

# **MONITORING AFRICAN FOOD AND AGRICULTURAL POLICIES (MAFAP)**

**A review of relevant policy analysis work in  
Africa**

**Main document**

***Draft***

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# EXECUTIVE SUMMARY

## Background and objectives of the review

The **Monitoring African Food and Agricultural Policies (MAFAP)** project intends to help African policymakers and other stakeholders make policies and investments fully supportive of agricultural development and poverty reduction, the sustainable use of natural resources and enhanced food security. For this, it aims at progressively establishing a food and agricultural policy monitoring system that will generate evidence-based information to support policy dialogue and investment identification at national, regional and international levels.

To develop the MAFAP methodology, it was decided to first conduct a review of past policy analysis work conducted in Africa - and more specifically in countries where MAFAP is expected to work- that is of relevance to the two domains where the project will be conducting original analyses: (i) monitoring of incentives and disincentives facing agents in the food and agricultural sector; and (ii) monitoring of public expenditures in support of the food and agriculture sector. MAFAP will be relying on available secondary information for its third domain, monitoring performance and development indicators.

The specific purpose of the review is to:

- inform of MAFAP-relevant analytical work already conducted in Africa;
- identify the key players and sources of expertise and experience;
- make an inventory of analytical methods and tools utilized and data available;
- pinpoint the main issues of methodological, as well as operational, nature (e.g. existing capacity and data availability);
- draw implications for the analytical methodology that will be adopted by the MAFAP project in terms of how to build upon and add value to the work already conducted
- learn lessons from past relevant analytical work to guide the development of the methodology MAFAP will be using.

## Main results of the review and implications

A review of past policy trends in Africa demonstrates that since the independence period, African governments have attempted a broad range of strategies to deal with poverty and food security, resorting to the array of policy instruments available, and sometimes changing radically their orientation pushed either by local conditions and/or external pressure. This illustrates the importance for governments to assess how changes in policy affect incentives provided to producers, the state and use of public finance, as well as sectoral performance, and assess whether this change of orientation is sustainable.

### *Existing capacities and implications*

An assessment of countries' capacity to monitor food and agricultural policies – here understood to include: (i) conviction by relevant stakeholders of the need for monitoring of policies; (ii) the institutional set-up required for sustainable policy monitoring; and (iii) available individual expertise – suggests that to achieve sustainably its objective, the MAFAP project will need to:

- keep national senior policy makers continuously informed on MAFAP work through regular briefing and consultations, so as to nurture their support

- establish and maintain close linkages between national organizations or experts with the required analytical skills and those who are involved in decision making, to ensure that results from analyses will inform the decision process
- strengthen national capacities, through training and mentoring which associates experienced national or international experts with national MAFAP team members
- collaborate closely with the AU Commission and the NEPAD Planning and Cooperation Agency to ensure integration of MAFAP activities at the regional level
- work closely with Regional Economic Communities and explore with them how results achieved in MAFAP countries can be useful for the regional policy dialogue.

### *Methodology*

The review draws from the experience from other work conducted earlier in order to identify main methodological challenges and collect hints to address them. It also identifies implications for the project.

- On the methodological aspects of the analysis of incentives and disincentives:
  - There is considerable experience with estimating quantitatively the incentives and disincentives to agricultural production resulting from policies that affect directly agricultural input and output markets, trade and exchange rate policies, policies supporting or penalizing non-agricultural sectors compared to the agriculture sector, public expenditure/budgetary payments on food and agriculture (e.g. direct payments, subsidized public goods and services), intersectoral linkages and feedback from changes in incomes and relative prices (in a general equilibrium framework only). All these approaches have much in common from a theoretical point of view as well as in terms of the kind of data that is required to conduct the analysis.
  - Indicators, particularly those resulting from partial equilibrium approaches, need to be interpreted with care and there is no single indicator able to measure all policy effects. MAFAP will therefore need to use a series of well selected and interpreted indicators. One important criterion to select these indicators will also be their suitability for long term monitoring, Africa and potentially worldwide coverage, comparability across a large number of countries, and the possibility of them being computed at country level, to ensure national ownership.
  - Existing methods and resulting indicators have failed to solve major problems or limitations resulting from some assumptions that are highly questionable particularly in the African context, such as competitive markets, perfect information, and generally high degree of substitutability between commodities. Specific measurement problems such as benefits or costs to producers that might arise from informal transaction costs, externalities, market failures, any other behind-the-border policies and underinvestment in public goods are not integrated in most analyses reviewed. Besides Africa is characterised by extreme heterogeneity of products.
  - The review suggests that the analysis of the extent to which incentives are actually aligned with country overall development objectives is generally missing. This is largely because the analyses conducted have focussed on estimating distortions between observed prices and efficiency prices, with the attention being on the objective of economic efficiency rather than other objectives such as poverty reduction, food security or sustainable management of natural resources. Within this approach, any policy-induced price wedge or “distortion”

carries a negative connotation, a persistent theme in the New Conventional Wisdom which stipulates the need to “eliminate distortions” in the process of agricultural development.

