet, sorghum and cowpea.

The government's investments are concentrated on irrigated crops, mainly in the Niger Delta: irrigation facilities were built in 2010 for 11 882 ha of lowland and 965 ha of floodplain (OECD 2011). Another focus is on diversification of export crops: cereals (rice, wheat, maize) and fruit, promoted by the Agricultural Competitiveness and Diversification Programme (PCDA), a comprehensive programme launched in 2008 with support from the World Bank. This programme, which expired in 2010, has been renewed until 2013. In addition to the PCDA, the World Bank and other technical and financial partners have initiated a new programme with similar ambitions: the Increasing Agricultural Productivity Project (PAPAM).

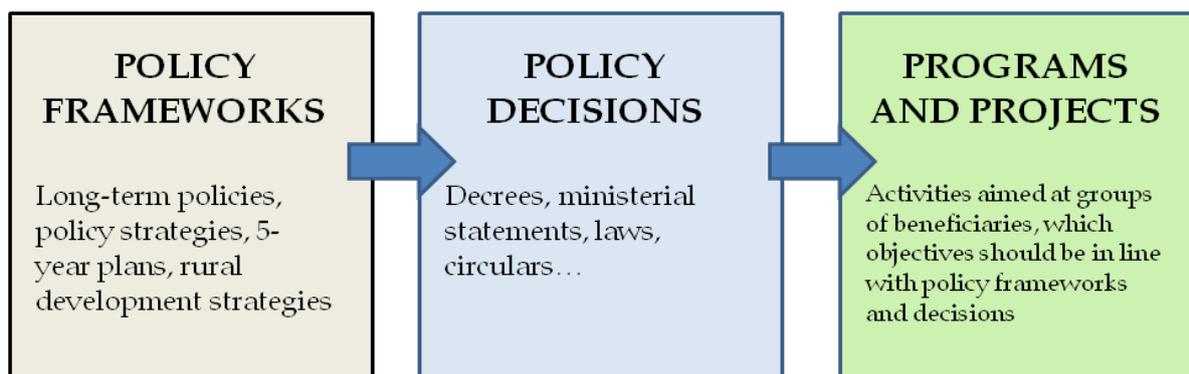
Another major challenge is the privatization of the CMDT, the national cotton company. After the decision in 2001, the process started in 2003 with the refocusing of CMDT's activities. The final phase, started in 2007, has not been concluded, and the situation and status of the tenders issued for the four regional units is not clear. Cotton is still a leading sector; investment in the sector more than doubled between 2009 and 2010 to 26 444 billion FCFA (OECD 2011).

It is inevitable that priorities and policy options for agriculture in Mali will depend to some considerable extent on the national and regional political context of the months and years to come. There is at present some uncertainty about the political and social climate in Mali, following the events of spring 2012. Instability, at the highest levels of national institutions, is an obvious impediment to the country's capacity to implement sustainable agricultural and rural policies. Yet, despite these events, a significant number of encouraging political processes, programmes and projects – such as the MAFAP project – are underway and have retained the attention of national authorities and development partners.

The new government has begun by according top priority to the country's rural and agricultural sector: 36 billion FCFA has been allocated on equity, to subsidize inputs for the new crop year. The ambitious activities in the context of the new Agricultural Development Policy show the importance attached by policy-makers and stakeholders in rural areas to the implementation of effective policies and to making agriculture a real development driver for the country. In this context, it is essential to have, or make available, solid information that allows all stakeholders (policy-makers, donors, civil society, producers and producer organizations, research) to have a clear, common vision of the rural and agricultural realities in Mali.

### **Measures and policy decisions on agricultural value chains analysed**

Over the period 2005-2010, the Malian Government took a series of measures and policy decisions that directly affect the main agricultural sectors in the country, most of which are analysed by the MAFAP project. Decisions and policy measures are defined here as "Decrees or Ministerial announcements on specific aspects of a policy framework" (FAO-FAPDA, 2010). They correspond to an implementation phase of these frameworks, but retain a statutory status, which differentiates them from projects and programmes (Figure 24).

**Figure 24. Simplified representation of the decision process and implementation of agricultural policies**

Source: FAPDA, 2010

This section is a review of decisions and government actions likely to have had an effect on incentives to production, directly (e.g. taxes or subsidies) or indirectly (capacity building activities, investments in public goods or services, or improvements of transport networks, for example). These various decisions and measures can be divided into four categories: general ones, in principle affecting all products, those targeting export products, those for imported products, and those relating to products not traded internationally. This study covers a sample of eight important agricultural products resulting from a selection process conducted jointly with national partners of the project (see section on methodology for product selection, Part 2, p.59).

### *General policy decisions*

The Rice Initiative is a policy decision and measure that covered all three product categories (imports, exports, and products not traded internationally) during the study period. This measure was introduced in 2008 by the Government of Mali. Initially intended to support the rice sector, it was extended in 2009 and 2010 to include maize, wheat, cotton, millet and sorghum. The Rice Initiative is to provide farmers with seeds and fertilizer at about 50 percent of their market price. The state also provides credit facilities (for power tillers, threshers, pumps) and support and advice to producers. The total amount of the fertilizer subsidy (see Table 25) rose in 2009/2010 to 16 200 FCFA, about 64 percent of the 25 398 billion planned (Ministry of Agriculture, 2010).

**Table 25. Input subsidies through Rice Initiative, 2008–2013**

Year	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
<b>Expenditure (billion FCFA)</b>	11.6	16.2	21.5	31*	36*

Source: Ministry of Agriculture, 2012 \*estimated amount

Another important decision in 2007-2008 was to sell grain from national stocks at subsidized prices to mitigate food insecurity in the country. Sales included maize (exported in small volumes, only in the subregion), millet and sorghum (very small volume traded, occasionally exported), and rice (massive volume imported). The national stocks, with a capacity of 135 250 tons, represent 78 percent of the storage capacity of the country (Diarra, S. et al.2011) and are managed by the Office of Agricultural Products of Mali (OPAM).

### Exported products

Cotton fibre and livestock are first and second export agricultural commodities in Mali. Groundnut is also an important export sector, groundnut oil and shelled groundnut being the fourth and fifth export products by value. Among the measures to mitigate effects of the food crisis of 2007-2008, the Malian Government decided to suspend the export of cereals and certain food products in 2007. However, these measures were not applied to groundnuts, livestock or cotton fibre, which continued to be exported without tax or direct government intervention.

**Cotton.** Cotton fibre is the first agricultural export product by value. The first important measure for cotton producers is the input subsidy, which started when the Rice Initiative was extended to other products in 2009/2010. Because of soaring energy prices (oil), several governments in West Africa including Mali, Burkina Faso and Cameroon, decided to subsidize inputs the prices of which had risen sharply compared to previous campaigns. The sale price of fertilizer (such as NPK 15-15-15 and urea 46 percent) to producers was set at 12,500 FCFA per 50 kg bag. The total amount of subsidy for producers reached 21 310 billion FCFA, including 11 850 billion FCFA for cotton producers in the area (FAO-FAPDA, 2010). Calculated from the cotton production of the 2009/2010 season, this amounts to a subsidy of 50 127 FCFA/tons of cotton fibre.

During the 2010-2011 crop year the fertilizer subsidy was applied to rice, maize, wheat and cotton. Out of a total of 900 000 farms, 446 507 farms or 49.6 percent benefited from the subsidy. Grant amounts recorded during the crop year as of February 1, 2011 are included in Table 26 below. Calculated from the production of the campaign 2010/2011, this amounts to a subsidy of 38 913 FCFA/tons of cotton fibre.

**Table 26. Amount of fertilizer subsidy for 2009/10 and 2010/2011 in Mali, CFAF/kg**

	2009/10	2010/11
Expenditures for general input subsidies	21,310,000,000	22,047,866,373
Subsidies for cotton producers of the CMDT	11,850,000,000	10,193,930,505
Subsidy equivalent (CFAF/TON of fibre)	50,127	38,913

Source: National Department of Agriculture, Review of the crop year 2010/2011

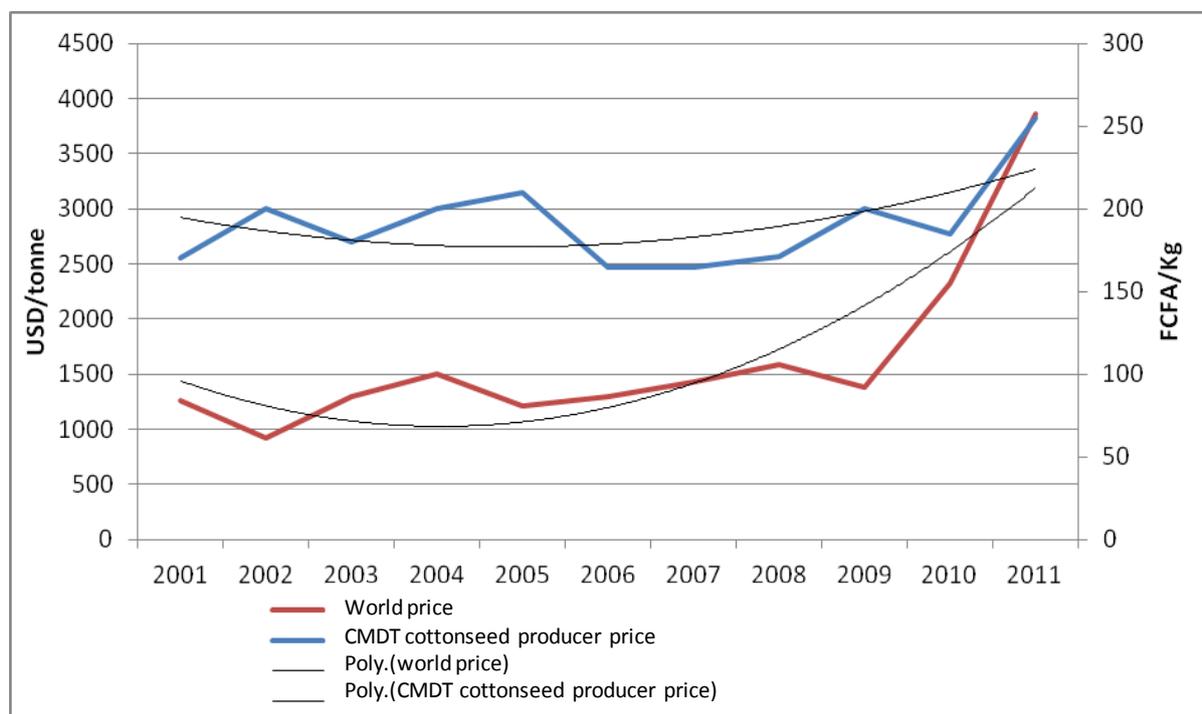
The mechanism for setting prices of seed cotton is another important measure to support the cotton sector. This mechanism, in part controlled by the government through the CMDT (despite the upcoming privatization of the latter), is designed to smooth out the price received by producers for seed cotton in Mali compared with international cotton prices.

The mechanism has changed three times since 2005. The principle is to guarantee a minimum price to cotton farmers while putting in place a ceiling price, determined before the production year, based on estimated production costs. This price may be adjusted later in the season depending on the world cotton price (COTLOOK index Middle East) and producers can then receive a supplement if the estimated price was lower than the price at the end of the season. A Memorandum of

Understanding, serving as a rule for the mechanism, stipulates that the price range is between 160 and 175 FCFA/kg.

Figure 25 shows clearly how the Malian system has largely smoothed the price curve and fluctuations in world prices at the producer level, especially in periods of decline (2001, 2004 and 2008). The producer price averaged 56 percent of the world price between 2001/02 and 2010/11, with peaks at 78 percent in 2004/05 and 77 percent in 2008/09. However, this mechanism has also prevented the transfer of high prices to producers from 2008 (see discussion in section 5, p.58). This situation is largely due to the fact that the CMDT is still the main actor in the sector in Mali: the sole buyer and the sole exporter of Malian cotton on the international market.

**Figure 25. Cotton production in Mali and trends in world prices<sup>5</sup> of cotton lint and seed cotton between 2000/2001 and 2009/10**



Source: Authors from CMDT, OECD/AfDB, 2006 for the adjusted world price

**Cattle.** There is no record of any specific government policy decision on cattle over the period 2005-2010. There is, however, the upstream development of a strategic framework, the National Policy on Livestock in 2004, and the creation of a new National Directorate of Production and Animal Industries (DNPIA), which replaced the Office of Malian Livestock and Meat (OMBEVI). At the concrete action level, many projects and programmes supporting cattle development were implemented in the period 2005-2010. The funds used for these projects and programmes were taken into account in the analysis of public expenditure and extend the range of available data (see Section 6, p.105). The amounts invested by the Malian Government have been relatively low compared with the relative importance of the cattle sector in the national economy, livestock being the third largest export product in value. From 2006 to 2010, the cattle subsector accounted for 9%

<sup>5</sup> The adjusted world price is the price of cotton fibre in local currency (CFA), adjusted by the coefficient transformation technique of seed cotton in cotton fibre.

of public expenditure on agricultural production in Mali (MAFAP, analysis of public expenditure, 2012).

**Groundnut.** Groundnuts, a former cash crop, is nowadays exported in limited quantities (about 50 000 tons a year) and gets little attention from the government. There is no specific policy measure targeting groundnut production or trade.

### *Imported products*

Excluding food preparations, rice and milk were the first and fifth food products in import value in 2009 (FAOSTAT). Following the 2007-2008 food crisis, the government took measures to encourage imports. Value added tax (VAT) on imported products (considered a protective tariff) and indirect taxes were suspended on many products, including milk and rice. Custom duties on imports of basic foodstuffs were also suspended over the same period. Meanwhile, at government initiative, negotiations were conducted with wholesalers to reduce the prices of basic foodstuffs. The government focused primarily on rice through these measures.

**Rice.** Rice is by far the most strategic import product: it is widely consumed, particularly in urban areas, making it a key product to ensure the food security of the population. Rice imports compete with domestic production, while Mali aims to become a net exporter of this cereal. In order to satisfy consumers, especially urban consumers, the government waived taxes and duties on imports of rice from March 2008 to December 2009, but on condition that the operators agreed to sell their rice at or below a ceiling price (**Table 27**). This operation was still ongoing in 2012. Rice sales from domestic stocks in food-insecure areas have been another measure to improve food security.

**Table 27. Wholesale and retail ceiling prices for rice in Mali, CFA/tons and FCFA/kg, 2008-2009**

Price	2008	2009
Wholesale (FCFA/TON)	300,000	280,000
Retail (FCFA/kg)	310	300

Source: FAPDA, 2012

Besides these measures and policy decisions, aiming directly at improving consumers food security, the government launched the Rice Initiative in 2008. Its first goal was to offer a reasonable price to the consumer while allowing producers to take advantage of a profitable price. Emphasis was therefore placed on reducing production costs to make lower prices to consumers possible, but also to stimulate domestic production to reduce import dependence, and even make the country a net exporter. The first component of the Rice Initiative is extension services, technical assistance, and capacity building with 0.7 billion FCFA in the budget for rice for the 2009-2010 campaign (Ministry of Agriculture, 2009). There are also credit facilities for farm equipment, with 7 percent bank interest and a five-year repayment period.

More than 1.1 billion FCFA were advanced in 2008 (Ministry of Agriculture, 2009), while the Rice Initiative did not yet include other cereals (Ministry of Agriculture, 2009). Later, the input subsidy allowed rice farmers to get 50 kg bags of fertilizer, urea or DAP, at 12 500 FCFA. These prices represent discounts of 22 percent and 19 percent for urea and 43 percent and 33 percent for DAP compared with the average market prices during the 2008/2009 and 2009/2010 campaigns

respectively (Ministry of Agriculture, 2010). The state spent 7.3 billion FCFA in fertilizer subsidy, overwhelmingly for rice, in 2008/2009 (Ministry of Agriculture, 2010), and budgeted an expenditure of 6.4 billion for 2009/2010 (Ministry of Agriculture, 2009).

The seeds of NERICA upland rice were subsidized under the Rice Initiative up to 60 percent of their estimated sale price at 300 CFA/kg (Ministry of Agriculture, 2009). The state spent 53 million FCFA in 2008/2009 for the grant of rice seed, and budgeted an expenditure of 1 billion FCFA in 2009/2010 (Ministry of Agriculture, 2009)

The Rice Initiative has also incorporated a large number of government policies, such as those intended to develop irrigation, particularly in the Office of Niger. Some of the investments or expenses associated with the development of irrigation are included in the analysis of public expenditure.

**Milk.** In 2007, following the explosion of international milk prices (a 32 percent increase between 2006 and 2008), Mali had a shortage of imported milk powder. The government decided to exempt milk imports from import duty, like those of rice. This coincided with a return to higher import levels recorded from 2008.

Decision-makers also showed their concern to develop this sector with the Development and Promotion of Milk Production Project in Mali (PRODEVALAIT). The project started in 2009 with the aim of increasing local production; improving milk collection for local processing industries; and inducing manufacturing industries to use local milk (CPS/SDR, 2010). The government invested almost 2 billion FCFA in the project (MAFAP, 2012). As a consequence, several collection centres have been built in the country. The construction of mini-dairies is included in several livestock projects such as the Regional Programme of conservation of ruminant livestock, the integrated development programme in the lake area, and the Tonka Development Project of Livestock in the Sahel.

### *Products not traded internationally*

The main crops not traded internationally but traded in Mali are millet and sorghum. They are widely consumed by rural households and almost entirely sold on the domestic market to feed the urban population. In 2001, according to EMEP, the population of Bamako consumed almost as much grain (millet, sorghum mainly) as rice. Millet and sorghum are also traded in grain-deficit areas in the north of the country. The total volume of millet exported from 1999 to 2009 amounts to 0.3 percent of national production for the same period; that of sorghum to 0.02 percent (FAOSTAT). Maize can also be considered as a product not traded internationally; registered imports and exports amount to less than 1 percent of production, except in 2005 when 3.5 percent was recorded. Since 2004/2005 the Malian Government has been implementing export restrictions of millet, maize and sorghum, which are considered strategic for the country's food security. These restrictions are in the form of instructions passed to the Customs (export red tape). There are no direct and explicit measures because these are contrary to decisions taken at both the West African Economic and Monetary Union (WAEMU) and ECOWAS about the free movement of goods and commodities. The cost of the informal restrictions is estimated at 10 FCFA/sack of grain (Dembele and Boughton, 2010). They are probably in place because of the government's lack of information concerning the level of grain stocks spread over the territory and its fear of a shortage in case of crop failure.

**Maize.** Maize is identified as a high-potential cereal by the Malian Government. It has the highest cereal yields after rice, and marketing prospects are good because of growing demand in the country and the subregion. In 2009/2010, the Government of Mali therefore launched the Intensification of Maize Culture Programme under the auspices of the Rice Initiative. Under this programme, the total subsidies actually spent for maize reached 2.286 billion FCFA for the 2009-2010 crop year, with a budgeted amount of 5 689 billion FCFA (Rice Initiative Assessment). The 2 286 billion were disbursed solely to support fertilizer use.

Support for cotton through the extended Rice Initiative probably benefited maize production as well because of the three-year rotation of cotton with cereals, which is widely practised in the cotton zone. This support, exclusively designed to lower the price of fertilizers, and covering 101 814 farms (Balance Rice Initiative), amounted to 10 4 billion FCFA in 2009/2010.

**Millet and Sorghum.** Despite the crucial role of these cereals in food security, the government neglects them because of their low productivity. However, it has been supporting the cultivation of millet and sorghum indirectly as part of the Rice Initiative, through the fertilizer subsidy for maize and cotton. Indeed, these food grains are seldom grown alone and while there is no direct support for producers of millet and sorghum, these crops benefit from the residual effects of fertilizer used on preceding cotton and maize crops. In some cases, the inputs provided for cotton and maize are at least partially used by farmers on their crops of millet and sorghum. There are also projects and programmes supporting millet and sorghum producers, and research on improved seeds.

## **Part 2: THE EFFECTS OF AGRICULTURAL AND FOOD POLICIES, PUBLIC EXPENDITURE AND AID**

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To attain specific development objectives, governments use policies to change the rules governing the economy as a whole (macroeconomic policy), or those governing a particular economic sector (sector policies), in order to guide and modify the behaviour and decisions of agents operating in the economy. This can either be done by establishing a legal framework by which economic agents must abide (e.g. food quality or safety norms, property rights), or run the risk of legal prosecution or fines. Another approach is institutional reform or providing incentives or disincentives to certain types of behaviour via price and trade policies, input and output marketing policies, social policies (income transfers, safety nets, social security schemes) and finance policies.

Public expenditure, on the other hand, can be used to make goods and services available to the food and agriculture sector, to support the implementation of government policies and to facilitate the achievement of development objectives. This expenditure may, for example, include the provision of public goods through public investment in infrastructure, or provide private benefits, such as subsidies or income transfers.

To monitor government actions and ensure that these are consistent and contribute adequately to development objectives, it is therefore essential that the authorities be fully informed regarding the incentives or disincentives that the packages of policies they implement may provide to the economy, and regarding the consistency, efficacy and adequacy of the way in which they spend their public resources.

Some of the key questions that governments need to consider include the following:

- Do policies in place provide incentives for production, processing and marketing in key food and agricultural value chains, or do they penalize them?
- Who, in the most strategic value chains, benefits from the policies in place? Producers, processors, traders or consumers?
- Which policies should be changed so that the incentive structure in the food and agriculture sector comes closer into line with government objectives?
- Is public expenditure spent in a way that addresses the key issues faced by the food and agriculture sector? (i.e. what is the most efficient way to improve farmer incomes -- an input subsidy or investment in a road?). Is public investment focusing on key investment needs?
- Are policy incentives and public expenditure coherent or do they in some cases provide contradictory signals to the economy, resulting in wastage of precious public resources?
- Are public resources spent efficiently, or are an excessive share of them used for administrative costs?

MAFAP adopts a three-pronged approach to assess the effects of food and agricultural policies on the agricultural sector: through price, public expenditure, and policy coherence analysis.

## **Price analysis**

This first approach is at the core of the MAFAP project. The MAFAP project assesses the effects of policy decisions that affect prices for the main commodities representing at least 65 percent of the production value in the country: bans, quotas, taxes.... This evaluation allows us to understand whether producers receive, or not, production incentives through high prices for each of these commodities, and to determine the causes of these (dis)incentives: trade policies, market structure, value chain efficiency....

The methodology behind this analysis relies on the law of one price, assuming that in an efficient market, all identical goods must have only one price. A benchmark price is therefore used for each commodity analysed, that is either the international or the regional price. This price is then adjusted with access costs from the point of export or import (transport, handling, margins...), and accounts for quality and quantity differences if necessary, to make it comparable to the domestic wholesale and producer prices. It is then called "a reference price", while the actual prices in the country are called "observed prices". The difference between the reference price and the observed price (price gap) provides a quantitative assessment of price incentives to wholesalers and producers. It is also called "market price support". If the price gap is positive, production is encouraged; on the contrary, a negative gap means producers are not supported through prices. This gap is also converted into a relative indicator (in percent), to allow comparisons with other commodities and across countries : this indicator is called Nominal Rate of Protection(NRP). The NRP reflects the policy support to producers and wholesalers through prices.

Additionally, budgetary transfers specifically directed to the commodity can be added to the calculation of the market price support to estimate the Nominal Rate of Assistance (NRA).

## **Public expenditure analysis**

Second, the project offers a disaggregated public expenditure analysis in support of food and agriculture in the country, in order to have a broader understanding of the effects of public policies. MAFAP looks at the composition of public expenditure, by commodity and nature of activities supported, budgeted and spent, supported by donors or nationally funded. The public expenditure analysis thus complements the price incentive analysis and helps policy-makers and donors understand if public expenditure addresses the development gaps of the country's agricultural sector.

The MAFAP public expenditure classification and analysis methodology builds upon the OECD's typology. It classifies all public expenditure (programmes, projects, governmental initiatives) into two main categories: agricultural-specific and agricultural-supportive. The first one relates to expenditure that goes either directly to agents working in agriculture (producers, traders...), or indirectly (research, training, extension...). The second one relates to expenditure supporting rural development as a whole and indirectly benefiting agents in the agriculture sector: rural education, energy, infrastructure. All initiatives, programmes, and project activities are individually classified within one of the several sub-categories existing, while administrative costs are also considered. Additional filters include classification by commodity and institution in charge of the activity.

### **Policy coherence analysis**

The third dimension combines the public expenditure and price incentive analysis. Comparing expenditure allocation with structural gaps and price incentives identified for each commodity, and for the sector as a whole, reveals if the government has a consistent agricultural policy set. For instance, the government may have spent a significant share of public expenditure to support production of one commodity, while not creating a policy environment allowing producers to benefit from high prices for the same commodities: low expenditure on roads and markets, low sale prices.... The policy coherence analysis also allows for assessing consistency between stated government policy objectives and effect of the policy measures as revealed by the MAFAP analysis of public expenditure and price incentives.

## Incentives, disincentives and market development gaps

### Abstract

#### Box 1: Summary of results by group of commodities analyzed

Disincentives for producers, and to a lesser extent wholesalers, are generally strong in the eight sectors analysed, indicating a lack of consistency in most targets set by the government.

- Imported products: despite the stated intention of the government to make the country a net exporter of rice, farmers are penalized regarding prices, thereby undermining chances for sustained support to production. Preference appears to be given to consumer interests during the food crisis. Milk producers remain heavily penalized, while dairy industries command good prices.
- Exported products: support for cotton via CMDT creates strong incentives for producers. However, the sustainability of this policy is questionable (privatization of the CMDT in progress, likely debt for the firm). Cattle breeders and wholesalers are significantly penalized, even though livestock is the country's third biggest export sector. Groundnuts are penalized, being neglected by the government, and as a consequence there are no policies supporting the commodity considered as a minor food crop.
- Non-traded products: millet, sorghum and maize are generally penalized, particularly because of their status as a grain for self-consumption. This is surprising for maize, which is highlighted by the government as a value chain with great potential (Maize Programme). Sorghum and millet are considered important for food security and the government hinders their export, thus strengthening disincentives for producers.
- In general, producers are penalized. However, this does not mean that all agents are penalized or lose out. Disincentives are reflected in producers' incentives passed on to consumers, who benefit from policies in place as in the case of rice or milk. Similarly, intermediaries such as dairy in the case of milk, or some retailers and wholesalers in the case of cattle or maize, may be favoured. Finally, if cotton farmers receive incentives, it seems clear that the CMDT and therefore the state, will be losers, and importers of cotton from Mali will be winners.
- Finally, the penalization of producers is also reflected in lower prices to consumers, which is broadly supportive of food security at least in the short term.

## Product Selection

Agricultural products were chosen for analysis based on three key criteria.

First, the products selected must represent about 70 percent of agricultural output in Mali.

Second, the selected products must also be representative of different categories of products in terms of the extent to which they are imported, exported, traded, or non-traded, as well as their relevance to food security. Indeed, the chosen products should represent at least 65 percent of total caloric intake in the country. Where applicable, products with high potential for use in promising or emerging value chains should also be taken into account, as identified in national policy frameworks. To ensure the relevance of indicators across the African continent, agricultural products representing a significant share of the total agricultural production value within their respective region, or within Africa as a whole, were identified for analysis in each country. In cases where domestic production exists, six of these regionally significant products were analysed in all countries where the MAFAP project is implemented. These commodities include rice, maize, groundnuts, beef, cassava, and plantain.

The sources used for the selection of products are:

- FAOSTAT regarding the value of total production in 1999-2011 constant international dollars
- FAO TradeSTAT for international trade
- FAOSTAT Food Balance for food security, using data volume and equivalent kilo calories available

Third, the national partner, as well as national development stakeholders, were consulted to determine other relevant products for analysis.

Based on these three criteria, the products that were first selected for analysis were originally: rice, beef, cotton, groundnuts, millet, sorghum, maize, mutton, cow's milk, goat meat, cowpeas, sugar and palm oil, plantain and cassava. Plantain and cassava were dropped, Mali only having a marginal output of these products. The analysis for mutton, goat meat, cowpeas, sugar and palm oil was postponed to the next phase of MAFAP work in the country. Mangoes, papaya, onions, shallots, tomatoes and fish were chosen as additional products to analyse in this second phase.

In conclusion, this report includes the study of the following products: rice, beef, millet, cotton, groundnuts, sorghum, maize, and cow's milk.

**Table 28. Value of production, exports and imports of the products studied in Mali, in thousands of USD**

Products	Average production 2005-2008 (1000 constant USD 1999-2001)	Average exports 2004-2008 (1000 constant USD 1999-2001)	2004-2008 average imports (constant 1000 USD 1999-2001)
Rice (milled rice and broken)	282,579	-	45,821
Beef	260,242	-	-
Millet	213,683	-	-
Cotton fibre	153,792	254,110	-
Groundnuts	147,768	-	-
Sorghum	116,925	-	-
Cow's milk	71,031	-	19,987
Maize		-	-
<b>% Of total</b>	<b>65%</b>	<b>89</b>	<b>22.5%</b>

Source: FAOSTAT, 2012

It should be noted that food imports are dominated by Malian wheat and wheat flour (11.5 percent), food preparations (11 percent), refined sugar (10 percent) and cigarettes (9 percent).

### Highlights of the methodology

This section gives a brief account of the methodology used to calculate the indicators for measuring incentives and disincentives at farmgate and wholesale level (see Box 1). A detailed methodology is available from the MAFAP project site, at [www.fao.org/mafap-documents](http://www.fao.org/mafap-documents).

### Box 2 : Methodology and MAFAP indicators

#### The Nominal Rates of Protection

The MAFAP project analysis uses four measures of market incentives and disincentives. First, there are two observed nominal rates of protection – one at the wholesale level and one at the farm level – which compare domestic market prices to reference prices free from domestic policy interventions.

Reference prices are calculated from a benchmark price, such as an import or export price expressed in local currency, that is brought to the wholesale and farm levels by adjusting for quality, shrinkage, loss, and market access costs.

First, the *Nominal Rates of Protection - observed (NRPo)* are the price gap between the domestic market price and the reference price divided by the reference price at both the farm and wholesale levels:

$$NRPo_{fg} = (P_{fg} - RPo_{fg}) / RPo_{fg}; \quad NRPo_{wh} = (P_{wh} - RPo_{wh}) / RPo_{wh};$$

$NRPo_{fg}$  capture all trade and domestic policies, inefficiencies along the product's value chain and other factors affecting incentives or disincentives for the farmer.  $NRPo_{wh}$  help identify where incentives and disincentives may be distributed in the commodity market chain.

Second, there are two *Nominal Rates of Protection - adjusted (NRPa)* – one at the wholesale level and one at the farm level – in which the reference prices are adjusted to eliminate any distortions found in the market supply chain (e.g. extraordinarily high transport costs, taxes/levies or excessive profit margins of economic agents). The equations to estimate the adjusted rates of protection, however, follow the same general pattern as those used to calculate the observed rates of protection:

$$NRPa_{fg} = (P_{fg} - RPa_{fg}) / RPa_{fg}; \quad NRPa_{wh} = (P_{wh} - RPa_{wh}) / RPa_{wh};$$

Distorsions caused by market power, exchange rate misalignments, and excessive market access costs, which are quantified and used to adjust the  $NRPo$  and generate the  $NRPa$  indicators. A comparison of those rates of protection identifies where market development gaps can be found and reduced.

#### The Nominal Rate of Assistance

The nominal rate of assistance takes into account one additional dimension in the analysis: budgetary transfers to producers and wholesalers in the value chains. It is built for each value chain from the  $NRPa$  and public expenditure towards the analysed value chain (see p.105.). This rate will be developed in the forthcoming MAFAP reports. It is not, however, presented here because of insufficient accuracy of the data available on public expenditure for most of the value chains that were analysed.

### The Market Development Gap (MDG)

“Excessive” access costs within the value chain are the first sort of distortion captured with the market development gap indicator. These costs stem from factors such as poor infrastructure, high processing costs due to obsolete technology and high costs due to excessive post-harvest losses. These “excessive” access costs can be regarded as implicit disincentives to the extent that they could be reduced through suitable investments or better governance, thus allowing increasing prices received by farmers.

A second set of distortions taken into account is the impact of exchange rate misalignment, imperfect functioning and non-competitive pricing in international markets and monopoly power on prices paid and received in the value chain<sup>6</sup>.

A major methodological question is: to what extent can these components be disentangled in order to calculate the total market development gap?

From a methodology implementation standpoint, it is argued that once we have clarified the relationship between the different MDGs, it is possible to propose the measurement of all “market development gaps”. As suggested above, the total market development gap cannot be measured quantitatively without a subjective evaluation of the proportion of the observed price gap which is not trade and market price support related. However, it is possible to provide an indicator for the total MDG which is value chain specific and includes elements related to the excessive access costs in the value chain, international markets and exchange rate policy.

In order to provide a relative indicator of the market development gap value, we can relate the gap to the farmgate price (fg) or the wholesale price (wh) as follows:

$$\text{MDG}_{fg} = \frac{(\text{IMG} + \text{ERPG} + \text{ACG}_{wh} - \text{ACG}_{fg})}{P_{dfg}}$$

IMPORTED  
GOODS

$$\text{MDG}_{wh} = \frac{(\text{IMG} + \text{ERPG} + \text{ACG}_{wh})}{P_{dwh}}$$

EXPORTED  
GOODS

$$\text{MDG}_{fg} = \frac{(\text{IMG} + \text{ERPG} - \text{ACG}_{wh} - \text{ACG}_{fg})}{P_{dfg}}$$

$$\text{MDG}_{wh} = \frac{(\text{IMG} + \text{ERPG} - \text{ACG}_{wh})}{P_{dwh}}$$

<sup>6</sup> Ideally, it would also be possible to calculate the gaps resulting from uncorrected externalities in production and consumption, but as this would be extremely difficult to do across countries, it is not yet proposed as part of the project’s core methodology.

### Marketing channel

For all products analysed, it was necessary to identify the point of competition and a production area in order to obtain a representative wholesale and producer price. To this end, it was important to produce a detailed analysis of the marketing structure of each product studied. For some commodities (rice, maize, millet, sorghum, cotton, cattle, etc.) several production areas exist, involving different marketing corridors. For the purpose of the study in this first phase of MAFAP, we selected a single production area and a representative point of competition (wholesale). Details on the marketing corridors selected and analysed are available in the technical notes written for each of the products studied and consulted on the MAFAP project site at [www.fao.org/mafap-documents](http://www.fao.org/mafap-documents).

### Observed prices and reference prices

Producer prices were determined from statistics of the Observatory of Agricultural Markets (OMA), except in the case of milk, where prices were determined from a MAFAP survey, since OMA does not collect milk prices.

Prices at the wholesale level were determined either from statistics obtained from the OMA or the West African Market Information Systems Network (RESIMAO).

Prices in international markets (CIF or FOB) were obtained from various sources according to product (see Appendix 4 on page 190 data sources).

### Access costs between the producer and the point of competition

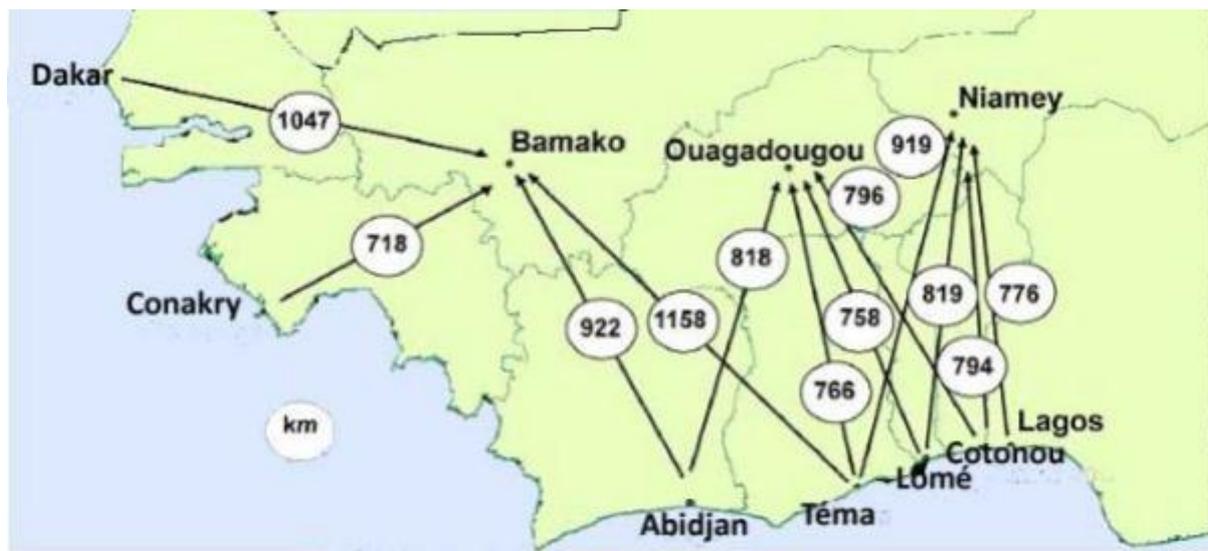
Access costs observed between the farm and wholesale market are calculated as the sum of the access costs collected by the national technical team for the MAFAP/SPAAA project. When data is insufficient, these access costs can be calculated as the difference between the wholesale and producer prices. The difference between these two prices supposedly reflects the real functioning of the sector, once all explicit taxes have been deducted. In other words, this value is an expression of the development level of infrastructure, the competitiveness of actors and the conditions of market power that are available for influencing access costs.

Access costs observed therefore include all costs, that is to say, transportation costs, various fees for services such as handling charges, the gross margin, expenses and illegal passage along existing corridors. Details and values of the access costs are available in Annex 6 on p.201.

### Access costs between the competition point and the border

In the case of a landlocked country such as Mali, the border is represented by the port which is the origin of imports and the destination for exports. Depending on the product analysed, total costs are reported at the port of embarkation or disembarkation. The ports that have been considered are: Tema (Ghana), Abidjan (Côte d'Ivoire), Conakry (Guinea), Lome (Togo), Dakar (Senegal), Cotonou (Benin). **Figure 26** shows the main commercial corridors. For non-traded products, it was decided to use some areas near the border with Mali as a point of competition, to better reflect the reality of those exchanges that are usually cross-border trade.

Figure 26. Trading corridors serving landlocked Mali, Burkina Faso, Niger



Source: Diallo and Steeve, 2009.

### Adjusted access costs

For all commodities analysed, adjusted data were considered for the access costs to the point of competition and access costs to the producer.

To determine access costs reflecting efficient value chains, the following adjustments have been made:

- estimates of actual transportation costs and reasonable profit margins have been provided by adjusting the cost of transport and trade margins, systematically choosing the lowest cost for each section.
- illegal taxes on roads from production areas to competition points and competition points to ports for export / import have been systematically deducted.

Because of the lack of reliable data, values used in the observed field were not changed for certain access cost dimensions, such as efficiency resulting from a better functioning of the sector and increased competition or reduced waiting times in crossing boundaries.

Adjusted costs therefore tend to be overestimates, that is to say, they are higher than they should be in a perfectly efficient market situation.

It follows that reference prices reported to producers that are calculated from the estimation of these access costs are lower than those that would reflect a market of perfect competition

### Indicators of effects of incentives or disincentives

The analysis is based on the comparison between domestic prices at farmgate and wholesale level and a reference price, which is calculated using the price of the product in the international market. Reference prices are those that producers should obtain in the absence of national policies affecting price levels and deficiencies in the structure and functioning of the product's domestic value chain.

The analysis is based on the law of one price, which is the economic theory that states there is only one prevailing price for each product in a perfectly competitive market. This law only applies in the

case of homogeneous goods, if information is correct (and therefore free), and if transaction costs are zero. Thus, the analysis in this study will be made for goods that are perfectly homogeneous (or perfect substitutes in the local market) in terms of quality, or, failing that, simply for comparable goods. An analysis of incentives and disincentives by the prices will, through indicators calculated from the reference and observed prices, reveal if prices are beneficial or detrimental to the different agents in the chain.

The indicators needed to estimate incentives or disincentives to production (NRP, NRA) and Market Development Gaps (MDGs) are calculated from the data presented in a simplified manner below. Note that the term "market development gap" does not fully take into account aspects that have to do with processing technologies, or with the lack of organization of the industry (including the question of scattered production, product collection and lack of organization of producers). These dimensions should also be kept in mind when interpreting the results.

The detailed calculations, the values used for each variable and all indicators calculated for each product, are available in Table 29 and Table 30 of the report. Furthermore, additional information is also available in the technical notes written for each of the products studied, which may be consulted on the MAFAP project site at [www.fao.org/mafap-documents](http://www.fao.org/mafap-documents).

**Table 29 and Table 30** show the two sets of indicators that the MAFAP project can generate: differences and ratios.

- The gaps obtained from observed prices and observed costs give an absolute representation of the effects of policy initiatives.
- The gaps obtained from the adjusted prices and adjusted costs take into account several other sources of price distortions such as market power in international markets, the effects of exchange rate policies and access costs, including the market development gaps. These gaps give a more precise representation of policy effects on price incentives and disincentives.
- The ratios, providing for the same variables a percentage that can be compared across countries and products.

Thus, indicators of the "observed field" consider whether government price policies had the desired effect in terms of incentives; for instance, if an import tariff of 20 percent has induced 20 percent price incentives to producers. The "adjusted field" indicators integrate other, less explicit variables to the analysis related to the policy environment (exchange rate, inefficiencies in transport costs), which provide further explanations for understanding the gap between the reference price producers should obtain and the price they actually receive.

### Caveats and limitations

First, uncertainty about data quality poses a limit to our analytical work. Every effort has been made to submit the data collected from local experts, in order to minimize errors.

Additional efforts were made to ensure data quality and to support partners in advocating for investment in reliable national statistical systems, a move that would provide great benefits for informed policy decisions. A better update of the RESIMAO database, which is extremely valuable for regional wholesale prices, would be highly beneficial to this work in the long term.

In addition, one thing is clear for Mali: for heavily traded products, importers and exporters systematically underestimate the volumes traded in order to pay less tax. The issue of customs data reliability is a cause of uncertainty in the analysis because it directly affects the methodology that is based on the comparison between domestic prices and international prices.

Second, our results are based on localized areas of production. For example, we consider the area of Loulouni (Sikasso region) for maize and the area of the Niger in the Segou region for rice. These represent the main production areas in Mali for those products, but other areas facing different situations in terms of, for example, access costs or connection to market information could yield different results.

Third, since our methodology uses annual averages, it does not allow for the representation or analysis of interannual variations in prices due to seasonality, or even quality during the production season.