- There is therefore ample scope for MAFAP to monitor incentives/disincentives in the view of development and sector objectives fixed by governments, and in a context where markets are often highly imperfect, at national level but also, for some commodities, at international level, and may result in an income distribution that is not “acceptable” given national development objectives. Moreover, it can be argued that direct government intervention to overcome market failure is needed at the early stages of agricultural development when conditions are less favourable. In such a “second best” context, policy interventions and their subsequent incidence in terms of price wedges created may be positive and even “optimal”. The challenge is then to find sets policy instruments which minimize some of the highly undesirable consequences of intervention, rather than to regard these consequences as sufficient reasons in themselves for there any form of price intervention.
  - For MAFAP, adopting a partial equilibrium framework will likely imply some bias in the estimates of incentives or disincentives as intersectoral linkages and feedbacks will not be considered. However, adopting a general equilibrium framework which would take these feedbacks into account, would probably be too demanding for MAFAP, with the resources and timeframe within which it operates.
  - The documents reviewed, particularly those dealing with qualitative and value chains analyses, suggest that for a better understanding of the various sources of incentives and disincentives, it is essential to comprehend the policy context and the interests, roles and influence of multiple actors by conducting political economy analyses. From that perspective MAFAP may want to adopt some of the tools and approaches used by FAO to conduct its policy intelligence work.
  - Little was found in the papers on incentives/disincentives reviewed about a major area of concern of the MAFAP project, namely the distribution of incentives and disincentives among different types of agents although the kind of analysis conducted in the value chain approach potentially generates the information required for this purpose. This suggests that MAFAP will need to combine the “classical” analysis of incentives/disincentives with the analysis of value chains in order to be able to conduct sufficiently disaggregated analyses that will generate information relevant for policy and investment decision making.
  - The regional dimensions of agricultural and food policies have not been adequately analyzed in the work reviewed and MAFAP could bring a significant contribution in proposing new ways to look at the potentially huge regional spillover benefits that could be obtained through regional collaboration. Regional collaboration has indeed in several instances proven to have positive effects on the effectiveness and efficiency of policy instruments.
  - Because of their recognized importance, factors that are not necessarily directly related to policies should be considered when assessing sectoral performances. They should be reflected in MAFAP reports and studies, although these elements may not be always directly analyzed by the project.
- On the methodological aspects of the analysis of public expenditure:

- There is an increasing body of Agricultural Public Expenditure Reviews (AgPERs), project or programme evaluations that analyse expenditure and aid flows in the food and agriculture sector, but there is still room for expanding the scope and extensiveness of available analyses so as to further be able to relate them to existing and future policy and strategies. The World Bank plays a key role in this domain.
- There is however considerable variation in the scope of the existing studies and the types of expenditures considered and there is no common classification of expenditure used in the existing studies despite the recommendation by NEPAD to adopt the COFOG classification. However, the most commonly found categories that are also MAFAP-relevant include: agricultural research, extension, training, pest and disease control, veterinary services, infrastructure, and marketing. As existing work provides relevant but not fully satisfactory information on spending and payments in the food and agriculture sector, MAFAP will need to generate a *sui generis* classification and analytical approach. This will allow conducting a full economic analysis of expenditure, making distinction among expenditure on public and private goods, expenditures in favour of equity and to reduce poverty and other economic characteristics which would allow an improved understanding of the incidence of given policy measures and their potential effects.
- Because of the important share constituted by foreign aid in public expenditure of African countries, it will be important for MAFAP to explore the external aid – public expenditure linkages. This creates problem as an important share of foreign aid does not transit through government channels and is directly spend “off-budget”. OECD’s *Creditor Reporting System*, CRS, and Aid Data are valuable sources for basic data required for analyzing aid flows.
- There is considerable potential in MAFAP’s objective to combine the analysis of spending in the agricultural sector (national expenditures and aid) and measurement of incentives or disincentives resulting from policies or due to the so called “market development gap”. It will go a long way in measuring the overall support or penalisation from one nation to its farmers.
- On the project management aspects:
  - Time management. Data gathering, processing and analysis is likely to take more time than initially expected. Institutionalization of the analyses conducted in MAFAP, through intensive capacity development activities, is also likely to necessitate a long period of time. All together the MAFAP project time table needs to reflect these. Similarly clear MAFAP milestones need to be identified and monitored.
  - There is a need to provide a clear, workable, agreed and shared methodology to all analysts involved before starting work at country level, while also ensuring a certain degree of flexibility to account for country specificities and needs. In all cases, experience from other similar projects suggests that deviations to the agreed methodology would need to be documented and approved ex-ante by the MAFAP project management.
  - Ensuring consistency of the work performed across countries. The role of the MAFAP support team that will be constituted for overseeing country level work and ensuring consistency across countries is an essential ingredient for success.



# CHAPTER 1: INTRODUCTION AND BACKGROUND

## 1.1 PURPOSE OF THE REVIEW

The **Monitoring African Food and Agricultural Policies (MAFAP)** project intends to help African policymakers and other stakeholders make policies and investments fully supportive of agricultural development, the sustainable use of natural resources and enhanced food security. For this, it aims at progressively establishing a food and agricultural policy monitoring system that will generate evidence-based information to support policy dialogue and investment identification at national, regional and international levels. In doing this, the project will contribute to the implementation of the Comprehensive Africa Agriculture Development Programme (CAADP) of the New Partnership for Africa's Development (NEPAD). The project is led by FAO and is supported financially by the Bill and Melinda Gates Foundation. It is being implemented in cooperation with several partners, in particular the OECD, the NEPAD Planning and Coordination Agency (NPCA), the African Union Commission (AUC), the Regional Strategic Analysis and Knowledge Support System (ReSAKSS) and the World Bank, among others.

In order to achieve their objectives in the food and agriculture sector, governments can use two main categories of instruments to influence change - policies and supporting public expenditure – the MAFAP project assumes that there are three main monitoring domains:

- monitoring of incentives and disincentives resulting from policies in place
- monitoring of public expenditures, including national budget and aid flows
- monitoring of performance and development indicators.

*Monitoring of incentives and disincentives facing agents in the food and agricultural sector.* The main aim here is to discern what factors affect the signals producers and consumers are receiving from the market. These signals may result from explicit government policies in the form of market interventions. They may also be modified by excessive costs incurred in getting goods to markets because of poor infrastructure or obsolete processing technology, and by malfunctioning markets resulting, for example, from monopolistic (or monopsonistic) practices and rent capturing that may be observed along the value chain.

*Monitoring of public expenditures in support of the food and agriculture sector.* The purpose is to keep track of the level and composition of expenditures and aid flows in support of food and agriculture sector development, and to establish a link between aid allocations and national expenditures. Indicators should make it possible to discern whether resources are being allocated to priority areas, whether they address investment needs, and whether they are consistent with the system of incentives that is in place. They should also reveal whether aid allocations are coherent with national priorities.

*Monitoring performance and development indicators.* While the two first domains will require original analytical work that will be conducted in the framework of the MAFAP project so as to generate new information, this third domain rests exclusively on data that are readily available from secondary sources. Performance and development indicators, within MAFAP, are designed to provide quantitative information on the setting within which incentives/disincentives and public expenditure are being analyzed. This setting is characterized by: (i) performance of the economy in terms of sectoral achievements, eradication of poverty and inequalities, realization of food security; health and human development; respect for the environment and the sustainable use of natural resources; and (ii)

drivers that should be instrumental to explain indicators computed by MAFAP and economic performance. Both these types of indicators will be used to underpin the country reports that will be produced with MAFAP support, and will help to compare the national settings across countries.

Ensuring that the selected indicators are “monitorable” means relying on information that is readily available or using information that can be collected regularly from existing data collection systems. This implies establishing a national monitoring capacity which requires conviction of decision makers, proper institutional set-up and an appropriate blend of individual expertise.

To develop the methodology to be adopted by the MAFAP project, it was decided to begin first by reviewing past policy analysis work conducted in Africa - and more specifically in countries where MAFAP is expected to work- that is of relevance to the three above domains. The purpose of the review is to:

- inform of MAFAP-relevant analytical work already conducted in Africa;
- identify the key players and sources of expertise and experience;
- make an inventory of analytical methods and tools utilized and data available;
- pinpoint the main issues of methodological, as well as operational, nature (e.g. existing capacity and data availability);
- draw implications for the analytical methodology that will be adopted by the MAFAP project in terms of how to build upon and add value to the work already conducted;
- learn lessons from past relevant analytical work to guide the development and subsequent adjustments of the methodology MAFAP will be using.

This **Main Document** constitutes the synthesis of this review. It aims at providing indications of what seems feasible in the domains of work of the MAFAP project. It does not seek to present the MAFAP approach or methodology – this will be the object of a separate document – but assembles information that will be central to designing a “feasible” methodology for MAFAP on the ground of what has already been done in the past, the relevant context, existing data, capacities and potential partners with whom the project should work. This document will also serve as a reference at the time of future evaluation of the MAFAP project

As the analyses conducted by MAFAP will be original only for the two first domains of the project (monitoring of incentives and disincentives resulting from policies in place; and monitoring of public expenditures, including national budget and aid flows), the review focuses on these two domains. Some information on the availability of data for development and performance indicators is made available in the **Annex Document**.

The structure of this **main document** reflects these dimensions of the review and its aim. Following the introduction, the next section of **Chapter 1** provides a rapid background overview of past trends in food and agricultural policies and illustrates changes in policy orientation observed since the independence era. Section 3 of this Chapter then focuses on the analysis of existing capacities for policy monitoring and conducting relevant analytical work in countries potentially covered by the MAFAP project. **Chapter 2** reviews various attempts at analyzing incentives and disincentives in the food and agriculture sector and examines experience accumulated in the analysis of value chains. **Chapter 3** draws lessons from analyses conducted of public expenditures and aid flows in the areas of food and agriculture.

## **1.2 PAST TRENDS OF FOOD AND AGRICULTURAL POLICIES**

The food and agricultural policies adopted by governments in Africa since Independence have gone through a number of phases characterized by changing objectives, intensity of state intervention in the economy, levels of protection or taxation in agriculture, and amount of public spending and aid to agriculture. There is no systematic tracking of these changes and their implications for agricultural development and food security, a gap which MAFAP intends to fill, at least in part. However, the literature abounds in indications on policy trends and paradigms pursued.