**Table 29. Observed and adjusted price gaps, in FCFA/TON, 2005-2010**

Products	Indicators:	Unit	2005	2006	2007	2008	2009	2010
Rice	Observed price gap at wholesale	FCFA / TON	(2,085)	(10,119)	(7,637)	(68,502)	(34,117)	(105,796)
	Adjusted price gap at wholesale	FCFA / TON	(685)	(8,720)	(51,350)	(129,789)	(98,016)	(167,955)
	Observed price gap at farm gate	FCFA / TON	6,928	(10,407)	(8,925)	(59,989)	(39,005)	(116,183)
	Adjusted price gap at farm gate	FCFA / TON	(4,696)	(21,380)	(65,010)	(137,050)	(117,976)	(191,666)
Maize	Observed price gap at wholesale	FCFA / TON	(25,028)	26,843	(19,930)	12,572	(33,172)	(27,728)
	Adjusted price gap at wholesale	FCFA / TON	(19,340)	17,075	(14,611)	17,960	(42,559)	(20,690)
	Observed price gap at farm gate	FCFA / TON	(7,884)	17,930	(22,886)	7,516	(29,361)	(35,384)
	Adjusted price gap at farm gate	FCFA / TON	(7,773)	3,158	(22,094)	6,927	(45,173)	(34,023)
Cotton	Observed price gap at wholesale	FCFA / TON	11,423	65,126	81,247	49,264	184,762	29,550
	Adjusted price gap at wholesale	FCFA / TON	(102,430)	(57,456)	(47,782)	(96,803)	29,452	(134,065)
	Observed price gap at farm gate	FCFA / TON	85,356	31,229	64,265	60,006	136,086	44,528
	Adjusted price gap at farm gate	FCFA / TON	34,669	(23,345)	6,955	(5,023)	66,941	(28,313)
Millet	Observed price gap at wholesale	FCFA / TON	23,928	(60,205)	(77,979)	(48,291)	(184,691)	(18,272)
	Adjusted price gap at wholesale	FCFA / TON	13,290	(68,137)	(85,261)	(57,123)	(194,323)	(27,810)
	Observed price gap at farm gate	FCFA / TON	26,389	(51,519)	(83,793)	(47,705)	(188,005)	(14,711)
	Adjusted price gap at farm gate	FCFA / TON	8,776	(65,189)	(95,538)	(62,700)	(204,350)	(30,274)
Sorghum	Observed price gap at wholesale	FCFA / TON	(45,208)	(15,183)	14,467	(15,483)	(115,483)	(5,608)
	Adjusted price gap at wholesale	FCFA / TON	(56,763)	(26,288)	5,362	(25,488)	(126,738)	(16,013)
	Observed price gap at farm gate	FCFA / TON	(69,700)	(61,475)	(1,725)	(33,175)	(143,875)	(15,900)
	Adjusted price gap at farm gate	FCFA / TON	(87,894)	(77,819)	(15,619)	(48,719)	(161,319)	(32,544)
Milk	Observed price gap at wholesale	FCFA / TON	227,360	205,708	231,160	193,075	258,757	184,039
	Adjusted price gap at wholesale	FCFA / TON	289,157	271,972	260,783	2 32,294	286,036	224,267
	Observed price gap at farm gate	FCFA / TON	2,160	(19,492)	(44,040)	(82,125)	33,557	(41,161)
	Adjusted price gap at farm gate	FCFA / TON	48,057	30,872	(30,317)	(58,806)	47,436	(14,333)
Meat	Observed price gap at wholesale	FCFA / TON	1,589	(15,270)	(47,450)	(3,641)	(28,771)	(8,052)
	Adjusted price gap at wholesale	FCFA / TON	(10,943)	(26,549)	(58,126)	(15,227)	(38,782)	(17,907)
	Observed price gap at farm gate	FCFA / TON	17,219	121	(45,549)	(23,897)	(41,975)	(45,200)
	Adjusted price gap at farm gate	FCFA / TON	180	(15,814)	(60,252)	(39,575)	(56,328)	(59,396)
Groundnuts	Observed price gap at wholesale	FCFA / TON	87,340	55,436	32,661	(60,248)	13,452	(69,457)
	Adjusted price gap at wholesale	FCFA / TON	66,706	35,322	9,460	(84,542)	(6,472)	(88,716)
	Observed price gap at farm gate	FCFA / TON	43,417	(5,055)	(23,367)	(109,519)	(63,949)	(124,462)
	Adjusted price gap at farm gate	FCFA / TON	(40,339)	(91,652)	(131,254)	(242,145)	(157,157)	(231,709)

**Table 30. Observed and adjusted Nominal Rates of Protection (NRPs), in %, 2005-2010**

Products	Indicators:	Unit	2005	2006	2007	2008	2009	2010
Rice	Observed NRP to wholesaler	%	-1%	-4%	-3%	-17%	-9%	-27%
	Adjusted NRP to wholesaler	%	0%	-3%	-16%	-28%	-23%	-36%
	Observed NRP to producer	%	3%	-4%	-4%	-17%	-12%	-32%
	Adjusted NRP to producer	%	-2%	-9%	-23%	-32%	-30%	-44%
Maize	Observed NRP to wholesaler	%	-21%	32%	-18%	11%	-21%	-19%
	Adjusted NRP to wholesaler	%	-17%	18%	-14%	17%	-25%	-15%
	Observed NRP to producer	%	-8%	35%	-25%	8%	-20%	-28%
	Adjusted NRP to producer	%	-8%	5%	-24%	8%	-28%	-27%
Cotton	Observed NRP to wholesaler	%	2%	11%	15%	8%	31%	4%
	Adjusted NRP to wholesaler	%	-16%	-8%	-4%	-12%	7%	-14%
	Observed NRP to producer	%	68%	23%	64%	54%	213%	32%
	Adjusted NRP to producer	%	20%	-12%	4%	-3%	50%	-13%
Millet	Observed NRP to wholesaler	%	19%	-36%	-46%	-28%	-57%	-12%
	Adjusted NRP to wholesaler	%	10%	-39%	-48%	-32%	-58%	-18%
	Observed NRP to producer	%	24%	-35%	-54%	-31%	-62%	-11%
	Adjusted NRP to producer	%	7%	-40%	-57%	-37%	-64%	-20%
Sorghum	Observed NRP to wholesaler	%	-22%	-9%	15%	-11%	-43%	-4%
	Adjusted NRP to wholesaler	%	-26%	-15%	5%	-17%	-45%	-11%
	Observed NRP to producer	%	-38%	-42%	-2%	-27%	-58%	-13%
	Adjusted NRP to producer	%	-44%	-48%	-17%	-35%	-61%	-23%
Milk	Observed NRP to wholesaler	%	65%	56%	59%	45%	71%	42%
	Adjusted NRP to wholesaler	%	101%	90%	72%	59%	84%	56%
	Observed NRP to producer	%	1%	-7%	-14%	-23%	12%	-11%
	Adjusted NRP to producer	%	21%	13%	-10%	-18%	17%	-4%
Meat	Observed NRP to wholesaler	%	1%	-7%	-20%	-2%	-11%	-3%
	Adjusted NRP to wholesaler	%	-5%	-11%	-23%	-7%	-15%	-7%
	Observed NRP to producer	%	10%	0%	-22%	-13%	-19%	-20%
	Adjusted NRP to producer	%	0%	-8%	-27%	-19%	-24%	-25%
Groundnuts	Observed NRP to wholesaler	%	34%	20%	9%	-13%	4%	-18%
	Adjusted NRP to wholesaler	%	24%	12%	2%	-17%	-2%	-22%
	Observed NRP to producer	%	31%	6%	0%	-21%	-17%	-32%
	Adjusted NRP to producer	%	11%	-8%	-12%	-28%	-26%	-38%

## MAFAP project indicators and interpretation

### *Leading indicators of MAFAP project*

It is important to emphasize several preliminary points:

A significant part of the period analysed (2005-2010) was particularly turbulent, with market fundamentals that have been challenged and price trends that have experienced drastic changes. This has made the analysis more difficult and made it harder to determine the causes of incentives and disincentives.

Moreover, the interpretations referring to the agricultural sector as a whole actually refer only to the product group studied, representing 65 percent of the value of the average production (2005-2009)<sup>7</sup>, that is to say, rice (13.5 percent), beef (12.5 percent), millet (10.3 percent), cotton fibre (7.5 percent), groundnuts (7.1 percent), sorghum (5.6 percent), maize (4.7 percent), and cow's milk (3.4 percent).

These indicators are aggregated by sector and product group. This aggregation is weighted to reflect the importance of each product relative to total production value, calculated as weight times reference prices. Each commodity indicator therefore will be presented with its weighted equivalent when commenting aggregated indicators, hence slightly different from the averages that could be computed from **Table 29** and **Table 30**.

The headline indicators selected are:

- the nominal rate of protection for imported products ( $NRP_{imp}$ )
- the nominal rate of protection for exported products ( $NRP_{exp}$ )
- the nominal rate of protection for thinly traded ( $NRP_{not}$ )
- the nominal rate of protection for products essential to food security ( $NRA_{fs}$ ) as defined in the selection of products (see page 73)
- market development gaps for all three product categories and for the agricultural sector as a whole ( $MDG_{imp}$ ,  $MDG_{exp}$ ,  $MDG_{not}$ , and  $MDG_{sag}$ ) although in fact it only refers to the eight products analysed.

### *Agricultural Sector Indicators*

The agricultural sector as a whole gets strong disincentives in Mali with average NRPs of -19 percent in the observed domain and -28 percent in the adjusted domain. Furthermore, the sector experiences a downward trend with an observed NRP going down from 6 percent in 2005 to -24 percent in 2010.

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<sup>7</sup> Average production value in 1 000 constant dollars between 2005 and 2009, and from 1999 to 2001.

**Figure 27. Nominal rates of protection for the agricultural sector, in %, 2005-2010**

Source: Authors

The food crisis of 2008/2009 clearly affected the price incentives structure over the period. The main link between the crisis and the structure of price incentives determined by the MAFAP analysis comes from the disconnection between the Malian market and regional and international markets. Thus, producer prices in Mali did not soar as much as international prices did, generating price disincentives. Another possible explanation lies in the implementation by the government of policy measures destined to maintain staple products within the country by discouraging exports through non-tariff barriers (red tape), which could have prevented producers from obtaining higher regional prices. Also, the levy on tax imports for rice and social sales have had a limiting effect on prices surge in the country.

Cotton is an exception, being the only value chain that has not received disincentives overall. It is important to note that CMDT subsidizes cotton producers and offered, for most years, prices even higher than the international prices to those producers, which probably resulted in debts for the parastatal company.

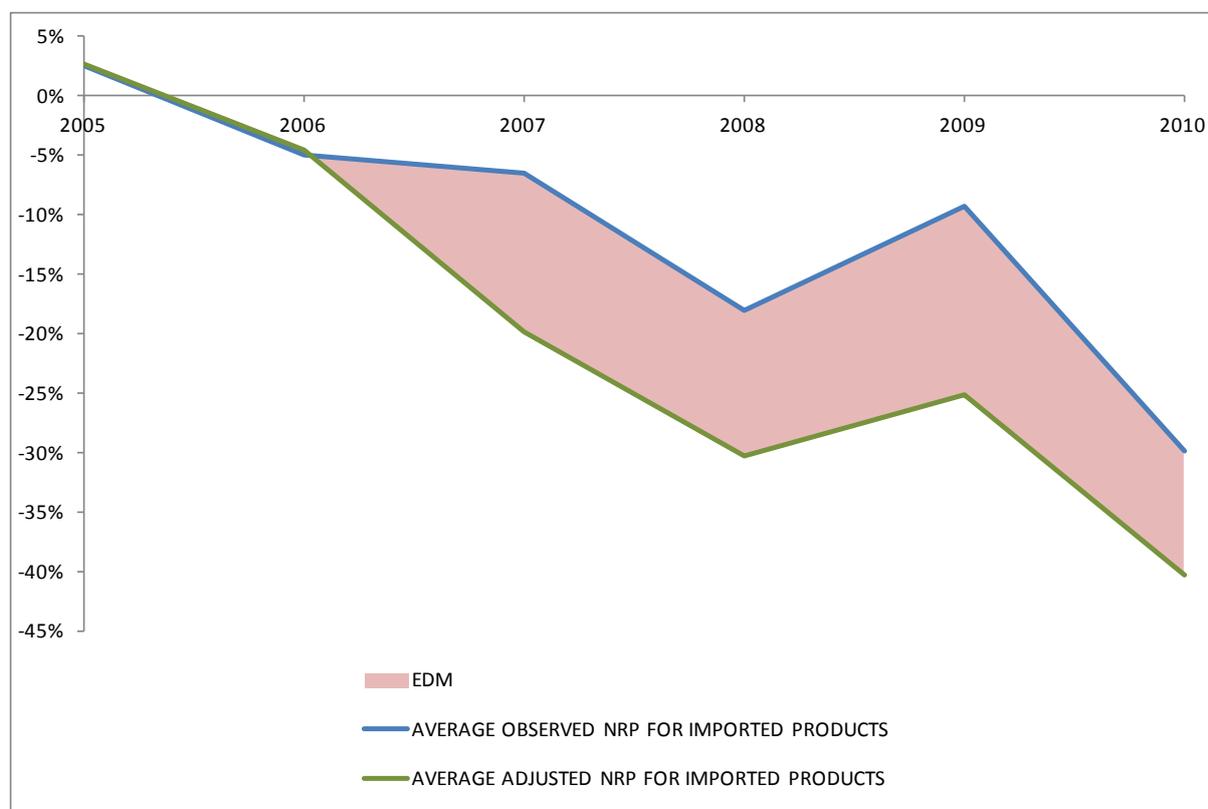
The deeper disincentives in 2009 and the recovery in 2010 is explained by the curve for thinly traded products (millet, sorghum, maize) for these two years, as producers for these commodities were cut off the international price surge of 2009 and hence experienced strong disincentives. Overall, cotton drags up the incentives level for exports, while rice drags it down for imports, reflecting the agricultural policy decisions of Mali, supporting cotton exports and focusing more heavily on rice consumers over the 2005-2010 period, which results in incentives for cotton producers and disincentives for rice producers.

A comparison between the adjusted nominal rate of protection (NRP<sub>a</sub>) with the observed nominal rate of protection (NRP<sub>o</sub>) reveals that the agricultural sector receives even stronger disincentives when inefficiencies such as overvalued exchange rate, excessive margins and illicit taxes are taken into account. In fact, the NRP<sub>a</sub> for the sector is negative for the entire period with 9 percent less incentives on average than the NRP<sub>o</sub>.

### Indicators for imported products

Imported products (rice and milk) have received disincentives overall during the 2005-2010 period. The average observed NRP for import products is -15 percent. The incentives have gone down from 2 percent in 2005 to -30 percent in 2010. This is largely due to the fact that the international price rise from 2007 and 2008 has not been passed on to producers in the country. Incentives went from -18 percent in 2008 to -9 percent in 2009, which reflects the impact of milk receiving incentives that year, mainly because milk producers obtained higher prices.

**Figure 28. Observed nominal rate of protection for imported products, in %, 2005-2010**



Source: Authors

It is also interesting to note that adjusted NRPs become lower than observed NRPs from 2007 onwards as a result of the 20 percent overvalued exchange rate that was taken into account in the analysis. This means that if the exchange rate was not overvalued, import prices would be higher, hence increasing – in our analysis – the price gap between observed producer prices and the adjusted reference price.

The same phenomenon is expressed in the MDGs. There is almost no market development gap before 2007, while the overvalued exchange rate after 2007 reveals an important market development gap. This happens because producers could obtain even higher prices after 2007 since import prices would rise in the case of a weaker exchange rate.

It should be noted that negative MDGs for import products partly represent an actual protection for producers, as they take into account inefficiencies between the producer and the wholesaler making imports less competitive. There is indeed a form of natural protection, due to the access costs structure that makes imports very costly and thus allows producers to benefit from higher prices. On the other hand, inefficiencies between the wholesaler and the producer act as a disincentive to the producer as they are taken into account by the wholesaler in the price he gives the producer. In the case of rice and milk, the inefficiencies between the producer and the wholesaler make up the bulk of MDGs, showing that market inefficiencies mostly lie at the wholesaler-producer level of the value chain.

## *Rice*

Rice is considered a strategic food product in Mali, it is therefore the object of special attention in terms of public policy (policies) and policy issues (politics). Rice is seen as the main staple with potential for achieving food security, improving farmers' incomes and meeting growing urban demand at a reasonable cost. In recent years, food price spikes have led to a revival of a project dating from the colonial era, which aimed to turn Mali into a self-sufficient country in rice production, and also into a net exporter of rice, at least for West Africa (Roy, 2010). In this context, policy objectives relating to the cereal are numerous and sometimes contradictory.

**Production.** Rice production in Mali has shown rapid growth, a trend that started in the 1980s, fuelled by strong government intervention, and continued during the 1990s, when the state withdrew from the sector, and rice markets were reopened. Rice is produced in Mali using a wide variety of production systems, ranging from floating rice in the Inner Niger Delta, to irrigated rice production on full water control schemes in the Office of Niger Zone, or from rainfed production to spate irrigation. From 2005 to 2010, rice production increased, going from more than 945 000 tons to 1 296 000 tons (CPS/SDR, 2011). The self-sufficiency ratio is thus around 86 percent in 2010. There was, however, a 700 000-ton dip in the production from 2009 to 2010. This may have resulted from new, more realistic estimates of the production, droughts in 2010 or the drop in international rice prices from 2008 to 2009, which had late effects on production.

**Consumption/Utilization.** In terms of consumption volume, rice in Mali lies in second place behind millet, which is the most widely consumed product. Rice also comes behind sorghum in rural areas (Nuove, 2004). However, annual per capita consumption rates of rice increased from 11 to 54 kilos from 1961 to 2007, according to data from FAOSTAT, and rice currently accounts for 25 percent

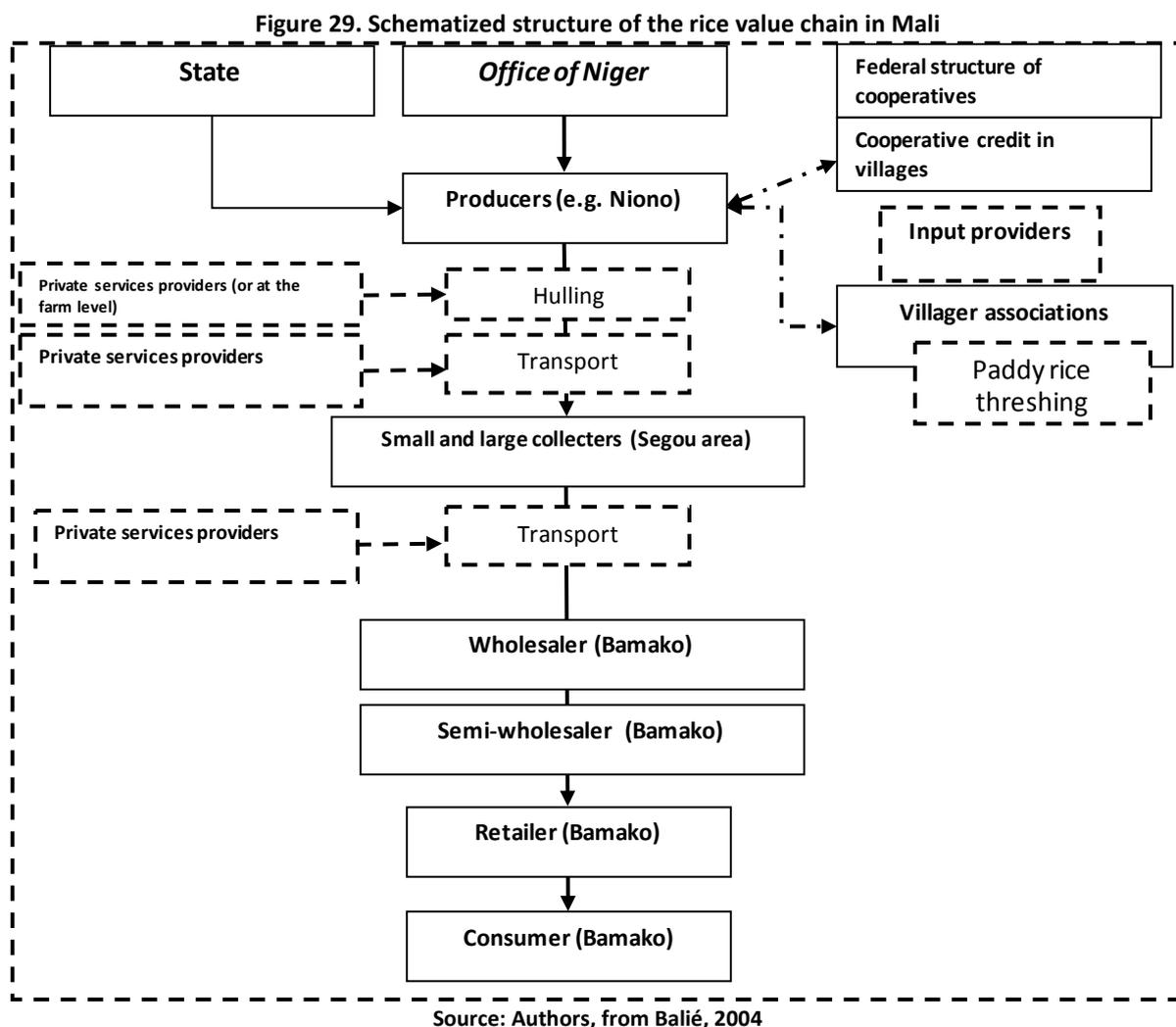
of the total consumption of cereals, compared with less than 10 percent in 1961. Rice is increasingly consumed by urban dwellers, playing a key role in the diet of urban households. Urban residents consume an average of more than 60 kg of rice per person per year, which explains the political significance of this crop. Given the high level of consumption within producing households (37 percent on average over the period 2005-2010), with higher rates reported in areas where it is cultivated (Segou, Mopti and Sikasso, to a lesser extent), imports represent only a very limited share of total rice consumption (Samake, Bélières et al., 2007).

**Trade and Marketing.** There is still a long way to go before increased output can meet the government's goal of turning the country into a net exporter of rice. Indeed, rice is the main cereal imported by Mali. These imports complement domestic production in order to meet urban demand. Average imports of rice by Mali over the period 2006-2009 amounted to 209 436 tons (CPS/SDR, 2010). Most of the imported rice comes from Asia (76 percent of total). Burma, India, Thailand and Pakistan are the main sources of rice imports to Mali, accounting for 25 percent, 15 percent, 14 percent and 13 percent, respectively.

Since 2006, rice imports have been increasing while the Rice Initiative has issued grants for inputs and credits to rice farmers (see section 4, p.53). The granting of import tax exemptions to importers of rice has certainly played a key role in this development. One may also raise the issue of an overestimation of production statistics.

Moreover, according to Lancon (2009), the need for substantial imports is fundamentally linked to a change in eating habits, rather than to a decline in production, since consumption levels are growing at a faster rate than production levels.

**Value Chain Performance.** Marketing is most active in areas of intensive irrigation, such as Segou (see Figure 29).



**MAFAP Indicators and Interpretation.** Rice imports from outside WAEMU, meaning almost all rice imports, have been taxed at a 12.5 percent rate until 2008. On top of this, Mali applies a VAT on some import products including rice, and high transport costs within the country should act as an additional protection to producers. In 2008, the government lifted import taxes on rice to protect consumers from the price spike – as of 2012, the measure is still ongoing. In addition, the rice value chain received up to 8 billion FCFA per year in input subsidies from 2008 to 2010, which should have provided incentives to producers. As a consequence, one could expect producers to have received strong incentives (at least 12.5 percent) from 2005 to 2008, those incentives becoming lower from 2008 onwards because of the import tax lift that would be somehow compensated by the Rice Initiative input subsidies.

However, observed NRPs at farm gate from 2005 to 2007 have been negative except in 2005 (3 percent, -4 percent and -4 percent). The import tax lift indeed corresponds to further disincentives, revealing that the Rice Initiative has not been sufficient to provide price incentives despite a boost in rice production being registered. Indeed, producers received increasing disincentives, going from -12 percent in 2008 to 32 percent in 2010. Over the period studied, producers received disincentives of -11 percent in the observed domain and -23 percent in the adjusted domain.

In 2005, government actions during the grain shortage, consisting mainly of trade policies (tariffs or equivalent), moderated the price spike without resulting in disincentives for the producers. In 2006 and 2007, however, there were increasing disincentives.

In 2008, with soaring food prices on the international market, protectionist policies in place were no longer needed to sustain high domestic prices. They were therefore suspended and supplemented by policies to support consumption and the purchasing power of households: low-priced sales by the government with support from international agencies, distribution of free food, subsidized imports. This set of measures could explain the disincentive levels for producers, who would theoretically have received higher prices if the transmission of international prices to farmers had functioned effectively. However some analysts (Koné, Diakité, 2010) argue that tax exemptions brought more benefits to a handful of rice importers than to the consumers.

In 2009 and 2010, the government, as part of the Rice Initiative, subsidized inputs (seeds, fertilizer, and credit for the purchase of equipment). For the 2009/10 period, these grants amounted to 6 398 million FCFA for fertilizers and 1 051 million FCFA for seeds. Together, these grants, in 2009, represented 3 335 FCFA per ton of rice while disincentives emerged as about 32 000 FCFA per ton, that is to say -10 percent in terms of nominal rate of protection (NRP). It can therefore be concluded that the support provided was not enough to fill the price gap, and that policy measures resulted in significant disincentives in 2009. The same phenomenon was observed in 2010. This is all the more surprising given that from 2008 onwards, a number of producers agreed to not "sell off their rice", and to confront the wholesalers who offered very low prices. It seems that despite a drop in disincentives in 2009, which moved closer to those of wholesalers, this initiative was not effective in 2010.

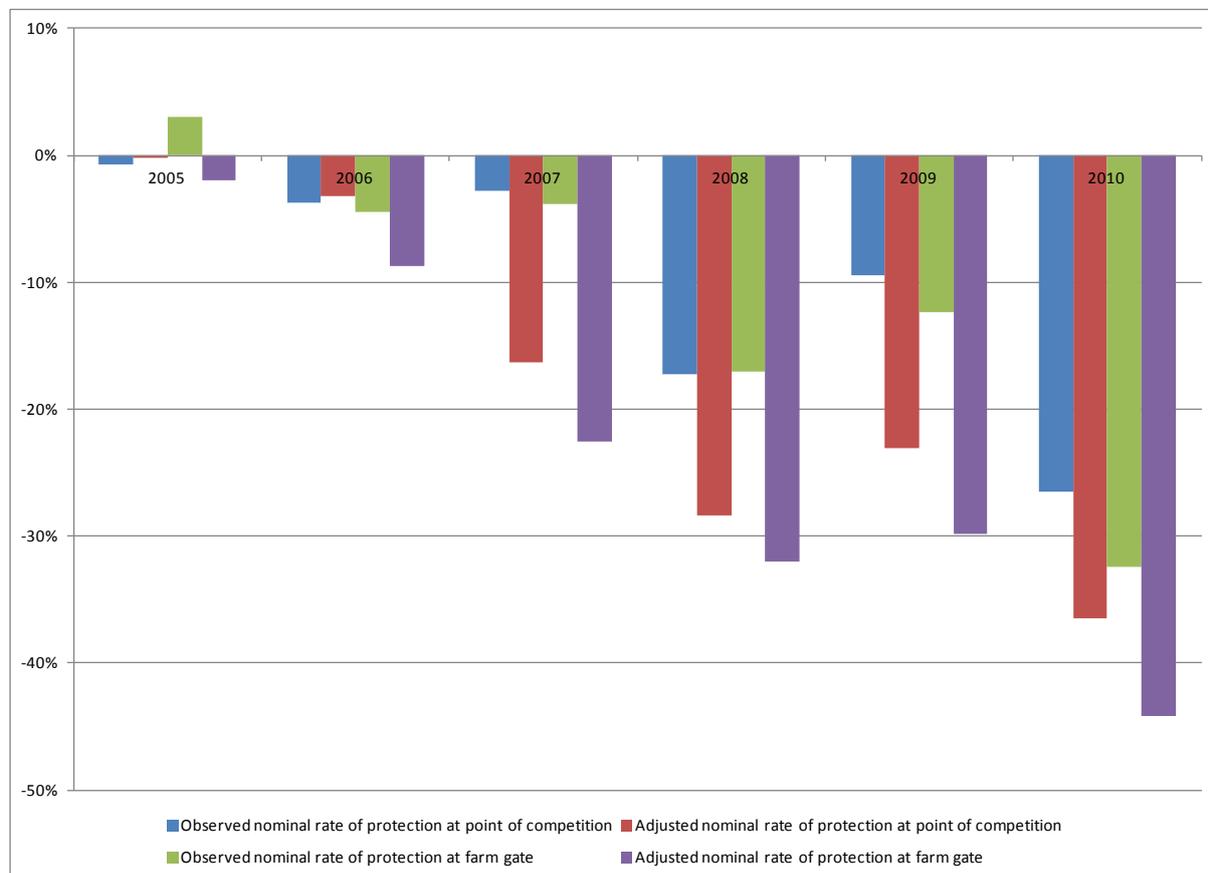
Rice wholesalers have received disincentives as well: -10 percent in the observed domain and -18 percent in the adjusted domain. In the observed domain, wholesalers are thus facing the same situation as producers, with very similar disincentives. However, they are receiving fewer disincentives in the adjusted domain. This is due to the analysis taking into account additional inefficiencies in the adjusted domain: misaligned exchange rate, excessive margins and illicit taxes. The misaligned exchange rate acts as a disincentive to producers by making imports less expensive and thus lowering the prices they obtain. However, the difference between the adjusted NRPs for producers and wholesalers is mainly explained by excessive trader margins faced by producers. In other words, the difference between adjusted NRPs for wholesalers and producers reveals that traders charge excessive margins to producers.

More generally, it emerges that rice production in Mali obtains disincentives for three reasons:

- The consumer-supportive policy environment (lift of import taxes, low price sales) has an impact on producer prices; producers do not receive the high international prices for the commodity;
- The access costs (especially transport) are disadvantageous for producers because these access costs are higher than they would be if the industry were operated in an efficient manner. One can therefore speculate that lack of development of the sector is linked to inadequate transparency associated with the operation of public services, which has prevented producers from obtaining higher prices;
- The market development gap, which measures inefficiencies stemming from excessive margins, illicit taxes, and a misaligned exchange rate is -15 percent on average. This means that even if

infrastructure were to be improved and the policy environment were more favourable to producers, excessive margins and illicit taxes would still incur disincentives to producers, as well as an overvalued exchange rate.

**Figure 30. Observed and adjusted nominal rates of protection and nominal rates of assistance for rice in Mali, in %, 2005-2010**



Source: Authors

**Main message.** If the Government of Mali wants the country to become a net exporter, rice production must be increased and better incentives must be provided to producers, especially when prices are high on the international market, or at least the regional market. The fact that neighbouring countries tend to undergo structural deficits in food and are net importers of rice is an element in favour of this policy. The main recommendation would be for better alignment of policy objectives with actual policy formulation. The current rice market should be analysed in order to take measures aimed at improving incentives for domestic production. This would allow the government to achieve greater consistency between policy objectives and the effects of these policies.

## Milk

Milk is widely produced in Mali, but most of the production is self-consumed, with very high imports of powdered milk, especially for urban demand. Milk is not getting strong attention from the government since it has limited potential as an export production, nor it is considered as a key food security product. Better marketing for local milk production, however, would result in higher incomes for many rural and peri-urban families and less reliance on powdered milk imports.

**Production.** Mali has strong potential for milk production. The quantity of milk produced in Mali in 2010 is estimated at 972 million litres (DNPIA, 2010) equivalent to about 1 million tons. For milk derived exclusively from cattle, the figure was 289 000 tons (307 800 tons, according to FAO), representing 29 percent of total milk production. Production levels of cow's milk have been rising steadily since 1991, after significant swings due to reductions in sizes of herds following the droughts of the 1970s and 1980s.

In Mali, 98 percent of all milk is produced in traditional livestock farming systems, while the rest is produced in peri-urban areas (DNPIA, 2010). Traditional production methods are poorly suited to the government's stated goal of intensifying dairy production.

Three types of milk processing predominate in Mali. Traditional processing, practised in rural areas, uses surplus production to make butter, curds, cream, ghee, yogurt and cheese. This type of processing is mainly practised by women farmers not to waste milk.

Larger-scale processing involves small family units who pasteurize or ferment milk surpluses, before putting it in simple packaging. This type of processing mainly involves reconstituted powdered milk. In addition, more than one hundred semi-artisanal processors are involved in processing what are generally small quantities of imported milk powder.

Lastly, there is industrial processing, which is carried out by thirty mini-dairies concentrated around Bamako, Koulikoro and Segou. There are three dairy manufacturers. Located in Bamako, the "Mali Lait" factory is a legacy of Mali's 1960 dairy industry policy. Since 1995, it has been privatized, based on the former ULB. Mali Lait produces 61 000 litres of milk per day, with a capacity of 632 000 litres. Eurolait is another important manufacturer, handling 360 000 litres per day (DNPIA, 2010), as does Somalait. The mini-dairies and dairies package and distribute local milk. Due to poor structuring of the sector, they also repackage a large share of imported milk powder: this practice, for example, accounts for 65 to 75 percent of the daily output of the country's largest dairy, Mali Lait (Corniaux et al., 2010).

**Consumption/Utilization.** A large proportion of milk production is consumed. Demand is increasing, largely due to rapid urbanization. Local milk continues to face very strong competition from imported milk powder, which represents between 50 percent and 80 percent of the milk consumed in Mali. In Bamako, the figure is 94 percent (Pomeranz, 2006). Imported powdered milk is cheaper than local milk and is well advertised. It is also easy to keep and is often considered to be healthier and more nutritious. Furthermore, local demand for milk cannot be met by domestic production due to poor structuring of the sector, which helps to maintain imports.

**Trade and Marketing.** Mali imports large quantities of milk, principally in the form of powdered milk. Imported milk comes mainly from the area outside WAEMU, representing 93.4 percent of total milk and dairy product imports from 2000 to 2004, the majority of it from France and the Netherlands (Toure et al., 2010). Imported milk passes through the ports of Abidjan (Côte d'Ivoire) and Dakar (Senegal). Import duties are low at 7.5 percent and imported milk remains highly competitive. Imports of milk by Mali, in the form of fresh milk, concentrate or powder, grew twelvefold between 1961 and 1990, due to the arrival of milk powder on the Malian market in the 1970s and a steady increase in the presence of concentrated milk. The total volume of milk imported in 2010 was 11 387 tons. However, of 11 387 tons, 9 407 tons consisted of powdered milk and 57 tons of concentrated

milk, which represents a much greater quantity of liquid milk. In total, this represents 73 million litres.

**Value chain performance.** The quantity of milk that is marketed does not exceed 8 percent, and milk supplied to urban centres is often of low quality (CAE, 2001). The milk marketing system, which is still poorly structured, represents the main obstacle to developing the sector in Mali. This is partly due to the highly perishable nature of milk, for which marketing must be well organized in terms of quality, hygiene, preservation, transportation and processing. This factor contributes to making local milk more expensive than powdered milk.

There are several options for milk marketing. The milk produced by farmers can be sold directly, fresh or sour, to markets or fairs. This is the most widely practised form of marketing. Other options include sale of milk by the producer to a retailer, who then sells milk directly to consumers; the sale of fresh milk or curd, processed by boiling, to collectors. This approach may involve several intermediaries, passing small quantities of milk to processors (small-scale units, mini-dairies, retailers) or directly to consumers. Suburban livestock keepers are often under contract with large dairies or mini-dairies, to which they sell their milk directly.

Finally, milk may be sold by small-scale processors, large dairies and mini-dairies, directly to consumers or indirectly, through small shops and supermarkets.

**MAFAP Indicators and Interpretation.** Until 2007, there was a 7.5 percent import tax applied on milk imports from outside WAEMU in the country, i.e. all milk imports. This would normally result in an incentive of at least 7.5 percent for milk producers, that would be reduced to 0 after 2007.

However, producers were almost in a neutral situation in 2005, with a 1 percent observed NRP, and received disincentives in 2006, at -7 percent. After the 7.5 percent import tax was lifted in 2007; disincentives indeed increased by 7 percent, to reach a total of -14 percent. Nevertheless, this seems to be a coincidence, as producers alternatively received incentives and disincentives in 2008, 2009 and 2010. The tariff does not seem to provide the protection expected to producers.

Over the period studied, producers did in fact receive disincentives of -7 percent in the observed domain. This can be better explained by looking at the results for the dairy factories: these latter (Mali Lait in this case), received high incentives, with an average NRP over the period of 56 percent in the observed domain.

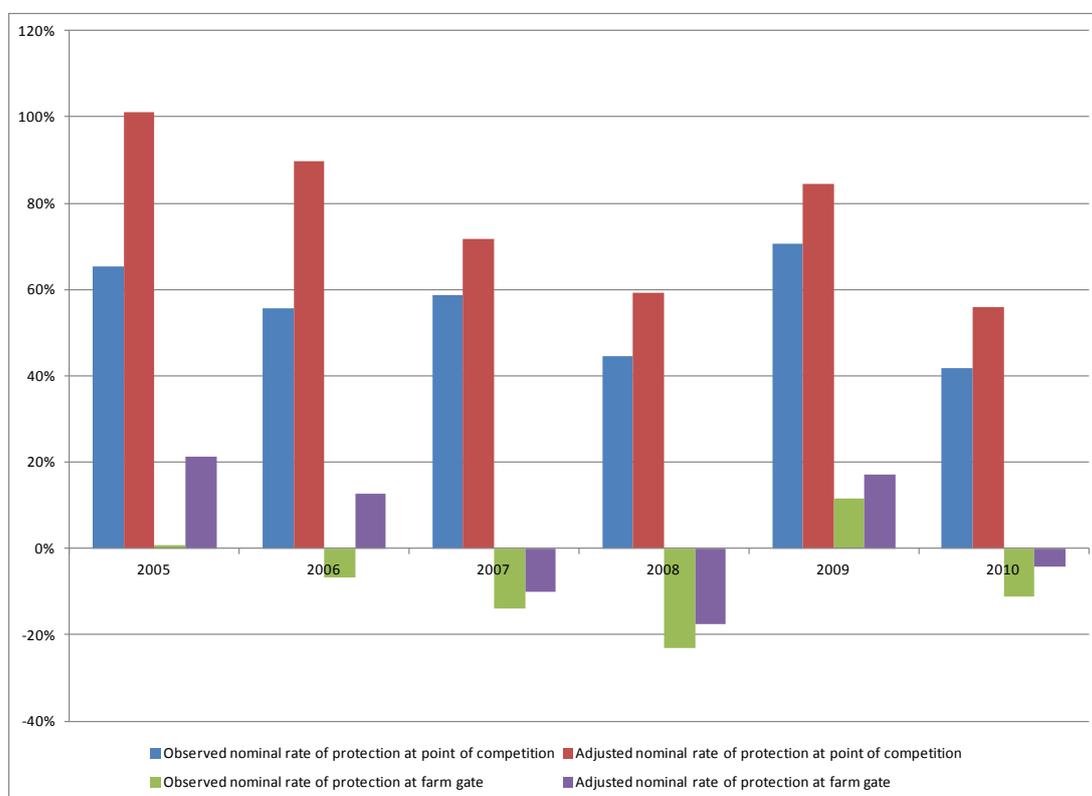
This shows a clear dichotomy between peri-urban milk producers and dairy factories. Mali Lait has a very important market power which allows the factory to pay low prices to producers and sell at high prices on the wholesale market. Mali Lait can afford to impose a low price on the collection centre (which acts as an intermediary), due to its low level of reliance on local producers, because the plant uses 75 percent to 90 percent powdered milk in its production of fresh milk. On the other hand, Mali Lait represents a major outlet for the sale of milk, making peri-urban producers highly dependent on it for sales.

The very high NRPs for Mali Lait means that consumers buy their milk, much of which comes from imported milk powder, at a price that is relatively high, and certainly higher than the price that would prevail if the market was open and competitive. Given that producers receive a price that is lower than the reference price, intermediaries including Mali Lait, capture substantial price differences,

including the protection coming from the import tax before 2007. In 2009, because of high international prices, powdered milk became difficult to buy for Mali Lait, which gave a higher market power to local producers. Mali Lait seemingly raised prices offered to the cooperative in order to ensure they could continue processing fresh milk, probably with more local milk and less imported powdered milk.

Furthermore, the disincentives that producers face are lowered by the collecting facility which, if one can rely on the data submitted to the MAFAP team, sold milk at a loss in 2005, 2006, 2009 and 2010. Further research is needed to determine why the collection centre would sell at a loss. The assumption is that the centre has several clients, some of which offer them a remunerative price, and that it seeks to support producers by purchasing all their milk and reselling partly to Mali Lait for prices which are non-profitable.

**Figure 31. Observed and adjusted nominal rates of protection and nominal rates of assistance for rice in Mali, in %, 2005-2010**



Source : Authors

At producer level, adjusted NRPs are positive, with an average 3 percent over the period studied. The adjusted domain captures market distortions stemming from excessive margins, illicit taxes and misaligned exchange rates. The positive adjusted NRPs mean that if excessive margins from Mali Lait were to be removed, producers could get incentives instead of disincentives. However, Mali Lait also obtains stronger incentives in the adjusted domain than in the observed domain, the adjusted NRP standing at 77% on average. This reveals that high access costs from Côte d'Ivoire to Bamako make powder milk imports more expensive, and should these costs be lowered (as captured in the adjusted indicator), Mali Lait could import powder milk at a cheaper price and obtain even more incentives. This would, however, probably have repercussions for local producers who would lose even more market power and face even lower prices.

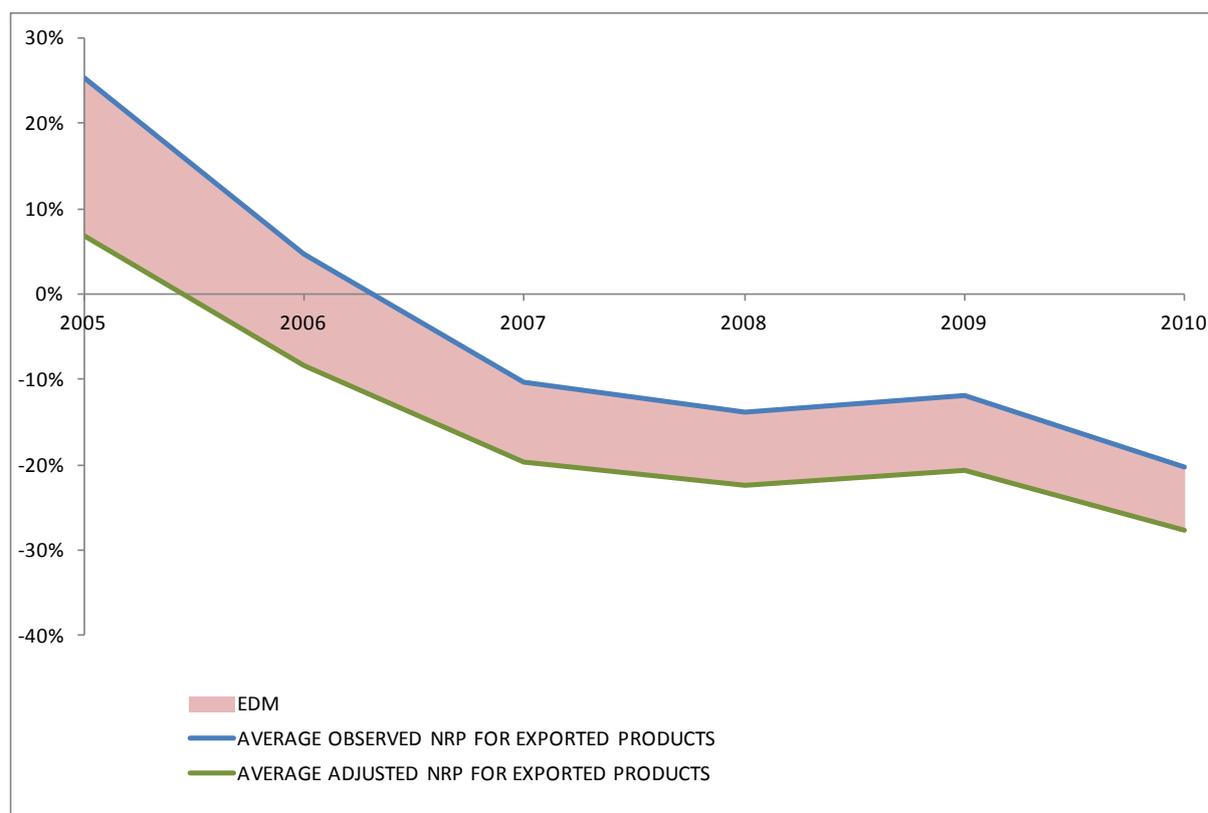
The market development gap is positive at 11 percent on average, since higher access costs represent a form of protection, raising prices of imported powdered milk and increasing producer prices.

**Main message.** Over the period studied (2005-2010), producers were penalized as a result of the food crisis and soaring milk prices in 2007 and 2008, but also by sharp price rises in 2010, that benefited Mali Lait rather than them. These reportedly high international prices were not fully transmitted to Mali Lait however, which suffered a small backlash during those years but faced significant incentives over the study period overall. The government's choice seems to be that of supporting milk powder imports in order to meet domestic demand, particularly in growing urban areas. However, these imports represent a significant loss of foreign exchange for the government and a missed opportunity to capitalize on the high dairy potential of the country.

### *Indicators for exported products*

Exported products receive disincentives overall. The disincentive level for the period is -7 percent in the observed domain. However, it should be borne in mind that cotton has a strong impact on this figure, with average incentives reaching 69 percent, while groundnuts and meat receive disincentives at respectively -7 percent and -12 percent. This suggests that the Malian Government focuses its policy support heavily on one export crop, cotton, while not providing a supportive policy environment for other export crops. When indicators are aggregated, the weight of cotton seed production and its low price is not sufficient to create incentives to the sector compared to the weight of bovine and groundnuts production together.

The adjusted domain, taking into account the overvalued exchange rate, excessive margins and illicit taxes, shows that such inefficiencies generate an overall disincentive for the export sector in each and every year except 2005. This is largely because cotton producers would receive a smaller price inducement if the exchange rate was devaluated, as estimated in the adjusted NRP.

**Figure 32. Nominal rates of protection and market development gaps for exported products in Mali, in %, 2005-2010**

Source : Authors

Exports reveal important negative market development gaps at -11 percent, similar to those of imports. This is mainly due to the importance of cotton, with an average MDG of -34 percent over the period. Cattle and groundnuts have respective average MDGs of -7 percent and -11 percent. Cotton's important negative MDG – despite the fact that it receives strong incentives – shows that incentives do not necessarily mean there are no market inefficiencies. In the case of cotton, it is clear that governmental policies give incentives to producers even though the value chain itself is inefficient. It should also be noted that cotton and cattle both experience negative MDGs, even though they present opposite situations in terms of incentives and disincentives. This means that MDGs are not, as might be expected, correlated to the effects of direct value chain support policies, and affect all categories of products regardless of their status in terms of incentives and disincentives.

### *Cotton*

The cotton crop, developed during colonization (quoted by F. Capronnier Benamou, 2005), has become an engine of rural development since the creation of the Malian Company for Textile Development (CMDT) in 1974. Since then, this semi-public company, 60 percent of whose capital was, until a few years ago, owned by the Malian Government, and 40 percent by French assets (CFDT, a mixed enterprise company which became Dagriss and Geo-cotton), is the main actor in the sector, managing the value chain upstream and downstream, from input subsidies to producer, to ginning factories and exports. The CMDT also controls the mechanism for setting the price of cotton

seed described in Part I. As in other African countries of the CFA franc zone, cotton is an agro-industrial commodity, largely vertically integrated or administered under state control.