In brief, it is possible to make a distinction between four main historic periods in Sub-Saharan Africa:

- From Independence through the 1970s
- From the late 1970s throughout the mid-1990s
- From the mid-1990s to the Food crisis (2006-2008)
- During and after the Food crisis.

### **1.2.1 From Independence through the 1970s**

Following Africa's Independence period and throughout the 1970s, African governments played a proactive role in agriculture through dedicated policies and institutional arrangements. In order to fight poverty and hunger, many countries adopted a pan-seasonal and pan-territorial pricing system which was aimed at creating a stable environment for farmers and ensuring an equitable pricing system. They also resorted to direct price support and universal input subsidies. The state played a dominant – and sometimes almost exclusive – role in agriculture marketing through dedicated parastatals (state enterprises). Parastatals were given the responsibility of organizing food markets and fixing nationwide prices for farmers and consumers, attempting to resolve the issue of providing stable and remunerative prices to producers while procuring cheap food to urban consumers. This function was performed for food crops as well as for export crops.

Parastatals were assigned a gamut of functions, including farming, processing, production of farm inputs (e.g. improved seeds and livestock), and provision of services (extension, research and finance) (Smith 1998). They also managed export crop production by farmers by providing inputs on credit, fixing crop prices, and monopolizing the processing and export of the crop. State enterprises also monopolized the import and distribution of fertilizer and other inputs which were often supplied to farmers at subsidized prices and on credit (Kherallah, Delgado et al. 2000)(Kherallah, Delgado et al. 2000)(Kherallah, Delgado et al. 2000). The logic behind the development of parastatals was to provide public goods but also private goods and services where the private sector activities were fragmented or non-existent and where it seemed possible to benefit from economies of scale.

From a political perspective, this period corresponded to socialist-oriented governments that wanted to control means of production, rather than leave them to foreigners or local ethnic minorities, and haste industrialization. With time, parastatals became a source of political patronage through the recruitment of redundant labour, sometimes even fictitious, (Lindauer and Nunberg 1994)(and a means to extract surplus from the agriculture sector (Smith 1995).

The performance of parastatals varied largely but generally worsened with time, as their extractive function became more important and, for those dealing with food marketing, the numbers of urban consumers increased rapidly. The prices farmers received were generally low because of taxation or high costs incurred by state enterprises, or both. In many countries, export crop prices averaged less

than half the world market rate. Anderson estimates that the rate of taxation in the 16 African countries analyzed rose sharply from 10 percent at the time of independence during the 60s and 70s (Anderson and Masters 2009)

After an initial period of growth (1961-1971), total food production per caput fell throughout the 1970s while cereal imports, which had stagnated during the 60s, increased throughout the 70s.

The pressures to reform started in the early 1970s and intensified in the 1980s due to the bad economic performance in general and in the agriculture sector in particular – which grew at a diminishing rate -, Inflation, stagnant agricultural growth, heavy budget deficit resulting in part from increased financial needs of marketing parastatals created much pressure to reform. In some countries, inputs and food subsidies constituted a major share of the government budget while investment in agricultural and rural infrastructure was low. Economies subject to strict state intervention (control regimes) were found to achieve a median growth rate that lay nearly two percentage points below that achieved by economies governed by policies judged “syndrome free” (Ndulu, O’Connell et al. 2008) .

Political leaders were forced to seek funding from the World Bank and the International Monetary Fund (IMF) and accept the affiliated policy conditions. The agricultural reforms introduced by the World Bank and IMF were designed to reduce or eliminate the bias against agriculture and open the sector to market forces. It was expected that improving price incentives for farmers and reducing government intervention in the agricultural sector would be enough to generate a supply response and allow well-functioning markets to emerge quickly.

### **1.2.2 From Late 1970s throughout the Mid-1990s: the Stabilization and Structural Adjustment Period**

Policy conditions attached to funding provided by international financing institutions opened a period of deep policy reform that led to the liberalization of agricultural markets, withdrawal of the state from direct production, dismantling of parastatals and improvement of the countries’ budget deficit situation. These led to diminished state intervention in agricultural services, in particular agricultural extension and research. Reforms in the agricultural sector included the removal of traditional instruments such as price controls, input subsidies, food subsidies, deregulation and closure of state-owned enterprises that monopolized agricultural trade. Changes in the foreign exchange market sought to provide greater incentives for exports. Foreign aid to agriculture and rural development, mainly through grants and concessional loans, increased regularly throughout the 80s to reach a maximum in 1989 (close to USD 5 billion). After 1991, public expenditure for agriculture progressively decreased and efforts were also made to create non-price incentives, for example through the reform of land-tenure policies, and by supporting the development of the private sector.

After almost two decades, the general consensus was that the reform programs did not meet expectations. While the rate of taxation of agriculture, according to Anderson, was back to less than 10 percent, the annual growth rate per caput of agricultural value-added was negative throughout the 1980s and 1990s. The same was true for gross domestic product (GDP) per caput. In general, sub-Saharan Africa’s economic performance has trailed that of other regions. The reform experience has varied widely across countries and crop sub-sectors, with clear progress in some areas and mixed results in others. Most reforms were only partially implemented and policy reversal was common. Once implemented, however, reforms generally increased competition and reduced marketing margins, benefiting both producers and consumers who participated in the market. Reforms contributed to boost export crop production and cereal production almost doubled during the late 80s before stagnating at around 60 million tons during the first half of the 90s, largely because yields did not improve. Expansion of private trade was constrained by lack of access to credit, uncertainty about the government’s commitment to reform, and high transaction costs. Input use, especially on non-traded food crops such as maize and cassava, declined in some cases because of the elimination of

input subsidies and devaluation of the local currency. Reforms have had mixed impacts on poverty, increasing the income of small export growers but hurting farmers living in remote areas. Contrary to conventional wisdom, however, evidence indicates that since the 1980s rural poverty has declined in many African countries (Kherallah, Delgado et al. 2000; Kherallah, Delgado et al. 2002) .

### **1.2.3 From Mid-1990s to the Food Crisis: Rethinking Traditional Instruments**

Starting from the mid-1990s, there has been a renewed interest both by governments and donors in traditional instruments such as input subsidies and state intervention in agricultural credit. State investments in infrastructure and other public goods, such as research and development or extension services have also been in the spotlight of numerous studies.

The renewed recognition of the important role agriculture has in reducing poverty and achieving food security has led to commitments by countries and by donors to allocate more resources to agricultural and rural development and food security. Declarations made during the two World Food Summits (FAO 1996; FAO 2002) and the Maputo Declaration (2004) are official manifestations of this commitment. Increased awareness of the potential complementarity between the promotion of agricultural development opportunities and the provision of rural safety nets, as embodied in the “twin-track approach” adopted by FAO’s member countries, has also changed the way to look at how public resources can be utilized to reduce poverty and improve food security. However, this period has also been characterized by an increasing share of aid allocated to financing emergency activities, a consequence of a growth in the number and intensity of human-made emergencies which reached a peak in the early 90’s, just after the fall of the Berlin wall (USAID 2002). Instead, the proportion of development funding diminished. Official development assistance was halved between 1990 and 2000 and the countries most affected by this reduction were those where food security and poverty were most acute. Public expenditure for agriculture also continued to decrease, falling below 5 percent of total public expenditure (Kherallah, Delgado et al. 2002).

The new interest in input subsidies has been triggered by the belief by many governments as well as the development assistance community of fertilizer subsidies as the only way to jump-start African agriculture and deliver concrete food security and income benefits to the rural poor, and the complementary emergence of innovative subsidy delivery systems and instruments (Dorward, Chirwa et al. 2008). Instead of traditional universal subsidies, contemporary programmes have used “smart subsidies” (contributing to the development of viable and competitive private sector-led input markets; targeted at the poor; introduced for a limited period, with a clear schedule for phasing out). The case of Malawi, among others, has demonstrated that when used as part of a broader strategy to address the binding constraints on supply and demand, well-designed input subsidies can help to overcome temporary market failures under favourable agro-climatic conditions. The debate is still on the trade-off between using additional resources earmarked for agriculture and food security for smart subsidies or using them for investments, and which of these two approaches is the most efficient in a context of budgetary stringency and of limited aid, despite wide recognition that spending in public goods is an effective way to reduce poverty and support agricultural production.

Regarding agricultural credit, experts now favour increased agricultural lending, but on a sustainable, market-oriented basis. The new, “indirect” approach to agricultural finance focuses on creating an enabling environment and strengthening institutional capacity in a way that induces the entry and evolution of competitive providers of rural financial services, instead of directly providing financial services. The expected result should be a stable yet dynamic financial sector, capable of operating without subsidy, and freed of the sustainability limitations that plagued earlier rural finance efforts (De Gorter and Swinnen 2002; Swinnen 2009)

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<sup>1</sup> USAID, Foreign Aid in the National Interest, 2002 , <http://www.usaid.gov/fani/cover.htm>

Other efforts to promote agricultural and rural development have included improvement of information flows (on markets and technologies), development of rural institutions (in particular producer organizations), improvement of biosecurity, and capacity development.

This period saw an average annual increase of agricultural GDP by 3.9 percent: a considerable improvement on the rhythm observed during the early 90s but imports of cereals continued to increase regularly. Performance of agriculture was affected by conflicts in Central Africa and by drought in Southern Africa. Traditional exports – apart from tea – have followed an unfavourable evolution, while exports of fruits and vegetables continue to grow. The number of undernourished in the region continued to increase although diminishing in other parts of the world.

#### **1.2.4 During and in the Wake of the Food Crisis (2006-2008)**

Responses of less industrialized countries to the food security crisis appear to have been in contrast with the policy orientation most had pursued over the last decades, characterized by an increased reliance on the market – both domestic and international – on the grounds that such a reliance would increase efficiency of resources allocation, and by taking world prices as reference for measuring economic efficiency (Demeke, Pangrazio et al. 2009). The crisis for many countries illustrated some of the drawbacks of this approach. Countries have seen their food import bills surge, while their purchasing capacity decreased, particularly for those countries that also had to face higher energy import prices. The number of undernourished has increased as a result of the crisis.