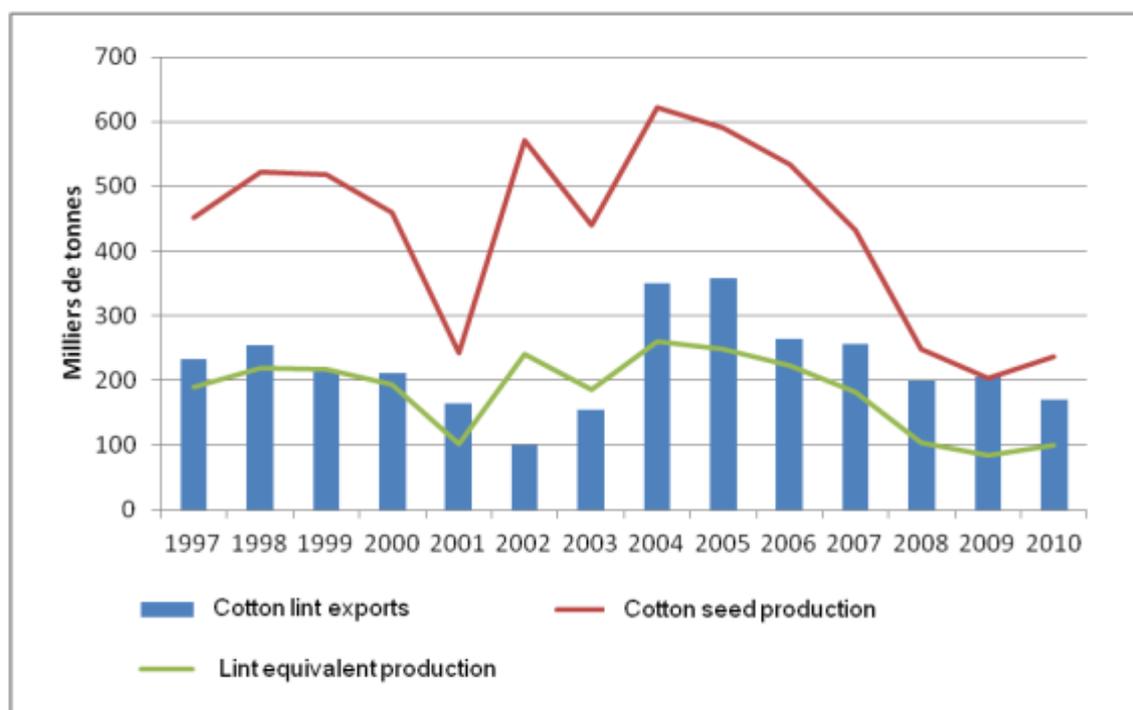
**Production.** Today, Mali has lost its place in the top group of African cotton producers. Indeed, cotton production in Mali and in the rest of West Africa fell sharply during the mid-2000s, plummeting from 620 000 tons in 2004 to 229 000 tons in 2010 (CPS/SDR, 2011). Cotton cultivation in Mali is practised by many small-scale farmers in the south of the country, involving some 190 000 producers in 2004. Between 2005 and 2010, 67 781 farms, representing 39 percent of producers, abandoned cotton production (CMDT, 2010) because prices were considered to be too low. The decline in production is also linked to a continuing fall in yields between 2005 to 2010, going from more than 1.1 tons/ha in 2004 to a little more than 900 kg/ha in 2010 (CPS/SDR, 2011).

The production system is relatively diverse, with a combination of cash crops (cotton) and food crops but also livestock and other farm activities. Thus, the overall average income of a family farm in the Koutiala area in 2007 was estimated to be about one million FCFA (72,000 FCFA per person), including 71 percent from crops, 10 percent from livestock, 5 percent from other primary activities (harvesting, forestry, etc.) and 14 percent from non-agricultural activities. Cotton represents just 27 percent of gross total crop production (Samake, Bélières et al., 2008). Almost all the cotton that is produced is processed into cotton fibre through ginning factories, owned by CMDT. The company has a ginning capacity of about 586 000 tons, corresponding to 17 plants in the cotton producing area in the south of the country (CMDT, 2010).

**Consumption/Utilization.** Almost all cotton seed production is processed into cotton lint; however, there is also a marginal utilization of cotton seed as animal feed, and to produce cotton oil.

**Trade and marketing.** Textile industries and crafts in Mali are poorly developed and almost 98 percent of national fibre production is exported on the international market, with only about 2 percent used for the domestic market (CMDT, 2010). The main buyer is China, with 17 percent of Mali cotton exports, followed by Malaysia at 13 percent. There has been a reorientation of cotton exports from Mali: the main partner used to be Europe, but it has become Asia since 2005. Cotton fibre exports usually follow the production trend, with a certain lag due to the production cycle. Hence, just as production did, exports sharply decreased from 2005 to 2010, going from 356 510 tons to 170 268 tons. It is particularly striking to see that for some years, cotton exports are higher than the national production. This raises doubt about national statistics, but could also be explained by the importance of stocks, of BT Cotton not being taken into account in national statistics, and of cotton seeds being bought outside of the Malian market and transformed by the CMDT.

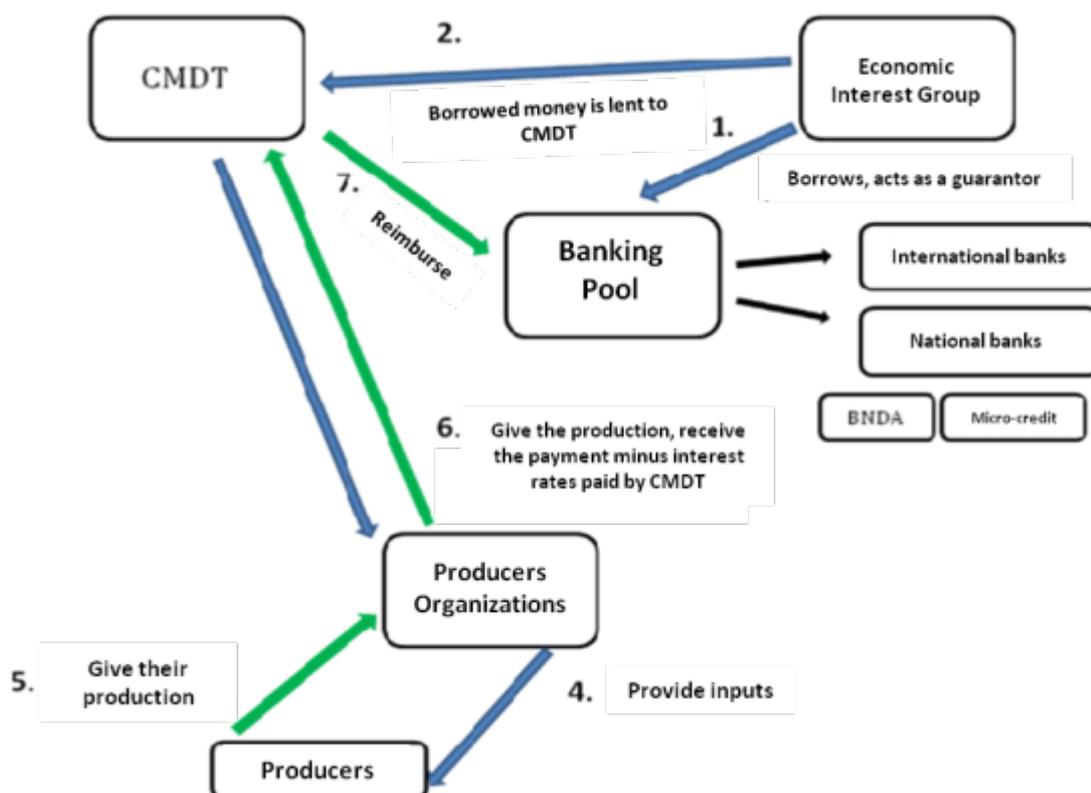
**Figure 33. Comparative development of cotton exports and production of seed cotton and lint equivalent Mali, in thousands of tons, 1996-2010**



Source: FAOSTAT, 2012 (production) and UN COMTRADE, 2012 (trade)

**Value chain performance.** The cotton industry, centred on the CMDT, has a relatively well developed system for financing crop years, as shown in Figure 30. This works to serve the industry as a whole, but primarily targets producers to enable them to access inputs. The system involves several actors whose economic interest grouping (EIG) is made up of the CMDT, the Office of the Upper Niger Valley (OHVN), producer organizations (POs), the state and a banking pool (comprising national and international banks), as well as producers themselves.

Figure 34. Simplified diagram of the system for financing cotton



Source: Authors

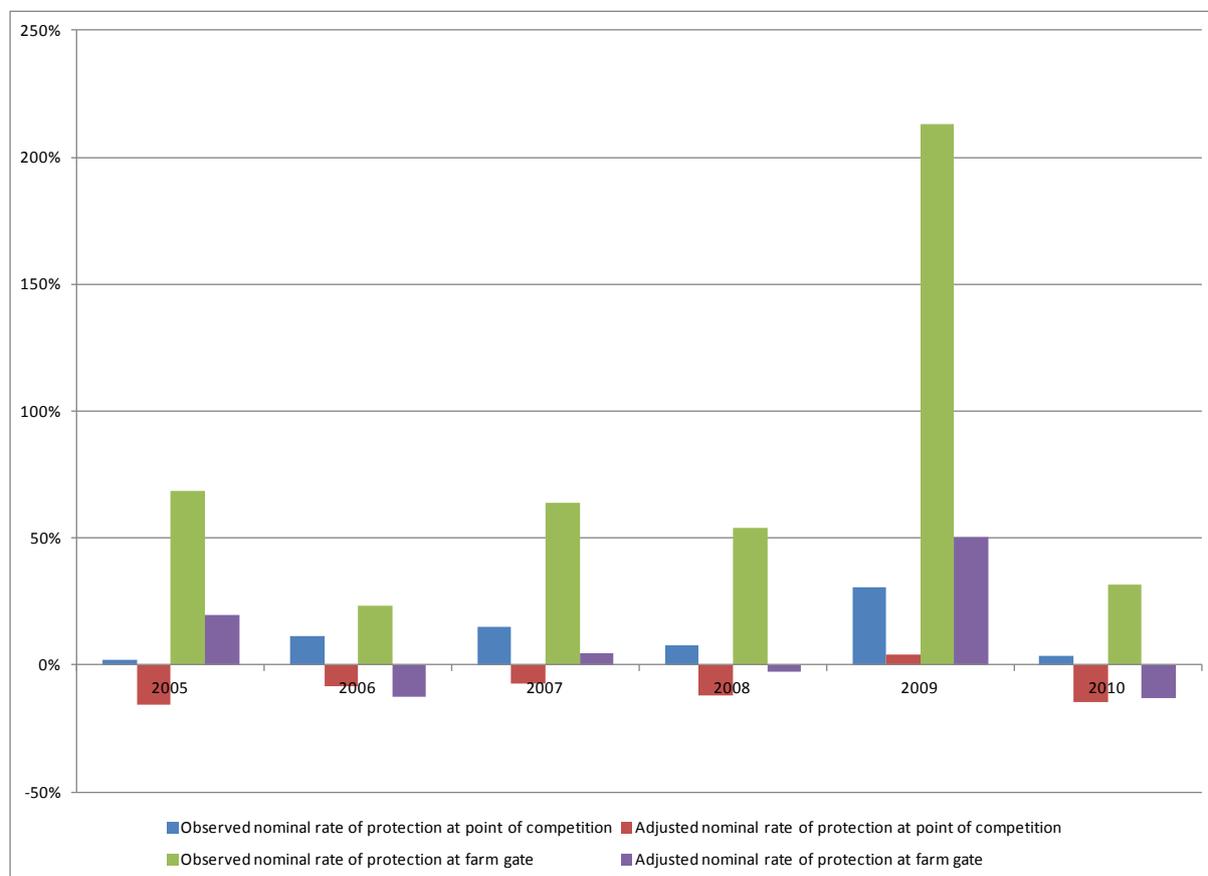
**MAFAP Indicators and Interpretation.** There is no explicit trade policy in Mali in the form of tax or subsidy on cotton exports. Under such conditions, our results should logically indicate a zero nominal rate of protection. However, the analysis is made more complex by the specific structure of the cotton value chain, organized around CMDT which conveys, at least partially, political intents for cotton. The CMDT has a monopsony on a national scale. It controls much of the information regarding the industry, and obtaining that information is not easy. It is particularly difficult to obtain detailed data on supply, production costs, processing costs, margins and different selling prices of the cotton seed which is used to produce by-products such as oil and cotton seed cake, used by companies other than CMDT. The sale of the seed is therefore partly used to balance the accounts of the ginners under CMDT.

Our results show that for the six-year period studied, producers in Mali received a higher price than would have prevailed in the absence of policies, and that production has been encouraged. Indeed, producers received average observed NRPs of 76 percent over the period studied. In 2009, the nominal rate of protection to the producer amounts to 213 percent, showing that producers obtain prices high above those of the international market through the CMDT price fixation mechanism. However, the extent of support through the price mechanism varies, as can be demonstrated by the 32 percent NRP in 2010, much lower than the NRP of 2009. Indeed, in 2010, the increase in the international price was not fully passed on to producers.

The CMDT's ginning plants also benefit from incentives through high prices with an average observed NRP of 12 percent over the period studied. This allows the CMDT to serve as a relay for the government's intentions to support the production of cotton seed through higher prices, higher than

the reference price to producers. However, the gap appears to be lower in times of rising cotton prices on the world market, such as the year 2010, with a protection rate of only 4 percent.

**Figure 35. Observed and adjusted nominal rates of protection and nominal rates of assistance for cotton in Mali, in %, 2005-2010**



Source: Authors

The adjusted NRPs for producers go down to an average of 8 percent, much lower than the 76 percent of the observed NRP. This is the effect of the 20 percent overvaluation of the exchange rate of the FCFA compared to the USD from 2007 onwards that is taken into account in the adjusted NRP. This means that if the exchange rate were to be devalued, producers would receive fewer incentives. The same situation applies for ginning factories, with an adjusted NRP of -9 percent instead of the 12 percent they receive in the observed domain.

From 2009, substantial subsidies emerged (50 and 39 CFAF/kg in 2009 and 2010 respectively), in addition to the market price incentives. It can therefore be observed that the nominal rates of assistance amounted to 291 percent and 59 percent for 2009/10 and 2010/11 respectively, which illustrates the effect of direct support and additional related budget transfers, such as input subsidies.

**Main message.** The CMDT works as a governmental relay to support cotton production, with observed producer prices higher than the reference prices. The company's financial accounts are unavailable, and it is therefore impossible to know the details of its support to producers and whether and how much it is in debt. High indebtedness would explain the fact that the company could give producers a price well above world prices for several years.

## *Cattle*

The results of the General Census of Agriculture (RGA, 2004) show that more than 80 percent of farms in Mali (776 141 farms) have some form of livestock (excluding poultry). Of these, 74 percent are mixed, practising both crop cultivation and livestock rearing. Farmers exclusively practising livestock rearing are largely nomadic and represent 10 percent of total farms. Cattle are the main form of livestock in Mali in terms of Tropical Livestock Unit (corresponding to the weight of the animal).

**Production.** Despite the significant losses linked to the droughts of 1972 and 1984, the number of cattle in Mali has increased steadily since the 1960s, rising to a total of between 8.8 and 9.1 million head in 2010 (FAOSTAT and DNPIA). This high production of cattle places Mali almost at the same level of production as in Niger and Burkina Faso (with 9.8 million head each), and behind Nigeria (16.5 million). These four countries are the major producers of cattle in West Africa (FAOSTAT, 2010).

Processing activities on the other hand, are mainly limited to fattening livestock, and producing dairy products, hides and skins. Indeed, little infrastructure and equipment exists for the transformation of Malian beef cattle, either at slaughterhouses, or during storage, for example through cold chains. There are only two refrigerated slaughterhouses in working order in the whole of Mali. They are located in Bamako, with a capacity of 10 000 tons per year. There are also seven regional abattoirs with an annual capacity of 2 000 tons (Samake, Bélières, 2008; DNPIA, 2010). The total volume of meat production in 2010 (including all livestock and poultry) was 52 006 tons, of which 69 percent was beef, representing some 35 884 tons, or 315 941 head of cattle. This represents an increase of 15.6 percent over 2009, when 273 176 cattle were slaughtered (DNPIA, 2010).

**Consumption/utilization.** Most of the cattle in Mali is used as a form of capital, as beasts of burden, as “fertilizers” or as a sign of prestige. The exploitation rate of herds does not reach 10 percent. Over 90 percent of the beef consumed in Mali is processed by traditional butchers, working on a daily basis, causing high sanitary risk (PCDA, 2008). The average per capita consumption of beef in Mali in 2007 was 8.9 kg/person/year (FAOSTAT), representing 5 percent of daily intake of protein and 1.5 percent of total daily calorie intake. In comparison, beef consumption in France was 26.8 kg/person/year in the same year. Moreover, while beef is the most widely consumed meat in Mali, its relative share is declining, going from 54 percent in 1986 to 48 percent in 2006. Beef does not represent a major dietary component in Mali and domestic requirements are covered by domestic production. The significant increase of the population, estimated at 3.6 percent over the period 1998-2009 means that domestic consumption will continue to grow.

**Trade and marketing.** Traditionally, Côte d'Ivoire has been Mali's main purchaser of cattle, accounting for 46.2 percent of total Malian exports, when calculated in kilograms, over the period 2000-2010 (Foreign Trade). Next comes Senegal, with 37.5 percent. However, exports have shifted heavily towards Senegal due to the crisis in Côte d'Ivoire in 2006, 2007 and 2008 (figures are not available for 2005). Exports have tended to shift back towards Côte d'Ivoire since 2009, and Senegal is expected to revert to being the second export partner. Côte d'Ivoire has the advantage of being close to the production area of Sikasso, and has high demand for cattle for domestic human consumption and for the leather industry. Côte d'Ivoire's national production only covers 60 percent of domestic requirements (OECD, 2008 in IRAM, 2009).

There is strong demand in the subregion, led by Benin, Cote d'Ivoire, Ghana, Nigeria and Togo. In 2001, it was estimated that demand for beef in West Africa would increase by 250 percent by the year 2020 (Delgado et al., 2001 in IRAM, 2009), with a deficit in the Nigerian and Ivorian Basin that could reach 500 000 to 1 million cattle heads between now and 2016 (Samaké et al., 2008). Moreover, the market is profitable, with prices ranging from between 200 000 and 500 000 FCFA for a live cow. The price differential may seem large, but this variation is unsurprising considering the influence on prices of a number of factors, such as the type of beef, weight and time of year. In December 2011, the average price for one head of beef cattle on the wholesale market of Port-Bouët in Abidjan was around 200 000 FCFA or 400 USD.

**Value chain performance.** Cattle marketing has a long tradition in Mali. The main marketing axes are north to south and coastal markets. Mainstream cattle marketing is regulated by a multitude of short circuits and varies depending on the time of year. In most cases, delivery is carried out on foot, with trucks used for long distances, although the number of trucks available for cattle transport is limited. Cattle marketing is handled entirely by private operators, most of them breeders, and usually on a hereditary basis. Upstream of the sector, there are first and foremost breeders: they generally sell their herds to collectors travelling in villages, along transhumance routes and to small markets or rural assembly markets. Breeders may also bypass middlemen. Animals identified by the collectors, or brought by breeders, are sold to collectors/dealers on wholesale markets. At larger markets, traders group animals according to age, sex and size. The price of an animal in a heterogeneous group of animals may well fall by 10 to 15 percent compared to the price in a homogeneous group (IRAM, 2009).

Collectors may sell the animals to meat dealers or exporters. This role may also be taken on by traders, who are often wholesalers. Wholesalers are key players, linking the upstream and downstream sectors of markets, due to their greater financial resources and the larger numbers of animals that they handle. They supply markets located in large urban centres, particularly Bamako, where traders sell animals to butchers and exporters.

There are also intermediaries, including brokers, who can play a critical role in facilitating transactions between collectors and traders or between traders. Brokers are, however, facing considerable criticism from some actors of the marketing chain, as they are sometimes considered useless, and a nuisance to the system. They are remunerated by applying a premium on the sale price of the animal, with margins ranging from 5 000 to 10 000 FCFA for beef. They also usually represent collectors, dealers or breeders and act as guarantors for animal identification and help to guard against theft from owners. The herders take animals on foot, often over long distances, although there are also some truck drivers. It should be noted that market supplies of cattle vary greatly according to the season, with the dry season, from April to July, representing the period when animals generally lose weight.

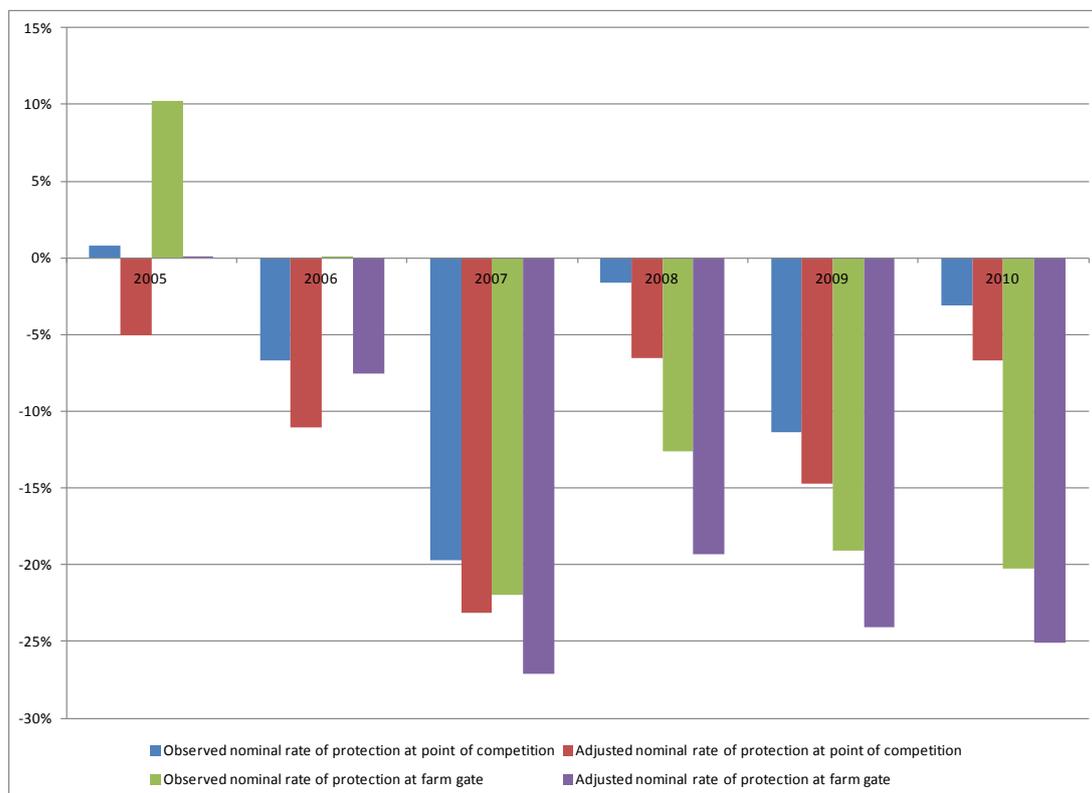
**MAFAP Indicators and Interpretation.** There is no specific price policy measure related to cattle in Mali, hence an NRP close to zero should be observed in the analysis. Furthermore, animal feed has been subsidized over the whole study period, which should have resulted in support to production and possibly positive NRPs. However, except in 2005, cattle producers received disincentives, with an average observed NRP of -11 percent.

It seems that the negative NRPs result from a lack of policies rather than from any specific policy. Indeed, disincentives in our analysis are due to excessively high access costs, so that breeders are not encouraged to sell. These excessive access costs come from high transport costs, a high number of intermediaries, and excessive trader margins. As a consequence, cattle producers in Mali are not receiving the prices they should.

It is interesting to note that from 2005 to 2010, cattle wholesalers are alternatively receiving more disincentives than producers (2005 to 2007) and fewer disincentives (2008 to 2010). Overall, both situations balance out and wholesalers receive an average observed NRP of -7 percent from 2005 to 2010, close to that of the producers (-11 percent). This result suggests that there is no clear market power from wholesalers over producers, which appears surprising as wholesalers are frequently referred to as imposing low prices on producers. In any case, wholesalers always face disincentives, which makes it clear that they do not benefit from the market structure as they should.

In the adjusted domain, producers as well as wholesalers receive stronger disincentives, the adjusted NRP being at -11 percent for wholesalers and -17 percent for producers. This reflects additional inefficiencies and excessive margins from various traders, acting as additional disincentives to producers and wholesalers alike. This conclusion is confirmed by the market development gap indicator, at -7 percent.

**Figure 36. Observed and adjusted nominal rates of protection and nominal rates of assistance for cattle in Mali, in %, 2005-2010**



Source: Authors

**Main message.** Over the period studied (2005-2010), cattle producers and wholesalers were generally penalized by the political environment in Mali. Disincentives for beef production owe more to lack of political support for meat processing and general livestock production development than to the result of an explicit policy. Livestock, especially cattle, largely remains a form of capital in Mali, as a source of cash, fertilizer production and beast of burden, while the marketing prospects for meat receive too little attention from the government, with very low policy support (see section 10, p.142). Access costs could be reduced if appropriate policies were adopted to invest in improving the marketing and processing infrastructure (transport, storage, fattening, slaughter, etc.) so as to lessen transport costs, and the number of intermediaries. Producers and wholesalers could then enjoy more market opportunities within Mali, but also at the subregional level, notably in Côte d'Ivoire and Senegal, while obtaining better prices.

### *Groundnuts*

Groundnuts are grown as a monocrop in Mali, or in combination with other crops (millet or sorghum), depending on the region. They were an important export crop in the 1960s and 1970s, but due to droughts, lower international prices, poor quality and market liberalization in the 1980s, the government has shifted its focus to other export crops and groundnuts have become a cash crop for domestic marketing only. Since 2000, groundnuts have also been intercropped with cotton on occasions, marking a change from the 1980s and 1990s, when many producers abandoned groundnut farming in favour of cotton. Groundnuts are mainly produced by small-scale farmers, principally by women.

**Production.** The total output of groundnuts in Mali has grown since the 1960s, with a marked increase between the periods 1991-1999 and 2000-08, when it rose by 38 percent. Production increased from 179 000 tons in 1991 to more than 324 000 tons in 2008, according to data from the CPS/SDR. This is explained by larger areas under cultivation. Yields have stagnated over the period, averaging around 900 kg/ha, with wide variations between seasons. However, there has been a sharp drop in production from 2008 onwards, with yearly output during the 2008-2011 period almost half of that achieved during 2000-2008. If the data is accurate, it would seem to indicate a sharp decline in yields over this period, though the reason is unclear.

Since the dissolution of parastatal management in the 1980s, groundnut processing has been handled by the private sector, largely on a small-scale basis, with women processing groundnut pulp and oil for sale on the domestic market. Processing of groundnut oil is hampered by the inability of governments to monitor the quality of products and by-products. The official processing sector requires a licence, but there is no regular monitoring of quality, and the vast majority of groundnuts are processed in the informal sector where there is no control whatsoever.

Contamination of groundnuts and groundnut products by aflatoxin is a major problem for the sector, with an alarming level of contamination of products sold in the markets of Bamako. Aflatoxin is a toxic, carcinogenic substance produced by fungi: it poses a significant threat to health. This quality issue is a major constraint to marketing, especially for exports.

**Consumption/utilization.** Groundnuts are widely consumed in Mali and play an important role in nutrition. They are especially important for infant health because of the high content of many nutrients essential for growth, such as proteins, fats and calcium. Groundnuts are also used as livestock feed.

Groundnuts are shelled before eating, or consumed as a paste or in the form of oil. They are used to prepare a number of dishes, especially in rural areas where they are largely grown for household consumption. According to IFPRI (Hellin et al., 2010), groundnut consumption is estimated at between 5 and 12 kg/capita/ year.

**Trade and marketing.** Groundnuts are a traditional food product which, during colonization, was developed into an export commodity for Mali, as was also the case with neighbouring Senegal. Groundnuts are mainly exported as shelled groundnuts which represent 94 percent of groundnut exports over the period 2000-2009 (FAOSTAT, 2012). Groundnut exports fell sharply in the 1960s and 1970s following the withdrawal of support to groundnuts as a cash crop by the Government of Mali. Around 4 000 tons of groundnuts are exported each year on average since the 1980s, account for 1 to 2 percent of production. The sharp drop in exports in 2008 and 2009 can be explained by difficulties caused by red tape, as well as high transport costs and falling prices, especially for producers. Some of the larger producers have since turned to gold mining (FEWSNET, 2011).

Malian groundnuts are marketed almost exclusively in the subregion. Groundnut exports have encountered four major obstacles: the isolation of Mali, which increases costs; poor structuring of the sector; the significant presence of aflatoxin in Malian groundnuts, making it impossible to access developed country markets, and the effects of lower prices. In addition, exports in the subregion are also penalized by significant illegal taxes, to an estimated average value of 4 814 FCFA for every 100 km (Observatory of Abnormal Practices, 2010). This figure makes Mali the second leading country for illegal taxes in the subregion, behind Côte d'Ivoire.

**Value chain performance.** Some producers sell their output directly to collectors, while others go to market. The markets are a gathering place for transactions between producers, collectors, rural retailers and processors. Processors obtain groundnuts to transform them in different ways, mainly in the form of groundnut kernels, pulp, oil, hay and meal. Hay and meal are being used as livestock feed. Rural retailers sell directly to rural consumers.

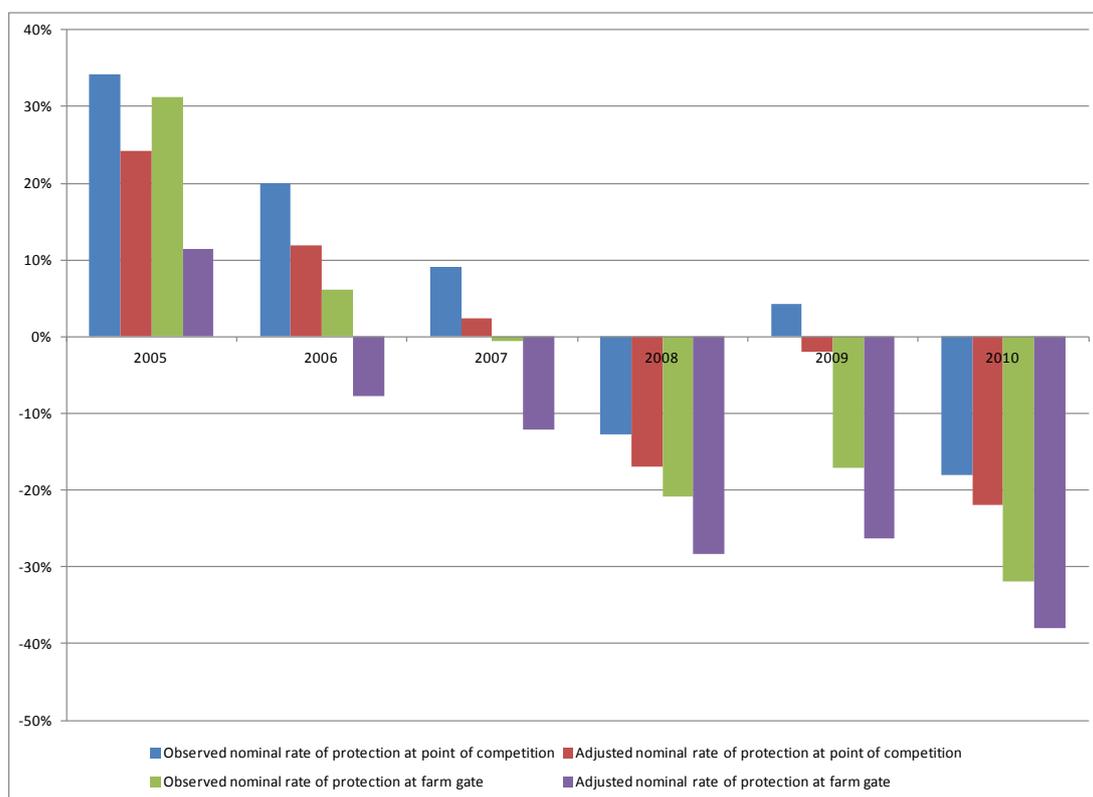
**MAFAP Indicators and Interpretation.** There are no specific price policies related to groundnuts over the period studied. Therefore a set of NRPs close to zero should be observed.

However, producers have received incentives in 2005 and 2006 (31 percent and 6 percent), a neutral situation in 2007, and disincentives from 2008 to 2010. Overall, they faced disincentives, with an average observed NRP of -6 percent from 2005 to 2010. Producers do not seem to get the prices they should in the absence of domestic policies, whether prices they get are higher than the reference price (2005, 2006) or lower (2008 to 2010). This can be explained by the fact that the Malian market does not seem well connected to the Ivorian market that has been used for the benchmark price. Exports of groundnuts, though they are significant, remain low and groundnut is mostly self-consumed and marketed within the country.

The important difference between producers and wholesalers in terms of incentives and disincentives is revealing of the market distortions in the groundnuts value chain. Indeed, wholesalers receive, on average, 6 percent incentives over the period, which is exactly the opposite of the -6 percent NRP received by producers. This suggests that wholesalers capture the price incentives existing in the value chain over the producers.

Distortions are further revealed when comparing the adjusted NRPs for producers and wholesalers. Adjusted NRPs are -1 percent for wholesalers and -17 percent for producers. These NRPs take into account the weight of excessive margins and illicit taxes. The MAFAP analysis shows that these two factors represent an additional burden for wholesalers and producers by generating further disincentives. The differential between observed and adjusted NRPs is also less important for wholesalers than for producers: from 6 percent in the observed domain to 1 percent for wholesalers compared to -6 percent to -17 percent for producers. This again implies a bias against producers. Last but not least, the market development gap is of -12 percent, meaning that excessive margins and illicit taxes represent a structural constraint in the value chain.

**Figure 37. Observed and adjusted nominal rates of protection and nominal rates of assistance for groundnuts in Mali, in %, 2005-2010**



Source: Authors

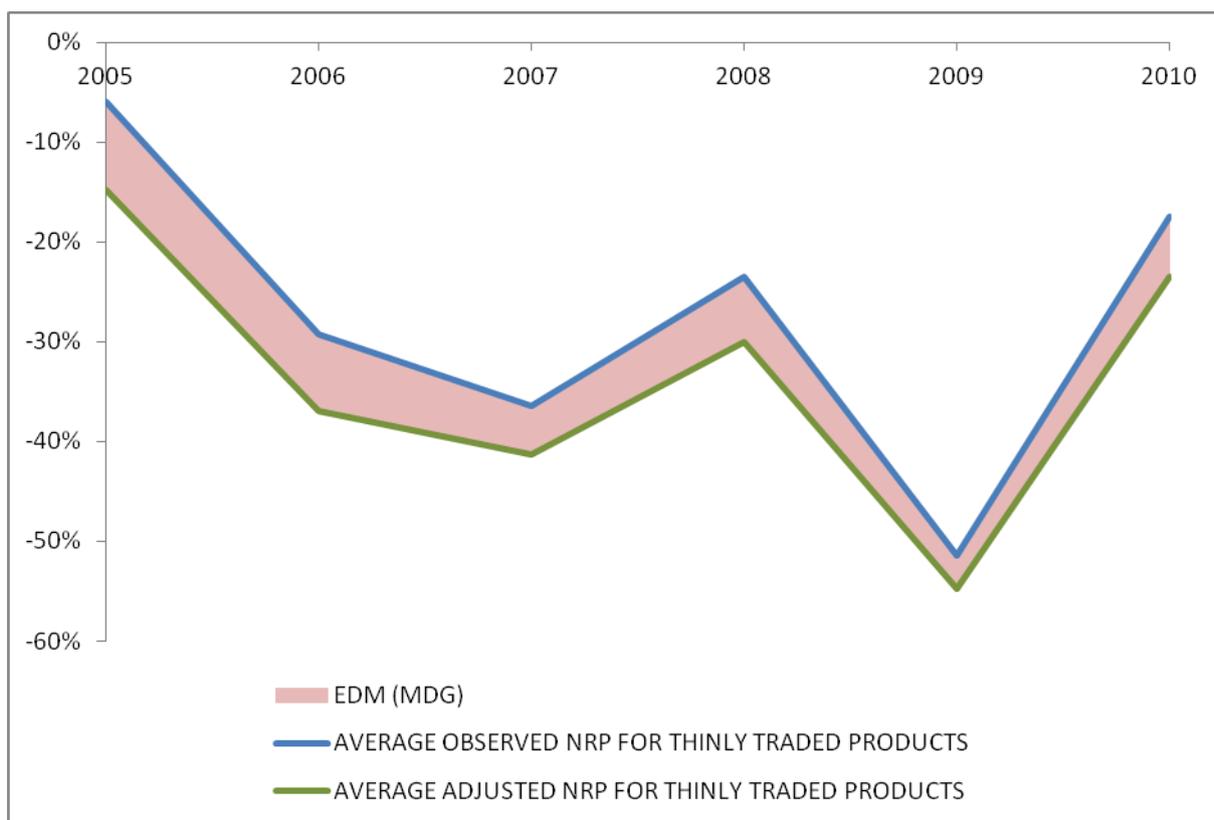
**Main message.** The government does not provide specific policy support to the groundnut value chain in Mali. The value chain is inefficient and domestic-market oriented, and as a result the market seems to be disconnected from regional prices. Producers obtained incentives in 2005 and 2006 but were clearly penalized from 2008 to 2010. Wholesalers systematically receive fewer disincentives, which suggests that they exact excessive margins from producers. It is interesting to notice however that there is an decreasing trend in incentives from 2005 to 2010, which would mean that groundnut

production gets less and less incentives. This confirms the production trend that is observed for this commodity, with a sharp decrease from 2008 to 2010.

### *Indicators for thinly traded products*

The average observed NRP for thinly traded products is negative, at -32 percent. It follows a downwards trend from 2005 to 2007, is deeply negative in 2009, but rises up in 2008 and 2010. There is no clear explanation over why producers have experienced fewer disincentives in 2010 than in the years before (except 2005). The government has indeed given input subsidies in 2009 and 2010 for maize, and in 2010 for millet and sorghum, but it is unclear whether this is related to price incentives recorded in the analysis. In any case, producers in all three value chains have been receiving disincentives from 2005 to 2010, which is coherent with the government's intention to restrict exports, especially for millet and sorghum. Increased disincentives in 2009 also appear coherent with low-price sales and distribution of food in the country in response to the food crisis, and further control of exports for millet and sorghum. Lower adjusted NRPs and negative market development gaps reflect the impact of illicit taxes and excessive margins, especially for sorghum and millet. The high illicit taxes on sorghum and millet are partly the consequence of the government's export restriction.

**Figure 38. Nominal rates of protection and market development gaps for thinly traded products in Mali, in %, 2005-2010**



Source: Authors

## *Millet and sorghum*

Millet and sorghum are the main staple crops in Mali, being cultivated throughout the territory except in the far north. They are very often associated and cultivated together, and are considered as substitute.

**Production.** Millet and sorghum, taken together represent Mali's major food crops and grain production in terms of volume. Millet by itself used to be the main crop in terms of volume, but has lost that place to rice since 2009. According to FAOSTAT, in 2010 the two cereals accounted for 67 percent of the total cereal area under cultivation. The two crops are often linked together. They follow the same production cycle and are more tolerant to drought or poor soil than maize (Sanders and Ouendeba, 2010). Total production of millet and sorghum has increased steadily over the past twenty years and was 1.2 million tons in 2010 for millet, and more than 0.8 million tons for sorghum. This is largely due to increased acreage under cultivation rather than improvements in yields, which have been stagnating at around 800 kg/ha from 2005 to 2010 for millet, and going up from 0.8 to 1.1 ton/ha for sorghum. The two crops respond poorly to intensification through fertilizer or improved seeds (Coulibaly, 2010) and are highly vulnerable to climate risk (especially millet), both factors which do little to encourage intensification strategies.

**Consumption/utilization.** In terms of consumption, millet and sorghum are considered substitutes, and for this reason they can be analysed together. Millet and sorghum are mainly prepared as a pap, paste, flour or "porridge" and play a significant role in food security in Mali. Although both cereals are mainly consumed in rural areas, rapid urbanization has resulted in a significant increase in demand. The annual per capita consumption for millet is 114.9 kg and 61.2 kg for sorghum. From the General Census of Population and Housing 2009, which estimated the population at 14,517,176 inhabitants, national requirements may be estimated at 1.7 million tons of millet and 0.9 million tons of sorghum. These needs are covered by domestic production for sorghum (1.4 million tons in 2009) and almost covered in the case of millet (1.5 million tons).

**Trade and marketing.** Given the high consumption levels of millet and sorghum, and the export restrictions from the state, in the form of red tape, trade is low. However, it is known that there is significant informal trade, not counted in the statistics. The total volume of millet exported from 1999 to 2009 corresponds to 0.3 percent of the national output for the same period, while that of sorghum corresponds to 0.02 percent (FAOSTAT and Foreign Trade of Mali). Sorghum can almost be described as non-traded outside the country, while exported millet remains by far the most important of all coarse grains in terms of volume: from 1999 to 2009, 156 169 tons of millet were exported. Imports of millet and sorghum are limited. The trade for both commodities depends on surpluses and deficits in the subregion, and is taking place with neighbouring countries, notably Burkina Faso, Côte d'Ivoire, Senegal, Mauritania and Niger.

**Value chain performance.** In Mali, the structure for marketing of millet and sorghum does not differ substantially from that for rice. The upstream market brings together producers, collectors, and "aggregators". There is also a farmers' market and a primary market. For the downstream market, there are wholesalers, semi-wholesalers and retailers with wholesale and consumer markets. However, the marketing structure is changing, with the main shift involving a decline in the power wielded by wholesalers. They are effectively facing increasingly strong competition from foreign

importers who offer more profitable margins for collectors and "aggregators". Over the past twenty years, the number of wholesalers in the country seems to have fallen significantly, with a decline of 71 percent in Sikasso, which is the main production area for maize (Diallo, 2011). This decrease can be linked to the proximity of Sikasso to neighbouring countries (Burkina Faso, Cote d'Ivoire), and thus to competition from foreign importers. Another contributing factor is better access to information through the development of mobile technologies, thereby reducing profit margins for wholesalers. It should, however, be noted that the number of wholesalers in the same period rose by 32 percent in Bamako (Diallo, 2011).

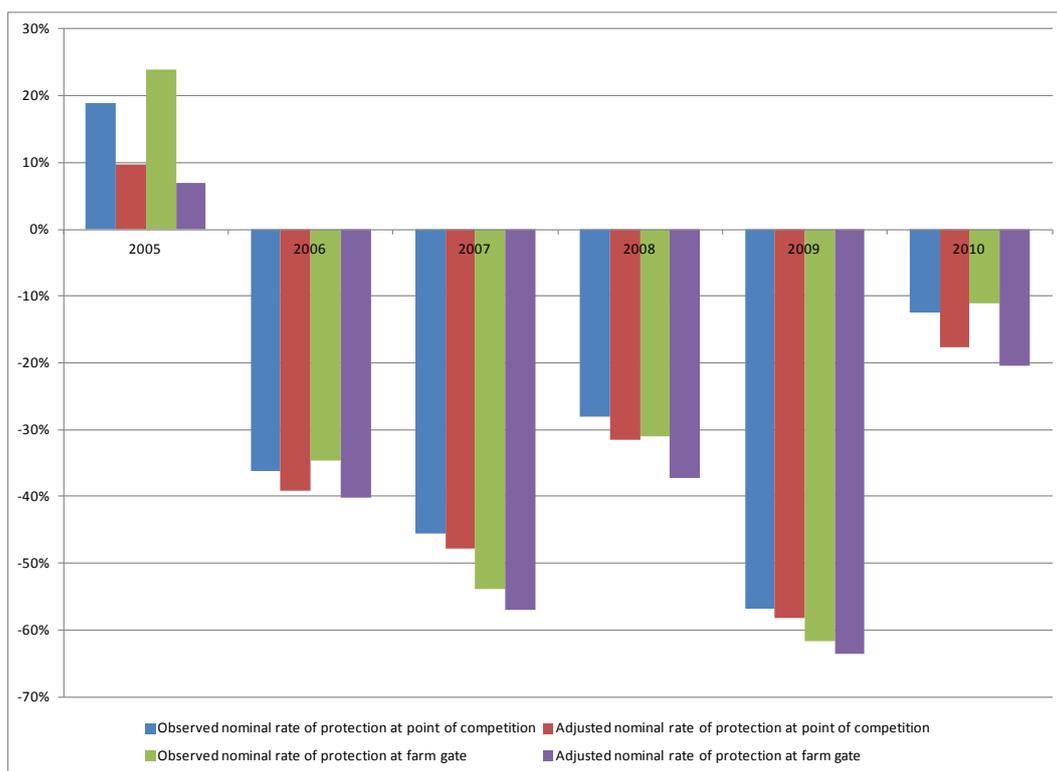
**MAFAP Indicators and Interpretation.** There is no explicit policy measure targeting millet and sorghum in Mali. However, the government of Mali provided input subsidies for maize in 2009 and 2010 and for millet and sorghum in 2010. It is also known that the government has imposed export restrictions through red tape at the border since 2004/2005, because millet and sorghum are seen as strategic for food security, and it is considered that marketing and trade of the commodities will endanger food security in the country. Negative NRPs over the period should hence be observed because of the export restrictions, possibly smoothed in 2009 and 2010 by input subsidies to maize (which indirectly benefit millet and sorghum) and to the two commodities in 2010.

This is confirmed by the results of the MAFAP analysis. Indeed, millet and sorghum producers received similar average observed NRPs of, respectively, -28 percent and -30 percent. Millet producers received incentives only in the year 2005 (24 percent), while sorghum producers received incentives in the year 2007 (15 percent). In 2010, disincentives lessened compared to 2009; however, this cannot be attributed to the input subsidies, but rather to a dip in the regional benchmark price.

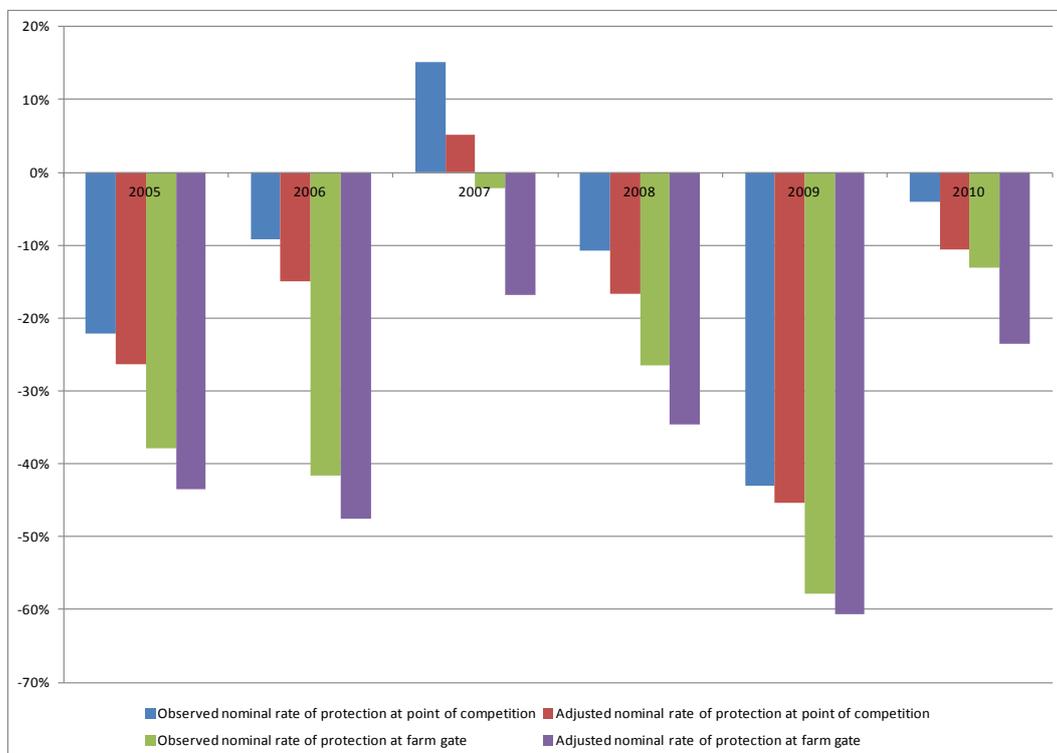
Millet and sorghum are staples, mostly self-consumed and seldom marketed. Producers obtain low prices because of the seasonality of production, and the production areas are remote with low-quality transport infrastructure. Millet and sorghum receive little support from the government, especially when it comes to storage and marketing aspects. The market prices are thus disconnected from the regional prices, all the more because of export restrictions that incur very high transport costs. Paperwork is an especially heavy burden on the Malian roads, affecting millet and sorghum even more than other products. In the first trimester of 2011, it was estimated that the number of road checks on the Koutiala-Dakar corridor (2 000 km) for convoys of millet/sorghum was 99, 49 of which took place in Mali (OPA, 2011). By comparison, the number of road checks for rice on the Koutiala-Bobo corridor (Burkina Faso - Mali) was 16 for a distance of about 400 km, 9 of them in Mali.

This in turn provides some explanation for the disincentives that are globally observed for the two commodities. It is interesting to note that disincentives were particularly high in 2009, while strongly diminishing in 2010. The high disincentives in 2009 resulted from the fact that prices for the commodities soared during that year on the regional market, while Malian producer prices barely went up. This could be explained by low-price sales and distribution of grains by the government in 2008 and 2009 as a response to the food crisis, coupled with an increased control over the export of staple crops.

**Figure 39. Observed and adjusted nominal rates of protection and nominal rates of assistance for millet in Mali, in %, 2005-2010**



**Figure 40: Observed and adjusted nominal rates of protection and nominal rates of assistance for sorghum in Mali, in %, 2005-2010**



Source: Authors

With regard to millet and sorghum wholesalers, these have also been penalized. They received an average observed NRP of -12 percent for sorghum and -27 percent for millet. Wholesalers in the sorghum value chain have thus received fewer disincentives than producers, which suggest that they exacted high margins over producers. This does not appear to be the case for millet: such a difference would need additional research as the two crops are substitutes and should thus show similar results in terms of wholesaler NRPs, just as they do for producer NRPs.

It is also interesting to note that the incentives or disincentives vary significantly between the adjusted and observed domains, both for millet and sorghum. For sorghum, average adjusted NRPs are -18 percent for wholesalers and -38 percent for producers; for millet average adjusted NRPs are -31 percent for wholesalers and -35 percent for producers. Adjusted NRPs take into account excessive margins, misaligned exchange rates and illicit taxes in the value chain. It should be remembered that there is no impact of exchange rates, since trading is carried out within the same monetary zone, that of the CFA franc. The additional disincentives in particular come from high illicit taxes, partly stemming themselves from the export restrictions; the taxes discourage producers and wholesalers from marketing millet or sorghum in the subregion. These fees can amount to almost 210 000 FCFA per trip in the Koutiala-Dakar corridor (OPA, 2011), including more than 170 000 FCFA in Mali. These restrictions can be described as non-tariff barriers, motivated by fear of a shortage of staple commodities in the event of crop failure, and can also be explained by lack of clear information regarding grain stocks spread across the country. The cost of these restrictions is estimated at 10 FCFA/sack of grain (Dembele and Boughton, 2010).

The structural inefficiencies in these value chains are further confirmed by the negative market development gaps, -9 percent for millet and -11 percent for sorghum.

**Main message.** There has been a lack of policies supporting millet and sorghum, with high disincentives for marketing stemming from insufficient marketing infrastructure and heavy informal taxes levied on the roads. These taxes are partly the result of 'soft' export restrictions decided by the government, which are effective in discouraging exports but also provide disincentives to production, generating low prices. Generally, access costs could be reduced by investments to improve marketing infrastructure (transport, storage, etc.). In addition, extensive research on improved varieties of millet and sorghum for crop intensification have not been sufficiently exploited and disseminated by the policies in place.

## *Maize*

Maize is considered to be a crop with a strong potential in the country. Both domestic and regional demand for maize are increasing, and yields are the highest among cereals in Mali after those of rice. However, most of the production and consumption of maize still remain in the southern part of the country.

**Production.** The Sikasso region, in the south of the country, is the main production area for maize. Maize production has increased sharply with the cotton crisis that affected producers in the mid-2000s. Indeed, with lower yields and prices for cotton, many farmers who were producing maize as a side crop for cotton, have been investing more heavily in maize. Other factors include the food price crisis in international markets between 2008 and 2010, combined with support measures aiming to boost maize production, implemented as part of the Rice Initiative. Production increased by 70

percent between 1998-2004 and 2005-2011, reflecting both higher yields (20 percent between the two periods) and an increase in the area under cultivation (42.6 percent). It has thus gone from almost 460 000 tons in 2005 to 893 000 tons in 2010.

However, it should be noted that the cotton crisis, while coinciding with an overall increase in maize production, appears to have caused a drop in production for some producers in the cotton producing areas (Traore et al., 2010). The production of maize and cotton are closely interrelated – maize initially developed as a complement to cotton cultivation because it is particularly sensitive to the side-effects of fertilizers used for cotton.

**Consumption/utilization.** Unlike other coarse grains (millet, sorghum), maize answers both consumer and marketing needs. Fifty eight percent of maize growers produce both for self-consumption and for the market. (CAE, 2001). However, only an average of 10-25 percent of total production is sold each year (Samaké et al., 2008). For this reason, maize production is seen as fundamental to food security. Maize is primarily intended for human consumption, with 80 to 90 percent used for this purpose (MSU, 2011), and to a lesser extent for animals (cattle feed) and businesses (starch, paint). More maize is consumed in rural than in urban areas, especially in the south, where it is cultivated mainly for household use. Post-harvest losses are significant, but data regarding these losses is inadequate.

The volume of maize used for human consumption is steadily increasing. Consumption of maize has greatly increased since the 1980s, from an annual 5.5 kg per capita in 1961 to 18.55 kg in 1986 (FAOSTAT). From then onwards, consumption increased steadily until 2005 before declining slightly in recent years.

Maize accounted for 8.34 percent of total calories consumed in Mali in 2010, compared with 7.9 percent in 2007, 4.4 percent in 1980 and 2.9 percent in 1961 (FAOSTAT). Although production is growing steadily, it remains the fourth source of energy. The caloric intake of maize has increased, particularly since the 2000s, with maize providing an average of 227 calories per capita per day over the period 2000-2007, compared with 179 calories for the period 1985-2000 (FAOSTAT).

**Trade and marketing.** Trade characteristics for maize are similar to those of millet and sorghum. From 1 percent to 3 percent of the total production is being traded, essentially in the neighbouring countries and through cross-border trade. Côte d'Ivoire is the main partner and Mali exports to or imports from Côte d'Ivoire, depending on whether there are small surpluses or deficits in the country. Senegal is a partner of increasing importance, as it imports Malian maize for its poultry industry.

**Value chain performance.** The maize value chain is structured like the millet and sorghum value chain, except it is more strongly connected to the export markets. For this reason, there is growing competition between Malian wholesalers and importers from neighbouring countries, especially in south-eastern Mali, around the main production area of Sikasso.

**MAFAP Indicators and Interpretation.** The only explicit policy measure targeting maize in Mali consists in input subsidies given through the Maize Programme , in 2009 and 2010. We should thus observe a zero NRP for the value chain in our analysis or a positive NRP if we consider that input subsidies could have raised prices.

However, our results show that over the period studied, producers have alternatively received incentives and disincentives. The observed NRPs for producers are indeed negative for 2005, 2007, 2009 and 2010 (-8 percent in 2005, and around -25 percent in the other years) and positive in 2006 and 2008 (35 percent and 8 percent).

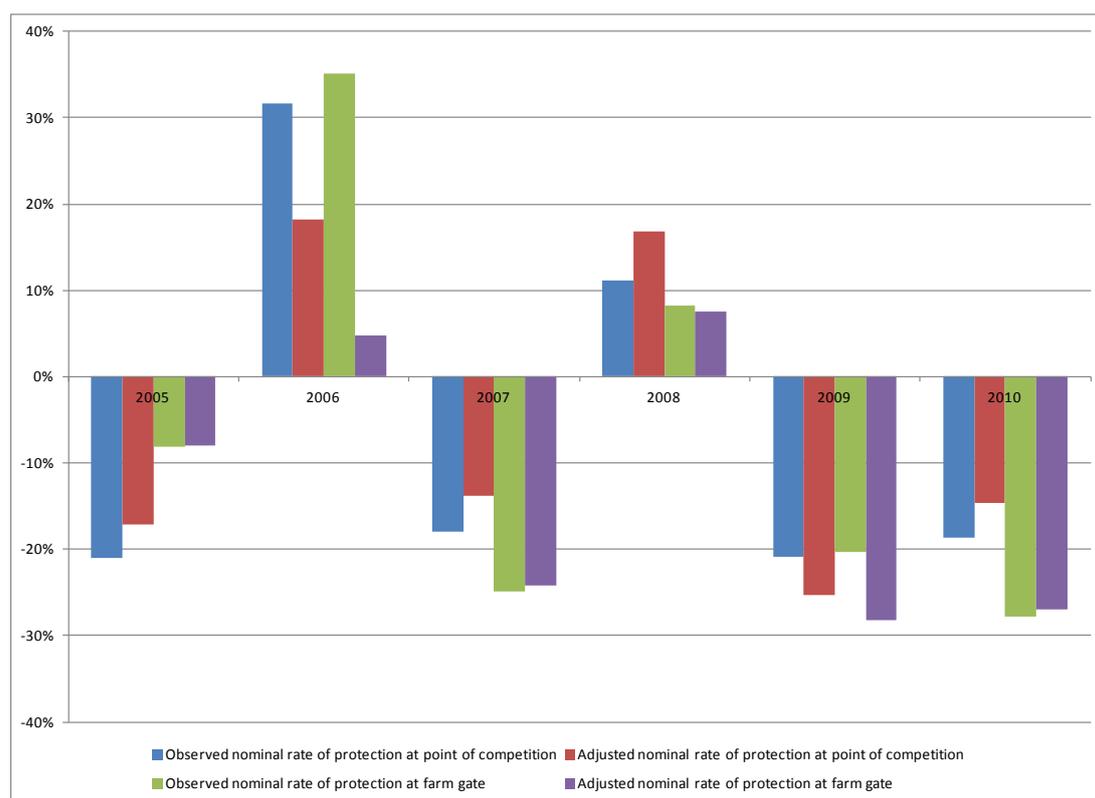
It has to be noted that maize was analysed under a different trade status at different periods: as an export product for 2006 and 2009, and as an import product for the other years. However, a correlation between the trade status and the incentives cannot be made, as maize producers obtained, for example, incentives in 2006 (with a benchmark price from Senegal) and disincentives in 2009 (with a benchmark price from Niger). For all years of imports, Côte d'Ivoire was used as the benchmark country.

Maize producers received disincentives for three years out of four when Mali imported maize from Côte d'Ivoire. This is surprising, as Mali imports maize when there is a deficit in production due to low rainfall, which should create high prices in the country compared to the neighbouring countries, and hence an incentive to producers. This link between rainfall and imports has been confirmed by the decision of the Malian Government to exempt maize imports from taxes in 2011, in order to address a shortage of this cereal in the subregion due to poor rainfall.

The disincentives received by producers in import years could be explained by high access costs, especially transport and margins. Since trading volumes are low, and trading is carried out when there is a shortage of maize on the domestic market, transporters, generally subject to little competition, charge high prices for transportation because they are in a strong bargaining position. A similar observation was made regarding other parts of Africa in the 2008 World Bank study on transport costs (Teravaninthorn and Raball, 2009). Excessive margins may also have been taken by importers from Côte d'Ivoire because of the risk incurred by the war from 2002 to 2009, which would explain why the Ivorian prices are not being passed on to producers.

The incentives received in 2006, an export year to Senegal, can be explained by the low benchmark price of Senegal. It seems that Senegal is a good market for Malian maize to be exported since it would allow producers to benefit from better prices. However, there is no clear explanation on the reason of incentives received in 2008, a year of imports from Côte d'Ivoire.

Despite annual variations, wholesalers have received on average the same disincentives as producers over the period, with an observed average NRP of -6 percent. This shows that wholesalers in Mali do not seem to be applying excessive margins to producers; however, excessive margins in the value chain may come from maize importers connected to Côte d'Ivoire who then sell the maize to Malian wholesalers.

**Figure 41. Observed and adjusted nominal rates of protection and nominal rates of assistance for maize in Mali, in %, 2005-2010**

Source: Authors

**Main message.** Despite maize being flagged as a high-potential crop for Mali, producers do not consistently receive prices from the regional market. This is the consequence of a lack of connection between the maize market in Mali and outside the Malian borders, apart from cross-border trade. To increase incentives for production, the government would need to improve the marketing environment for maize, especially around south-eastern Mali, the main production area. This implies better infrastructure to lower transport costs, and efforts to cut down illegal taxes and custom harassment. Support to production, as is already taking place through input subsidies (the Maize Programme), would help producers to market higher quantities of maize and make them less dependent on weather. However, storage infrastructure is also needed in order for them to receive the best prices. Furthermore, producers have received higher incentives in our analysis when the reference price of Senegal has been used, implying that this country may be a more profitable market than the traditional Côte d'Ivoire market.

## Conclusions

### *Coherence between policy objectives and impacts*

**Rice.** It seems that the political objective of increasing rice production in Mali, in order to make it a net exporter, is not supported by price policies. It is clear that the Government of Mali does not have a single political objective of making the country a net exporter of rice, and that all policy objectives must be considered and prioritized where possible.

One could also speculate that the country offers a mix of policy measures to: (i) develop the rice industry, including using protectionism through the use of VAT, and (ii) ensure affordable food prices to consumers. In general, with imports meeting just 10 percent of national demand, Mali manages to keep relatively low retail prices in domestic markets, while penalizing rice producers.

**Maize.** Mali has long been committed to supporting maize production, the government taking clear steps in 2009 and 2010 with the input subsidies through the Maize Programme. However, our analysis shows that except for two years of incentives, all policies established by the Government of Mali led to observed prices that were unfavourable to producers when compared to the reference prices calculated. It therefore seems that there is no real coherence between policy objectives and the effects of these policies, particularly in 2009 and 2010 when disincentives were strong, despite the Maize Programme. This is particularly interesting in view of the fact that the Government of Mali appears keen to encourage the maize sector and will therefore seek greater efficiency in the impact of its measures to support production.

**Millet and sorghum.** Millet and sorghum have benefited from input subsidies during the 2009/2010 crop year, after they were included in the Rice Initiative. Nonetheless, this support did not result in incentives to producers and wholesalers in 2010. It seems there is no evidence of consistency between policy objectives and the effects of these policies, particularly in 2009 and 2010 when disincentives were strong despite the Rice Initiative support. Government support for the production of millet and sorghum is primarily intended to increase production for food security, or even food sovereignty, as included in the LOA. The government is less interested in encouraging trading on the domestic market and appears hostile to international trade, with the authorities seeming to encourage informal red tape in order to discourage exports of staple products. These measures have generated disincentives to producers and wholesalers, but have enabled the government to achieve its implicit objective of limiting foreign trade in millet and sorghum.

**Cotton.** Regarding the effects of policies (explicit and implicit) in place for cotton production over the period studied, both producers and CMDT plants generally received support. Since 98 percent of this commodity is exported, this means that Mali actually subsidized cotton buyers in the world. However, policy objectives (see **Table 39**, p. 137) have not been achieved, since production has plummeted from 2006 to 2010 (-50 percent) and more than 60 percent of farmers have abandoned production. It therefore seems reasonable to assume that political incentives in place were not effective in maintaining production, although they represent a significant cost to the state budget (see the analysis of public expenditure in Section 6).

**Cattle.** Mali does not have a proactive or ambitious policy for the sector, nor does it have policies that would lead to remunerative prices for farmers. The main inconsistency thus consists in the lack of interest shown by policy-makers in such an important sector, both in terms of food and nutrition, as well as from a financial, social and cultural standpoint. The development and promotion of the beef export industry, based on the idea of adding value by promoting the meat trade rather than live animals, remains a huge challenge given the enormous lack of infrastructure and the insufficient structuration of the value chain. There is a need to increase awareness among decision-makers because the country's cattle sector is failing to realize its potential and, with current support levels, is unable to be a socio-economic driver for animal rearing areas in the north (Gao and Mopti) and south (Sikasso). Given the current political climate – and in order to strengthen national and territorial

unity in Mali – it may be appropriate to rethink the structure of incentives to farmers and other actors in the beef industry.

### *Incentives to agricultural production*

**Rice and milk.** We show in our analysis that rice farmers receive lower prices than those they would obtain if the national market was functioning effectively, and therefore cannot undertake the necessary investments to increase production. For the specific case of milk, the need to overcome the constraints posed by lack of on-farm cold chain and storage facilities, is even more critical to the development of the dairy industry and warrants greater attention from policy-makers.

**Maize.** In the case of maize, we show that the opportunities to obtain better prices from the international market are consistently being missed. The market is generally loosely structured, both regionally and nationally. This point is linked to a more general and fundamental issue regarding the lack of structure and organization of the maize sector, at both national and subregional levels.

**Cereals.** Mali encourages the production of millet and sorghum, but less explicitly and less directly than in the case of maize and rice. However, productivity and above all trade levels are too low for producers to be able to exploit market opportunities. In years when harvests are abundant, some Malian producers manage to export very low surpluses to cross-border deficit areas. It seems that only a small proportion of producers with storage capacities are able to trade on existing markets in the subregion, benefiting from higher prices in areas where demand is stronger.

**Cotton.** An analysis of cotton incentives via prices does not seem sufficient to explain all the mechanisms at work in the value chain. Margin and producers' incomes need to be analysed to understand the reasoning behind the cotton farmers' overwhelming decision to leave the sector between 2005 and 2010. One can speculate that the price of cotton, even when supported by policies, is not profitable enough, i.e. that cotton production in Mali is not sufficiently profitable and is too uncertain compared with opportunities offered by crops such as maize (largely grown for household consumption), or other agricultural and non-agricultural activities. The dependence of small farmers on prices determined by the CMDT may turn into a poverty trap, due to the low productivity of cotton.

**Cattle.** The bulk of disincentives come from the high access costs faced by operators. Better and higher public spending and aid could lower transport costs and fix added value on the Malian territory, which would result in higher incentives for breeders and wholesalers. This would involve developing quality processing infrastructures and showing a genuine desire to eliminate red tape and other taxes along illicit trade corridors.

### *Effects on consumers*

**Rice.** The incentive structure for the rice sector is favourable to consumers, which tends to indicate the approach preferred by the government in handling food security: ensuring good prices for consumers. It is also true that the country's food security does not exclusively depend on the rice market. The issue of improving food security could also be considered from the perspective of integrating regional cereal markets.

We suggest that the policy objective in relation to food security (that is to say favouring low prices for consumers rather than production) should be made explicit in order to allow producers and

producer organizations to adjust through a real reorganization of the sector, echoing the political context and the structure of incentives and disincentives.

**Milk.** Consumers are to some extent short-term winners, because they buy milk at low prices through massive imports of cheap, safe and storable milk powder. However, in the medium and long term, with rising living standards in cities and in particular given the increased focus on nutrition issues, consumers are increasingly interested in local dairy products, which have the advantage of being fresh, diverse and of increasingly good quality. There is already growing interest in Bamako for the production of cream, *fene* and other dairy products based on local milk.

**Maize.** Public policies resulted in disincentives to producers with little benefits to consumers. Maize is indeed massively self-consumed, and remains a minor commodity in several areas of the country and in urban areas.

**Millet and sorghum.** The government's main objective, though implicit, was to limit exports of millet and sorghum in order to ensure national food security; it appears to have been partially successful. Indeed, there was limited food insecurity in Mali during the period 2005-2010, despite the global food crisis, and few staple products were exported, most of them being consumed locally. However, it is important to boost the country's processing capacity for millet and sorghum. Urban consumption, focused on processed millet and sorghum, will represent a major outlet for producers in the coming years. There is also a need to make producers more aware of international price signals, and to encourage better transmission of these prices to both producers and local consumers.

### *Effects of exchange rate policies*

Our analysis reveals, as those of others have done before us (Lançon and Benz, 2007), that the appreciation of the euro against the dollar tends to increase the competitiveness of Asian rice imports in dollar terms. This overvaluation of the CFA (not necessarily decided in Bamako) is a serious problem for the development of agricultural production in the future. However, this policy has minimized the impact of recent price hikes on international markets, and also those of many other products, including energy.

### *Value chain organization*

Our analysis shows that opportunities to obtain better prices from the international market appear to be consistently missed. The market is generally loosely structured, both nationally and at subregional level. This point is linked to a more general and fundamental issue regarding the lack of structure and organization of the cereal sector at both national and subregional level. The market structure of many of the products studied (including maize, millet and sorghum, but also cattle) at the subregional level should be a central element of the overall objective of the Government of Mali to promote better value chain organization. This should be done for each product around the main production areas, the main consumption areas (or feed) and the main trade corridors.

As a corollary and for some products (maize, millet, and sorghum), there is a need for the development of private or collective storage capacities to manage periods of shortage and surplus and to reduce interannual volatility and the local price level of products. These storage capacities, resulting from targeted investments, would promote market-oriented production, and producers

would not only be able to reduce post-harvest losses, but would also be placed in a position to sell their products when prices are highest, that is to say, off-harvest.

Besides such investments at farm level, investments in infrastructures seem fundamental in order to reduce the disincentives faced by producers. The improvement of tracks and surfaced roads on the main corridors would result in reduced transportation costs. It appears that public expenditure decisions in this area are not always consistent (see Section 6, p. 123), even though improving transport infrastructure is an effective way of encouraging marketing and thus production. Substantial efforts need to be made by the government to reduce illicit taxes on trade corridors, which hamper trade for all the products studied.

For cotton also, considerable work remains to be done to improve the competitiveness of production and the organization of the industry (Behrendt, 2006). The main factors that determine the competitiveness of cotton in Mali are productivity and especially yields, production costs, quality and marketing. The pivotal role of the CMDT should be included in any discussion on an effective and efficient organization of the sector. Liberalization of the sector, as targeted by the government, means an overhaul of current policies and would normally result in a zero nominal rate of protection which would therefore mean radical changes in the structure of incentives. Will the plan to privatize the CMDT, split it into four regional entities, and establish a cotton interprofession, provide early solutions to the aforementioned challenges?

## Public expenditure and aid

### Abstract

#### Box 3. Summary of results of the analysis of public expenditure and aid

Public expenditure is an important policy instrument in the agricultural sector as large amounts of funds are allocated in support of the sector. However, the composition of spending may not be optimal

- Aid accounts for a large part of expenditure, raising questions about sustainability of support to the sector
- Administrative costs have an important share in overall spending
- Actual spending deviates significantly from allocated funds

### Introduction

The importance of developing the agriculture sector in Mali has been emphasized in a number of strategies, both at the sector and economy level, as demonstrated in Part 1 – Context of food security and agricultural policies. These strategies have been translated into more than 100 individual projects and programmes, shaping public expenditure in support of food and agriculture development in Mali in the period analysed. These projects and programmes are at the core of the analysis presented in this chapter (a detailed list of the projects and programmes is available in **Annex 1**).

The projects and programmes that come under the definition of public expenditure in support of food and agriculture development adopted by the MAFAP project are those directed at Mali's rural development sector. This is similar to the definition traditionally adopted by Mali when measuring public expenditure in support of agriculture. The main government bodies in charge of the rural development sector are the Ministry of Agriculture, Ministry of Energy and Water, Ministry of Livestock and Fisheries and the Ministry of Environment and Sanitation, and their agencies. However, several other ministries are also implementing projects and programmes in the rural sector, such as the Ministry of Economy and Finance, Ministry of Territorial Administration and Local Communities, Ministry of Social Development, Solidarity and Aged Persons and the Ministry of Industry, Investments and Trade. These have also been taken into account when measuring public expenditure in support of agriculture in Mali.

The following analysis uses concepts and definitions described in the MAFAP methodology for measuring public expenditure in support of food and agriculture sector development and its terminology. Those readers who are not familiar with the methodology are invited to refer to the MAFAP concept paper available at: [www.fao.org/mafap](http://www.fao.org/mafap). However, for the reader's convenience, a few main definitions are provided in **Box 4**, while **Annex 2** offers a brief summary of the main concepts.

#### Box 4. Main definitions for public expenditure analysis

The main definitions are provided below. For further explanation on the main concepts behind the measurement of public expenditure in support of food and agriculture sector development in the MAFAP projects, see **Annex 2**.

**Public expenditure in support of food and agriculture sector development:** all public expenditure undertaken in support of food and agriculture sector development, financed from the national budget, either central or regional government, regardless of the ministry that implements the policy, and external aid, provided either through local governments or specific projects conducted by international organizations or NGOs. Public expenditure is either agriculture-specific or agriculture-supportive .

**Agriculture-specific expenditure:** all public expenditure measures that generate monetary transfers to agricultural agents (producers, consumers, input suppliers, traders, processors and transporters) or the sector as a whole (e.g. in form of research, extension services, etc.).

**Agriculture-supportive expenditure:** public expenditure measures that are not strictly specific to the agricultural sector, but that exert a strong influence on agricultural sector development, such as rural education, rural health or rural infrastructure (energy, water and sanitation, roads, etc.).

**Support to individual commodities:** public expenditure that directly targets specific individual commodities such as rice or cotton.

**Support to groups of commodities:** public expenditure that directly targets specific groups of commodities such as crops or livestock.

**Support to all commodities:** public expenditure that does not target specific individuals or groups of commodities, but that benefits any food and agricultural activity.

#### General trends in public expenditure in support of agriculture in Mali

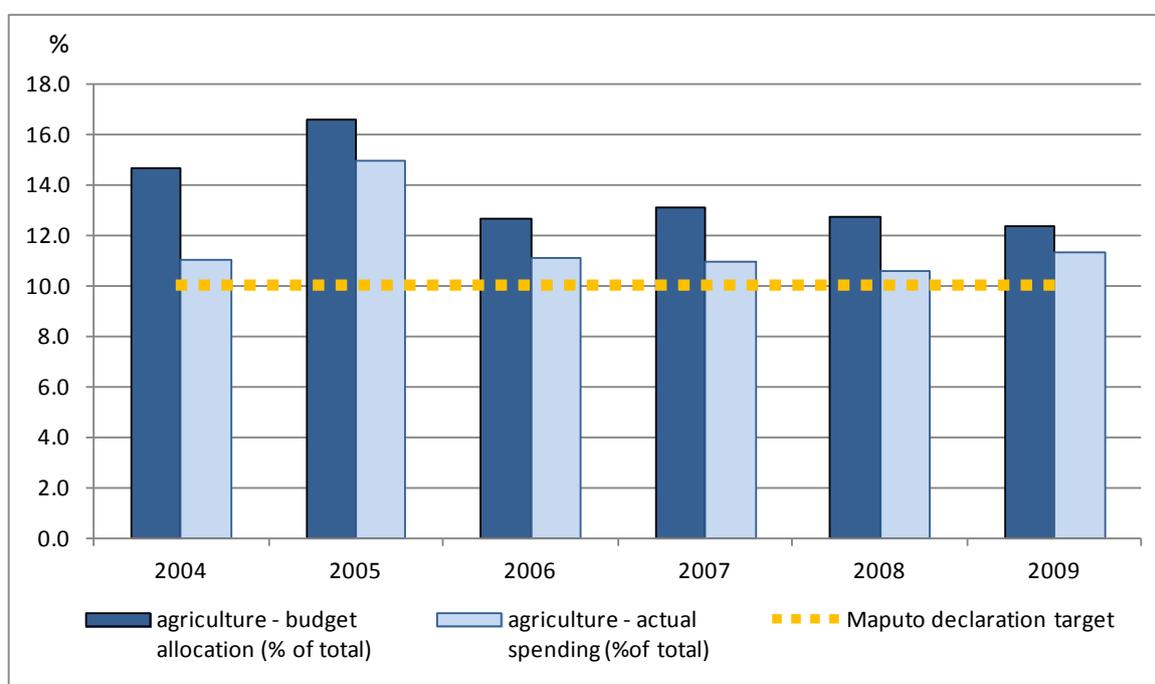
The total approved budget for the sector increased by 72%, in nominal terms, from 2004 to 2010 reaching 198 billion FCFA (Table 31). Total actual spending has grown even more: it increased by 82% from 2004 to 2010, reaching 132.3 billion FCFA. In relative terms, however, the agricultural budget allocations have declined from almost 15% of total government spending in 2004 to about 12% in 2009, while actual spending was at a similar level of 11% in 2004 and 2009 (Figure 42)<sup>8</sup>. Although the trends in relative terms show that the importance of agriculture in the total government budget is slightly declining, the current level of spending meets the CAADP recommendations of allocating 10% of the overall budget to agriculture and rural development (including national resources and aid), as expressed in the 2003 Maputo Declaration.

<sup>8</sup> At the moment of drafting this report, data on total government budget were not available for the 2010.

**Table 31. Total and agricultural expenditure in Mali: Budget allocations and actual spending, in %, 2004-2010**

	2004	2005	2006	2007	2008	2009	2010	% increase 2004- 2010
	<b>one billion FCFA</b>							
<b>budget allocation</b>	115.3	141.2	118.2	130.2	134.2	143.2	198.0	72
<b>actual spending</b>	72.6	117.1	95.3	96.9	94.8	117.1	132.3	82

Source: Own calculations based on CPS and MEF (2011).

**Figure 42. Agriculture in total government expenditure in Mali: planned and actual spending, 2004-2009, in %**


Source: Own calculations based on CPS and MEF (2011)

**Table 32. Public expenditure in support of food and agriculture in Mali (actual spending), in one billion FCFA, 2006-2010**

	FCFA billion				
	2006	2007	2008	2009	2010 <sup>P</sup>
<b>I. Agriculture-specific policies</b>	39.3	45.1	38.6	71.1	84.2
<b>I.1. Payments to agents in the agrifood sector</b>	17.8	19.4	17.2	26.3	30.0
<b>I.1.1. Payments to producers</b>	16.6	17.4	15.6	23.9	27.1
A. Payments based on output	0.0	0.0	0.0	0.0	0.0
B. Input subsidies	16.3	17.0	15.2	23.5	26.7
<i>B1. variable inputs</i>	0.9	2.4	1.7	4.5	5.2
<i>B2. capital</i>	15.0	14.5	13.4	19.0	21.2
<i>B3. on-farm services</i>	0.4	0.1	0.1	0.1	0.3
C. Income support	0.3	0.4	0.4	0.4	0.4
D. Other	0.0	0.0	0.0	0.0	0.0
<b>I.1.2. Payments to consumers</b>	0.6	0.9	0.5	0.8	0.7
E. Food aid	0.5	0.7	0.4	0.6	0.6
F. Cash transfers	0.1	0.2	0.1	0.2	0.2
G. School feeding programmes	0.0	0.0	0.0	0.0	0.0
H. Other	0.0	0.0	0.0	0.0	0.0
<b>I.1.3. Payments to input suppliers</b>	0.0	0.0	0.0	0.0	0.0
<b>I.1.4. Payments to processors</b>	0.6	1.0	1.1	1.6	2.2
<b>I.1.5. Payments to traders</b>	0.0	0.0	0.0	0.0	0.0
<b>I.1.6. Payments to transporters</b>	0.0	0.0	0.0	0.0	0.0
<b>I.2. General sector support</b>	21.6	25.7	21.4	44.8	54.2
<b>I. Agricultural research</b>	0.2	0.5	0.6	3.0	3.2
<b>J. Technical assistance</b>	0.1	0.7	0.6	3.2	3.9
<b>K. Training</b>	3.0	4.2	2.5	7.3	9.7
<b>L. Extension</b>	0.1	0.7	0.5	1.1	1.4
<b>M. Inspection (veterinary/plant)</b>	1.7	2.6	2.7	5.2	6.1
<b>N. Infrastructure</b>	11.4	10.6	9.3	14.0	13.2
<i>roads</i>	1.0	2.2	2.2	3.5	3.0
<i>Irrigation water</i>	7.7	5.9	5.1	7.7	9.1
<i>other</i>	2.7	2.5	1.9	2.8	1.2
<b>O. Storage/public stockholding</b>	2.8	2.8	2.3	2.4	2.6
<b>P. Marketing</b>	1.3	3.3	2.6	7.6	13.1
<b>R. Other</b>	0.9	0.3	0.4	0.9	1.0
<b>II. Agriculture-supportive policies</b>	24.6	24.6	25.0	24.1	32.9
<b>S. Rural education</b>	3.2	3.0	2.4	1.8	2.2
<b>T. Rural health</b>	4.8	2.8	2.6	2.5	2.6
<b>U. Rural infrastructure</b>	11.1	9.7	9.0	10.7	15.2
<i>roads</i>	9.4	8.6	8.5	10.4	13.6
<i>water and sanitation</i>	0.7	0.4	0.3	0.2	1.6
<i>energy</i>	0.7	0.6	0.3	0.1	0.1
<i>other</i>	0.3	0.1	0.0	0.0	0.0
<b>V. Other</b>	5.4	9.1	11.0	9.1	12.9
<b>III. Total expenditure in support of the food and agriculture sector</b>	63.9	69.7	63.6	95.2	117.1

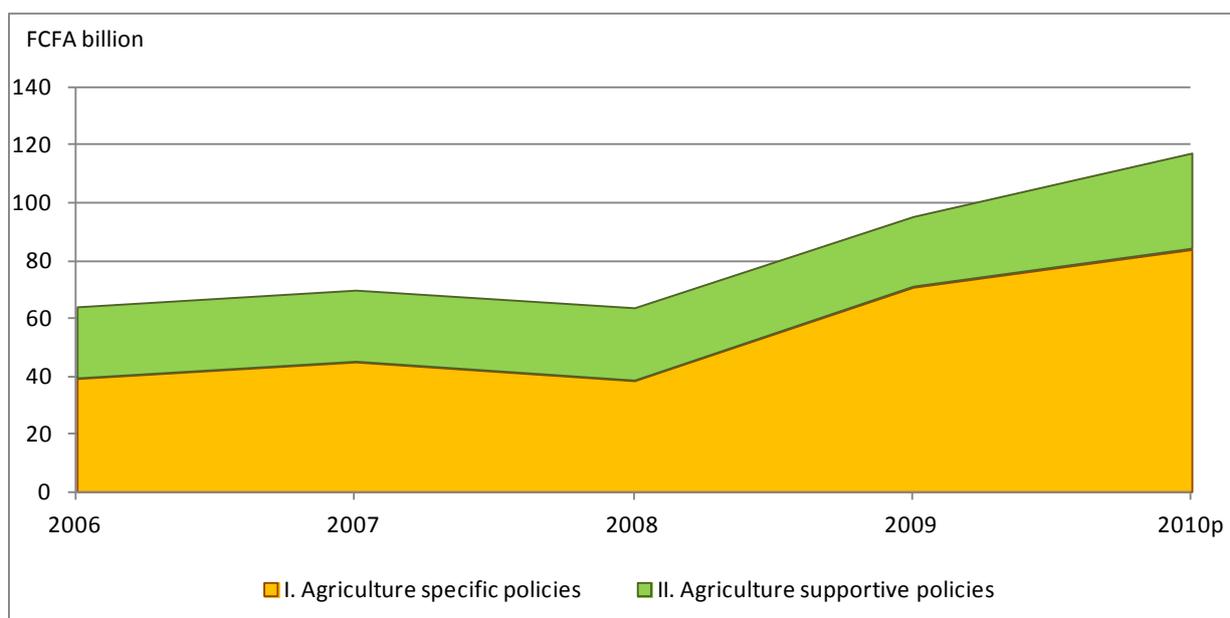
Source: Own calculations based on budgetary data collected by Institut d'Economie Rurale in Mali for the MAFAP project. <sup>P</sup> - provisional estimate

### Composition of public expenditure in support of agricultural and food sector in Mali

Data collected at country level allows for a good disaggregation of expenditure, funded from national resources and foreign aid, allocated to the agricultural sector. About 100 projects and programmes were identified and grouped according to the MAFAP classification, as outlined in the project methodology (MAFAP, 2010). Collected data covered the 2006 to 2010 period. However, for some of the expenditure, data on measures was missing for the most recent year. In such cases, estimation methods were provisionally applied, until such time as the most recent data can be obtained from the country. The results are shown in **Table 32**.

Agriculture-specific expenditure accounts, on average, for almost 70 percent of expenditure in support of food and agriculture development. Their importance to overall agricultural support increased from about 60 percent in 2006 to 80 percent in 2010. In terms of the level of spending, the agriculture specific expenditure almost doubled over the analyzed period, while agriculture supportive expenditures increased only slightly (Figure 43).

**Figure 43. Composition of public expenditure in support of agriculture in Mali, in one billion FCFA, 2006-2010**



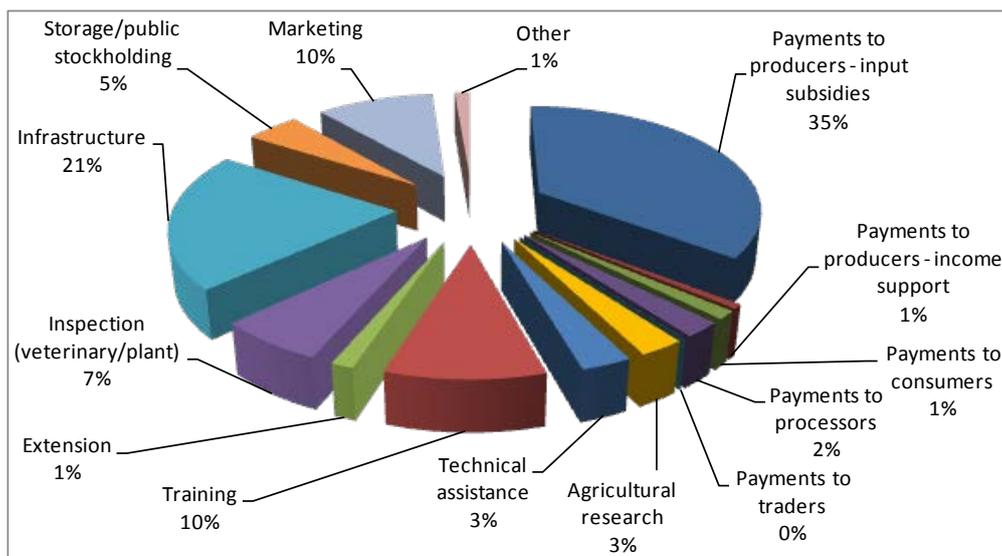
Source: Own calculations based on budgetary data collected by Institute of Rural Economy in Mali for the MAFAP project

Among agriculture-specific expenditure measures, about 60 percent are in the general sector support category. Most of this expenditure falls into the infrastructure category, with the largest investments in irrigation/water and feeder roads. Other significant expenditure involves training, inspection, storage (including investments in related infrastructure) and marketing (including investments in construction of markets). These shares do not change significantly throughout the period analysed. Agricultural research, technical assistance and extension services account for only a small proportion of agriculture-specific spending. However, their shares increased in the second half of the period analysed.

Payments to agents in the agrifood sector account for the remaining 40 percent of agriculture specific expenditure. Within this category, the majority of expenditure concerns payments to

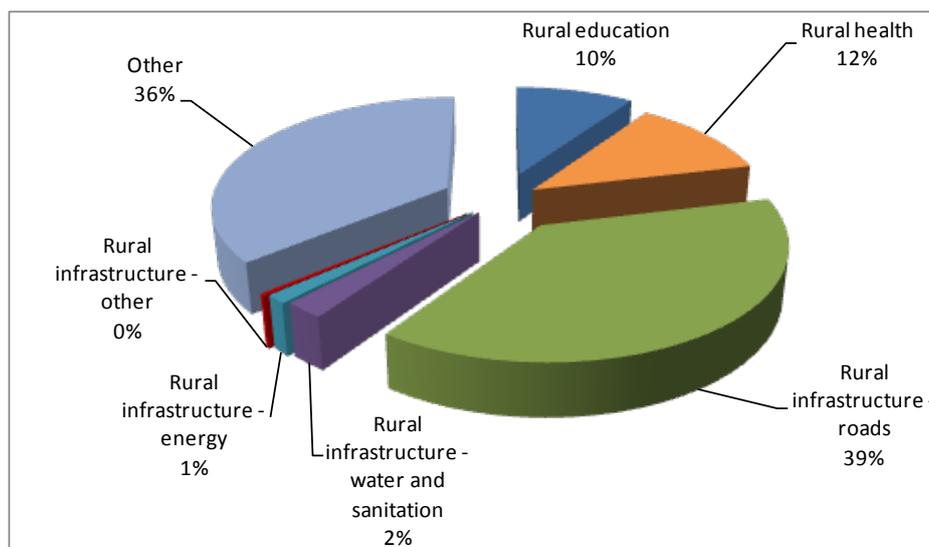
producers in the form of input subsidies, particularly subsidies for capital formation (including support to machinery and equipment, investments in irrigation and access to credit), but also for variable inputs and on-farm services. There is also some expenditure for income support to producers, but this accounts for a very small proportion of agriculture-specific spending. Other payments to agents in the agrifood sector include payments to consumers (mostly in the form of food aid and cash transfers), payments to processors and payments to traders, but those also account for a very small proportion of agriculture-specific spending. There are no payments to transporters or suppliers of inputs.

**Figure 44. Composition of agriculture specific spending in Mali, in %, average 2006-2010**



Source: Own calculations based on budgetary data collected by Institute of Rural Economy in Mali for the MAFAP project

Agriculture-specific expenditure is complemented by agriculture supportive expenditure. It accounts, on average, for about 30 percent of overall support to the food and agriculture sector in Mali. Among agriculture-supportive measures, by far the largest expenditure is on rural infrastructure, and most of that concerns investments in rural roads (Figure 45). There is relatively little investment in rural water and sanitation or rural energy, however there is significant expenditure on rural health and education. These proportions are almost constant throughout the period analysed. It is important to note, however, that about a third of agriculture-supportive spending falls into the “other” category. This latter category regroups those agriculture-supportive measures for which there was not enough information to classify them into aforementioned categories. Ideally, additional information should be collected to place those measures in the appropriate spending categories. This approach may bring significant changes to the relative importance of the categories within the agriculture-supportive measures.