In reaction to this situation, several countries have decided to change their approach, questioning *de facto* the paradigm that had guided their policies and strategies during the last decades by:

- trying to isolate domestic prices from world prices (exporting countries);
- moving from a food security based strategy to a food self sufficiency based strategy;
- trying to shunt “normal” international trade processes either by acquiring land abroad for securing food and fodder procurement or by trying to engage in trade agreements at the regional level;
- showing distrust towards the private sector (price control, anti-hoarding laws, government intervention in output and input markets).

In Africa, trade oriented decisions have generally consisted in tariff reduction and trade prohibition. Export bans were used extensively, along with import restriction reduction and lowering of import tariffs (Table 1).

Table 1: Trade Oriented Policy Measures Taken in Reaction to the Food Crisis

Imports		Exports			Other trade and trade-related measures	Macroeconomic policies	
Tariff <i>28 countries</i>		Other measures that affect imports <i>7 countries</i>	Export prohibition <i>9 countries</i>	Other export restrictions <i>1 country</i>	Other measures that affect exports <i>1 country</i>	Government procurement <i>1 country</i>	Agriculture expenditure <i>2 countries</i>
Burkina Faso Burundi Cameroon Cape Verde Congo Cote d'Ivoire DRC Djibouti Egypt Gabon Gambia Ghana Guinea-Bissau Guinea Kenya	Liberia Libya Madagascar Mauritania Morocco Niger Nigeria Rwanda Senegal Sierra Leone Tanzania Zambia Zimbabwe	Ethiopia Ghana Kenya Madagascar Mozambique Sierra Leone Zambia	Cameroon Djibouti Ethiopia Guinea Kenya Liberia Malawi Tanzania Zambia	Malawi	Guinea-Bissau	Nigeria	Algeria Kenya

Policy actions taken in favour of consumers have included suspension or reduction of domestic taxes on food items, distribution of food aid in kind, food subsidies, reestablishment of price fixing, stabilization and control schemes, and increase of salaries of civil servants (**Table 2**).

**Table 2: Measures Taken in Favour of Consumers in Reaction to the Food Crisis**

Tax		Social			Market		Disposable Income
<b>Introduce/Remove/ Reduce VAT 22 countries</b>	<b>Reduction of the ICT 6 countries</b>	<b>Food Aid in kind 12 countries</b>	<b>Food subsidies 10 countries</b>	<b>Untargeted subsidies (fuel, power, water) 11 countries</b>	<b>Set up strategic stockpile 10 countries</b>	<b>Price control 18 countries</b>	<b>Increase salaries of civil servants 6 countries</b>
Angola Burkina Faso Cameroon CAR Comoros Congo Cote d'Ivoire Djibouti Egypt Ethiopia Gabon Gambia Guinea Bissau Kenya Lesotho Madagascar Mauritania Mozambique Namibia Senegal Sudan Tanzania	Comoros Djibouti Kenya Liberia Rwanda Uganda	Angola Benin Ethiopia Libya Guinea Madagascar Bissau Mauritania Morocco Niger Conakry Mali Mauritania Senegal Tanzania Niger Senegal Zambia Zimbabwe	Egypt Ethiopia Libya Madagascar Mauritania Morocco Niger Pakistan Senegal Tanzania	Cameroon Djibouti Egypt Ghana Madagascar Mauritania Mozambique Sao Tome/Pr. Senegal Togo Tanzania	Algeria Angola Benin Ghana Kenya Libya Malawi Mauritania Senegal Zambia	Benin Burkina Faso Cameroon Cape Verde Cote d'Ivoire DRC Djibouti Gabon Kenya Liberia Malawi Morocco Namibia Nigeria Senegal Togo Zambia Zimbabwe	Cameroon Egypt Ethiopia Libya Mozambique Niger

In support of producers, measures have included programmes to facilitate availability and access to fertilizers and seeds (including input subsidies) and finance, financial instruments for risk management, funding of productive infrastructure, intervention on agricultural markets (public purchase and ban of private purchase of commodities, and value chain development (**Table 3**).



**Table 3: Measures Taken in Favour of Producers in Reaction to the Food Crisis**

<b>Production Support Measures</b>				<b>Market</b>
<b>Agricultural input measures</b> <i>30 countries</i>	<b>Finance and Credit facilities</b> <i>17 countries</i>	<b>Productive assets and infrastructure</b> <i>16 countries</i>	<b>Government Intervention</b> <i>11 countries</i>	<b>Market</b>
Algeria Angola Benin Botswana Burkina Faso CAR Chad DRC Egypt Ethiopia Gambia Ghana Guinea Bissau Guinea Conakry Kenya Liberia	Madagascar Malawi Mali Morocco Mozambique Namibia Nigeria Rwanda Sao Tome/Pr. Senegal Sierra Leone Togo Tunisia Tanzania Zambia	Algeria Angola Botswana Burundi Cameroon DRC Djibouti Ethiopia Gambia Guinea Bissau Kenya Mauritania Mozambique Nigeria Sierra Leone South Africa Tunisia	Algeria Benin DRC Egypt Gambia Guinea Conakry Kenya Liberia Malawi Mali Nigeria Senegal Togo Tunisia Uganda Zambia	Algeria Burkina Faso Ethiopia Malawi Mali Nigeria Senegal Togo Tunisia Uganda Zambia

### 1.2.5 Monitoring future policy changes

The above rapid review of past policy trends demonstrates that since the independence period, African governments have attempted a broad range of strategies to deal with poverty and food security, resorting to the array of policy instruments available, and sometimes changing radically their orientation pushed either by local conditions and/or external pressure. In the immediate, it will be important for governments to determine how their eventual change of strategy and accompanying measures during the crisis have affected incentives provided to producers, the state and use of public finance, as well as sectoral performance, and assess whether this change of orientation is sustainable.