**Figure 45. Composition of agriculture-supportive spending in Mali, in %, average 2006-2010**

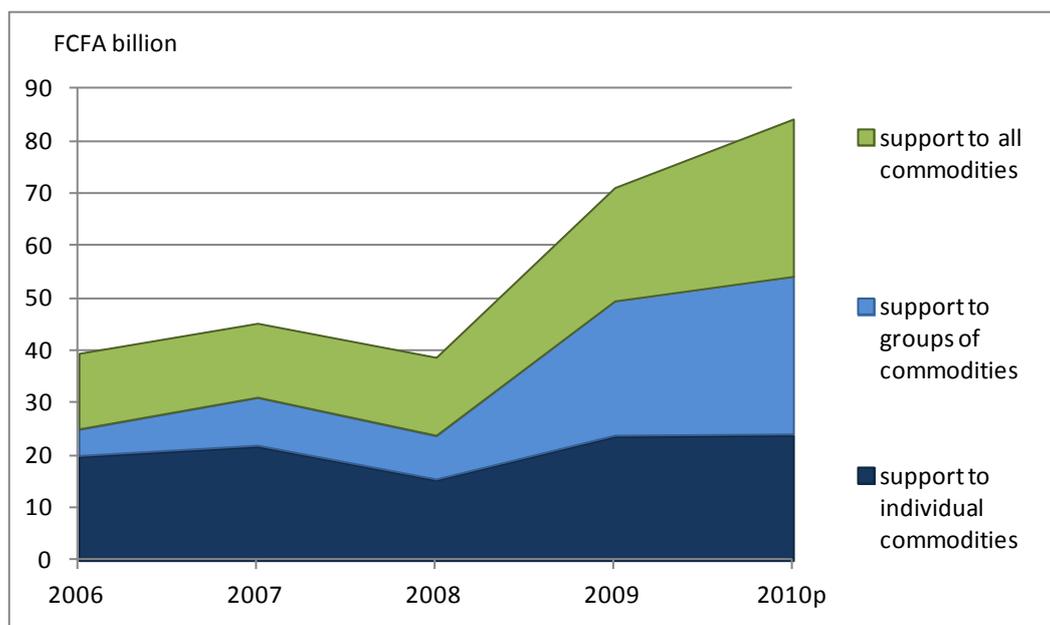
Source: Own calculations based on budgetary data collected by Institute of Rural Economy in Mali for the MAFAP project

Agriculture-specific expenditure can be also broken down by commodities which they intend to support.<sup>9</sup> Each expenditure measure within that category has been attributed an appropriate commodity, depending on whether it supports an individual commodity (e.g. rice for l'Initiative Riz in its initial stage, as it was then extended to other cereals, including wheat and maize), a group of commodities (e.g. fruit and vegetables, fish and livestock for PCDA) or all commodities (e.g. construction of non-specialized markets).

Generally, a large number of commodities are supported through these expenditures, including rice, maize, cotton, millet sorghum, onions/shallots, sesame, shea, fruit and vegetables, livestock and livestock products. In 2006, most of these expenditures were in support of production of all commodities, followed by almost equally high expenditure in support of individual commodities, while very little was spent on groups of commodities (Figure 46). The latter category has increased significantly over the period analysed, and currently support to groups of commodities accounts for about one-third of all agriculture-specific spending. The remaining two-thirds are almost equally distributed between support to individual commodities and groups of commodities.

<sup>9</sup> Agriculture-supportive expenditures, by definition, are not intended to support production of any particular commodity and hence are considered as not specific to production of agricultural commodities.

**Figure 46. Agriculture-specific spending in Mali: support to commodities, in one billion FCFA, 2006 2010**

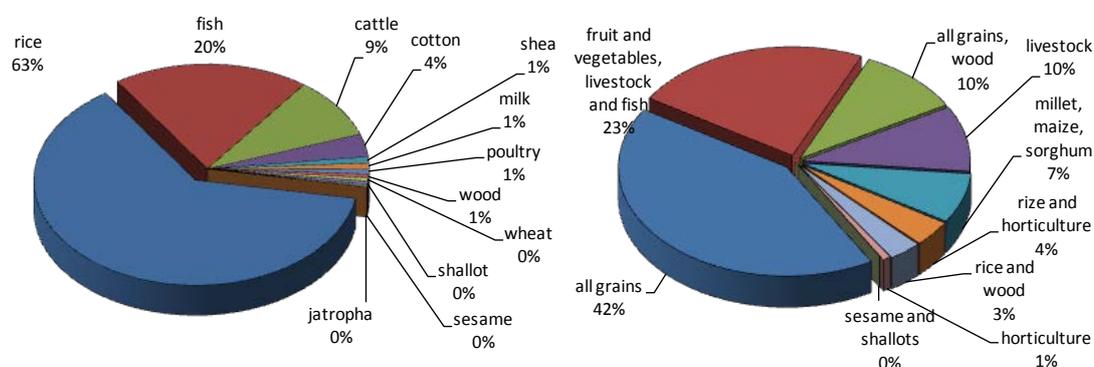


Source: Own calculations based on budgetary data collected by Institute of Rural Economy in Mali for the MAFAP project

By far the largest share of expenditure in support of individual commodities goes to rice, followed by fish, cattle and cotton (Figure 47, left panel). Support to both rice and fish is principally provided through on-farm capital investments in irrigation and equipment, and through infrastructure development, but also through training, storage and marketing (particularly in the case of fish). Among expenditure undertaken in support of groups of commodities, the biggest share goes to all grains, followed by fruit and vegetables, the livestock and fish group, the all grains and wood group, the livestock group and the millet, maize and sorghum group (Figure 47 right panel). In common with individual commodity support, support to the groups of commodities is principally provided via investments in on-farm capital, infrastructure, marketing and training (and extension in the case of livestock products).

Overall, most public expenditure is aimed at the provision of public services and investment, with a strong focus on infrastructure, both agriculture-specific and agriculture-supportive. They support mainly grains, and particularly rice, but also livestock and livestock products.

**Figure 47. Support to Individual and groups of commodities in Mali, in %, average 2006-2010**



Source: Own calculations based on budgetary data collected by Institute of Rural Economy in Mali for the MAFAP project

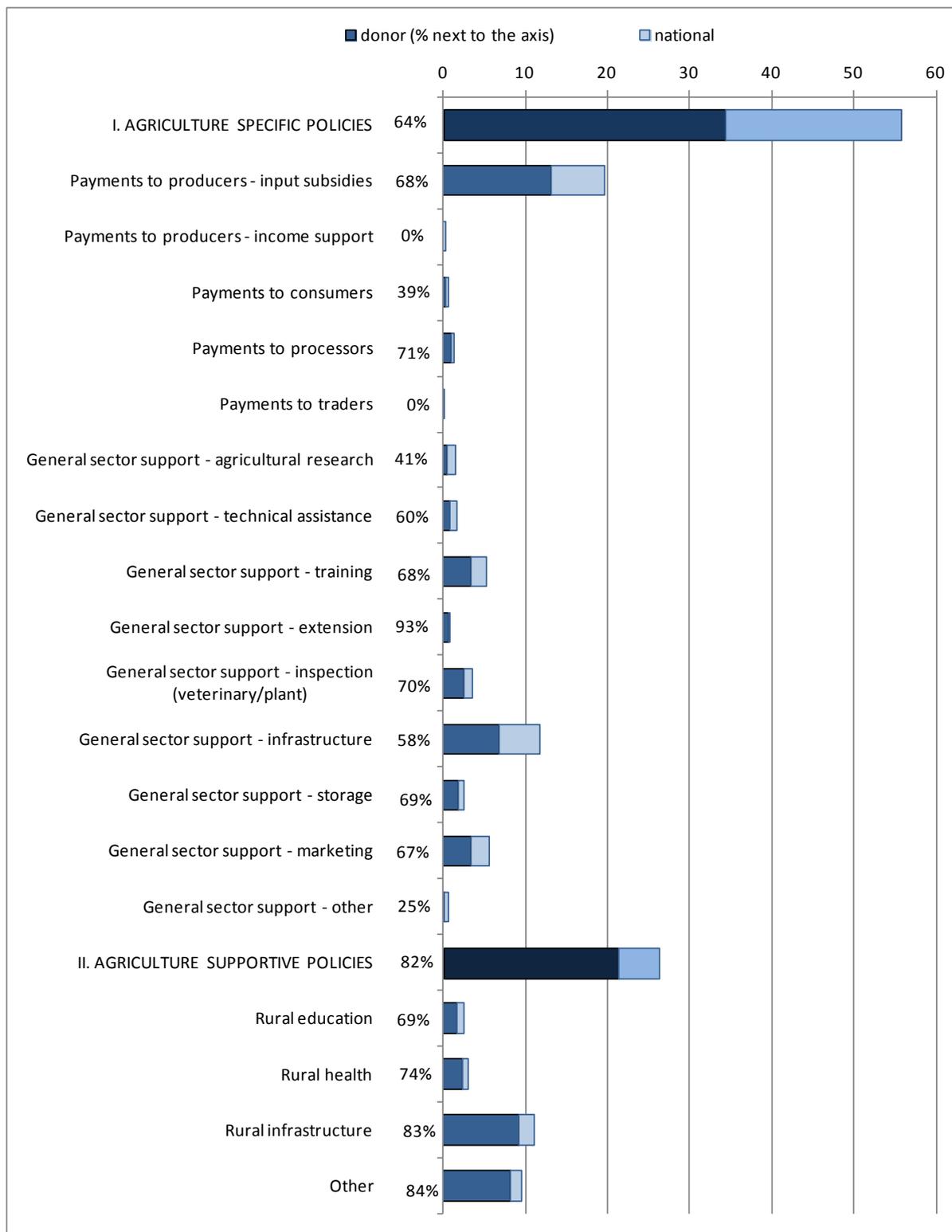
### **Role of aid in public expenditure on agriculture in Mali**

Donors' aid to the Government of Mali seems to be consistent with the government's overall objectives, although there are some minor differences in priorities. On average, donor spending accounts for as much as 70 percent of overall public expenditure in support of the food and agriculture sector in Mali. External aid contributes to 64 percent of agriculture-specific measures and to 82 percent of agriculture-supportive measures (Figure 48).

Within each of the main categories, the contribution of aid differs. For agriculture-specific expenditure, in terms of proportion of total spending, donors contribute the most to extension, payments to processors, inspection, storage, input subsidies, training, marketing and infrastructure. In terms of the level of spending, input subsidies and infrastructure receive the highest support.

Among agriculture-supportive measures, all categories receive almost equally high levels of aid, while the highest amount of donor support goes to rural infrastructure. The most supported category of spending is input subsidies. However, if all infrastructure expenditure (agriculture-specific and agriculture-supportive) were put together, there would be a much higher share of aid directed towards input subsidies. Among all spending categories, income support and payments to traders are the only two categories that do not receive any external support.

**Figure 48. Average shares of total aid in spending in Mali, in one billion FCFA, 2006-10**



Source: Own calculations based on budgetary data collected by Institute of Rural Economy in Mali for the MAFAP project

## Conclusions and recommendations

Although the level of public expenditure to support food and agriculture development in Mali is above the level of the Maputo declaration target, it does not translate into a stable agricultural growth objective as set by the CAADP<sup>10</sup>. Similarly, the study of ECOWAS, the Republic of Mali and the African Union (CEDEAO, Republique du Mali et Union Africaine, 2006) concluded that the elasticity of agricultural growth with respect to public expenditure in support of Mali's food and agriculture is low, falling below the average for sub-Saharan Africa. This may be due to a number of reasons.

First, there is still scope for improvement in the composition of public expenditure in support of agriculture. The composition of public expenditure is just as, if not more, important than the total level. There may be trade-offs between spending in different categories (for example, spending on rural infrastructure versus subsidies for seed and fertilizer), and there may be complementarities (for example, between spending on extension services and the development of infrastructure that would enable farmers to get their output to market).

Although the overall observed pattern of spending is consistent with government objectives regarding most public expenditure aimed at the provision of public services and investment, there seems to be an imbalance between particular categories of spending. High levels of investment in infrastructure can bring benefits via lower transaction costs and improve farmer access to markets. High levels of support to rural development can provide off-farm employment opportunities, while training services can help farmers to improve productivity. There is also an important share of support to on-farm capital formation, particularly credit and production equipment.

However, a large amount of spending is dedicated to input subsidies, while much less is being spent on research and extension services<sup>11</sup>. Fan and Zhang (2008) have estimated that of all the public expenditure measures they analysed, agricultural extension and research produce the highest returns in terms of agricultural productivity and poverty reduction. Similarly, several other recent studies concluded that investments in agricultural R&D produce much better outcomes in terms of agricultural growth and poverty reduction (SOFA, 2012<sup>12</sup>). Allocating more resources in those two spending categories may produce better outcomes than those currently achieved, particularly when accompanied by high investment in infrastructure.

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<sup>10</sup> The 10 percent budget allocation to agriculture and rural development agreed under the Maputo Declaration was established as a means to achieving the 6 percent of growth in the agricultural sector. Although the last five years average agricultural growth in Mali exceeds 6 percent, the annual growth rates varied substantially over the time, often falling well below the 6 percent target.

<sup>11</sup> Although inputs subsidies may be an important policy instrument in stabilizing producer incomes in developing countries in the short run, they could also compromise the allocation of resources to those categories of spending that will improve incomes over the long term (for an in-depth discussion, see OECD, 2012 and Brooks and Wiggins, 2010).

<sup>12</sup> See SOFA (2012) for an overview of studies on comparing the impact of different types of agricultural expenditure and investments.

It is also interesting to note that most of the input subsidies in Mali are allocated towards capital (80 percent) rather than variable input subsidies (15 percent). Despite the important publicity made around variable input subsidies policy measures such as Initiative Riz, the combined capital-supportive activities of all projects and programmes in the country (on-farm irrigation, livestock, equipment...) represent much more expenditure for inputs.

Second, a large share of funds is allocated to policy administration costs (Table 33), and there seems to be an imbalance between the share of these costs and the share of policy transfers in total expenditure.<sup>13</sup> Further, an important share of administration costs is dedicated to wages, while only a small proportion is given over to operational costs. This may exert significant constraints on the effectiveness of certain expenditures. For example, extension services or training can only be provided in an effective manner if extension or training officers have sufficient resources for travelling to communities where their services are needed.

**Table 33. Share of policy transfers and administration costs in total public expenditure, in %, 2004-2010**

	2004	2005	2006	2007	2008	2009	2010
Administration costs	n.a.	n.a.	26	26	26	21	20
Policy transfers	n.a.	n.a.	74	74	74	79	80
Total agricultural budget	n.a.	n.a.	100	100	100	100	100

*Source:* Own calculations based on budgetary data collected by the Institut d'Economie Rurale in Mali for the MAFAP project and CPS (2011)

Third, actual spending deviates significantly from allocated funds. Although the rate of disbursement of allocated funds has improved in the period analysed, it is still at a somewhat low level (Table 34). Further, the rate of disbursement of funds allocated to policy administration costs was generally much higher than that of policy transfers to the sector (with the exception of 2009 and 2010). Only two-thirds of the allocated funds to projects and programmes in support of the sector were actually spent, a factor caused mainly by delays in the release of funds allocated to ministries.

<sup>13</sup> Total policy administration costs may be slightly overestimated as they are calculated as the difference between the total budget to RDS minus policy transfers, and hence may include elements which we would not take into account if detailed data were available; for example, some of expenditures related to policies supporting protection of biodiversity such as wild animal protection in natural parks. This overestimation is believed to be insignificant for the results.

**Table 34. Budget allocations versus actual spending in Mali, in billion FCFA and %, 2004-2010**

	2004	2005	2006	2007	2008	2009	2010 <sup>p</sup>
Total agricultural budget <sup>1</sup>							
budgeted amount (bln FCFA)	115	141	118	130	134	143	198
actual spending (bln FCFA)	73	117	96	97	95	118	132
<i>actual spending as a share of budget (%)</i>	63	83	81	75	71	82	83
Policy transfers							
budgeted amount (bln FCFA)	n.a.	n.a.	87	96	100	114	158
actual spending (bln FCFA)	n.a.	n.a.	64	70	64	95	117
<i>actual spending as a share of budget (%)</i>	n.a.	n.a.	73	72	64	84	74
Administration costs							
budgeted amount (bln FCFA)	n.a.	n.a.	31	34	34	29	40
actual spending (bln FCFA)	n.a.	n.a.	32	28	31	23	15
<i>Actual spending as a share of budget (%)</i>	n.a.	n.a.	104	82	91	76	38

1. Total agricultural budget includes policy transfers in support of agriculture and policy administration costs.

Source: Own calculations based on budgetary data collected by Institut d'Economie Rurale in Mali for the MAFAP project and CPS (2011)

Fourth, aid accounts for more than two-thirds of public expenditure in support of food and agriculture development. Although donor priorities seem to be generally aligned with those of the government, the question remains whether such large amounts of funding from external resources can be maintained, and this raises doubts about the sustainability of programmes and projects that are currently in place. The future adoption of a sector-wide approach to budget planning, which will integrate all stakeholders, including the donor community, coupled with implementation of the medium-term expenditure framework, should help to address those issues and also to improve overall budget planning and resource allocation.

Finally, whether or not addressing these problems will be reflected in improved agricultural growth will also depend on other growth factors, which are not fully dependent on public expenditure.

## **Coherence between incentives and government spending**

The MAFAP analysis provides policy-makers and development stakeholders with better information to evaluate whether the agricultural policies in place address the gaps in the agricultural and rural sector in the country. There are different means to use the MAFAP results as a policy coherence assessment tool, hereby presented.

### **An assessment of policy coherence through incentives and disincentives for each commodity**

A first approach to assess agricultural policy coherence is to look at the MAFAP results in terms of incentives and disincentives. These results, summarized with Nominal Rates of Protection and Market Development Gap indicators, can be explained through various driving factors which we have described in part 5 of the report (see p.72). Comparing these driving factors and MAFAP results with government policies, whether these policies are price-related policies or public expenditure, gives an overview of policy coherence for each commodity we analysed. This overview is presented here as a matrix.

Table 35. Summary matrix for MAFAP findings, by commodity

<b>PRODUCT OR PRODUCT GROUP</b>	<b>INCENTIVES/ DISINCENTIVES</b> <i>What are the price incentives for producers? What are the costs that market inefficiencies represent for producers?</i>	<b>DRIVING FACTORS</b> <i>What are the key factors or issues driving incentives/disincentives for production?</i>	<b>POLICY</b> <i>What policy measures and objectives are related to these driving factors?</i>	<b>PUBLIC EXPENDITURE</b> <i>How does public spending address these driving factors?</i>
<b>ALL PRODUCTS</b>	Average Observed NRP: -19% Average Adjusted NRP : -28% MDG : -11%	<ul style="list-style-type: none"> <li>High transportation costs due to high fuel costs and poor infrastructure, especially in rural areas</li> <li>Weak transmission of price signals to producers, lack of information and high transaction costs.</li> <li>Concentration of profit margins among intermediaries along the value chain</li> </ul>	<ul style="list-style-type: none"> <li>Develop agricultural infrastructure: roads and irrigation.</li> <li>Boost agricultural productivity</li> <li>Improve products competitiveness on the international and domestic market</li> <li>Improve market information (OMA)</li> </ul>	<ul style="list-style-type: none"> <li>Spending on infrastructure: 21% of ag-specific, 39% ag-supportive, an important share.</li> </ul>
<b>IMPORTS</b>	Average Observed NRP : -15% Average Adjusted NRP : - 26% MDG : -13%	<ul style="list-style-type: none"> <li>Insufficient domestic production to meet demand</li> <li>Despite the fact that local rice and milk production could both meet demand in the country, the poor connection of producers with the market (transaction costs, transport infrastructure) results in the country importing a lot of these products.</li> <li>Strong market power of importers in both value chains, from milk industries and the handful of rice importers alike.</li> </ul>	<ul style="list-style-type: none"> <li>VAT, custom duties suspended on several food imports including rice and milk imports from 2007 to 2009</li> </ul>	<ul style="list-style-type: none"> <li>Improvement of infrastructure in the country (see above) should make imports cheaper and raise the need for increased competitiveness in the agricultural sector.</li> </ul>
<b>Rice</b>	Average Observed NRP : -15%	<ul style="list-style-type: none"> <li>Poor connection of domestic production to the market, the production should meet at least most of the demand,</li> </ul>	<ul style="list-style-type: none"> <li>VAT and custom duties suspended from 2007 to 2009, to encourage imports and prevent food insecurity</li> </ul>	<ul style="list-style-type: none"> <li>Rice is individually targeted by 24% of agricultural-specific public expenditure</li> </ul>

	Average Adjusted NRP : -28% MDG : -15%	however Mali still imports large quantities of rice. <ul style="list-style-type: none"> <li>• High competition from cheaper imported rice despite high transport costs</li> <li>• Production and transformation costs are too high, productivity too low, high transport costs (including illicit taxes) are an impediment lowering producer prices.</li> </ul>	and social unrest, especially in the urban areas where rice consumption is high. <ul style="list-style-type: none"> <li>• Negotiations with wholesalers to reduce rice prices during the food crises. Not so successful.</li> <li>• Rice sales in food-insecure areas</li> <li>• Input subsidies for local rice production (Rice Initiative) from 2008 onwards (more than 10 billion FCFA total)</li> </ul>	<ul style="list-style-type: none"> <li>• It accounts for 63% of commodity-specific public expenditure for food and agriculture.</li> <li>• Grains, including rice, are targeted by 11,8% of agricultural-specific public expenditure</li> <li>• They represent 42% of public expenditure targeting groups of commodities</li> <li>• Most of public expenditure individually targeting rice (thus, Rice Initiative not included since it also targets other products), go towards support to capital stock for producers (41%).</li> </ul>
<b>Milk</b>	Average Observed NRP : -7% Average Adjusted NRP : 3% MDG : 10%	<ul style="list-style-type: none"> <li>• Milk producers do not have the capacity to process, store, and commercialize milk. There is a poor connection between rural supply and urban demand.</li> <li>• Rural producers sell through very short circuits or self-consume their production; milk is rarely their main activity.</li> <li>• Peri-urban producers cannot compete with cheap, easy to store powdered milk imports.</li> <li>• The dairy factories have high market power and offer low prices to producer cooperatives</li> </ul>	<ul style="list-style-type: none"> <li>• VAT and custom duties suspended from 2007 to 2009</li> <li>• Little effort is made to rebalance market power between cooperatives rather than dairy factories. One programme, PRODEVALAIT, is trying to promote local milk production (2 billion FCFA budget).</li> </ul>	<ul style="list-style-type: none"> <li>• Milk is individually targeted by 0,4% of agricultural-specific public expenditure</li> <li>• It accounts for 1% of commodity-specific public expenditure for food and agriculture.</li> <li>• Marketing activities represent the bulk of individual support to milk</li> </ul>

<b>EXPORTS</b>	Average Observed NRP : -7% Average Adjusted NRP : -17% MDG : -11%	<ul style="list-style-type: none"> <li>• High incentives for cotton producers but disincentives for other products.</li> <li>• Transport costs are very high because of the landlocked situation of Mali, and producers are given low prices, except for cotton, which is subsidized.</li> <li>• All value chains, including cotton, have strong inefficiencies (see negative MDG).</li> </ul>	<ul style="list-style-type: none"> <li>• National frameworks (PDA, LOA) put forward the need to “conquer foreign markets” and promote exports.</li> <li>• Efforts to reduce transport costs remain insufficient.</li> <li>• No official export taxes in the country but staple products exportation is being discouraged by red tape.</li> <li>• Illicit taxes are high, roads of poor quality, value chains disorganized.</li> </ul>	<ul style="list-style-type: none"> <li>• Public spending to develop infrastructure will allow all agents to benefit from higher prices (see above).</li> </ul>
<b>Cotton</b>	Average Observed NRP : 69% Average Adjusted NRP : 7% MDG : -34%	<ul style="list-style-type: none"> <li>• High political as well as economic and social stakes. 2<sup>nd</sup> export product after gold, millions of producers. Hence why it is heavily subsidized despite a stagnation of yields over the last years.</li> <li>• Cotton subsidies have been integrated to the Rice Initiative since 2009. Producers have their inputs pre-financed by the parastatal ginning company (CMDT), itself financed by a pool of banks and by the state. Inputs are reimbursed at the end of the campaign. The prefinancing is a form of subsidy since producers reimburse a price that is lower than the market price. A price mechanism also ensures producers receive a decent price.</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-payment of inputs for cotton cultivation every year through the parastatal company. The input subsidies are being paid back at a price lower than market price by cooperatives to the state and the CMDT, which then reimburse the pool of banks.</li> <li>• The subsidies go through the Rice Initiative since 2009. More than FCFA 10 billion in total.</li> <li>• Price mechanism to ensure producers are protected from international price fluctuation.</li> </ul>	<ul style="list-style-type: none"> <li>• Cotton is individually targeted by 1,3% of agricultural-specific public expenditure</li> <li>• It only accounts for 4% of commodity-specific public spending.</li> <li>• A large amount of the payment is made through the price fixation mechanism and with private funds from CMDT which is not included in the analysis.</li> </ul>
<b>Cattle</b>	Average Observed NRP : -12% Average Adjusted NRP : -18%	<ul style="list-style-type: none"> <li>• Almost no processing infrastructure to produce and export meat.</li> </ul>	<ul style="list-style-type: none"> <li>• A new National Directorate of Production and Animal Industries (DNPIA) replaced the old structure, but not much has changed in the</li> </ul>	<ul style="list-style-type: none"> <li>• Cattle is individually targeted by 3,6% of agricultural-specific public expenditure</li> <li>• It accounts for 9% of public</li> </ul>

	MDG : -7%	<ul style="list-style-type: none"> <li>• Cattle is exported live, with significant weight loss</li> <li>• High access costs because of many intermediaries and high transport costs.</li> <li>• Poor connection to regional market prices.</li> <li>• Skinny, live animals being traded means loss of value added for cattle producers</li> </ul>	<p>value chain. Most investments for animal health, and cattle markets.</p> <ul style="list-style-type: none"> <li>• Investments for cattle production are low given the value chain's strong potential (3<sup>rd</sup> export product).</li> <li>• No specific policy to support cattle trade.</li> </ul>	<p>spending targeting individual commodities</p> <ul style="list-style-type: none"> <li>• Livestock as a group is targeted by 2,7% of agricultural-specific public expenditure</li> <li>• It accounts for 7% of public expenditure targeting groups of commodities</li> <li>• Most of the support to the bovine value chain goes to animal health and infrastructure (roads, slaughter areas...), each of these two categories receiving 25% of the expenditure.</li> </ul>
<b>Groundnuts</b>	<p>Average Observed NRP : -7%</p> <p>Average Adjusted NRP : -18%</p> <p>MDG : -11%</p>	<ul style="list-style-type: none"> <li>• Poor market organization, regional market signals do not seem to reach groundnuts producers</li> <li>• Groundnuts cannot be exported internationally because of aflatoxin, a dangerous fungus, i.e. low quality</li> <li>• Used to be an export crop, now more of a cash crop for domestic marketing. It is neglected by the government</li> </ul>	<ul style="list-style-type: none"> <li>• Neglected by the government, no real policy supporting groundnuts production and trade in Mali</li> </ul>	<ul style="list-style-type: none"> <li>• Almost inexistent public expenditure supporting groundnuts in Mali. However, the groundnut culture is indirectly supported through cotton, millet and sorghum subsidies, these latter often being cultivated together with groundnuts.</li> </ul>

<b>Thinly-TRADED</b>	<p>Average Observed NRP : -32%</p> <p>Average Adjusted NRP : -38%</p> <p>MDG : -8%</p>	<ul style="list-style-type: none"> <li>• High self-consumption for these staple products that are not well connected to regional markets, let alone international markets.</li> <li>• Most trade is cross-border trade in years of surplus or deficit, resulting in a change of status from export to import.</li> <li>• Marketing costs are high as there are only small quantities being traded, and the value chain is not well structured. Also, export restrictions for millet and sorghum, in the form of red tape, have been in place in the country since 2007.</li> </ul>	<ul style="list-style-type: none"> <li>• Build up the capacity of existing farmer organizations to engage in more efficient marketing</li> <li>• Disseminate market information to relevant stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>• Public expenditure is not oriented towards marketing of these commodities: only 10% of agricultural-specific public expenditure goes to marketing, essentially for other products.</li> <li>• Globally, payments to processors only represent 2% of public expenditure</li> </ul>
<b>Maize</b>	<p>Average Observed NRP : -11%</p> <p>Average Adjusted NRP : -17%</p> <p>MDG : -5%</p>	<ul style="list-style-type: none"> <li>• High self-consumption, the rest being commercialized domestically. Mostly produced in the south-west of the country. Highest yields for an agricultural production in the country after rice (still low compared to other world countries).</li> <li>• Some cross-border trade mainly to Côte d'Ivoire and Senegal, in years of surpluses or deficit.</li> <li>• The low level of marketable surplus from farmers raises the costs of doing business, eating into the traders' margins.</li> </ul>	<ul style="list-style-type: none"> <li>• Getting strong attention from the government.</li> <li>• Important input subsidies through the Rice Initiative (Maize Programme): more than 2 billion FCFA in 2009.</li> <li>• Also benefits from the after-effects of cotton fertilizers, and more than 20 billion FCFA input subsidies for cotton were spent over 2009 and 2010.</li> </ul>	<ul style="list-style-type: none"> <li>• Maize is not individually targeted by any project or programme, except for the Programme Mais (input subsidies)</li> <li>• Millet and sorghum, together with maize, are targeted as a group by 2.1% of agricultural specific public expenditure</li> <li>• The millet, sorghum and maize group account for 7% of public expenditure targeting groups of commodities</li> <li>• Grains, including rice, are targeted by 11.8% of agricultural-specific public expenditure</li> <li>• They represent 42% of public expenditure targeting groups of commodities</li> </ul>

<b>Millet and Sorghum</b>	<p>Average Observed NRP Millet : -29%</p> <p>Average Adjusted NRP Millet : -36%</p> <p>MDG Millet : -9%</p> <p>Average Observed NRP Sorghum : -31%</p> <p>Average Adjusted NRP Sorghum : -39%</p> <p>MDG Sorghum : -10%</p>	<ul style="list-style-type: none"> <li>• Staple crops, heavy self-consumption. Some domestic marketing.</li> <li>• Mostly cross-border trading when there are surpluses. Trade of less than 1% of total national production. Some years, millet and sorghum are more imported than exported</li> <li>• Millet and sorghum producers not receiving regional market signals nor international market signals</li> <li>• Exports are being restricted through red tape by the government since the 2007/2008 food crisis. As a consequence, transport costs are particularly high.</li> </ul>	<ul style="list-style-type: none"> <li>• Some production subsidies through the Rice Initiative since 2010. Also millet and sorghum benefit from maize and cotton fertilizers, which have been subsidized as well.</li> <li>• Export restriction through red tape, which increases transport costs and further penalizes producers. Estimated cost is 10 FCFA/sack of grain.</li> </ul>	<ul style="list-style-type: none"> <li>• Millet and sorghum, together with maize, are targeted as a group by 2.1% of agricultural specific public expenditure</li> <li>• The millet, sorghum and maize group account for 7% of public expenditure targeting groups of commodities</li> <li>• Grains get 42% of group of commodities public spending; however most of this expenditure is aiming rice production.</li> <li>• Millet and sorghum: 7% of group of commodities public-spending.</li> </ul>

### **An assessment of policy coherence through agricultural policy objectives**

A second way to assess policy coherence using MAFAP results is to put them in perspective with the government's stated objectives for agricultural development. These objectives are set within large policy frameworks. Agricultural policies are considered here as being a series of decisions and policy measures aimed at being consistent with the overall objectives.

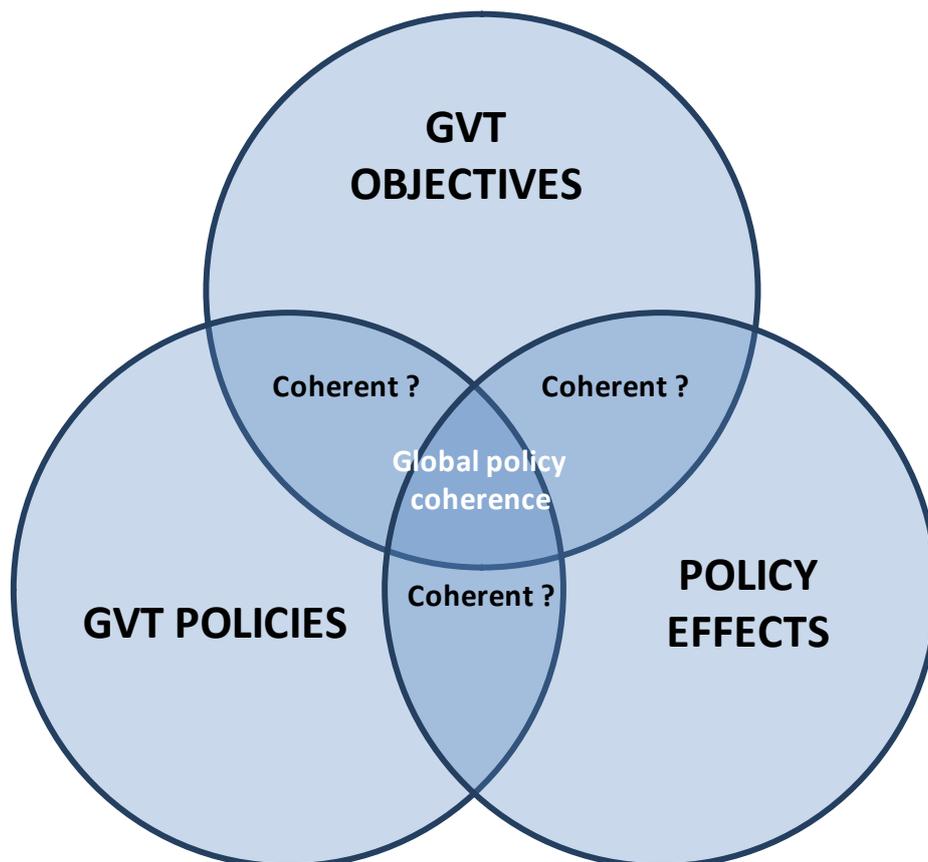
A study of agricultural policy coherence of the Global Donors Platform for Agricultural and Rural Development (Wiggins et al., 2011) showed that the real risk of inconsistency lies in the proliferation of policies, projects and programmes that are subsequently cancelled and are not prioritized. Indeed, in Mali, as in other countries, it can be observed that, despite progress in a coherent and coordinated sectoral approach, agricultural policy consists of a maze of programmes and projects. Included in this category are government decisions on trade, especially those relating to tariffs.

It should also be remembered that agricultural policy is not the exclusive domain of government. Donors and other development partners also exert an influence on policy decisions, dictated by their own agenda and interests (see discussion of interests and power of actors, p. 220). In Mali, 70 percent of expenditure for agriculture comes from foreign aid.

Therefore, the main questions in addressing the issue of policy coherence are:

- a. What are the main strategies determined by the government?
- b. What are the major policy decisions and measures (main programmes/projects, taxes/exemptions)? Are these decisions consistent with the stated objectives?
- c. Have the adopted measures and policy decisions really had an impact/achieved expected effects, and have they met the outlined objectives?

Figure 49. Logical framework for the analysis of policy coherence



Source: Authors

### Government's main objectives

There is not a single reference document in Mali that presents a clear and simple outline of the government's objectives and priorities regarding agricultural and food policies. It is, therefore, necessary to conduct an analysis from existing documents.

This brief review covers four strategic frameworks relating to the agricultural and rural sectors over the period 2005-2010:

- The Agricultural and Rural Sector (SRA) part of the Strategic Framework for Growth and Poverty Reduction (CSCR)
- Agricultural Orientation Law (LOA)
- The Master Plan for Rural Development (SDDR)
- The draft Agricultural Development Policy (PDA)

Only the most important objectives have been selected, specifically related to the MAFAP analysis. These objectives were grouped into six categories which were defined *a priori*, namely, the objectives of supporting production, trade, consumption, environment and sustainable management of resources, capacity building of producers and producer organizations, income and food security.

Table 36. Main policy objectives in Mali

Document	Production	Trade	Consumption	Natural Resources / Environment	Capacity building/ Producers' organization	Income / food security / social protection
<b>SRA CSCRP</b>	Water availability	Diversification and marketing of rural products		Protection and preservation of the environment (urban and rural)	Technical supervision	
	Access to factors of production (agricultural equipment, products, pesticides, seeds and inputs)			Plant protection		
	Financing of agriculture					
	Land tenure					
<b>LOA</b>	Increased production and agricultural productivity	Conquest of foreign markets		Increase of forest and herbaceous cover	Structuring of the agricultural profession, recognition of civil society	Food sovereignty: accessibility, availability, quality, stability.
						Regulation of food imports and exports
	Production of exportable products and conquering export markets			Ending unsustainable practices and promoting the harmonized use of agricultural and rural areas	Education and agricultural training	Improving living conditions for agricultural workers
	Improving product quality			Control and mobilization of water resources	Promotion of research and farm advisory services	Rural income and social risk management
	Water control			Restoration and preservation of biodiversity		Job creation and reduction of rural exodus
	Local inputs manufacturing			Rehabilitation of desert areas		Climate risk management

<b>SDDR</b>	Animal health and breeding				Strengthening private / public roles in cotton	Food security: quality, availability, stability
	Development of fisheries resources	Exports			Strengthening agriculture chambers	Inclusion of women, youth and marginalized groups
	Rural credit	Infrastructures, mainly pastoral			Structuring value chains	
	Improved seeds	Processing and conservation			Developing support structures	
	Diversification and fruit and vegetable sectors	Storage			Training of POs	
	Intensification of strategic sectors (rice, maize)	Water, irrigation			Institutional and legal environment	
	Access to inputs and equipment	Information and communication			Strengthening agricultural research	
	Access to land	Regional economic integration			Strengthening extension and advisory support	
	Soil fertility					
	Hydro-agricultural infrastructures					
<b>PDA</b>	Increasing investment	Product competitiveness in the international and domestic market		Environmental preservation	Agricultural research and extension system	Food security for all
	Access to fertilizer				Institutional development and agricultural research	
	Market information				Capacity building and training of stakeholders	

It appears clear from Table 36 that some areas are more informed than others, which is a good indication of government priorities. For example, it is surprising that there is no objective associated with consumption. Nutrition is also neglected, since there is only one objective that refers indirectly to improving product quality. Of course, the largest share of food consumption in Mali comes from auto-consumption, therefore the goals associated with increased production and food availability directly affect consumption of rural and farm households, representing about 80 percent of Mali's population. In addition, food security objectives are generally directly related to consumption, including through the availability of food and nutrition, but also through the physical and financial access of populations to food, including urban communities. It therefore follows that if consumption is not explicitly taken into account, the issues related to it are considered indirectly, through other public policy objectives.

It should also be noted that for certain value chains, specific objectives are rare. Only the Master Plan for Rural Development (SDDR), replaced by the Agricultural Development Policy (PDA), suggests an effort to define certain priority value chains (*rice, maize, fruit and vegetables*), but also diversification of products (*sesame, sorrel, sweet pea*), along with an action on more cross-sector structuring (*collection, storage, packaging, processing, marketing of agricultural products*), or a desire to support the professionalization of producers.

As far as Agricultural Orientation Law (LOA) is concerned, the recognition of business, producer organizations (POs) and chambers of agriculture occupy an important place. The LOA also provides access to the development of the value chain approach in general. The policy document indicates a desire to better organize production and marketing, which also includes targets for recovery of production through conservation and processing. Beyond these general measures, the government indicates priorities by identifying specific strategic sectors: cotton, rice, fruit and vegetables, livestock, beef, poultry, seafood, nuts and dry cereals.

It seems clear that through the various documents, the government has adopted a strategy based on agricultural production intensification and diversification, complemented by control or promotion of imports/exports, as appropriate.

At the same time, this table also indicates the multiplicity and confusion of objectives stated within the various government policy documents. It seems that despite the stated hierarchy of documents, similar objectives, in terms of detail and scope, can be found in the Strategic Framework for Growth and Poverty Reduction (CSCR), the Agricultural Orientation Law (LOA) and the Policy for Development of Agriculture (PDA). It appears to be impossible to prioritize government policy objectives, making it more difficult to analyse the coherence between objectives, actions or measures taken and results or effects observed.

## Assessing the effects of major decisions and policy measures based on the results of the MAFAP project

Reading the various policy documents that exist in Mali, it is difficult to obtain a clear and rapid assessment of government priorities on food and agriculture. A fairly complex decision-making process characterizes the Government of Mali. This process requires dense and laborious decoding to distinguish priorities and try to discern the coherence of objectives and actions.

It is nevertheless possible to identify clues as to the coherence between public expenditure, decisions and measures implemented by policies, and incentives and disincentives observed by the MAFAP project. Our intention is to identify situations where policies complement each other and those where, on the contrary, they seem to contradict or compete with each other. In such cases, this can result in inconsistent messages, difficult to read and adapt to on the part of operators, especially producers. The MAFAP's intention is to see if, beyond government declarations, there is real support for all or at least some producers, by combining support prices and government spending in favour of producers.

However, it is not possible with the sole MAFAP methodology to cover all government objectives here, or to measure the performance of policies in all areas. The methodology is not competent, for example, to assess policy coherence with objectives such as improved plant protection, animal health, improved seed quality, supporting livestock through improved animal genetics and animal health, mobilization of water resources, or even job creation. We have thus selected objectives for which the MAFAP approach and methodology allow for a relevant assessment of performance and consistency in some areas of agricultural and food policies.

### Increased production

This is a key objective of the LOA. The Rice Initiative (2008-2010), later extended to other cereals, is the main government decision for the period 2005-2010 and includes a large number of measures: support for inputs, credit for equipment, training and extension mainly for rice, wheat and maize. The Rice Initiative has also helped to support the production of cotton, millet and sorghum, although this aspect is not well understood. Investment in irrigation schemes also contributes to the objective of increasing production.

First, we observe that the objective of increasing production has actually been achieved for several products, including rice, which has seen a substantial increase in production in the five years studied, according to official statistics. However, the increase in production began in 2005, well before the adoption of the Rice Initiative. Production more than doubled between 2005 and 2009 but there was a decline in 2010. Despite the sharp increase in production, we show that producers were significantly penalized, receiving prices below the reference price, notwithstanding the Rice Initiative. Thus, there is no policy coherence when it comes to a sustainable increase of production, given that producers are facing reduced production incentives. Similarly, the goal of increasing exports which is stated in the LOA must be based on a sustainable increase of production. It should also be remembered that the political stakes are very strong with respect to rice, and that production data for this crop are subject to real politicization, none of which makes it easy to produce a measured and independent analysis of the sector's results, especially for production and trade.

Although none of the government documents described above seems to discuss urban consumption, it is clear that policy decisions are intended to support it; especially for rice consumption with the Rice Initiative (price ceilings and imports are exempt). This again raises the issue of consistency, or at least transparency of goals. Indeed actual policy effects seem to favour consumption which does not appear as a clear policy objective, whereas stated support to production does not coincide with strong disincentives faced most of the time by producers.

It should be noted that many projects and programmes focus on rice in Mali. This profusion of initiatives reflects a strong desire to develop the crop beyond the scope of the Rice Initiative. Rice receives 63 percent of total public expenditure to specific products, making it the leading product in terms of public expenditure. The objective of increasing production seems to be pursued simultaneously through public expenditure and secondary support measures, via direct prices, thereby reflecting some consistency.

Finally, given the amounts credited to the Rice Initiative, for example 25 398 billion FCFA for the year 2009/10 (compared with 117 billion FCFA spent in total in Mali for the rural and agriculture sector), we are led to question the programme's sustainability, especially when it comes to inputs (fertilizer, seeds) and loans for equipment.

Maize, and its intensification, is widely quoted in the SDDR as a priority. This priority was actually implemented by the adoption of a plan to step up the maize crop in 2009, affiliated with the Rice Initiative. Maize generates considerable policy interest, being both a key food crop in southern Mali and a potential export commodity, given the high demand at regional level. Maize production has actually exploded in recent years (70 percent between 1998-2004 and 2005-2011, see Part 2, p.72) with, a marked improvement in yields (20 percent increase over the same period). Some time may be needed to assess the actual impact of recent policy decisions for maize, especially the Rice Initiative: for the time being a decline in production was observed in 2010. Our present results indicate that this initiative does not seem to have helped to establish clear incentives for maize production. Prices received by producers in 2009 and 2010 remained below the international reference prices. Producers were penalized globally over the entire period of 2006-2010 (see p. 113). Regarding public expenditure, maize is supported through various projects and programmes targeting cereal production, but it is nevertheless clear that rice is the dominant commodity in all these programmes. For now, support for maize appears to be more cyclical than structural, with over 2 billion FCFA spent for input subsidies in 2009-2010.

### Boosting exports

This objective is included in most government policy documents: the LOA, the CSCRP and the SDDR. It was shown that producers were being penalized for a number of commodities, including rice and maize. But the goal of increasing exports cannot be met without a sustained increase in production.

Moreover, it is surprising that the word cotton appears only once in the LOA. Indeed, this sector absorbs a large share of government spending through support to the CMDT, and it is also integrated into the Rice Initiative. Cotton is seen as the export product *par excellence* for the country, and remains the second biggest export after gold. In addition, crop diversification, as highlighted in the various policy frameworks, is undermined by the emphasis on cotton cultivation. The importance of

cotton in the country's agricultural policies compared to the commodity's low presence in the government's stated objectives is thus perceived as an inconsistency.

Indeed, cotton farmers have received strong support (see p.99) via the CMDT, which is probably in debt. Our results show that for the six years studied (2005-2010), Malian producers, linked to the company, received a higher price than would have prevailed in the absence of policies, and therefore the production of cotton for fibre export was strongly encouraged. However, the opaque accounting of CMDT does not allow us to go far enough in analysing the sustainability of the current cotton system. The ability of the state to influence cotton production and exports through CMDT in the future comes with a question mark, given the ongoing privatization of the company.

Other export products that we studied, particularly groundnuts, appear to be neglected, with no specific measures targeting them, although we know that the government seeks to boost exports of mangoes, for example. It is surprising to note the absence of a clear policy in Mali promoting livestock exports, even though it is the third most important export product in value.

### Supporting the livestock sector

Livestock, and cattle meat in particular, are included in the explicit objectives of the SDDR. However, other decisions for the sector have been taken, such as the adoption of the new national policy on livestock in 2004. Moreover, the creation of the DNPIA to replace the OMBEVI reflects the government's desire to boost the livestock sector and to build capacity, while diversifying the approach to livestock production. Besides these institutional decisions, breeding has benefited from an array of projects and programmes focusing particularly on animal health, breeding, marketing and slaughter, such as PADESO.

Our results show that government efforts to boost livestock are real, though they are insufficient given the potential of the sector. Cattle receives 9 percent of public expenditure allocated to specific production in Mali, while livestock receives 10 percent of public expenditure allocated to groups of products in the country. The objectives of the SDDR have been taken into account, including animal health, infrastructure development and pastoral breeding of herds. Animal feed, although well documented in the texts as critical to increasing livestock quality, appears to have been somewhat neglected, with the exception of bourgou pasture production. More importantly, the state does not appear to have sought to stimulate a better structuring of the sector in order to harness the significant potential represented by livestock exports (third most important export commodity for Mali). This lack of structure - many intermediaries, high cost of transport, insufficient animal feeding - has not allowed producers to receive the best prices, and they were therefore penalized during the period 2005-2010.

### Diversifying production

This goal features prominently in the SDDR. The concentration of financial resources on rice, as discussed above, drew the government's attention away from its goal of diversifying production, expressed both in the SDDR the LOA.

Nevertheless, the government has implemented some programmes targeting diversification. The most important is the PCDA, which should soon be ending. The PCDA was succeeded by a programme with similar objectives - the Project for Increasing Agricultural Productivity in Mali

(PAPAM) - that supports the emergence of the production of fruit and vegetables (mango, papaya, shea butter, onions/shallots, and tomatoes), while encouraging the development of cattle meat production. The PAPAM, however, seems to have been slow to take off. The fruit and vegetable industries have yet to be analysed in the MAFAP project, making it difficult to assess the impact of government decisions and actions on these products. Both programmes receive significant funding, including from the World Bank. The PCDA represented an important share of public expenditure over the 2005-2010 periods, with fruit and vegetable crops and livestock and fish farms receiving 23 percent of public expenditure allocated to groups of products in Mali.

In addition, the public expenditure analysis shows that 20 percent of expenditure for individual agricultural products has been devoted to the promotion of fish farming, a considerable share of public expenditure for specific products: is indeed in second position after rice. Despite these figures, the fish subsector has gone relatively unnoticed in our review of public policies. The amounts involved justify a specific analysis of performance and consistency of public policies in relation to fish farming, an important sector for the diversification of production.

Despite the stated objectives, and although there is an increase in the production of onions, shallots and mangoes, figures show that fruit and vegetable production still represents a marginal share of the country's total agricultural output.

### Developing the road and hydro-agricultural infrastructure

This target, especially the hydro-agricultural component, is stated in the CSCRP. It also features in the SDDR, which mentions hydro-agricultural infrastructure and support for pastoralism, and appears in the LOA as "water control".

Regarding programme implementation, the main initiative is the National Rural Infrastructure Programme (PNIR), which ended in 2010, and through which many roads and hydro-agricultural infrastructures have been completed. Other important programmes in these areas include the development programme for the Middle-Bani, the programme for the rehabilitation of irrigation projects in Baguinéda, and various irrigation programmes in the the Office du Niger. The PNIR represents a very significant share of total public expenditure for the rural and agricultural sector between 2005 and 2010, accounting for 8.1 percent of public expenditure over the period. Among all the projects identified, it should be noted that the hydro-agricultural component is generally well represented. Substantial efforts also appear to have been made through projects to improve roads. In total, it is noted that the share of infrastructure in state spending averaged 21 percent over the period studied. There is thus a certain consistency between policy objectives and programmes and projects that were implemented, reflecting the political will to develop the road and water infrastructure. The development objective of irrigation is particularly closely linked to government efforts to promote the cultivation of rice and other irrigated crops, unlike dry cereals such as millet, sorghum and maize. In some cases, irrigation projects include a market gardening component, indicating that the government is keen to promote a certain level of diversification.

In terms of access to inputs, the government has also been consistent, since on-farm support to producers is the main type of expenditure specific to agriculture identified by the MAFAP project (35 percent). These payments, however, cover both capital support (credit unions, equipment) and variable inputs, but they do not represent a long-term support to factors of production.

It should be added that the incentives analysis that was conducted has reflected high access costs as being a major reason for the penalization of farmers, as well as inefficiencies associated with poor road infrastructure and storage.

### Ensuring food security for the country

Food security is among the government's overall objectives. A national strategy for food security in 2015 was put in place in 2002, with a specially dedicated departmental structure, the Office of Food Security (Commissariat à la Sécurité Alimentaire). Food security is cited as "food sovereignty" in the LOA, which is a development that should be emphasized because the implications in terms of trade are important. Food security is also one of the areas for priority interventions in the SDDR, and holds an important place in the draft PDA.

Following the food crisis of 2008, and in order to ensure food security especially in cities, tax exemptions on imports of rice have been granted by the government for almost two years. These measures were accompanied by the imposition of price ceilings for certain products, including rice, which is consumed heavily in urban areas, as well as limitations of informal exports of coarse grains (maize, millet and sorghum in particular), by instructing the custom authorities to increase red tape as much as possible, in spite of WAEMU free trade agreements for agricultural products. In addition, support to millet and sorghum, through the extension of the Rice Initiative, follows the same logic, since these two products, which are virtually untraded and are widely consumed, are the bedrock of food security in Mali.

Millet and sorghum represent some 80 percent of total consumption in rural areas (CILSS, 2011). Although cereals are frequently included in development projects, they usually involve rice and to a lesser extent maize. Paradoxically, millet and sorghum do not receive as much attention through specific projects, except through agricultural research to produce better varieties, and some projects and programmes that focus on processing and marketing. Furthermore, our results show that producers of millet and sorghum were heavily penalized during the study period (see p. 110).

Production of these two grains is highly disconnected from regional market signals because they are largely self-consumed in rural areas, and there are no signs of any initiatives to favour their marketing. We can reasonably conclude that the availability and access components of food security, through increased production and improved access to products, are only partially met, while stability is sought more through limitations on exports than through support policies for storage. Urban consumers also appear to be favoured over rural populations. The utilization component of nutrition and food security appears totally absent, as already mentioned in comments about the absence of consumption-specific objectives.

### Domestic processing and marketing

This objective is mainly discussed by the PDA. Marketing and processing are among the targets announced by the government in the LOA, with the aim of promoting an integrated value chain approach (production, gathering, processing and marketing).

The PCDA is the main support programme for marketing. The results of the public expenditure analysis show that 10 percent of total budget expenditures of ARS are allocated to marketing support. However, the livestock programmes, focusing on the creation of livestock markets, and the

PCDA, receive the bulk of resources. With few projects that incorporate important marketing components, the government has clearly decided to focus on production. Indeed, it appears that problems of processing, whether they be related to cattle meat, groundnuts or cotton, are very seldom addressed in projects and are very poorly represented in the composition of expenditure, with only 2 percent of total expenditure for the ARS. The lack of processing capacity, particularly for cattle meat, causes severe losses of potential added value. Other less tangible elements were identified as constraints to the functioning of markets and marketing, including at subregional level (Soule and Gansari, 2010). These constraints relate, in particular, to harassment and illegal taxes along trade corridors and the problem posed by an ageing fleet. The government does not appear to bring serious enough answers to these daunting problems for the Malian economy.

### Building capacity

Capacity building appears as an explicit objective of the Government of Mali in several documents including the CSCRP, the SDDR and the recent PDA. It is also implicit in the LOA. Capacity building for the government and administration is also taken into account through PASAOP. In addition, training activities and capacity building for POs are broken down into different projects and programmes developed in Mali. The state budget allocates 10 percent of expenditure for agriculture and rural training, which is an important level of spending. There has also been a gradual and growing incorporation of POs, even though they mostly remain too poorly organized and have inadequate training. Chambers of Agriculture are badly neglected.

The MAFAP analysis cannot provide a comprehensive overview of the state capacity building needs and activities in Mali. However, lack of competence remains acute among both producers and producer organizations, and in some cases, within government services.

### Conclusion on policy coherence

This brief analysis of the level of policy coherence raises several key points:

- Policies of the Government of Mali appear to be consistent in some cases, even when the government does not make an explicit link between the stated objectives and measures put in place. Consistency and transparency of decisions do not necessarily appear to be related. An example of consistency without transparency is the support for consumption in reaction to the food price crisis, through price caps and exemptions.
- There is also consistency in government funding to support strategic sectors in general, such as cotton and rice. However, consistency does not mean support and existing policies do not necessarily translate into incentives for production, especially in the case of rice. Although policies seem consistent in terms of objectives, and measures adopted to achieve them, their actual impact sometimes produces undesirable results, a factor that may jeopardize their permanence, and hence the stability of the policy.
- Some areas receive the bulk of government attention. This is especially true for rice, which absorbs a significant share of the public expenditure allocated to the agricultural sector (via the Rice Initiative and a number of projects and programmes). Cotton is the second product, and is strongly supported through the CMDT.

- Significant public expenditure for projects supporting development of rural infrastructure, especially roads, shows that the government is trying to relieve the burden on producers in terms of access costs.
- There are inconsistencies regarding support to food security or development of rice production, as well as efforts to promote intraregional or even domestic marketing.
- Although presented as a priority objective, livestock (beef and milk) is largely neglected, compared with measures granted to support agricultural production.
- Investment in farms, which is central to the PDA, is primarily focused on support for capital such as irrigation, rather than on marketing, processing, product storage and, on a wider level, on training and adding value locally, especially at producer level.

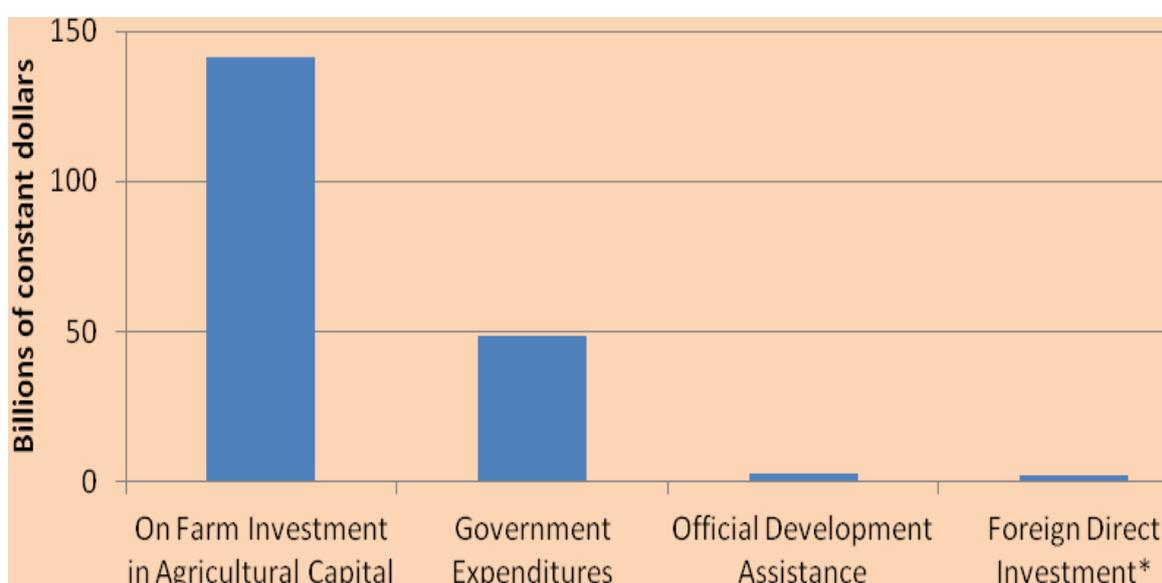


### Part 3: TOPIC OF NATIONAL INTEREST RELATED TO THE POLICIES: OPPORTUNITIES AND CONSTRAINTS TO INVESTMENT IN FOOD AND AGRICULTURE IN MALI

#### Introduction

In middle and low-income countries such as Mali, most of the money invested in agriculture comes from the producers themselves (**Figure 73**): they invest at “*least 3 times as much as governments, and 50 times more than donors or foreign investors*” (SOFA, 2012).

**Figure 50: Annual flows to agriculture in selected low and middle-income countries by source, billions of constant dollars, 2012**

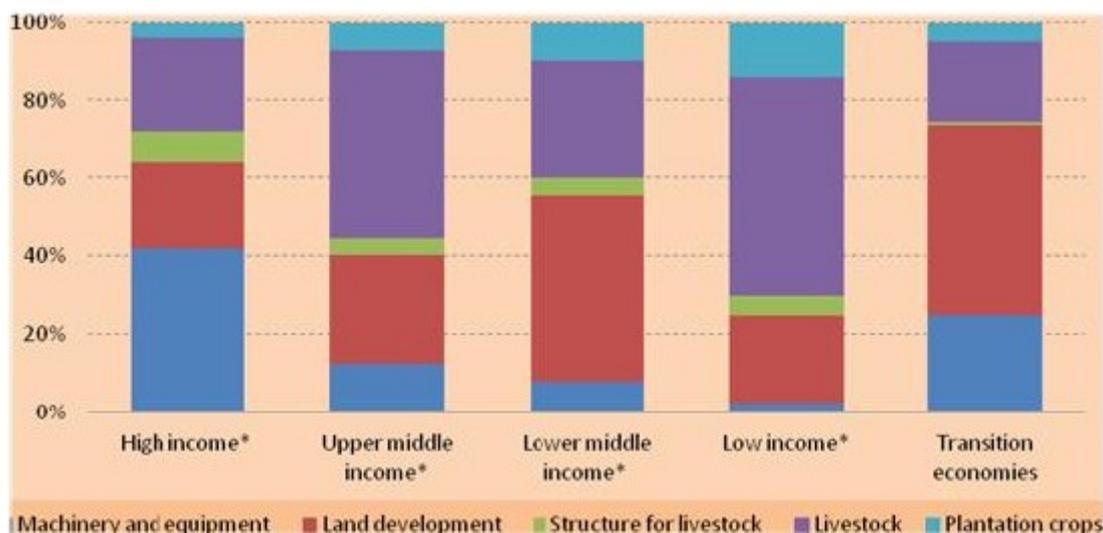


Source: SOFA, 2012.

Smallholders directly invest in agricultural capital stock (ACS). Capital can have various forms: physical, human, intellectual, natural, social or financial (SOFA, 2012), but farmers’ investments overwhelmingly go to physical and natural capital, with livestock constituting the bulk of the physical capital in low-income countries (see Figure 51). Land development comes next, with irrigation structures and facilities and land improvements to facilitate crop management and control erosion.

In Mali, 68 percent of farms are less than 5 hectares; 86 percent are less than 10 hectares (Samaké et al., 2008). With such a predominance of small-scale farming, smallholders are by far the most important investors in agriculture. Although there is no specific study on the composition of ACS in Mali, one can infer that livestock indeed represents the main part, given the lack of machinery and equipment, the poor land development and the large number of livestock in the country. For example, 56 percent of herders, mostly in the north, are nomads (mostly Peuls and Tuaregs), who keep cattle mainly for animal traction, as capital stock and sometimes even for prestige.

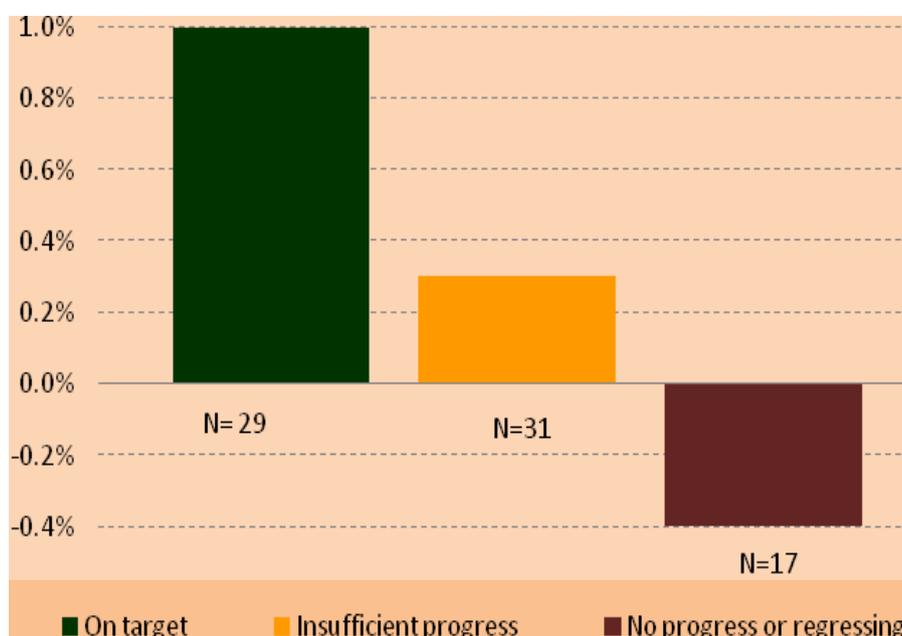
**Figure 51. Composition of ACS for different income groups, percent, 2005-2007**



Source: SOFA, 2012

The fact that livestock constitutes the principal capital for smallholders in Mali illustrates the significant constraints they face when investing, which comes as a major bottleneck for agricultural and rural development (ARD) in the country, considering that growth in ACS directly leads to favourable outcomes for ARD. Indeed, growth in ACS can result in farmers producing more food at a lower cost, improving their revenue, increasing food availability and diversity, and reducing food prices. **Figure 75** shows the range of ACS growth rates in African countries.

**Figure 52. Growth in agricultural capital stock per worker, %/year, and progress in meeting MDG Target 1 in African countries**



Source: SOFA, 2012

There is, however, an insufficiently enabling environment for smallholders' investment in Mali. The Food and Agriculture Organization (FAO) conducted a prefeasibility study in November 2011 to identify constraints to farmer investment and options for capacity building to improve the conditions for farmer investment. Several stakeholders were interviewed: government officials, donors, NGOs,

private sector, research institutes, producer organizations, who gave their views on the situation of investment in Mali, and the constraints they identified. The results of the study, completed by external sources, have been used to document this part of this report.

## Agricultural investment in Mali

### Level of equipment

The capacity to manage and develop mechanization at farm level is lacking at a national level in Mali. From 1964 to 1980, the state was providing equipment to the producers through the Agricultural Credit and Rural Equipment Service (SCAER). The SCAER provided equipment to the producers who could buy it on subsidized credit: this system effectively distributed equipment in the country. However, in the 1970s drought and general lack of good management of the programme resulted in many producers not reimbursing their loans. The system was collapsing by 1980, when Mali started to apply Structural Adjustment Policies. The government dissolved the SCAER and the National Agricultural Development Bank (BNDA) was put in charge of agricultural credit, except in the area of the Office of Niger and the CMDT zone. The BNDA did not give producers the same advantages as the SCAER, and the level of equipment and know-how in the country diminished through the 1980s and 1990s. Since the 2000s, the government has been promoting agricultural mechanization again: a national programme for the supply of agricultural and irrigation equipment to rural producers was launched in 2007, and the government has been offering subsidized credit to producers for equipment through its Rice Initiative.

Yet the level of equipment in the country remains very low. The 2004 Agricultural Census found that 54 percent of farms owned at least one plough and that animal traction was used on 72 percent of the total cultivated area, while only around 1 percent was cultivated by tractors or motor cultivators. The quantity of mechanized equipment, despite being very small, appears to have increased much more than the animal traction equipment (see **Table 40**), which is probably due to the government's Agricultural Mechanization Strategy. However, the data are unreliable: given the agricultural population growth (just over 2 percent per year), the large number of farms – 805 200 in 2004 (Agricultural Census) – and Mali's extensive agriculture, animal traction equipment should have increased much faster than reported by FAO between 1997-2002 and 2002-2007 (see Table 37). Savings made by farmers have also tended to be invested in more livestock. Livestock has three functions for households: animal traction, a source of organic fertilizer, and a form of savings. The fact that most or all of their savings are in livestock is a sign that the existing financial system is not attractive to the population and is unable to mobilize their money.

**Table 37. Distribution of farm equipment in Mali, 1997-2007**

Type of equipment/power source	Number of equipment		Numeric increase	Percentage increase
	1997-2002	2002-2007		
<b>Animal traction</b>				
Ploughs	346024	348048	2024	0.6
Mule hoes	13046	13846	800	6.1
Wheeled toolcarrier	234608	234608	2000	0.9
Planters	96361	97561	1200	1.2
Animal drawn carts	222276	229279	2003	0.9
Draught animals	1079000	1081000	2000	0.2
<b>Mechanized</b>				
Tractors with implements	743	1300	557	75.0
Power tillers	226	310	84	37.2
Threshers	850	924	74	8.7
Grinding mills	540	703	163	30.2
Shellers	960	1238	278	29.0
Motorized pumps	2946	3646	700	23.8
Multifunctional platforms	150	520	370	246.7

Source : FAO, 2010, adapted from Diarra, 2008

There are great differences in the level of equipment of farms, with much less equipment found in remote areas and more in the cotton and peri-urban areas. Storage and processing facilities are also concentrated in the most developed areas.

The long-term evolution of the level of equipment remains uncertain. It may be dependent on market conditions: for example, during the cotton crisis in the mid-2000s, farmers in the cotton area were compelled to sell their draught animals and other equipment because cotton prices were low.

Transportation equipment is not mentioned in Table 37, yet it also represents a major constraint in Mali. In the area of the Office du Niger for instance, several farmers living far from their field have bought motorcycles or bikes to ride there. Transport is often the primary use of tractors as well.

## Funding Sources

Because of the level of poverty, self-financing of investment is very limited beyond investment based on improvements to the farm by family labour. The government, through its various projects and programmes, can play an important role in creating a more enabling environment for smallholder investment. The MAFAP's detailed analysis of public expenditure suggests that around 25 percent of public expenditure specifically allocated to agriculture goes to support for the creation of ACS: subsidized credit remains low, and most of the government support goes to equipment distribution, building of on-farm facilities and plot improvement. However, the total expenditure per farm is low, around 36 000 FCFA per farm in 2009<sup>14</sup>, which suggests that most of the funds are concentrated on a limited number of farms, probably in the cotton and rice areas.

It is more difficult to mobilize finance from the private sector. Credit is available mostly for one season and exceptionally for a medium to long term, and is rarely granted to smallholders due to lack of guarantees. Interest rates are often high: they are usually around 12 percent/year for fertilizers and 15 to 25 percent for other activities (MSU, 2011), while deposit rates are extremely low (around 2 percent). Medium- and long-term investment in agriculture cannot support such high interest rates.

Credit can be obtained either through special arrangements within a given value chain (mostly for cotton), where banks can secure reimbursement by controlling income at the source; through microfinance institutions or through projects, although both generally direct their funding towards recognized farmer cooperatives or groups rather than to individuals. However, this type of collective credit has met with problems of increasing numbers of defaulters; some banks are now redirecting their activities to financing individual larger farmers or small rural enterprises able to provide good security (30 to 40 percent down payments, collateral, personal guarantees).

As a result, according to a recent World Bank study less than 2 percent of farms have access to finance, and even less to medium-term credit. The World Bank's Doing Business indicators (see section on Input market and main constraints to production in Part 1, p. 42) rank the depth of credit information 1 out of 6 and the strength of legal rights for credit access 3 out of 6 (World Bank, 2012).

Lack of longer-term finance obliges farmers to finance medium and long-term investments with short-term credit. It is impossible to say how many farmers benefit from credit, but it is unlikely that more than 20 percent ever have access to any financing, particularly since financial institutions that were primarily oriented towards agriculture have been progressively orienting their activities towards urban areas since the cotton crisis emerged in the mid 2000s. Kafo Jiginew, one of the two main microfinance institutions, had its rural clientele decline from 59 to 48.8 percent of its total clients from 2003 to 2006 (MSU, 2011). The BNDA's credit authorizations to the rural sector shrank much more severely from 39.5 percent in 2006 to 4.1 percent in 2008 (Kodio, 2010).

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<sup>14</sup> Calculated from 2004 Agricultural General Census data on the number of farms, 802 500, and the total amount spent on agricultural and rural development in 2009, FCFA 117 billion, calculated by MAFAP.

**Box 5. An example of a microfinance institution: *Kafo Jiginew***

- Main microfinance institution with Nyèsigiso
- Groups 19 microfinance cooperatives
- Has 167 agencies of which 80% are in rural areas
- Accounts for 35% of microfinance activities in Mali
- Covers 302,000 beneficiaries
- Provides mostly short term credit and only very limited medium term credit at 12% interests rate using the lines of credit it has from banks (e.g. BOAC)
- FCFA 22 billion of outstanding loans on 31/10/2011
- FCFA 20 billion of deposits

Source: Author

Other and maybe more important sources of finance for agricultural investment – but data are lacking – are non-agricultural income and transfers from the Malian expatriates who have migrated abroad. Malians from abroad transferred FCFA 200 billion to Mali in 2009 (Central Bank of West African States), significant compared to the ODA of USD 984.39 million, roughly FCFA 443 billion, for the same year (OECD, 2012). The region of Kayes receives a large part of these remittances (41percent) because of the strong community of Kayes migrants abroad, thus making it a region where banks are particularly present.

### **Constraints to agricultural investment in Mali**

There are two overarching constraints to investment:

- the high level of poverty of small family farms limiting investment capacities as their priorities are food security and health, and
- the defensive strategies adopted by small family farms to manage or cope with risks associated with production and marketing (climate, markets, price fluctuations)

Beyond these, investment by households in their farming operations is constrained by five main specific issues:

1. Lack of access to finance
2. Lack of clearly defined land property rights
3. Lack of information and access to markets
4. Lack of training and organization
5. Unsupportive policy and institutional environment

## Lack of access to finance

The first and obvious constraint to rural investment in Mali is poverty. Almost 50 percent of rural workers live on less than 21 000 FCFA per year (USD 46) and do not have enough funds to improve their capital stock. Any policy resulting in poverty reduction will thus improve the enabling environment for investment in the country.

This being said, lack of access to finance represents the biggest short-term constraint to poor producers. This is due to the absence of adequate financing organizations and inadequate financing options. Without access to finance, the investment capacity of households is limited to what they can do based on their own labour. Financing options, when available, are generally limited to short-term schemes with very high interest rates (which can go up to 20 percent), whereas medium-term credit for three to five years is necessary to support investment in equipment and other major improvements to farms. One of the main reasons for high interest rates is risk. Agriculture is an especially risky business given its vulnerability to external shocks, and banks are wary of that risk. This results in a vicious circle: poor producers pay for that risk with high interest rates, and when shocks such as drought, insects, price volatility do occur, they find themselves heavily indebted. Reducing risk for producers thus represents an important challenge to improve their access to finance; a wide array of measures can reduce risk, such as pest and disease control or support through produce stocks to reduce price volatility and loss of harvests.

Lack of access to finance is also physical: financing organizations are barely present in rural areas, with the exception of the most active economic areas (urban areas, cotton producing areas, irrigated areas, and the Kayes region). Even those institutions that had a specific orientation towards financing agriculture are diversifying their activities to urban areas. The Banque Nationale de Développement Agricole (BNDA), initially established to support agricultural development, shifted its activities towards urban areas after it was privatized. However, the BNDA is cooperating with development partners, such as the AFD, with which it is preparing an accessible medium-term loan for producers at an annual interest rate of 8 to 12 percent.

Microfinance institutions too are more and more interested in conducting business in urban areas. This is true for *Kafo Jiginew*, which was initially established as a farmer cooperative, but which appears to be run more as a private business with few dividends paid back to its members. These institutions have been unable to offer low, small loan amounts, risk and proximity. The difference between their interest rates on savings and loans can be more than 20 percent, creating dissatisfaction among farmers and their organizations. The level of information provided to their clients (precise conditions of loans provided, consequences of default, etc.) and the level of supervision provided also appear to be unsatisfactory. The increasing number of microfinance institutions and lack of control by those institutions has led several smallholders to contract multiple loans and indebt themselves heavily: 20.3 percent of rural households in Mali find themselves indebted (INSTAT, 2011). Due to the high interest rates and the strong level of risk they face, smallholders are sometimes unable to repay their loans, resulting in the sale of their assets (equipment or livestock). In order to improve this situation, the Malian Solidarity Bank (BMS) was created in 2002 with the intent to reconnect with smallholders through low interest rates, large geographical spread and a “producers’ bank” image. Seventy-two percent of the bank is owned by other microfinance institutions (MSU, 2011).

Group lending, which was widely used in the past, is now in crisis. This is largely due to the cotton crisis, which put a strain on several producers who could not reimburse their loans, causing the group lending system to fail. The system is now mistrusted by both farmers and banks, and new modalities are being tested.

Within value chains, financing suffers from a middle-funding gap between microfinance and large investments (between USD 20 000 and 150 000). There is a need to forge links between local business operators, particularly the small and medium ones, and investors (mostly but not exclusively external) who can also provide technical advice. Unfortunately, the private Malian agribusiness sector is weak, although it has grown in recent years. For example, the Chamber of Commerce is in very poor condition and is undergoing a total reorganization to put it back on its feet. As a result, it is difficult to mobilize private money to invest in agricultural value chains.

### Poorly defined property rights

The lack of clear land rights is a major constraint to investment. On the one hand the producers hesitate to invest in land if rights are unclear, not secure, or shared with other users (e.g. herders), and on the other hand, land without clear rights cannot be used as collateral for credit.

In many cases, there is a real risk of losing agricultural investments made as other right holders may claim land that has been improved – for example, land that has become irrigated following the purchase of a pump, or land that has been planted with mango trees. Multiple land rights shared by different people are a source of conflict and a hindrance to investment. These rights are almost always customary: except in peri-urban areas, there are no official land titles in Mali (an illegal land market also exists in the area of the Office of Niger). Thus, land cannot be used as collateral for credit. However, even if it were titled, some land would not be worth the trouble of being seized by a creditor. Insecurity is also important for small farmers on large irrigation schemes such as the area of the Office of Niger. This is because land belongs to the state and while major agribusiness investors have generally been granted user contracts for variable, usually long periods of time, farmers have not (Samaké et al., 2008a). Farmers in this area can be quickly expelled if, for example, they do not respect the rules (e.g. do not pay their water fees).

### Lack of market access

Another important constraint to investment is that most farmers, particularly those in areas without large rural development projects (“diffuse zones”), have limited access to markets. There is a general lack of value chain development, with supply poorly connected to demand. Communication and transport infrastructure and facilities are poor or inexistent. The proportion of surfaced roads is very low (24.5 percent), and only 8 percent of Malians possess a car (INSTAT, 2011). Most producers find themselves isolated, with insufficient information and bargaining power. Thus, they do not obtain the best prices for their products from wholesalers, and their low stocking capacity generally forces them to sell their products at the time of harvest, when the prices are lower. Smallholders therefore have few incentives to invest in order to increase their production; neither do they have the funds to do so. This is especially true for staple crops such as sorghum and millet, which are not sufficiently supported by government policies, rarely being regarded as commercial crops.

## **Small producers insufficiently trained and organized**

Even if smallholders have adequate access to markets, land and financing, they sometimes lack knowledge and capacities to engage in medium to long-term investment plans.

### ***Improving market signal reading***

Despite notable examples of farmers having at least a medium-term vision (i.e. Dogon onion producers), an important number of farmers, particularly the smaller farmers and those in the remoter and poorer areas, miss market opportunities and, as a consequence, fail to improve their revenue. For instance, most farmers only market a small share of their production at time of harvest to earn cash required for unavoidable expenditures. This stems both from inefficiencies along the value chain, on which MAFAP aims to shed light, and from farmers' lack of business skills and capacity to read the market signals. Some farmers and farmers' organizations have made explicit their need for better access to information, and for accounting and planning knowledge, along with adequate equipment (silos for instance), to ensure they benefit from incentives to production and marketing.

### ***Illiteracy***

The very low literacy rate among farmers – 26 percent in Mali (UNDP, 2011) – makes it hard for most of them to access credit, as banks usually expect some accounting data as a prerequisite for loans. However, higher education for rural youth, contributes to the rural to urban drift, as youngsters usually stay in town once their studies are completed. Ensuring that education also benefits the rural population in the long run thus represents a challenge for the Malian Government.

### ***Technical knowledge***

Producers generally lack knowledge of improved agricultural production systems, technology and use of equipment. For instance, while there is a good potential for mango production, the traditional way of caring for mango trees does not produce fruits that are of the appropriate quality and quantity for marketing, particularly for the export market. Another example is the lack of knowledge for using mechanical equipment, resulting in an excessively rapid deterioration of the material. Misuse of pesticides is a common source of health hazards, and inappropriate use of fertilizers may lead to loss of soil fertility.

### ***Inadequate use of mechanization***

The capacity to manage mechanization is lacking at a national level in Mali. Technical competence in this area seriously diminished after 1980, a period marking the disengagement of the state from the provision of equipment.

In Mali, equipment generally needs to be bought from India, China or Brazil, as they are now the countries with available equipment suitable for the crops and climate of Mali. This equipment costs less than its former European equivalent, but difficulties still remain in ensuring its maintenance and support. The capacity of local artisans to maintain this new capital should be strengthened, while local manufacture of machinery is yet to develop.

### ***Weak producer organizations***

Producer organizations are increasingly important actors in agricultural and rural sector development, especially since their recognition by the government in 1992. Their growing weight is illustrated by their participation in drafting most of government's agricultural policies in the 2000s, for instance the Agricultural Orientation Law in 2006. They are powerful actors in helping producers, building an enabling environment for investment, and have already contributed to successful projects facilitating access to credit or improving land management. Nevertheless, they still face challenges to strengthen themselves and should be assisted in their efforts.

The main challenges that have been identified by the study revolve around governance and capacity issues (Guegen, 2010).

- **Governance:** most producer organizations are recent (often dating from the 1990s) and despite several success stories, many are still struggling to ensure adequate governance. Challenges come both from outside and from within the organizations. On the one hand, donors and the state have contributed to the structural weakness of producer organizations. Donors have had at best a minor effect on strengthening producer organizations, because capacity-building programmes and technical assistance often were too short-term and failed to deepen the capacities within these organizations. They were also weakened by some donor or government initiatives that drove them away from their core activities, such as transferring input marketing to cotton producers' organizations, with dubious effects. However, challenges also come from within producer organizations. The largest umbrella organization, the National Coordination of Peasants' Organizations (CNOP) and the permanent representation in Bamako for regional Chambers of Agriculture (APCAM), among others, are facing criticism for being disconnected from grassroots farmers and regional organizations. The Association of Professional Farmers' Organizations (AOPP), a smaller umbrella organization, one of the members of CNOP, is usually referred to as a better example of an advocacy group that has remained in touch with its base. Producer organizations are often centred on their leaders, with too little capacity building for the other members of the organization. Roles and procedures are not always clear, and some producer organizations are not properly registered and thus ineligible for government or project support.
- **Lack of capacity:** The capacity of producer organizations to provide support to farmers (extension and advocacy) could be reinforced. The organizations have limited capacity to help farmers or farmer groups formulate good investment proposals that consider production aspects as well as maintenance, processing and marketing, quality and safety of products, and financial sustainability. They also have inadequate capacity to provide training to farmers and producers on planning and business skills.

## **An unfavourable policy environment and institutional framework**

### ***Organizational vacuum in the field***

Stabilization and Structural Adjustment Programmes of the 1980s resulted in the almost complete dismantling of public agencies in the field (extension in particular); their functions were not taken up by either private organizations or by farmer organizations, whose capacity to provide real support to farmers has remained very weak.

The government divestiture and cut-down policy followed in the earlier decades as part of Structural Adjustment programmes resulted in the dismantling of the extension apparatus in the field (the CMDT and various “offices”). It was expected that this would provide space to the private sector and civil society to take over the functions hitherto implemented by the state, which would be progressively transferred along with the cost attached to them. Unfortunately, in Mali like in many other countries, this policy resulted in the creation of a vacuum, as civil society was hardly able to establish sufficiently strong organizations and the private sector remained at best embryonic in all but in a few more developed parts of the country. Non-governmental organizations (NGOs), farmers’ organizations grouped under the CNOP, Cooperatives, and government-supported Chambers of Agriculture are now partially filling the gap. However, there is a global lack of coordination between these organizations, and most importantly they lack technical and financial capacities.

### ***Uncertainty over the government’s priorities and support to smallholder investment***

Government policy statements and documents such as the Strategic Framework of Growth and Poverty Reduction (CSCR, 2007–2011) or the 2006 Agricultural Orientation Law (LOA) mention among their objectives increasing agricultural production as well as reducing food insecurity. The government aims are on the one hand, to develop market-oriented agricultural enterprises, and on the other, to improve the conditions of small family farms. The MAFAP’s findings show that the government’s public expenditure on agriculture is largely targeted on irrigation projects for rice and cotton producers through input subsidies (notably, the CMDT system and the Rice Initiative), and the building of rural infrastructures such as roads or dams. This does not correspond to the vision, advocated by some NGOs and producer organizations, of government supporting the development of small family farms, but rather of government promoting the development of agrobusiness. Nor does it show that the government fully supports smallholder investment: public expenditure remains concentrated on rice production, and credit subsidies mostly benefit medium-size farmers rather than small farmers.

In accordance with the LOA, the government is currently creating a National Fund for Agricultural Development (FNDA) to subsidize interest rates of loans provided by commercial banks and microfinance institutions, and to provide financial resources in case of natural disasters. The Fund is only at the start of operations and has a very limited budget (FCFA 10 billion). There are still insufficient data for analysis of its implementation.

## **Conclusion and Recommendations**

Developing smallholder investment remains a challenge in Mali. Multiple obstacles are to be overcome: depth of poverty of rural households, limited access to finance and to markets, heavy risk

in production and marketing, uncertain or even non-existent land titles, lack of technical and organizational skills. But the most important obstacle may be the policy environment, which tends to impair rather than facilitate profitable investments in farms. Coherent and well-balanced policies are needed to set the right conditions to enable smallholders to invest. Smallholder investment represents the principal flow of investment in the agricultural and rural sector and needs to be efficiently supported and channelled: stakeholders – especially the government – should not underestimate its central importance to agricultural and rural development. The present study leads to the following recommendations:

- **Affirm political will and partnership between all stakeholders** – Advocacy and dialogue are needed to ensure that smallholder investment is put high on the agenda. Consensus among all major stakeholders on the causes of low farm-level investment and the best way forward is crucial. This report identifies some of the key constraints for smallholder investment that need to be truly tackled.
- **Implement policies aiming at key areas to develop smallholder investment (finance, land and market)** – Once there is national leadership in promoting smallholders' own investments, Mali will need to develop and formulate policies to support this. The FNDA needs to be effectively implemented, and the government and donors should support and improve credit access through subsidies and innovative credit mechanisms, such as [warrantage](#) (credit on produce inventory). An ambitious land reform also needs to be undertaken: secure land tenure is essential for further investment by smallholders. Regarding market access, an important part of public expenditure is already going to the building of roads. Yet, more needs to be done, notably in terms of access to information, training and technical assistance to both smallholders and producer organizations.
- **Strengthen farmer organizations and chambers of agriculture** – In order to improve access markets and financing, farmer organizations need to be better organized. The change needs to come from within the organization, but also, unlike many donor projects of the past, formation and technical assistance should be done in the long run so as to truly create capacities within producer organizations. The state also has a pivotal role in supporting a network of well-funded and competent Chambers of Agriculture as they are important contributors to decentralized agricultural and rural development.
- **Improve coordination of training of smallholders at national/regional/provincial levels** – In order for smallholders to invest in agriculture, there needs to be consistent and informative support in terms of education and training in different fields, including mechanization, marketing, budget and finance, and business practice.
- **Strengthen financial institutions and improve access to credit** – Banks, including microfinance institutions, need to make more efforts to lower interest rates and move closer to potential customers. Financial institutions need to be more aware of lending mechanisms specific to agriculture that can mitigate the risk that is typical to this sector. Both banks and smallholders would benefit from a better knowledge by banking operators of risk assessment in agriculture. The government, producers' organizations and donors have a role to play in working with banks to achieve this and help mitigating risk for producers, which would result in a win-win situation.

## GENERAL CONCLUSIONS

### Key Messages

Mali is classified under the category of the least developed countries, even though it benefits from a strong economic growth rate (5 percent GDP annual growth). The population is also growing fast (3.6 percent per year), is young and increasingly more educated. Despite the growth in the exploitation of mineral resources, and gold in particular, Mali's economy is still dominated by agriculture, with a contribution of 37 percent to the national GDP in 2008; more than 70 percent of the active workforce was employed in the sector in 2010 (Samaké et al., 2008). However, the level of agricultural added value is low compared to that of the industrial subsector, which more than quadrupled between 1980 and 2001, with the mining sector showing the highest relative growth. The growth of the agricultural sector is generally steady (7 percent in 2010), but is subject to high annual variations (negative in 2001, 2003 and 2005), with disparities within different subsectors.

Despite this growth, economic benefits in terms of livelihoods and standard of living for the population remain low. The poverty rate is extremely high, with 46 percent of the population living on an average of less than USD 1 a day in 2010. This rate reaches 50.6 percent in rural areas, indicating that agriculture, the main economic activity, fails to be the engine for development and poverty eradication, a role assigned to it by donors and by the Malian Government. In this context, it is essential to ensure that the agricultural and food policies in place, and public expenditures budgeted for the sector, provide incentives for production and ensure adequate and equitable remuneration to producers. It is also essential to measure the consistency between the objectives of these policies, the measures being adopted and their resulting effects.

### *Incentives, Disincentives and Market Development Gaps*

Market incentives, disincentives and MDGs are measured and analysed for eight agricultural products (rice, beef, millet, cotton lint, sorghum, groundnuts, maize and cow's milk), representing 65 percent of the total value of agricultural production in Mali. These products are grouped into four categories:

- exports: cotton, beef and groundnuts
- imported products: rice, milk
- thinly traded products: maize, sorghum, millet
- key products for food security: maize, sorghum, millet, rice, groundnuts

It should be noted that the period studied (2005-2010), the most recent from the viewpoint of data availability, was particularly turbulent due to the food crisis and soaring agricultural prices from 2007 onwards, with market fundamentals being challenged and price trends subject to significant fluctuations. These factors have made the analysis more difficult and the unravelling of the causes of incentives and disincentives more complicated.

Over the period 2005-2010, all groups have received disincentives, with exports receiving only -7 percent, due to the strong incentives of cotton, imports receiving -15 percent due to important disincentives for rice, and thinly traded products receiving -32 percent, with millet and sorghum

producers being highly penalized. Food security products, a combination of rice, millet, maize, sorghum and groundnuts, have received disincentives as well, at -23 percent.

With the exception of changes in incentive levels related to very significant price fluctuations during the food price crisis between 2008 and 2009, incentive levels remained relatively stable during the period analysed. However, this relative stability of incentive levels does not mean price stability. Prices have been subject to considerable variations, both interannual (essentially related to the crisis of agricultural prices) and intra-annual (seasonal related). It is worth recalling that price volatility is a limiting factor that is regularly singled out by producers, because high price fluctuations, and especially their unpredictability, makes decision-making more difficult for production, often encouraging more conservative behaviour in order to minimize risks.

During the crisis in 2008-2009, incentives became slightly higher for the exported products category, and disincentives strongly diminished for import products. By contrast, disincentives became higher for narrowly traded products and key products for food security.

The results indicate that producers have generally received disincentives for all products being analysed (rice, maize, sorghum, millet, milk, cattle and groundnuts), except cotton fibre (at 69 percent). Alongside producers, wholesalers have also been penalized, but the level of these disincentives has often been lower than those received by producers. An exception is the milk sector where dairy factories received high incentives (77 percent).

Disincentives are particularly striking for rice, which is the focus of considerable attention from policy-makers, both in terms of public expenditure (63 percent of expenditures towards individual products) and in terms of political environment, with the objective of boosting production sufficiently to turn Mali into a net exporter. Disincentives are important, at -11 percent. However, in order to have a complete picture of policy impacts, it would be necessary to obtain insights into the development of producers' incomes, especially for rice, with statistics showing a considerable increase in output correlated to the Rice Initiative.

The level of disincentives for cattle breeders (-11 percent) is also surprising, given that livestock (and cattle in particular) is the country's third largest source of export earnings and that meat consumption in West Africa is increasing heavily. Although we have shown that intermediaries (traders) capture a significant portion of incentives through their profits, it appears that the other share is absorbed and lost in the inefficient organization of the cattle meat sector.

In addition, disincentives for coarse grains (-30 percent for sorghum, -28 percent for millet, -6 percent for maize) can be explained by the government's intention to restrict exports in order to ensure food security, a policy which increases the access costs for the agents of the sector and does not allow them to benefit from the best prices. However, this policy is detrimental to the medium and long-term objective of encouraging production of these cereals, in particular maize, which is a promising sector when considering the increasing demand for maize in Mali and the subregion. It should also be noted that such constraints on the movement of agricultural products in the subregion are contrary to the regulations of WAEMU and ECOWAS.