From a global and regional perspective, it will be important to examine whether the strategic changes observed in many countries at the time of the crisis will be maintained or reversed. Furthermore, it will be necessary to understand how the political economy setting, where urban pressure groups are likely to gain in power and influence with urbanization and foreign investment is attracted by cheap agricultural produce, will affect the channelling of financial resources to rural areas and incentives to agricultural producers. How will future policies affect the achievement of CAADP objectives, and, more broadly, the MDGs 1 on food security and poverty and 7 on natural resources management?

Despite progress accomplished over the last five decades, achievements have been below expectations and potential. Poverty and food security remain pervasive in sub-Saharan Africa and have even increased over the past years as a result of conflicts or external crises. Many of the key constraints that existed in the past have not been resolved by successive strategies, and awareness of others has increased. Agricultural productivity is lower than in other regions of the world. Access to services and markets is limited for the majority of the rural population. Markets work more imperfectly than on other continents, thus reducing the potential impact of any policy decision by governments and impinging on competitiveness of value chains. The private sector remains embryonic in many countries and limited to certain subsectors, while public institutions are weak for lack of human and

financial resources or inadequate policy or legal frameworks. Many of the key export commodities on which countries rely on to earn foreign exchange are being channelled through global value chains on which neither government nor the international community has much leverage to influence (Josling 2009). Awareness of the need to manage natural resources responsibly and deal with externalities created by agriculture and agriculture-based value chains has grown, but is reflected so far only imperfectly in government policies.

This review learns from recent and ongoing policy analysis work conducted in Africa to determine how these issues have been dealt with by others authors and to improve the proposed MAFAP methodology through experiences.

Establishing a systematic and sustainable basis for monitoring future evolutions in the food and agriculture sector, while factoring key issues such as progress made toward food security, poverty eradication, sustainable use of natural resources and gender equity into the analysis, is the central objective of the MAFAP project.

### **1.3. EXISTING CAPACITY TO MONITOR FOOD AND AGRICULTURAL POLICIES**

Capacity to monitor food and agricultural policies is here understood to include: (i) conviction by relevant stakeholders that there is a need for a sound evidence-based monitoring of food and agricultural policies whose results feed into policy dialogue; (ii) a proper institutional set-up for a sustainable monitoring of food and agricultural policies and policy dialogue; and (iii) available individual expertise to conduct the analyses and present results in a way that is useful for policy dialogue.

The assessment made here is based on the results of the scoping phase of the MAFAP project, early contacts with countries where MAFAP will be implemented in the current phase of the project, and an analysis of the modalities of activities reviewed in next sections of this report.

#### **1.3.1 Conviction by Relevant Stakeholders**

The report of the scoping phase of the MAFAP project concluded that:

- African governments and their international development partners (donors, NGOs) all concur on the need to re-invigorate food, rural and agricultural sectors in Africa; and the recent crisis of the world food economy has made such this need even more urgent, and that it will require enhanced investments and policy reforms.
- African governments recognize the need to develop on regular basis adequate information to analyze the performance of policies affecting the food and agricultural sectors.
- There also seems to be full support for the creation of a forum through which participating countries would be able to engage in a peer review of national policy indicators and related analyses, and benefit from the related policy dialogue.
- Contacts with development partners of Africa, including the Secretariat of the Development Assistance Committee, the African Partnership Forum Support Unit, the Club du Sahel and Paris21, all based in OECD, and with the Donors' Platform on Rural Development, confirmed a further source of interest in the proposed project.

Early contacts of the MAFAP Secretariat with participating countries demonstrated that, at national level within governments, it is the coordinating ministries (Finance, Planning, Prime Minister's Office

or equivalent) that are the most supportive to the establishment of a policy monitoring system. Measures of incentives provided by the policies in place, tracking public expenditure in various line ministries dealing with food and agriculture and performance indicators constitute for them central inputs into their coordination work. In Kenya, for example, the analysis of public expenditure was felt by the Ministry of Planning and Vision 2030 (2009) to be a potentially important source of information for deciding budget allocation among the ten line ministries involved in the food and agriculture sector.

In some countries, sectoral ministries felt that policy monitoring may expose some of the weaknesses in the policies they adopt and that it may lead to some critical assessment of their performance. In most countries however, they did see the interest of what MAFAP is proposing in strengthening their dialogue with other ministries and improving the management of the food and agriculture sector. MAFAP was felt to be complementary to monitoring and evaluation efforts undertaken in the framework of sector programmes and in which policy monitoring was generally not included.

Farmer organizations and private sector also welcomed the idea of policy monitoring as they expected that this would give them fact-based arguments in their negotiations with government.