Regarding incentives for cotton producers (+69 percent), measures taken to deal with international cotton prices, which are low at certain times are likely to result in debt for the CMDT. Thus, the

question arises as to whether this strategy will prove sustainable when the state seeks to disengage itself from the CMDT - although it is also true that the international market has improved significantly. Moreover, while incentives were recorded at the producer level, yields decrease regularly, threatening the sector's profitability, while the cotton crisis in the mid-2000s showed the vulnerability of the sector to external shocks. It is therefore possible that Mali's cotton sector will experience new upheavals and changes in the structure of incentives/disincentives to producers.

Finally, the market development gaps (MDGs) measure the extra costs for market access, including the rents, and more generally, the whole set of inefficiencies in the functioning of each value chain. In order to obtain a comparable ratio between products and countries, these cost gaps are compared to the reference price at farm-gate level. It can be observed that all products, except milk, are affected negatively by market development gaps, whatever their trading status, and regardless of their status from the point of view of incentives and disincentives resulting from the effects of explicit policies (trade policies, pricing policies, etc.). An average MDG rate of -10 percent is observed in the period. This rate represents the average additional disincentive at the producer level stemming from implicit policies or absence of policies: lack of infrastructures, rigidities and market inefficiencies. It should be noted that exported products (cotton, beef in particular) reveal very significant market development gaps, which are on average four times higher than those of non-traded products. This is of particular concern for products subject to international competition, facing severe obstacles for price competitiveness.

The MDG analysis also highlights the depth of the problem created by those gaps, which reduce the incentives of products having received incentives (cotton) and increase the disincentives of products already being penalized. By contrast, market development gaps show gains and cost savings that could be achieved if the necessary investments were made, notably in transport infrastructure and technology acquisition, and if adequate measures were taken, especially to eliminate or limit market inefficiencies, such as illegal taxes, bribes, excessive profits and monopsonistic behaviour.

### *Public expenditure and aid*

The amount of public expenditure devoted to agriculture shows a significant net increase over the period analysed, with an 82 percent increase of expenditure made towards the ARS between 2004 and 2010. A large share of these expenditures has been allocated to implement hydro-agricultural infrastructures, and to support producers, both through equipment support, credits and variable inputs. The structure of public expenditure reflects the importance of the Rice Initiative, and of hydro-agricultural infrastructure development programmes, in particular the National Rural Infrastructure Programme. The PNIR represents more than 8 percent on average of general government expenditures towards the ARS between 2005 and 2010, while the Rice Initiative represents an average 14 percent in 2009 and 2010. Generally, producer support represents 35 percent of public expenditure specific to agriculture, and support towards production-oriented infrastructure represents 26 percent. Marketing is reasonably represented with 10 percent, this share being greatly impacted by the Agricultural Competitiveness and Development Programme (PCDA), and various investments towards cattle markets. The PCDA has a very important impact on agricultural expenditure, corresponding to 6 percent on average of general government expenditures towards the ARS over the period analysed. There is a relative support to cattle, which represents 9 percent of total expenditures towards specific products, but this figure is low given the importance of the sector, livestock being the third export product in terms of value for the country. Also, support is

mainly focused on animal health, slaughter areas, and cattle markets, as well as genetic improvements, while the key question of cattle feed is not really taken into account. Generally, public expenditure is highly concentrated on rice support, and on irrigation development, neglecting not only consumption and transformation, but also agricultural research, even though this latter represents a highly profitable agricultural investment (Fan and Zhang, 2008).

### *Performance of the studied value chains*

It should be remembered that beyond the analysis of price incentives, in order to appreciate the full effects of policy, it is important to analyse developments in producer income for each production. Our findings should ideally be complemented by work on the distribution of added value between different value chain actors, with an analysis of subsectors, or net margins generated by producers, according to different types of farms.

From our results, however, we can draw a number of useful conclusions for policy-makers in Mali.

First, there was a steady increase in output of all products during the period studied, with the exception of cotton, for which production and yields have been falling since 2005. This increase in production is due above all to extension of the agricultural area, rather than to yield increases. This is especially true for millet and sorghum, which respond relatively poorly to fertilizer and intensification techniques. It is also true for cattle breeding, milk and groundnuts. Rice and maize are the only products with increasing yields, with 20 percent between 1998-2004 and 2005-2011 for maize. Cotton has been experiencing a worrying fall in yields since 2005, which can partly be explained by soil degradation. The medium-term impact of the Rice Initiative on rice and maize, but also cotton and millet/sorghum has yet to be assessed, especially once input subsidies have ended. The objective of making the country a net exporter of rice is a long way from being achieved. From 2005 to 2010, imports remained almost 20 times higher than exports, while the government's focus on maize has yet to produce results in terms of exports, with less than 1 percent of production being traded during all years studied (except in 2005, when the figure was 3.5 percent).

Groundnut production increased 38 percent between 1991-1999 and 2000-08, but remained low, with a significant drop in 2009 and 2010, settling at 129 000 tons. Groundnuts are generally marketed on a very small scale; this is largely linked to the intermediate status of the production, between a staple and a market crop, and to lack of interest on the part of both the government and the donors.

Production of bovines continues to grow, with head of cattle reaching close to 10 million, but this comes at the expense of the environment and the quality of animals. Cattle exports remain very important, but the exploitation rate of herds is low, at 4.5 percent, and cattle marketing and trade is poorly organized. This represents a missed opportunity for the country, fourth cattle producer in West Africa, to use cattle as an engine for development.

Milk production is growing alongside cattle production, but losses remain a significant problem. Milk is widely produced for domestic consumption in rural areas (which is good for food and nutrition of herder communities), but problems include poor quality, lack of structuring of the sector, inadequate quality of cattle feed and insufficient intensification of production. In urban areas, imported milk powder dominates the consumption pattern, and local milk production still receives too little support from public expenditure and tax policies to cope with competition from milk imports.

Value chains in Mali are insufficiently structured for both export and domestic markets, the latter being the main market for Mali's agricultural production, especially for cereals. There is indeed a proliferation of intermediaries (particularly for milk and cattle), and wholesalers wield excessive power, preventing an efficient transmission of international prices to producers.

Very high transport costs represent a major obstacle, due to poor infrastructure and outdated fleets, as well as red tape and illegal fees. An improved processing infrastructure could also help to produce added value and encourage trading. This is true for exports, particularly cattle, where added value is lacking, but also for domestic marketing. Indeed, there are significant missed opportunities, especially for milk, cattle, and millet/sorghum, for which demand is increasing from the urban population in search of diversified food sources.

The recognized Market Information System of Mali, the Observatoire des Marchés Agricoles (OMA), constitutes an asset for the country in terms of marketing for the different value chains. The development of mobile telephones also facilitates information flow: 62.4 percent of rural Malians are now equipped with a mobile phone (INSTAT, 2011). Despite this, the transmission of information is insufficient, and even when it does circulate, producers do not necessarily have the means to exploit it.

### *Coherence of agricultural and food policies*

Policy coherence is a challenge for all countries, and this is also the case for Mali. The MAFPA analysis showed that it is necessary to analyse policy coherence on at least three levels:

- Coherence between the objectives and measures implemented, with clarity and transparency of objectives and measures;
- Coherence between the measures adopted and the impacts measured;
- Consistency between the modalities of government action, that is between explicit public policies, especially pricing policies, and the level and composition of public expenditure.

The Government of Mali has been consistent in its support for the consumption of commodities as a result of the food price crisis of 2007-2008, but it has also acted with limited transparency, and in many cases there has been conflict with the objectives set for the development of production in sectors such as rice, milk, millet and sorghum. The government has also shown consistency in terms of support, particularly financial support, given to products considered to be strategic, such as cotton and rice, which receive large cash transfers. Through the Rice Initiative and support for the CMDT, these products absorb a significant portion of the state budget allocated to agriculture. However, these policies do not necessarily translate into production incentives. The case of rice shows a real inconsistency between disincentives to producers and the objective of increasing production to make Mali an export power at the subregional level.

Significant public expenditure for rural infrastructure programmes and projects (26 percent of total expenditure specific to agriculture), especially roads, shows that the government is trying to relieve the burden on producers in terms of access costs. However, if this line of government policy seems consistent with the priorities and constraints identified at producer level, the effectiveness of measures remains questionable, since throughout the study period, access costs remained the main source of disincentives for producers.

Along with various laudable efforts to reach a certain level of coherence, there are also many examples of inconsistencies. Support for the development of rice production, discussed above, is not proving successful. Objectives to encourage intraregional trade, where the real market opportunities can be found, or even the objective of marketing a greater share of production in the domestic market, cannot be completed until a full review of administrative practices (red tape) and illicit practice (i.e. bribes) is undertaken. At best, massive investment will be required to promote trade, which so far is not happening (cold chain for cattle meat, private and public storage for grain, etc.).

In addition to transportation difficulties, producers often have too low an income and cash flow to be in a decent negotiating position: they must sell wherever and whenever they can, that is to say, generally at the local market, when prices are far from the most attractive. The use of storage could help to overcome this problem, but storage facilities are expensive, so few producers use them due to lack of financial resources. Moreover, there are substantial losses involved for individual storage. For this reason, it would be beneficial to encourage the development of warrantage by producer organizations or microfinance institutions.

Although cattle is presented in the government's objectives as a priority and receives significant attention, with 9 percent of public expenditure allocated to specific products, this sector remains largely neglected compared with measures granted to support crop production, including rice and cotton. Farm investment, at the core of the new Agricultural Development Policy, is mainly focused on capital support, including irrigation. Support is low, especially to producers, for marketing, processing, and product storage, but also for training and adding value locally.

Furthermore, in terms of agricultural performance, the issue of the use of irrigation in agriculture is a crucial one in Mali, a Sahelian country. It was shown that water resources are abundant in Mali, through the Niger River, but they are also unevenly distributed. The Malian Government has made development of irrigation one of its priorities as part of the LOA, which aims to mobilize and control water resources, and through the SDDR (and now through the PDA), which seeks to promote a tailored and targeted irrigation infrastructure. With 291 000 ha, the irrigated area is only 5 percent of the total cultivable land area of Mali (MEA, 2011). Irrigation thus appears to be insufficiently developed to achieve the highest potential yields of certain crops, including cotton and rice, and even maize in some areas. Even in areas where irrigation is strongly developed, the stakes are high. We know, for example, that the irrigated areas in the Office of Niger face critical situations for supplying irrigation resources at certain periods, especially in the late dry season and early rainy season. Finally, the lack of irrigation infrastructure has a significant opportunity cost to the economy of Mali, which was assessed at 6 percent of the value added of agriculture (MEA, 2011).

There currently are some limitations of our analysis on policy coherence, however. Indeed, although this methodology has proved useful in many contexts for gaining insights into the impact of agricultural and food policies, and even on some aspects of their consistency when analysing incentives combined with an analysis of public expenditure, our work does not allow us to draw conclusions as to the effects of policies on margins and income generated by producers. In other words, our analysis helps to understand the incentives and disincentives received by producers as a whole, but fails to show yet how these incentives are absorbed, transformed and combined by the wide variety of farms in the country.

This is because our analysis stops at the farmgate and does not consider the choice made by farmers regarding commodity production when faced with a set of incentives and disincentives that varies from one product to another, and which the producer is forced to combine in his or her production system. Furthermore, the methodology uses annual average prices aggregated at national level. Although it is possible for this methodology to calculate indicators at lower geographical levels, such as by region, province or even production area, and to use average monthly or even weekly prices, this type of analysis has yet to be conducted in Mali. The MAFAP analysis monitors the impact of food and agricultural policies on an annual basis in several countries at a time; therefore the very nature of our work makes it difficult to take into account the strong interannual variability in prices due to seasonality, while it tends to blur the differences between regions and production systems.

Thus, additional technical and economic analysis that would allow for the breaking down of annual data and for a more thorough analysis at farm level would be complementary to the work proposed by the MAFAP project. This would help to understand how incentives are translated into production decisions, and determine which operating systems benefit and which are excluded.

### **Recommendations for better dialogue on agricultural and food policies**

The main objective of the MAFAP project is to achieve a richer and more transparent dialogue on food and agricultural policies, both at national and regional levels. The idea is that policies may be analysed and rewritten if necessary, and adjusted or reformed to achieve an implementation that supports a high degree of consistency between objectives, measures and their implementation, and the effects and impacts of these policy measures on different value chains, and especially on producers.

It seems important in this context to understand the different opportunities that arise. These include the new dynamic created by the Agricultural Development Policy, which represents a true window of opportunity for undertaking the changes required. Moreover, political will exists among many policy-makers seeking to capitalize on the experiences of other projects related to the economic analysis of value chains, such as the PCDA. It is important that the policy dialogue promoted by the MAFAP project advances quickly and that stakeholders in the agricultural and rural sector who show an interest in the outcome of the project are included. This also means promoting the inclusion of producer organizations and the private sector in policy dialogue.

Regarding this dialogue, the MAFAP project results offer a wide range of possibilities. It appears, however, that some topics will be particularly attractive to producers, their representatives and policy-makers. This is especially true for the results for each value chain in terms of incentives and disincentives to production, stability of the signals sent to producers over the years, the issue of policy consistency at different levels (objectives/measures, measures/effects, price policies/public expenditure), by value chain and for the agricultural sector in general, and the issue of transparency of objectives including those that are *a posteriori*.

The role of dialogue at both national and regional levels appears essential to meet one of the main objectives outlined in this report: reorienting agricultural and food policies of Mali in three main directions:

- Limitation of the various risks faced by producers and consumers and all agents in the chain. First and foremost are production and market risks. These include, of course, price volatility, both in terms of levels and instability. Government decisions can offer solutions that are more or less efficient in providing production and consumption incentives, and achieving food security. Many options exist and can be combined:
- storage management to stabilize grain prices; management of food emergencies,
  - receipt storage systems which use market mechanisms to reduce price volatility,
  - trade policy measures often used to support or stabilize domestic supply, with protective measures at borders,
  - agricultural commodity exchange to aggregate supply, improve transparency in pricing and reduce transaction costs,
  - market information systems to facilitate access to reliable information on prices and markets. They can often support planning and government interventions, reduce risk and correct market imperfections. They also help to include stakeholders in decisions that affect markets and production.

Other risks, particularly those related to production, must of course be considered by public policy. A wide range of options exist for risk management mechanisms: financial services, insurance, safety nets and all measures relating to disaster, climate and biological risk management, including animal health and phytosanitary issues. Political and institutional risk as a factor of instability is not directly covered by this report, but it must be remembered that these factors also have an impact on producers, because they directly or indirectly affect the agricultural environment and therefore production incentives, as shown by the political upheavals in Mali in the spring of 2012.

Market organization and development of inclusive pathways to promote the marketing of production volumes, bringing together large numbers of producers and production systems in the main production areas in order to meet the demand of urban consumer markets in West Africa.

For this, investment in infrastructure is needed to support more efficient and better-organized value chains, especially in order to reduce access costs and open up certain areas of production. It is equally important to facilitate trade by removing barriers, including non-tariff trade barriers, while harmonizing standards and quality criteria across the region. Market and price information is also crucial so as to improve value chain functioning. The Observatoire du Marché Agricole allows Mali to have high quality information and data: this is a major asset, which should be preserved and strengthened. It is also important to share that knowledge with other countries in the region.

- it is essential to have an articulated policy dialogue between national and regional or subregional levels. Again, there are opportunities to strengthen this relationship, leading to greater coherence of policy documents at the subregional level (i.e. ECOWAP) and of multiple and diverse national policies. The West African Economic and Monetary Union (WAEMU), for instance, appears ready to play the leading role in facilitating and harmonizing policy dialogue among countries that would be non-binding and voluntary. The results of monitoring and analyzing agricultural and food policies could be presented, together with comments on shared experiences and trends. Such a forum could in turn enable the experience of Mali and Burkina Faso to be extended to other countries in the subregion, since these countries would see the

benefit of a better understanding and measurement of the effects of their own agricultural and food policies.

## Lessons learned and the future of the MAFAP project in Mali

The implementation of the first phase of the MAFAP project made it possible to draw some lessons and identify opportunities and uncertainties for the future of activities that were established under the MAFAP project in Mali. These opportunities and threats can be general, but also sometimes specific to Mali. They serve as a basis to reflect on the implementation of the project in other countries. Several points are worth mentioning.

From the perspective of the scope of the project, it should be remembered that the goal is to establish a sustainable monitoring and analysis of agricultural and food policies in at least ten countries in Africa, and especially Mali. The main challenge is that of institutionalization to ensure that in the coming years we move beyond the project context, which is necessarily limited in time, to position ourselves as part of a regular routine, perhaps linked to the normal cycle of political and institutional processes in Mali. From this perspective, the main uncertainty at the end of this first phase concerns political will, especially because of the troubled political and social climate prevailing in Mali since March 2012. Political instability in Bamako also poses constraints on the political dialogue, which was planned from the second half of 2012. It remains unclear how and when this dialogue will continue.

Moreover, the nature of the MAFAP project is to formulate recommendations based on rigorous economic analyses that should be sustained in time, while the political agenda is often dictated by rapidly changing interests, all the more so in troubled times. This raises the question of the potential for combining the two agendas: the timeframe for technical and analytical undertakings and that for political ones. Will the MAFAP project partners manage to forge and maintain the necessary consensus in the administrative and political spheres for the project and its activities to remain a priority of the government's agenda on agriculture and food policies in the coming months and years?

From the perspective of technical and financial partnerships, there are other factors to be borne in mind. At the international level, the project currently has a proper footing, which should probably remain for the next two or three years. The project indeed receives institutional and financial support from the Bill and Melinda Gates Foundation and FAO, as well as developing partnerships with other international institutions, such as OECD, IFPRI and the World Bank for technical aspects. These partnerships are a source of strength.

At the national level, the project has so far remained largely rooted at the technical staff level. In order to deliver their full potential, MAFAP project results must be made available to decision-makers and other stakeholders and partners. The task of transmitting technical results and promoting political dialogue lies with the CPS/SDR, but it is too early to ensure that this function is performed effectively. In addition, CPS/SDR will itself need assistance, including political support for carrying out this role, despite some problems stemming from its uncomfortable positioning at the intersection of different ministries responsible for agriculture and rural development.

In addition, the project is fully inserted within the IER-ECOFIL, with a national coordinator whose expertise is widely recognized and is well connected to different actors in agricultural and rural development. The methodology is owned by the national IER-ECOFIL team, and has been presented successfully during the project launch and the capacity-building workshop. Newspapers and television also relayed these workshops. This is also a strength that can lead to opportunities: the project is attracting growing interest from the technical and financial partners, but also from major national players, as shown by the presence of two Ministers (for Agriculture and Livestock and Fishery) during the launching workshop. Indeed, the project appears relevant to policy-makers because it provides answers to a real need for information, including the impact of major government policies such as the Rice Initiative.

In addition, the project involves a wide range of actors: the government and donors, but also producer organizations and civil society, for whom the analysis promoted by the MAFAP project may develop into a tool for advocacy. Producer organizations, such as ROPPA, have already indicated their willingness to be included in the project and trained in the analytical methodology.

However, there are also weaknesses. There is, for example, a certain difficulty in sustaining the activities supported by the MAFAP project, including some within the IER/ECOFIL and more broadly, within the Ministry of Agriculture. The IER/ECOFIL has a workforce made up of young talents, with a good command of the methodology. However, these individuals are poorly recognized, sometimes working in precarious conditions and do not receive lasting contracts. It appears to be difficult for them to achieve the coveted status of young researchers. Ensuring they obtain good working conditions would avoid the pitfall, all too familiar, of a brain drain and would be likely to facilitate the internalization within IER of skills and expertise gained by these young people in the analysis of agricultural and food policies. Discussions are under way, including partnerships with a network of universities in Africa, to mitigate the risk of losing the capacities that were built within partner institutions, once the current phase of the project has ended.

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## Annex 1: List of projects and programmes included in the analysis of public expenditure

Title of project / Programme	Government agency for the implementation
Rice Farming Improvement A On (ARPON III, IV)	Office of Niger
Lowland development Niamanali Sikasso HIPC	Governorate of the Sikasso Region
Development of 30 ha PIV at Zindaga Gao (HIPC)	Governorate of the Gao Region
Development of lowland plains Koulikoro Region	Governorate of the Koulikoro Region
Development of lowlands in border areas	Governorate of the Sikasso Region
Development of the Niger River banks	Agency of the Niger River Basin
Development of the PIV in the Gao Region phase 1 (PAPIV)	National Directorate of rural support
Bewani irrigation development (Block D Office of Niger)	Office of Niger
Cattle Market development	DAF Ministry of Livestock and Fisheries
Development of 35 ha at Tanima (HIPC)	Baguinéda area irrigation office
Pastoral development Pondori of Dialloubé	Ministry of Livestock and Fisheries
Development of small village irrigation area Sélingué	Office of Rural Development Sélingué
Development of plains of Diangofala Koulikoro	Governorate of the Koulikoro Region
Irrigation development Wara plain Sikasso Region HIPC	Governorate of Sikasso Region
Development of plains of Titiena Sikasso	Governorate of Sikasso Region
Support to women's activities in the karité (Shea) sector	National Directorate of Women's Empowerment
Support for reforestation	National Directorate of Nature Conservation
Support for PBS / CIGQE	Ministry of Environment. (Disbursement higher than budget)
Support for rural communities (PACR)	Cabinet MDSSPA
Support for rural communities of Mopti	Ministry of Territorial Administration and Local Communities
Support for local extension initiatives -NIHL (HIPC)	Project to support grassroots initiatives
Support for decentralization to Communities ACODEP	Ministry of Agriculture
Support for consolidation of decentralization in Mali	National Directorate of Nature Conservation

<b>CPS support Ministry of Agriculture, Livestock, Fisheries</b>	Administrative costs
<b>Textile Cotton Sector Support in four countries / Cotton Initiative (PAFICOT)</b>	Ministry of Agriculture
<b>Support programme FAO / Mali / Venezuela</b>	Ministry of Agriculture
<b>Support Value addition biological sesame</b>	National Directorate of Women's Empowerment
<b>Consolidation of women's groups PRODESO area</b>	DAF Ministry of Livestock and Fisheries
<b>Consolidation of the management system 3 reserved forests Bamako</b>	National Directorate of Nature Conservation
<b>Construction of underground filter dams</b>	Governorate of Kidal Region
<b>Construction of modern fish market in Bamako HIPC</b>	National Directorate of Fisheries
<b>Construction/ rehab. / equip. animal husbandry training center</b>	National Directorate of Production and Animal Industries
<b>State Plan contract / OHVN</b>	Office of Upper Niger Valley Development
<b>Contract-Plan Central Veterinary Lab / State</b>	Central Veterinary Laboratory
<b>Integrated control animal trypanosomiasis</b>	Ministry of Livestock and Fisheries.
<b>Creating a zone free of flies Tsé-Tsé / Trypanosomiasis East / West Africa</b>	National Directorate of Veterinary Services
<b>Integrated Agricultural Development Saouné Plain</b>	National Directorate of Rural Development/Equipment
<b>Poultry Development in Mali (PDAM)</b>	Ministry of Livestock and Fisheries
<b>Development of fisheries resources in Lake Sélingué</b>	Office of Rural Development Sélingué
<b>Integrated pastoral development in lakeside area Tonka / HIPC</b>	Ministry of Livestock and Fisheries
<b>Rural Development Ansongo Circle</b>	National Directorate of Rural Development/Equipment
<b>Integrated Rural Development Mopti-Timbuktu</b>	National Directorate of Hydraulics
<b>Developing the National Biosafety Framework in Mali</b>	National Directorate of Nature Conservation
<b>Development and Maintenance of extension infrastructure Office of Niger</b>	Office of Niger
<b>Establishment of development / management plan of the forests in Mali</b>	National Directorate of Nature Conservation
<b>Study modernization Konan Korientzé</b>	National Directorate of Rural Development Equipment Disbursements exceeded budget
<b>Study of lowland development</b>	National Directorate of Rural Development/Equipment
<b>Study of irrigation development Phédié Sabalibougou</b>	Office of Niger

<b>Development study small dams Ségou</b>	Ministry of Agriculture
<b>Study of Rural Development of Djenné circle</b>	National Directorate of Rural Development/Equipment
<b>Feasibility study of fishponds in Mali</b>	National Directorate of Fisheries
<b>Study development value addition milk production</b>	National Directorate of Livestock Production and Industry
<b>Study Jatropha sector development</b>	Ministry of Agriculture
<b>Feasibility study of transformation biological sesame / shallot</b>	DAF MPFEP
<b>Market gardening study peri-urban Bamako / Samanko</b>	National Directorate of rural support
<b>Study channel lining secondary pumping station APPO HIPC</b>	Irrigation office Baguinéda area
<b>Development Fund in the Sahelian Zone (FODESA)</b>	National Directorate of rural support
<b>Social Development Fund to fight against poverty</b>	Ministry of Social Development, Solidarity and the Elderly
<b>Sustainable Land Management GEF</b>	Secretariat Tech. Perm. Setting Inst. Gest load. Quest. Env
<b>Social environment management area Downstream PMB (HIPC)</b>	National Directorate of Urban / Rural Equipment
<b>Land management for agricultural/pastoral productivity Improvement</b>	Perm. Tech. Secretariat Institutional Framework for Management of Environmental Questions
<b>Vegetation management and land rehabilitation in arid zones</b>	National Directorate of Nature Conservation
<b>Land registration / titling Niger Office area</b>	Office of Niger
<b>Reassessment of Rice Initiative to Rice-Wheat-Maize</b>	Ministry of Agriculture
<b>Fight against CBPP</b>	National Directorate of Veterinary Services
<b>Implementation of the Agricultural Orientation Law (LOA)</b>	National Department of Agriculture
<b>Implementation of soil fertility action plan</b>	National Department of Agriculture
<b>Establishment of a permanent information system on the agricultural / livestock sector HIPC</b>	Planning and Statistics Cell
<b>Development of the Faguibine system</b>	National Directorate of rural support
<b>Mopti Rice Office Contract Plan</b>	Rice Office Mopti
<b>Segou Rice Office Contract Plan</b>	Segou Rice Office
<b>Partnership / Sustainable Development Environmental Management Institute</b>	National Directorate of Nature Conservation
<b>Livestock Project Agro-silvo-pastoral Breeding, Northeast Mali Phase II</b>	Mali Livestock Project North East

<b>National action plan for wetland management</b>	National Directorate of Nature Conservation
<b>Transition Plan to the sectoral approach to rural development in Mali</b>	CPS/SDR
<b>Integrated rural development plan in the Kidal Region</b>	Food Security Commission
<b>ABN Programme Fight against desertification in the Niger river basin</b>	National Directorate of Nature Conservation
<b>Agricultural Sector Support Programme (PASAM)</b>	Ministry of Agriculture
<b>Agricultural Services Support Programme for Farmers' Organizations (PASAOP)</b>	Department of Agriculture. Disbursements exceeded budget
<b>Competitive agricultural diversification programme (PCDA)</b>	Ministry of Agriculture
<b>Support programme to sustainable development of Yélimané</b>	National Directorate of rural support
<b>Support programme livestock development Western Sahel</b>	DAF Ministry of Livestock and Fisheries
<b>Programme Irrigation development programme in the Bani basin and in Sélingué</b>	National Directorate of Rural Engineering
<b>Programme against the Desert Locust (PALUCP)</b>	National Directorate of rural support
<b>Development Programme Middle Bani Plains</b>	National Directorate of Rural Development/Equipment
<b>Integrated development programme ONDY Madina Diassa area</b>	Operation Ndama Yanfolila
<b>Investment / development programme area northern region</b>	Office of the President
<b>Government programme of 50 000 ha reassessed to government programme of 103 000 ha</b>	Office of Niger
<b>National Rural Infrastructure Programme (PNIR)</b>	Ministry of Agriculture
<b>Pan-African programme against animal diseases</b>	Ministry of Livestock and Fisheries
<b>Five-year Aquaculture Facilities programme (PQAA)</b>	National Directorate of Fisheries
<b>Five-year Pastoral Facilities programme (PQAP)</b>	National Directorate of Livestock Production and Industry
<b>Regional development programme Fouta Djallon Massif</b>	National Directorate of Nature Conservation
<b>Regional programme of in situ conservation of ruminant livestock</b>	Ministry of Livestock and Fisheries
<b>Grain Market Restructuring Programme (PRMC)</b>	Agricultural Products Board of Mali
<b>Income and food security programme Kidal area (PSARK)</b>	Ministry of Agriculture
<b>Seed Sector Support Project</b>	National Directorate of rural support
<b>Development Support Project Rural Plains Daye Hamdja, Koriomé</b>	National Directorate of rural support

<b>Support Project Development of inland fisheries</b>	National Directorate of Fisheries
<b>Breeding Development Support Project South Kayes Area</b>	National Directorate of Livestock Production and Industry
<b>Rural development support project Mopti Region</b>	Rice Office Mopti
<b>Rural development support project Mopti Region CA</b>	Administrative costs
<b>Support Project / Azawak Zebu selection multiplication Phase II</b>	National Directorate of Veterinary Services
<b>Irrigation area development project Maninkoura (PAPIM)</b>	Office of Rural Development Sélingué
<b>Support Project to the Wheat sector in the Timbuktu Region (Project-Alkama) / Implementation of Action Plan Blé Dire</b>	Ministry of Agriculture
<b>Support Project Shallot Sector Phase I</b>	National Directorate of Women's Empowerment
<b>Support Project to Community (PADEC)</b>	Ministry of Social Development, Solidarity and the Elderly
<b>Rural Development Support Project in Tienkonou Tamani (PADERTKT)</b>	Rice Office Segou
<b>Project to support farmers' organizations of the Dogon Plateau for a higher price for their vegetable crops (GTFS/MLI/030/ITA)</b>	National Department of Agriculture
<b>Vaccination parks construction project</b>	National Directorate of Veterinary Services
<b>Livestock development project in the Sahel (OCCI) Phase II PADESO</b>	Ministry of Livestock and Fisheries
<b>Livestock development project Liptako Gourma Region</b>	DAF Ministry of Livestock and Fisheries
<b>Development Project Phase II in the lake area</b>	National Directorate of rural support
<b>Integrated Development Project Downstream Manantali (PDIAM)</b>	National Directorate of Rural Development/Equipment
<b>Nerica rice Dissemination Project</b>	Institute of Rural Economy
<b>Rehabilitation project in the agricultural area Baguinéda, Contract-Plan</b>	Ministry of Agriculture
<b>Project slaughter by-products processing</b>	National Directorate of Livestock Production and Industries
<b>Agricultural Development Project / IDB</b>	Office of Niger
<b>Integrated development project in the Segou Region</b>	Rice Office Segou
<b>Project development in fish culture area OHVN</b>	National Directorate of Fisheries
<b>Integrated rural development project in Kita (PDIRIK)</b>	National Department of Agriculture
<b>Intensification Project in the Baguinéda command area</b>	Ministry of Agriculture
<b>Project on environment and support of the fight against</b>	National Directorate of Nature Conservation

<b>desertification / development prospects</b>	
<b>Rehabilitation / extension project West San irrigated area</b>	National Directorate of rural support
<b>Poverty Initiative Project HIPC</b>	Administrative and Financial Directorate MEA
<b>Multiregional project integrated management of proliferating aquatic plants AFOU</b>	Directorate of Nature Conservation
<b>Regional project quality improvement of hides / skins</b>	DAF Ministry of Livestock and Fisheries
<b>Protection / management national parks and forests</b>	National Directorate of Nature Conservation
<b>Rehabilitation / Extension of Buildings ODRS</b>	Office of Rural Development Sélingué
<b>Rehabilitation of experimentation CEEMA Samanko</b>	Institute of Rural Economy
<b>Ke-Macina Rehabilitation Phase II</b>	Office of Niger
<b>Rehabilitation Boky Were irrigation area -Support Office of Niger</b>	Office of Niger
<b>Rehabilitation Missabougou pastoral site HIPC</b>	Governorate of Ségou Region
<b>Capacity-building sustainable agriculture in Cinzana commune</b>	Institute of Rural Economy
<b>Capacity building for the collection and loc. material environmental management</b>	National Directorate of Nature Conservation
<b>Strengthening means of plant protection / stored products</b>	DAF Department of Agriculture
<b>Renovation / Rehabilitation of Molodo Fish Culture Centre</b>	National Directorate of Fisheries
<b>African Network of Environmental Information / AEIN</b>	Perm. Tech. Secretariat Institutional Framework for Management of Environmental Questions
<b>Equip themselves by reforestation</b>	Ministry of Agriculture
<b>Equip themselves to overcome poverty</b>	Cabinet MDSSPA

## **Annex 2. Summary of main methodological concepts**

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The methodology proposes to capture all public expenditures that are undertaken in support of food and agriculture sector development. This includes expenditures from the national budget, either central or regional government, regardless of the ministry that implements the policy, and external aid, provided either through local governments or specific projects conducted by international organizations or NGOs.

The primary focus is on the food and agriculture sector; however, for some countries forestry and fisheries may be an important part of rural activity and are also included in the scope of the project.

We seek to capture all public expenditures in the rural areas, such as rural infrastructure, rural education and rural health, as they may also have an important role in agriculture's sector development, even if they are not specific to the sector.

Expenditure measures generate explicit or implicit monetary transfers to support individuals or groups. We consider all those expenditure measures that generate explicit or implicit monetary transfers in support of food and agriculture sector development. These measures are divided into two main categories of expenditures: agriculture-specific expenditures and agriculture-supportive expenditures. Agriculture-specific expenditures include those measures that generate monetary transfers to agricultural agents or sector as a whole. The agents, or the sector as a whole, must be the only, or the principal recipient of the transfers generated by the expenditure measure. Agriculture-supportive measures should include measures that are not strictly specific to agriculture sector, but that have a strong influence on agricultural sector development, such as investments in rural development. All the measures that comply with these criteria are considered, regardless of their nature, objectives or perceived economic impacts.

Further, general expenditure measures available throughout the entire economy are not considered, even if they generate monetary transfers to the agricultural sector.

Finally, the expenditure measures are considered and classified according to the way in which they are implemented and not on the basis of their objectives or economic impacts.

### ***Classification and disaggregation***

Many expenditures of greatest relevance to agricultural development, in terms of their ability to expand the production frontier, may not be specific to agriculture, but could fall into other categories. Moreover, support can be provided in several different ways. Support to agricultural producers may be provided via reduced input prices (e.g. a fertilizer subsidy), cost sharing for fixed capital (e.g. machinery), revenue foregone by the government (tax concession), reimbursement of taxes or charges or services in kind (e.g. delivery of extension services). Agriculture-specific support to the sector more generally may be provided via spending on agricultural education, research, marketing of agricultural goods, irrigation etc. Some policies, which benefit agriculture, may be even more general, such as expenditures on rural infrastructure, rural education or rural health. Although the latter are not sector-specific, they may be sector-supportive. In order to capture all public expenditures in support of the food and agriculture sector, the following breakdown is proposed.

1. A broad distinction between policies that are: agriculture-specific, agriculture-supportive and non-agricultural expenditures.
2. Within the agriculture-specific category, a distinction between support to producers and other agents in the value chain, and general sector support. The agents in the value chain include farmers (producers), input suppliers, processors, consumers, traders and transporters.

The detailed classification of support follows the OECD's principle of classifying policies according to their economic characteristics, i.e. the way they are implemented, which provides the basis for further policy analysis (OECD, 2008). The particular categories, however, should be designed to reflect the types of policies applied in African countries. Likewise, the categories proposed in the box below have been elaborated based on the experience of various agencies, including FAO (e.g. FAO, 2006), working on public expenditures in developing countries (for a comprehensive overview, see MAFAP, 2010c). Further, drawing on the OECD's experience, the classification proposed aims at distinguishing, to the extent possible, policies providing private goods as opposed to public goods, given their different economic effects.

#### **Proposed classification of public expenditures in support of the food and agriculture sector**

**I. Agriculture-specific policies** – monetary transfers that are specific to the agriculture sector, i.e. agriculture is the only, or major, beneficiary of a given expenditure measure

**I.1. Payments to the agents in the agrofood sector** – monetary transfers to the agents of agro-food sector **individually**

**I.1.1. Payments to producers** – monetary transfers to individual agricultural producers (farmers)

**A. Production subsidies based on outputs** – monetary transfers to agricultural producers that are based on current output of a specific agricultural commodity

**B. Input subsidies** – monetary transfers to agricultural producers that are based on the on-farm use of inputs:

- **variable inputs** (seeds, fertilizer, energy, credit, other) – monetary transfers reducing the on-farm cost of a specific variable input or a mix of variable inputs
- **capital** (machinery and equipment, on-farm irrigation, other basic on-farm infrastructure) – monetary transfers reducing the on-farm investment cost of farm buildings, equipment, plantations, irrigation, drainage and soil improvements
- **on-farm services** (pest and disease control/veterinary services, on-farm training, technical assistance, extension, etc., other) – monetary transfers reducing the cost of technical assistance and training provided to individual farmers.

**C. Income support** – monetary transfers to agricultural producers based on their level of income

**D. Other** – monetary transfers to agricultural producers individually for which there is insufficient information to allocate them into above listed categories

**I.1.2. Payments to consumers** – monetary transfers to final consumers of agricultural commodities individually in form of:

**E. food aid** – monetary transfers to final consumers reducing the cost of food

**F. cash transfers** – monetary transfers to final consumers to increase their food consumption expenditure

**G. school feeding programmes** – monetary transfers to final consumers providing free or

reduced-cost food in schools

**H. other** – monetary transfers to final consumers individually for which there is insufficient information to allocate them into above listed categories

**I.1.3. Payments to input suppliers** – monetary transfers to agricultural inputs suppliers individually

**I.1.4. Payments to processors** – monetary transfers to agricultural commodities processors individually

**I.1.5. Payments to traders** – monetary transfers to agricultural traders individually

**I.1.6. Payments to transporters** – monetary transfers to agricultural commodities transporters individually

**1.2. General sector support** – public expenditures generating monetary transfers to the agrofood sector agents **collectively**

**I. Agricultural research** – public expenditures financing research activities improving agricultural production

**J. Technical assistance** – public expenditures financing technical assistance agricultural sector agents collectively

**K. Training** – public expenditures financing agricultural training

**L. Extension/technology transfer** – public expenditures financing provision of extension services

**M. Inspection (veterinary/plant)** – public expenditures payments financing control of quality and safety of food, agricultural inputs and the environment

**N. Infrastructure (roads, non-farm irrigation infrastructure, other)** – public expenditures financing off-farm collective infrastructure

**O. Storage/public stockholding** – public expenditures financing public storage of agrofood products

**P. Marketing** – public expenditures financing assistance in marketing of agrofood products

**R. Other** – other transfers to the agrofood agents collectively for which there is insufficient information to allocate them into above listed categories

**II. Agriculture supportive policies** – public expenditures that are not specific to agriculture, but which have a strong influence on agricultural sector development

**S. Rural education** – public expenditures on education in rural areas

**T. Rural health** – public expenditures on health services in rural areas

**U. Rural infrastructure (rural roads, rural water, rural energy and other)** – public expenditures on rural infrastructure

**V. Other** – other public expenditures on rural areas benefiting agricultural sector development for which there is insufficient information to allocate them into above listed categories

For more details on MAFAP methodology on measurement of public expenditures in support of food and agriculture sector development, see [www.fao.org/mafap](http://www.fao.org/mafap).

### **Annex 3. Data and data sources for public expenditure analysis**

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The data required to conduct an in-depth public expenditure analysis under the MAFAP project include the following:

- ❖ At a detailed (individual expenditure) level for policies that generate transfers in support of the food and agriculture sector including:
  - detailed description of policy implementation criteria (for whom, how, for which commodity, under which conditions)
  - actual expenditure
  - source of funding (national and/or aid)
  - government level that implements the policy (national/subnational)
  
- ❖ At an aggregate level (i.e. for the whole sector/agencies involved as defined above)
  - Proportion of administrative costs in total expenditures
  - Recurrent versus development budget
  - Ratio of actual spending and budget allocations
  - Share of aid in budget allocations and share of aid in actual expenditure
  - Aid type – loans versus grants
  - Off-budget expenditures

The analysis covers expenditures in the Rural Development Sector (RDS) in Mali (see Section 2 for more details). The main government bodies in charge of the RDS are the Ministries of Agriculture; Energy and Water; Livestock and Fisheries; and Environment and Sanitation, and their agencies. However, several other ministries are also implementing projects and programmes in the rural sector, such as the Ministries of Economy and Finance; Territorial Administration and Local Communities; Social Development, Solidarity and Aged Persons; and Industry, Investments and Trade. All relevant expenditure measures from these ministries have been identified and included in the analysis.

The main source of information on the projects and programmes within the RDS sector was the CPS – the Planning and Statistics Cell of the Ministry of Agriculture. The CPS has provided detailed descriptions of all the projects and programmes in the sector, including their implementation criteria and main objectives.

The data on budget allocations and actual spending for the identified projects and programmes came from the DNDP (the National Planning and Development Directorate). They provided data for expenditures funded from national resources and from foreign aid.

Information on the expenditures at the aggregate level was obtained from the 2011 CPS Agriculture Public Expenditure Review (CPS, 2011).

When this draft was being prepared the data collection process was still ongoing. The disaggregated 2010 data were not yet available when the database for this draft was being prepared. As a consequence these data are provisional and, to a large extent, based on estimates. The final database will include the 2010 figures for the disaggregated data and updated figures for the aggregate level data; both will be provided by the DNDP.

Finally, some of the information was not available in the databases identified at the country level. In particular, we failed to identify a source of data that would allow us to estimate the proportion of loans and grants in the total aid. Neither could we collect the information on off-budget expenditures. External data sources such as the OECD Creditor Reporting System database can help to fill that gap. These sources of data are currently being explored.

All the data used in the analysis were collected by the Institut d'Economie Rurale, the main technical project partner in Mali, under the supervision of the MAFAP Secretariat.

## Annex 4. Data sources for the analysis of incentives and disincentives

<i>Concept</i>		<i>Description</i>	
		<i>Observed</i>	<i>Adjusted</i>
<b>Benchmark price</b>	<b>Rice</b>	Annual average CIF price calculated from Thailand and adjusted for freight charges and insurance of shipping to the port of Côte d'Ivoire. To convert the price FOB Thailand to CIF Abidjan, costs of transportation and transshipment are set at 95 to US\$/TON	N.A
	<b>Milk</b>	FOB annual average calculated from a weighted average unit value of imports in Côte d'Ivoire of milk and cream, concentrated and with added sugar, milk powder unsweetened > 1.5% fat. This value was converted to FCFA, and then, to be comparable to the local milk, the value was increased by 14 percent, which gave the frontier price	
	<b>Cotton</b>	FOB annual average price calculated from Cotlook A	
	<b>Cattle</b>	FOB annual average price calculated from the average unit value of an ox on the wholesale market in Abidjan in 2010, obtained from the site Esoko Côte d'Ivoire: <a href="http://www.esoko.com/?co = network # m = dashboard; sid = 119">http://www.esoko.com/?co = network # m = dashboard; sid = 119</a> . Prices for 2005 to 2009 were calculated by interpolation according to the inflation index.	
	<b>Groundnut</b>	FOB annual average price calculated from the unit value of groundnuts exported from Argentina and adjusted for international freight to the border Côte d'Ivoire - Mali	
	<b>Maize</b>	For import years (2005, 2007, 2008, 2010), the standard price is the average annual price on the wholesale market of Daloa in the production area north of the Côte d'Ivoire as detected by RESIMAO.  For export years (2006, 2009), the standard price is the average annual price on the wholesale markets in Thilène in Senegal and Kayako, Sierra Leone as detected by RESIMAO.	
	<b>Millet / sorghum</b>	<b>Millet:</b> Price FOB annual average calculated from the wholesale price of millet on the market in Niamey Katako for 2005 and 2010 (RESIMAO), and from the wholesale price of millet on the market Daloa (Côte d'Ivoire) from 2006 to 2009 (OMA).  <b>Sorghum:</b> Price FOB annual average calculated from the wholesale price of sorghum on the market in Abidjan from 2005 to 2010 (RESIMAO).	
<b>Prices at the wholesale level</b>	<b>Rice</b>	Annual average price observed as detected by the OMA	N.A

	<b>Milk</b>	Annual average price calculated from the wholesale price of fluid milk at the main dairy of the country, Mali Lait in Bamako, which uses both local and imported milk. Determined by the MAFAP survey.	
	<b>Cotton</b>	Annual average price calculated from the price of the sales value of cotton fibre from the CMDT plants. These values were adjusted for access costs from factory to port of embarkation.	
	<b>Cattle</b>	Annual average price calculated from the monthly wholesale price of the wholesale market Kati Draal, obtained from the Observatory of Agricultural Markets (OMA).	
	<b>Groundnut</b>	Annual average price calculated from the retail prices and adjusted for the value of the retailer's profit margin as detected by the OMA	
	<b>Maize</b>	Annual average price observed in the market of Bamako (2006), Koutiala (2009), or Sikasso (2005, 2007, 2008, 2010) as detected by the OMA	
	<b>Millet / sorghum</b>	<b>Millet:</b> Annual average price calculated from the wholesale price at Koutiala in 2005 and 2010 (OMA), and at Segou from 2006 to 2009 (OMA). <b>Sorghum:</b> Annual average price calculated from the wholesale price at Niaréla in Bamako from 2005 to 2010 (OMA).	
	<b>Rice</b>	Annual average price as noted by the CMDT.	
<b>Producer prices</b>	<b>Milk</b>	Annual average price paid to farmers in peri-urban Bamako by the Ouelessebouougou collection centre, determined by the MAFAP survey.	N.A
	<b>Cotton</b>	Annual average price as noted by the CMDT.	
	<b>Cattle</b>	Annual average price calculated from the monthly market price of Niore breeders in the Kayes Region, connected to the market Kati Draal as noted by the AMO.	
	<b>Groundnut</b>	Annual average price in the locality of Badingo which is in a major production region, as detected by the OMA	
	<b>Maize</b>	Annual average price observed in the town of Sikasso Loulouni province, the main production region, as detected by the AMO. The producer price is an average price over the year which is not weighted by quantities	
	<b>Millet / sorghum</b>	<b>Millet:</b> Annual average price calculated from the producer price at Siraguélé (Sikasso Region) for 2005 and 2010 (OMA), and at Monimpèbouougou (Ségou Region) for 2005 and 2010 <b>Sorghum:</b> Annual average price calculated from the producer price at Diola (Koulikoro Region) for 2005 to 2010	

		(OMA).	
<b>Exchange rate</b>	<b>Rice</b>	The nominal exchange rate CFAF / USD comes from the IMF database. The exchange rate used is an average of monthly data. This was preferred since the average of daily data was not available for all the years studied.	It was considered that the exchange rate CFAF / USD is overvalued by 20% since 2007. This hypothesis comes from Etta-Nkwenna, Jeonga et al, 2010, and the MAFAP team chose to apply this correction to 2007 .
	<b>Milk</b>		
	<b>Cotton</b>		
	<b>Livestock</b>	The exchange rate is not applied because the trade is mainly in the subregion and therefore in the same currency area of the CFA franc.	NA
	<b>Groundnut</b>		
<b>Maize</b>			
<b>Millet / sorghum</b>			
<b>Access costs wholesaler-border</b>	<b>Rice</b>	Access costs are the sum of their components: transportation, handling, storage and marketing margin from wholesaler to the border (point of competition).	
	<b>Milk</b>	The calculation of these access costs took into account the price of transportation, tolls, handling, transit fees, finance charges, the SDV estimates of trade margins (10% of cost) and illicit costs. These data come from the calculation structure of milk powder import from the European zone established by the National Trade and Competition Directorate (DNCC) in 2009, and surveys of truck carriers and truck transport unions.	To reflect the operation of a more efficient chain, access costs are adjusted to deduct illegal costs. The marketing margin is estimated at 5%.
	<b>Cotton</b>	Access costs are the sum of their components : transportation, handling, storage and marketing margin from the wholesaler to the border (point of competition).	Access costs are consistent with data from the World Bank report on transport in Africa.
	<b>Cattle</b>	Access costs are the sum of their components, as determined from exporters by MAFAP survey. These components are transportation costs, handling, toll tax on the livestock market in Abidjan, illegal deductions, and	To reflect the operation of a more efficient chain,

		the margin.	access costs are adjusted to deduct illegal costs. The marketing margin is estimated at 5%.
	<b>Groundnut</b>	Access costs are the sum of their components: transportation, handling, storage and marketing margin on the wholesale segment to point of competition. The marketing margin is estimated at 10%.	
	<b>Maize</b>	Access costs are the sum of their components: transportation, handling, storage and marketing margin on the wholesale segment to point of competition. The marketing margin is estimated at 10%.	To reflect the operation of a more efficient chain, access costs are adjusted to deduct illegal costs. The marketing margin is estimated at 5%.
	<b>Millet / sorghum</b>	The calculation of access costs took into account the price of transportation, tolls, handling, transit fees, inspection fees, tolls and weighing charges, estimated trade margins (10% of cost ) and illicit charges. These data come from MAFAP surveys (including illegal fees) and from the National Trade and Competition Directorate (DNCC) in 2009, as well as from surveys of carriers and truck transport unions.	
<b>Access costs producer-wholesaler</b>	<b>Rice</b>	Access costs are the sum of their components: transportation, handling, storage and marketing margin in the segment producer - wholesaler. The marketing margin is estimated at 10% .	
	<b>Milk</b>	Access costs are the sum of their components , as determined by the MAFAP survey at the Ouelessebougou collection centre: transport, handling, milk processing, and marketing margin of 10% of the cost. No illegal charges have been identified on the route.	To reflect the operation of a more efficient chain, the gross margin is estimated at 5 percent.
	<b>Cotton</b>	Access costs are the sum of their components: shipping, handling the collection, weighing, and storage and marketing margin in the segment producer - wholesaler. The data used are from the CMDT (Estur 2009) and further investigations by the MAFAP project team at the CMDT.	N.A
	<b>Cattle</b>	Access costs are the sum of their components , as determined by survey of the MAFAP project from farmers in Bamako. These components are transportation, margin of the trader, handling, the commission of the negotiator (determined from an SNV report), taxes on livestock markets and illegal deductions	To reflect the operation of a more efficient chain, the gross margin is estimated at 5 percent.
	<b>Groundnut</b>	Access costs are the sum of their components: transportation, handling, storage and marketing margin in the segment producer - wholesaler. The marketing margin is estimated at 10%.	
	<b>Maize</b>	Access costs are the sum of their components: transportation, handling, storage and marketing margin in the segment producer - wholesaler. The marketing margin is estimated at 10%.	

		<b>Millet / sorghum</b>	Access costs are the sum of their components, determined by the MAFAP survey and literature review: transport, handling, illegal fees, and gross margin. Illegal fees were determined by appraisal.	To reflect the operation of a chain more efficient, the gross margin is estimated at 5% and illicit charges are subtracted, except for the 15-km section Siraguélé-Koutiala.
<b>QT adjustment</b>	<b>Wholesaler-border</b>	<b>Rice</b>	N.A	N.A
		<b>Milk</b>	0.14 to convert the imported milk powder to liquid milk. Meyer and Duteurtre, 2001.	N.A
		<b>Cotton</b>	0.42 for the processing yield of seed cotton to cotton fibre  0.94 to reflect the fact that processing a kg of seed cotton processed produces fibre but also 600 grams of flour valued by the CMDT at the oil mills but not included in the remuneration of the producer.	
	<b>Wholes.-producer</b>	N.A	N.A	
<b>QL adjustment</b>	<b>Wholesaler-border</b>	<b>Rice</b>	To account for the preference for local rice coefficients corresponding to the local rice price ratio / imported rice is applied	N.A
	<b>Big - Prod</b>	N.A	N.A	N.A

## Annex 5. Prices used for the analysis of incentives and disincentives

Products	Source	Notes	2005	2006	2007	2008	2009	2010
<b>Rice</b>								
Benchmark price	International Grain Council	CIF Thailand rice RM40, converted to FCFA and adjusted with the shipping, insurance and freight at the port of Abidjan. Whole milk powder 26% fat	177.944	186.381	184.700	311.526	257.842	276.223
Wholesale price	OMA	Wholesale market Niaréla, Bamako. Local rice (any type)	267.000	262.000	263.000	327.000	326.000	293.000
Producer price	OMA	Wholesale market Niono, Segou Region. Local rice (any type).	236.000	223.000	223.000	291.000	277.000	242.000
<b>Cotton</b>								
Benchmark price		International Cotton Price Index "Cotlook" Middle East	606.577	647.474	607.853	719.936	674.466	846.450
Wholesale price			553.000	647.600	624.100	693.200	783.250	800 000
Producer price			160.000	165.000	160.000	200.000	170.000	185.000
<b>Cattle</b>								
Benchmark price	<a href="http://www.esoko.com">www.esoko.com</a>	Wholesale market in Abidjan, average live beef cattle	261.192	286.251	298.334	280.114	311.620	314.736
Wholesale price	OMA	Wholesale market Draal Kati, Koulikoro Region, average live cattle for slaughter	205.000	213.200	193.103	218.692	225.068	248.903
Producer price	OMA	Wholesale market Nioro, Kayes Region, average live cattle for slaughter	186.000	193.440	162.051	165.258	177.808	177.706
<b>Millet</b>								

Benchmark price	RESIMAO	Katoko wholesale market in Niamey, Niger (2005 and 2010), wholesale market in Daloa, Côte d'Ivoire (2006-2009)	187.000	217.114	220.588	225.000	379.000	205.000
Wholesale price	OMA	Koutiala, Sikasso Region (2005 and 2010), and Segou (2006-2009)	151.000	106.000	93.000	124.000	140.000	129.000
Producer price	OMA	Siraguélé, Sikasso Region (2005 and 2010), and Monimpébougou, Segou (2006-2009)	137.000	97.000	72.000	106.000	117.000	118.000
<b>Sorghum</b>								
Benchmark price	RESIMAO	Wholesale market at Adjamé in Abidjan	268.625	228.700	155.050	204.800	332.300	203.725
Wholesale price	OMA	Wholesale market at Niaréla in Bamako	159.000	150.000	110.000	128.000	153.000	136.000
Producer price	OMA	Dioila, Koulikoro	114.000	86.000	77.000	92.000	105.000	106.000
<b>Groundnut</b>								
Benchmark price	RESIMAO	Wholesale market Adjamé in Abidjan, peeled	383.000	458.000	423.000	424.000	373.000	443.000
Wholesale price	OMA	Niaréla wholesale market in Bamako, peeled	342.911	332.500	394.250	416.100	328.700	315.400
Producer price	OMA	Badingo, Kayes, shelled	263.000	238.000	301.000	328.000	219.000	226.665
<b>Cow's milk</b>								
Benchmark price	Indicative Oceania Trade Price	CIF New Zealand, converted to FCFA and adjusted with the shipping, insurance and freight at the port of Abidjan. Whole milk powder 26% fat	1,235,385	1,190,640	1,995,261	1,767,743	1,176,965	1,759,598
Wholesale price	MAFAP Survey	Milk-Mali industrial dairy, Bamako, liquid whole milk	400,000	400,000	400,000	400,000	400,000	400,000
Producer price	MAFAP Survey	Ouelessebougou collection center, Koulikoro Region, liquid whole milk	293.750	293.750	293.750	293.750	293.750	293.750
<b>Maize</b>								

Benchmark price	RESIMAO	Wholesale market Daloa, Côte d'Ivoire, 2005, 2007,2008,2010); Tilène wholesale market in Dakar, 2006; Katakou wholesale market in Niamey, 2009	83.000	149.000	75.639	77.000	216.600	110.000
Wholesale price	OMA	Wholesale market Sikasso (2005, 2007, 2008, 2010); wholesale market Niaréla in Bamako, 2006; wholesale market Koutiala, 2009	94.000	111.000	91.000	125.000	126.000	121.000
Producer price	OMA	Loulouni, Sikasso Region (2005 to 2008, 2010); Siraguélé, Sikasso Region (2009)	90.000	69.000	69.000	98.000	115.000	92.000

## Annex 6. Access costs for the analysis of incentives and disincentives

Products	Route taken	Component of the access cost	Source	2005	2006	2007	2008	2009	2010
		Total		36,028	-	35,292	35,428	-	38,728
<b>Maize</b>	Daloa-Sikasso	Transit charges at the border	MAFAP survey	1,607		1,607	1,607		1,607
		Inspection fee (Phytosanitary fee)	OMA	500		500	500		500
		Handling at the frontier and on the wholesale market	Owner	1,000		1,000	1,000		1,000
		Transport from the border to wholesaler	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009	22,100		22,100	22,100		22,100
		Estimated profit margin on the wholesale market (10%)	Owner	10,821		10,085	10,221		13,521
		Total		-	66,533	-	-	-	-
	Bamako - Dakar	Wholesale transit charges to the border	MAFAP survey		1,607				

		Inspection fee (Phytosanitary fee)	OMA		500				
		Handling on the frontier and on the wholesale market	Owner		1,000				
		Transportation from wholesaler to the border	Statistical Annual on Transport in Mali 2005 and 2009		45,750				
		Estimated profit margin on the wholesale market (10%)	Owner		15,986				
		Illegal levy wholesaler to frontier	MAFAP survey		1,690				
		Total		-	-	-	-	57,428	-
	Niamey-Koutiala	Wholesale transit charges at the border	MAFAP survey					1,607	
		Inspection fee (Phytosanitary fee)	OMA					500	
		SDV (toll and weighing charges) at the border to wholesaler	DNCC (calculation structure of retail prices of rice, 2009)					1,150	

		Handling at the frontier and on the wholesale market	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009					2,000	
		Transportation to wholesaler from the border	Owner					34,496	
		Estimated profit margin on the wholesale market (10%)	MAFAP survey					16,675	
		Illegal levy at the frontier	MAFAP survey					1,000	
		Total		11,040	-	22,000	27,000	-	29,000
	Loulouni-Sikasso	Transport producer to wholesaler	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009	2,040		2,040	2,040		2,040
		Handling producer to wholesaler	Report on fluctuation of rice and maize prices in 2010, OMA	8,500		8,500	8,500		8,500
		Estimated producer mark-up to				10,960	15,960		17,960
		Unlawful removal	Report on fluctuation of rice and maize prices in 2010, OMA	500		500	500		500

		Total						11,500	
	Siraguéle-Koutiala	Transport producer to wholesaler	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009					510	
		Handling producer to wholesaler	Report on fluctuation of rice and maize prices in 2010, OMA					2,000	
		Estimated producer mark-up						7,990	
		Unlawful removal	Report on fluctuation of rice and maize prices in 2010, OMA					500	
		Total		76,318	76,801	76,715	84,115	80,980	82,054
Rice	Abidjan-Bamako	Port of entry charges	DNCC (calculation structure of retail prices of rice, 2009	10,300	10,300	10,300	10,300	10,300	10,300
		Transit charges to the border	DNCC (calculation structure of retail prices of rice, 2009	10,000:	10,000:	10,000:	10,000:	10,000:	10,000:
		EMASE tax at the port	DNCC (calculation structure of retail prices of rice, 2009	500	500	500	500	500	500

		SDV (passage and weighing) at the border	DNCC (calculation structure of retail prices of rice, 2009	1,150	1,150	1,150	1,150	1,150	1,150
		Financial charges	DNCC (calculation structure of retail prices of rice, 2009	1,410	1,469	1,467	2,475	2,045	2,193
		Handling on the wholesale market	The author	2,000	2,000	2,000	2,000	2,000	2,000
		Transport from the border to wholesaler	MAFAP survey	37,517	37,517	37,517	37,517	37,517	37,517
		Illegal removal at the border	MAFAP survey	1,333	1,333	1,333	1,333	1,333	1,333
		Estimated profit margin on the wholesale market (5%)	DNCC (calculation structure of retail prices of rice, 2009	12,108	12,532	12,448	18,840	16,134	17,061
		Total		27,489	26,839	26,839	30,239	29,539	27,789
	Bamako-Niono	Transport producer to wholesaler	Statistical Annual on Transport in Mali 2005 and 2009	11,866	11,866	11,866	11,866	11,866	11,866
		Handling on the producer and wholesaler market	Report on fluctuation of rice and maize prices in 2010, OMA	2,600	2,600	2,600	2,600	2,600	2,600
		Estimated producer mark-up	Owner	12,523	11,873	11,873	15,273	14,573	12,823

		Unlawful removal	DNCC (calculation structure of retail prices of rice, 2009)	500	500	500	500	500	500
Millet	Segou-Daloa	Wholesale transit charges at the border	MAFAP survey	1,607	1,607	1,607	1,607	1,607	1,607
		Inspection fee (Phytosanitary fee)	OMA	500	500	500	500	500	500
		SDV (toll and weighing charges) at the frontier	DNCC (calculation structure of retail prices of rice, 2009)	1,150	1,000	1,000	1,000	1,000	1,150
		Handling at the border	DNCC (calculation structure of retail prices of rice, 2009)	2,000	2,000	2,000	2,000	2,000	2,000
		Transport to the border	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009 MAFAP survey	34,496	30,776	30,776	30,776	30,776	34,496
		Profit margin estimated at the border (10%)	Report on fluctuation of rice and maize prices in 2010, OMA	19,175.3	14,265	12,965	16,065	17,665	16,975.3
		Removal at the border	MAFAP survey	1,000	762	762	762	762	1,000

	Monimpébougou-Segou	Transport producer to wholesaler	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009	510	4,760	4,760	4,760	4,760	510
		Handling producer to wholesaler	Report on fluctuation of rice and maize prices in 2010, OMA	2,000	2,000	2,000	2,000	2,000	2,000
		Estimated producer mark-up	MAFAP survey	10,990	1,740	13,740	10,740	15,740	7,990
		Unlawful removal	Report on fluctuation of rice and maize prices in 2010, OMA	500	500	500	500	500	500
Cattle	Kati (Bamako)-Abidjan	Taxes at the railway yard in Abidjan	MAFAP survey	150	150	150	150	150	150
		Toll	DNCC (calculation structure of retail prices of rice, 2009)	1,150	1,150	1,150	1,150	1,150	1,150
		Unloading at the border	MAFAP survey	242	242	242	242	242	242
		Transport to the border	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009	19,975	19,975	19,975	19,975	19,975	19,975
		Wholesale trade margin	MAFAP survey	25,000	25,000	25,000	25,000	25,000	25,000

		Commission agent's charge on the Abidjan market	MAFAP survey	7,500	7,500	7,500	7,500	7,500	7,500
		Costs of shepherd conveyor and feed at the border	MAFAP survey	1,312	1,312	1,312	1,312	1,312	1,312
		Incidentals	MAFAP survey	2,125	2,125	2,125	2,125	2,125	2,125
		Governorate laissez-passer	MAFAP survey	227.	227.	227.	227.	227.	227.
	Nioro-Kati	Producer margin	MAFAP survey			10,856	33,238	27,064	51,001
		Transport producer to wholesaler	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009	10,606	10,606	10,606	10,606	10,606	10,606
		Handling producer to wholesaler	MAFAP survey	303	303	303	303	303	303
		Commission agent's charge	MAFAP survey	7,500	7,500	7,500	7,500	7,500	7,500
		Costs of shepherd conveyor and feed	MAFAP survey	1,312	1,312	1,312	1,312	1,312	1,312
		Market entry and exit tax per head of cattle	MAFAP survey	111	111	111	111	111	111
		Unlawful removal	MAFAP survey	364	364	364	364	364	364

Groundnut	Bamako-Abidjan	Transit charges at the border	MAFAP survey	1,607	1,607	1,607	1,607	1,607	1,607
		Inspection fee (Phytosanitary fee)	OMA	500	500	500	500	500	500
		SDV (toll and weighing charges) at the border	DNCC (calculation structure of retail prices of rice, 2009)	1,150	1,150	1,150	1,150	1,150	1,150
		Handling at the border	Report on fluctuation of rice and maize prices in 2010, OMA	1,000	1,000	1,000	1,000	1,000	1,000
		Transport to the border	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009 MAFAP survey	37,517	37,517	37,517	37,517	37,517	37,517
		Estimated profit margin on the wholesale market (5%)	MAFAP survey	19,301	18,780	21,868	22,960	18,590	17,925
		Unlawful removal	MAFAP survey	1,333	1,333	1,333	1,333	1,333	1,333
	Badingo-Bamako	Transport producer to wholesaler	Google Maps, Statistical Annual on Transport in Mali 2005 and 2009 MAFAP survey	7,854	7,854	7,854	7,854	7,854	7,854

		Handling producer to wholesaler	Report on fluctuation of rice and maize prices in 2010, OMA	18,000	18,000	18,000	18,000	18,000	18,000
		Estimated producer mark-up	Owner	53,557	68,146	66,896	61,746	83,346	62,381
		Unlawful removal	Report on fluctuation of rice and maize prices in 2010, OMA	500	500	500	500	500	500

## Annex 7. The political economy of the MAFAP project in Mali

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### Introduction

The analysis of the context of Mali in terms of performance and development provides important benchmarks for understanding the framework of implementation of the MAFAP project, but it may be supplemented by a more detailed analysis in terms of political economy. Political economy seeks "to determine how political constraints –and the heterogeneity of interests– may explain differences between actual policy choices and optimal policies, and their economic consequences<sup>15</sup>". The primary objective of the MAFAP project is to provide new information – or in a new form – to decision-makers to improve dialogue on national agricultural policies and ultimately, decision-making. It is therefore important to understand how these public policies are defined and implemented, both formally through a clear institutional framework (*politeia* in Greek), but also through power relations and interests between different actors that make up the agricultural and rural sector (*politikè*). Even without going into detail concerning the complexity of all the political relations that affect the determination of agricultural policy in Mali, it is nevertheless possible to look at how the MAFAP project fits into this framework. Indeed, the methodology (see below) requires the choice of a specific policy issue or topic of study. The MAFAP project focuses on various interest and power relations and by extension, the analysis of their introduction and acceptability can shed light on the political economy of the agricultural and rural sector in Mali.

In more concrete terms, we may ask the following questions:

- What is the context of the Agricultural and Rural Sector (ARS) in Mali?
- What is the institutional framework of the ARS in Mali, and how is a project of agricultural and rural development such as the MAFAP project introduced into it?
- Who are the main actors and what part do they play in the formulation and implementation of agricultural and rural development projects such as the MAFAP project?
- Which goals characterize each of these actors?
- Apart from their formal institutional positions, which actors have both the power and the ability to impose their interests to others?
- What are the links between the different actors?
- How is the MAFAP project perceived and what does it represent for each of these actors?
- In the light of the responses to the previous questions, what are the opportunities and threats, internal and external, for the MAFAP project and its chances of success in the short, medium and long term in Mali?

The answers to these questions are not simple and require very thorough field research and analysis involving different disciplines: political science, sociology, political economy.... Political economy is

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<sup>15</sup> Drazen A., 2000, *Political economy in Macroeconomics*, [http://www.vwl.tuwien.ac.at/hanappi/Lehre/pee\\_draz.pdf](http://www.vwl.tuwien.ac.at/hanappi/Lehre/pee_draz.pdf), page accessed 18.08.2011

not an exact science, and results should be interpreted with caution. They are presented here as a basis for reflection on ownership of the project, which is the principal aspect for its success.

### *Methodology*

The methodology of economics used to identify and analyse players in the agricultural and rural sector in Mali will be that of *Policy Intelligence and Preparedness* (PIP), developed by FAO. This methodology provides insight into issues of political economy that exist around the formulation and implementation of a policy, and still more of a project such as the MAFAP project. It lies in the wake of the work by DFID (Drivers of Change) or the Swedish cooperation (Power Analysis), and was developed to improve the effectiveness of policy assistance provided by FAO. The analysis aims at understanding:

i. *What* – the research question and by extension the inclusion of this issue in the general socio-economic context of the country. This includes an analysis of the political environment and the identification of “windows of opportunity” (Kingdon, 1984), defined as the opportunity to pinpoint the problems covered by the policy.

ii. *Who* – the analysis of key actors in the implementation of the policy or policy issue studied; their power, their interest in its success or failure, and the relationship between them.

iii. *How* and *When* – all the elements of the process including an analysis of interactions between the actors on the subject: places, methods and times of external inputs that promote the adoption of a policy decision. This area naturally leads to recommendations for capacity building and a plan of action to ensure the success of the assistance policy.

These questions can be answered by the application of both quantitative and qualitative tools; they call for reflection on the type of information to be sought, how it should be organized, and visualized once it is obtained.

The quantitative aspect of the methodology is intended to facilitate the visualization of data that might otherwise appear vague. The quantitative translation of what are sometimes qualitative considerations can highlight trends to better show such realities as the power of actors, their interests in the success of the project, and the network of actors around the project.

### *Analysis of opportunities and threats for the MAFAP project in Mali*

Using the concept of the “window of political opportunity” (*policy window*) helps to develop major opportunities for the project. This concept, taken from Kingdon, is defined as a **predictable event** (election), or **unpredictable** (media event) that stimulates the government to take a problem into account. Generally, the window of political opportunity is created by the confluence between the recognition of a problem by public authorities, the will to implement a public policy to solve it, and the possibility of implementing this policy, depending on organized political forces, public opinion, executive power and collective negotiation skills.

Looking specifically at the MAFAP project – centred on the establishment of a national and continental quantitative monitoring of agricultural and food policies –the following questions pose themselves: What problems does the project propose to solve? What policy approach will best solve these problems? Are there public policies being implemented or being drafted, that the MAFAP

project may help to clarify, and which can already be identified? What are the threats that could thwart the project?

The window of political opportunity of the project is described in Table 38, which starts from a reflection on the key issues addressed by the project.

Table 38. The window of opportunity of the MAFAP project

<b>Main issues addressed by the MAFAP project</b>	<b>Policies, projects, programmes seeking to address problems or benefiting from an answer to these problems</b>
<b>National agricultural policies formulated and implemented without solid knowledge of their effect / impact on streams</b>	<ul style="list-style-type: none"> <li>• The new PDA and its framework for implementing the PNISA.</li> <li>• The PAPAM</li> <li>• The PCDA (will soon be closed)</li> <li>• Other projects to support agricultural sectors</li> </ul>
<b>National public investment and development assistance for agriculture provided without real knowledge of the gaps between market development and public expenditure</b>	<ul style="list-style-type: none"> <li>• Rice Initiative extended to other grains and commodities</li> <li>• PAPAM</li> <li>• Other large projects and domestic investment</li> </ul>
<b>Other problems considered by the MAFAP project</b>	
<b>Low domestic and foreign private investment in part due to a lack of reliable information on agricultural markets and growth sectors in Mali</b>	<ul style="list-style-type: none"> <li>• Work by the Investment Promotion Agency (API)</li> <li>• PAPAM</li> <li>• World Bank projects on investment indicators</li> </ul>
<b>Limited advocacy capacity of producer organizations, mainly due to lack of reliable data establishing the link between government policies and the condition of the producers</b>	<ul style="list-style-type: none"> <li>• Projects to support the advocacy of POs</li> <li>• Project to support POs of the BM Gates Foundation</li> <li>• Bilateral cooperation agencies (Switzerland, Canada ...).</li> </ul>

Identifying threats to the MAFAP project in Mali is the mirror image of the logic adopted for the identification of opportunities, starting from project objectives. The aim is to arrive at answers to the following problems

<b>Overall objectives set by the project</b>	<b>Identified threats</b>
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<p><b>National agricultural policies efficient and informed, with a thorough and continuous analysis of their impact on the key agricultural sectors in Mali. This involves the production and analysis of accurate statistical data on the structure of agricultural sectors, particularly in terms of actual access cost, margins, and prices at the wholesaler and producer levels, combined with a detailed review of agricultural policies and public expenditure adopted in recent years. A proper political dialogue is also needed so that the technical results are considered by the political forces in place.</b></p>	<ul style="list-style-type: none"> <li>• Difficult access to sufficiently reliable and accurate sources of statistics to produce quality results that are scientifically and politically credible.</li> <li>• Difficulty of establishing links between agricultural policies and quantitative results.</li> <li>• Challenges of building MAFAP into a national institution and sustaining its analysis capacity beyond the first country report.</li> <li>• Lack of consideration of MAFAP results by policy-makers in their arbitration dealing with pressure groups and technical aspects: difficulty of the political dialogue.</li> <li>• Mismatch, including temporal, between the MAFAP results and the political agenda often dictated by urgency.</li> </ul>
<p><b>Further improving the more strategic policy assistance and investment for the agricultural and rural sector (ARS) for the donors.</b></p> <p><b>More optimal allocation of public expenditure supporting agriculture. This also involves an analysis of agricultural sectors to determine investment needs, and a rigorous and exhaustive analysis and classification of public expenditure on the ARS.</b></p>	<ul style="list-style-type: none"> <li>• Difficult access to sources comprehensive and reliable enough to produce quality results that are both scientifically and politically credible.</li> <li>• Difficulty of convincing donors of the validity of the results of MAFAP, and of systematizing their use.</li> <li>• Difficulties of convincing policy-makers to recognize the lack of optimal allocation of resources, with differences between political and economic optimum.</li> </ul>
<p><b>Possible secondary goals</b></p>	
<p><b>Provision of reliable data providing information on the structure of growth areas (especially access costs), and public investment spending on the rural and agricultural sector in Mali.</b></p>	<ul style="list-style-type: none"> <li>• Difficulty of promoting the MAFAP project and its results in the private sector.</li> </ul>
<p><b>Provision of reliable data providing information on incentives and disincentives for producers based on government policies, constituting an advocacy tool.</b></p>	<ul style="list-style-type: none"> <li>• Difficulty of promoting MAFAP and its results in the voluntary sector.</li> <li>• Difficulty of disseminating the results.</li> </ul>

### *Analysis of key players*

The concept of the window of political opportunity recalls the importance of assessing "the possibility of implementing a policy based on organized political forces, public opinion, executive capacity and collective bargaining". This indicates a crucial component of the analysis of political economy: the actors. Forces can be identified by defining the real power and interest of key players revolving around the implementation of the MAFAP project, and on this basis the chances of

implementing the project and making it sustainable, can be estimated. Therefore, the position of players in relation to the MAFAP project should be identified in order to ensure its success and the achievement of its established objectives.

Two methods were used to identify the different key players around the project: by stakeholder involvement with the project, and by forums where relationships in the sector are forged.

### *1. Actors by role in the project*

Several actors have been identified through their involvement in the design and implementation of the project. Four role categories are used:

- i. Financing the project: Bill & Melinda Gates Foundation, FAO, USAID ...
- ii. Implementing or technically supporting the project: FAO, OECD, World Bank, IFPRI internationally and IER-ECOFIL, CPS/SDR ... nationally
- iii. Involved in the project, other than through the implementation: World Bank, CountrySTAT, Ministry of Agriculture, professional and farmers' organizations ...
- iv. Involved in the project but absent from the process: some bilateral development agencies, banks, companies, some producer organizations.

### *2. Actors by forums*

Forums can be defined as places or spaces where there are debates about the various dimensions of the MAFAP project. It is in forums that representations of the project are developed. Therefore, many actors have been included in more than one forum. Four forums have been identified:

- i. Science Forum: IER-ECOFIL, CILSS, FAO, World Bank ...
- ii. Policy Forum: Ministries, UEMOA, ECOWAS, technical and financial partners (TFPs), umbrella producer organizations (CNOP, AOPP) ...
- iii. Companies Forum: Investment Promotion Agency, Banks, the CMDT ...
- iv. Community forum: PTFs, producer organizations ....

### *Analysis of power and interests of actors*

The quantification of the power and interests of the large number of actors identified provides a visual representation of the key stakeholders for the success of the Mali MAFAP project. The power of the players was evaluated based on their ability to contribute to the success of the project objectives, while their interest was quantified according to their potential willingness to see the project objectives to fruition. Weighted scores have been awarded in two categories according to different criteria<sup>16</sup>. The 21 most important actors have been evaluated. Certain conclusions can be drawn from the representation obtained (see Figure 53) for the four groups identified:

1. FAO Bamako, the Ministry of Agriculture and the World Bank appear to be the players with the greatest potential to contribute to project success MAFAP. This is due to their significant budgetary resources, but also their network, their ability to influence policy, their permanence and ability to cover the whole territory. However, the interest of the World Bank in the success of the project is relatively small, while the Ministry of Agriculture's interest rating is diminished by uncertainty over its political will to use the results of the MAFAP project. FAO Bamako supported by FAO Rome is logically the actor most interested in the project's success.
2. A second group of actors still has a relatively strong potential to contribute to the success of the project. Among these actors, RAI-ECOFIL dominates by its strong interest in the project's success, as well as CPS, MEF and DNPDP. The power of the CPS, IER, DNPDP and MEP is due to their direct contribution to the MAFAP project. As for MA, the interest of MEP is average due to uncertainty about its interest in the results of the project or in their usefulness. It is therefore essential to convince the ministries to become more closely involved, also in the future use of the project results. The bilateral cooperation agencies are in the low range of the second group, with an average interest. Finally, the CMDT has a low interest in the success of the MAFAP project, especially since it already has many data on the cotton sector that the project itself does not have, and because some findings of the project might not be fully favourable for it.
3. A third group is characterized by stakeholders with medium to high interest in the project's success, despite their low ability to contribute to it: OMA, a market information system, which has no impact on the success of the project except by its willingness to cooperate or not, while CountrySTAT, a statistical information project, has neither the power nor a network in policy decisions that would make it particularly influential. The CNOP, AOPP, API, APCAM and CSA are another subgroup, characterized by little power and an average interest in the project's success. However, their average interest shows that the project must take account of these structures: four of them are in fact doors to private forums and associations covered by the secondary objectives of the project, while the CSA is an important political actor in the field of food security covered by FAO. Revealing underlying interests for these players may induce them to move toward ownership of the project, which would be favourable for its sustainability as well as its institutionalization.

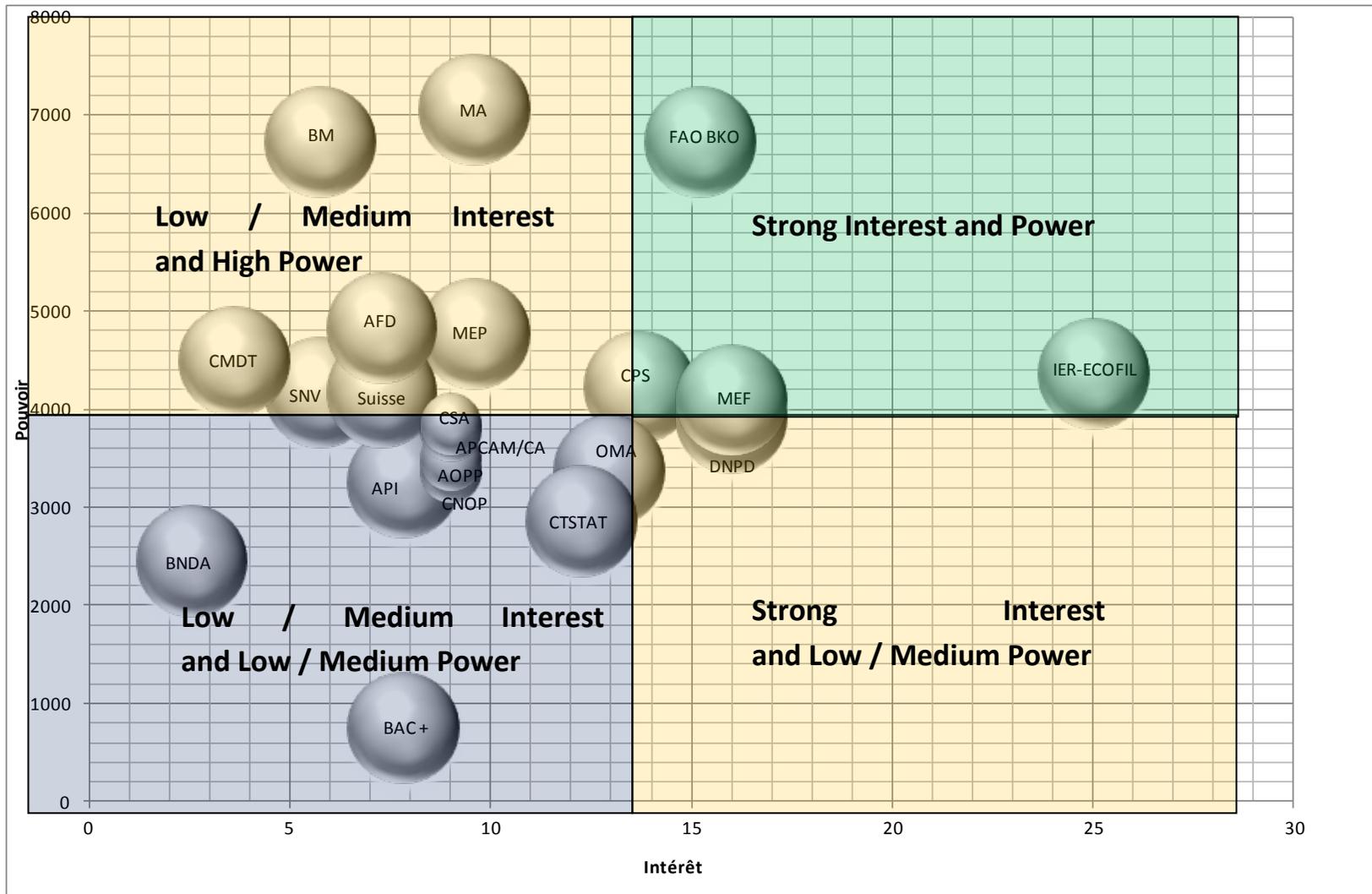
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<sup>16</sup> The detailed methodology is available in the specific technical note, and a simplified version is available in annex to this report.

4. The last group consists of BNDA and the consultancy firm BAC +. Both would be able to exert only limited power towards the success of the project; however, BAC + has a real interest in its success, unlike BNDA which has no particular interest.

A major search effort for additional data would be needed to improve the detail of this analysis, classifying more actors and refining the ratings. It would be interesting and useful, for example, to include in the analysis the African Development Bank (AfDB), which seems a priori to be a natural partner of the MAFAP project, but is completely absent.

Figure 53. Visual representation of key stakeholders around the MAFAP project by power and interest



### *Links among actors*

The network between the various stakeholders identified around the MAFAP project has been converted into an image (Figure 54) using the social network analysis software Cuttlefish<sup>17</sup>. Some preliminary conclusions from the network analysis are presented below.

#### **1. The core of the network**

There is a core group of actors, represented in Figure 54 in the large blue circle. In the centre is the Ministry of Agriculture (MA), which has the strongest links with all stakeholders. It is the central institution organizing public actions on agriculture and food. The core group also includes the Ministry of Livestock and Fisheries, which plays an equally important role in the definition of a part of national policies devoted to agriculture. It is interesting that the CPS and IER-ECOFIL, identified by the MAFAP project as partners in technical and political dialogue, are at the centre of the network. It should be noted that the network representation does not take power into account: the IER is an actor well connected in the agricultural and rural sector, but with limited power. The World Bank is the only non-state actor in the core group. It is well connected to the central institutions due to its significant influence in defining the Malian Government policies. Surprisingly, this does not seem to be the case for FAO.

#### **2. Science / agricultural and food policy forum**

The yellow circle shows the group comprising FAO (Bamako) with CountrySTAT (set up by FAO, but strongly anchored nationally), CPS and the OMA. These actors are connected to the scientific (technical) and political forums: the CPS by political dialogue; FAO by technical and policy assistance and a secondary role as donor, providing technical support and advice for CountrySTAT; OMA by its connection with its ministry.

#### **3. The private forum**

The orange semicircle on the left shows the trio AFD, - BNDA and CMDT; their proximity is due to the links between them, in particular in the cotton sector. The proximity of the CMDT to FAO or OMA has no special meaning.

#### **4. The community forum**

The pink ellipse at the top shows a consistent group of players, comprising the Swiss and Dutch bilateral cooperation agencies and the CNOP and AOPP. This is due to the work of this bilateral cooperation in support of producer organizations, evidenced by strong ties, and the clear institutional link between the AOPP and CNOP, the first being part of the second.

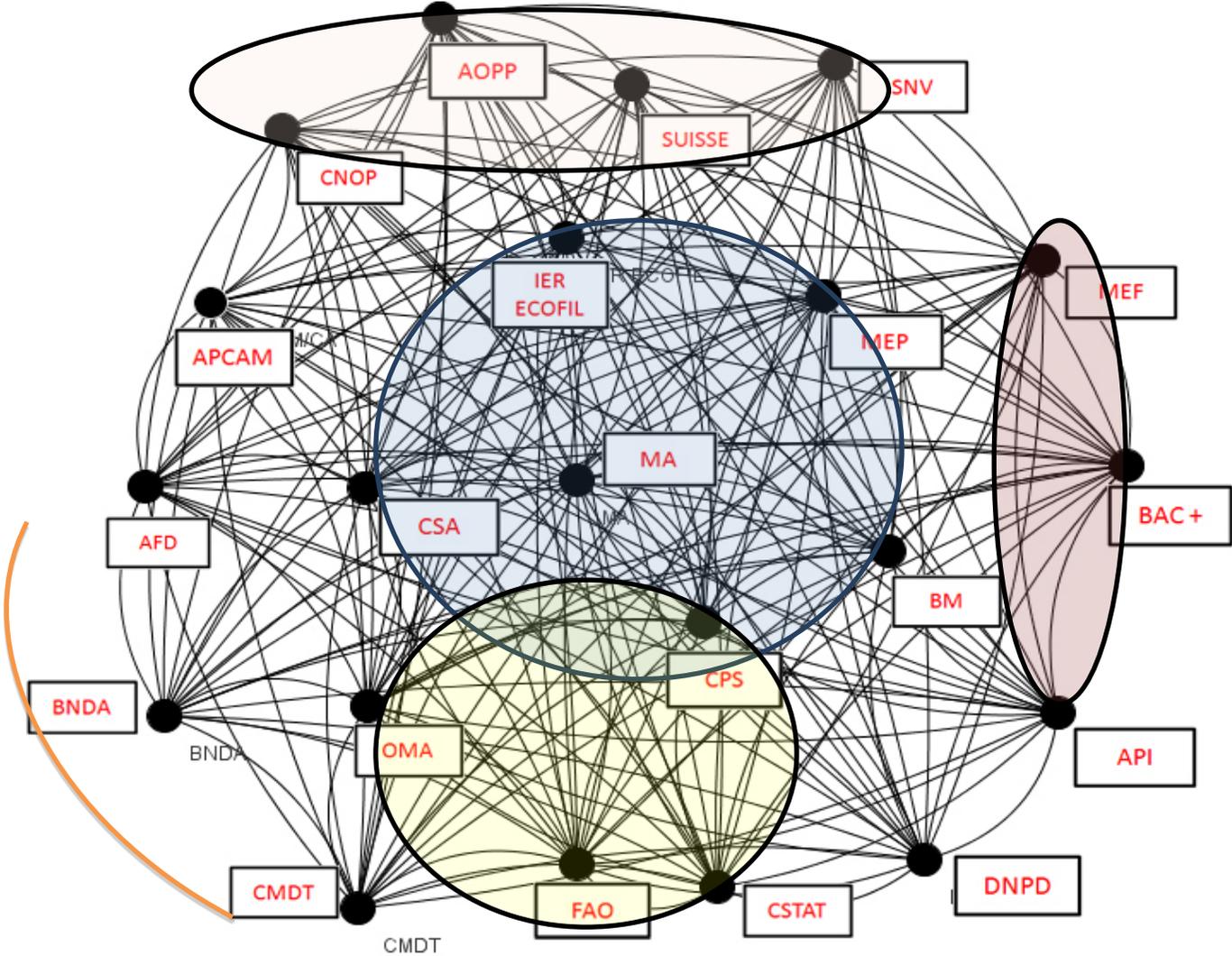
#### **5. Marginalized actors**

Finally, the ellipse to the right includes marginalized actors: API, isolated in its general support role to the private sector; BAC +, a small consulting firm; and the MEF, which does not have a central role in the ARS. The position of these actors on the margin is consistent with their activities.

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<sup>17</sup> Cuttlefish is rights-free software, available free at: <http://cuttlefish.sourceforge.net/>

Figure 54 Visual representation of the intensity of links between actors working on the MAFAP project



### **Conclusion and Recommendations**

The results presented are the first sketches towards a more comprehensive and documented study. While they do not yet fully elucidate the environment which influences the formulation and implementation of agricultural and food policies, the work has led to some conclusions and recommendations about the conditions necessary for the success of the MAFAP project. The study also identified approaches for analysis and reflection on the general political environment of the ARS in Mali.

1. The analysis of threats and opportunities pointed to three activities essential for project success:
  - seize the window of opportunity opened by the new Agricultural Development Policy;
  - seek to capitalize on the work done in other projects related to the economy of sectors: Programme Competitiveness and Agricultural Diversification (PCDA) or PAPAM for example;
  - Also strive to achieve secondary goals that will increase project visibility and its overall success: making contact with projects of the non-profit and private sectors is important in this effort.

Regarding threats, every effort must be made to make the project sustainable and ensure its ownership by national policy makers. This involves producing results that are credible and accepted in the scientific and political forums as well as in the private and non-profit ones, and identifying good resource persons (champions) to communicate these results.

2. At this stage of the project, IER-ECOFIL is clearly the main resource actor of the project, being heavily involved in its implementation. It appears necessary to capitalize on the significant power of some actors, primarily the Ministry of Agriculture, to enable them to identify their perceived and underlying interests for the MAFAP project. Greater involvement of FAO-Bamako, in both technical and institutional aspects and as the link with FAO-Rome, should be sought immediately. It appears equally important to involve the World Bank more in-depth. The CPS is not involved enough in the project, despite its status as a national partner for political dialogue. Other actors that appear should not be ignored; the DNP, MEF, the Swiss cooperation agency, for example.
3. The project is fairly well grounded in what appears to be the heart of the agricultural and rural sector in Mali, through its association with IER ECOFIL and CPS/SDR. However, it should strengthen links with the Ministry of Agriculture, and better involve the Office of Food Security; the Ministry of Livestock and Fisheries (merged with the Ministry of Agriculture in 2012), especially because the project is studying the livestock-meat sector; the Ministry of Economy and Finance (MEF); and the World Bank. Stakeholder group forums and business associations were also identified, and it may be useful to approach them in order to extend the project's influence in them; contacts have been established already with producer organizations and certain bilateral cooperation agencies.









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