Development partners at country level demonstrated high interest and support, particularly where sector programmes were being prepared or implemented, and in the case countries benefited from budget support.

### **1.3.2 Institutional Set-up**

For monitoring of food and agricultural policies to be performed sustainably in a given country and its results to feed into the policy decision making process, there is a need for a proper institutional set-up. There are three aspects to this set-up.

First, there is a need to institutionalize the analytical capacity required for policy monitoring. This can be done either in an analytical department within government (e.g. the Direction générale pour promotion de l'économie rurale – DGPER - in Burkina Faso), policy centres linked to government (generally the ministry of finance or planning like the Economic Policy Research Centre – EPRC - in Uganda or the Centre d'analyse des politiques économiques et sociales in Burkina Faso) or independent research centres (e.g. the Research of Poverty Alleviation – REPOA – in Tanzania, the Institut d'économie rurale in Mali or the Kenya Agricultural Research Institute), academic institutions (e.g. University of Makerere in Uganda or the Economics Department of the University of Dar es Salaam in Tanzania). As can be seen from the examples given, in most African countries, and certainly in those visited so far by the MAFAP team, there are usually several such organizations where some capacity exists, although it may not cover all analytical aspects envisaged under MAFAP.

Second, there is a need to institutionalize the monitoring function within government. In this case too, in most countries, there are one or more set-ups that can host the monitoring function. This can be either at the level of sectoral ministries (e.g. monitoring unit within the ministry of agriculture) or at the level of coordinating units (e.g. the Agriculture Sector Coordination Unit in Kenya), or even at the level of coordinating ministries (e.g. the Department of Policy Coordination of the Prime Minister's Office in Kenya).

Third, for the information generated by a policy monitoring system to feed into the national policy decision making process, as stipulated in the MAFAP project objective, there is a need for a mechanism that brings the results of monitoring work to the arena where policy decisions are taken. This means creating a strong link between those conducting the analytical work, those who are the custodian of the monitoring function and those who manage the policy process. This link must guarantee close relations of trust between those who conduct analytical work on policies and those who make policy decisions.

This type of mechanism usually does not exist formally. In Burkina Faso, for example, the link between quantitative policy analysis conducted by the DGPER and the policy process managed by the Secrétariat permanent du Comité de coordination des politiques sectorielles agricoles (SP/CPSA) is at best tenuous. An essential question, from the standpoint of the DGPER, is to reinforce the link between policy analysis, particularly quantitative analysis, and decision making and this particularly within the permanent Secretariat of the Committee of coordination of sectoral policies in agriculture (SP/CPSA). The SP/CPSA musters the ministries of agriculture, livestock and environment (at the ministerial level), representatives of the civil society and the technical and financial partners. The notes and reports that it produces to inform the policy dialogue are essentially descriptive and reflect very little quantitative analysis conducted elsewhere in the country. This notwithstanding, policy analysts, whether from policy centres, academia, consultancy firms or specialized government departments are frequently asked, in most countries, to conduct ad-hoc analytical work on policy issues and their result is generally made available through reports and debated in workshops. This situation has been observed in countries visited since the beginning of the MAFAP project. In some cases, academics can also be part of consultative committees or groups on agricultural development.

The approach proposed by the Regional Strategic Analysis and Knowledge Support System (ReSAKSS) to create nodes that would manage the linkages among various networked national institutions could be an effective way to institutionalize this mechanism. The mechanism itself would need to comprise activities that lead to a validation of the policy monitoring work (focus and questions, analytical tools and data used, results obtained) by those who take decisions.

At regional level, there are already institutions in place with which MAFAP will need to collaborate. They include ReSAKSS that supports the implementation of the Comprehensive African Agricultural Development Program (CAADP) of the African Union/New Partnership for African Development (NEPAD), and plays a central role in the monitoring and evaluation of CAADP implementation. ReSAKSS works with various Regional Organizations and is being technically supported by IFPRI. A close cooperation with IFPRI in the development of methodologies and in capacity building in the proposed project is therefore foreseen. The AU Commission and the NEPAD Planning and Coordinating Agency organize arenas where regional policies and strategies are being debated and where results of policy monitoring work could be presented and used to provide quantitative basis to the policy debate. Further institutional capacity exists also in other regional networks (e.g. FARA, the Forum for Agricultural Research in Africa, the Association for Strengthening Agricultural Research in Eastern and Central Africa – ASARECA) and initiatives (Alliance for a Green Revolution in Africa – AGRA). The recent Policy Analysis and Knowledge Systems (PAKS) initiative of the AU demonstrates the will of this institution to stimulate capacity development in policy analysis and monitoring.

At sub-regional level, organizations like ECOWAS, SADC (FANRPAN), COMESA and UEMOA offer venues for policy dialogue and are conducting relevant analytical work. In West Africa CILSS has been conducting analytical work on food security monitoring. Those that were so far contacted by the MAFAP secretariat have demonstrated a keen interest to cooperate.

### **1.3.3 Individual Expertise**

Over the years, there has been considerable development and diversification of individual expertise in Africa in the area of food and agricultural policy analysis. A first assessment shows however that this expertise may not be sufficient in all analytical aspects that are envisaged under MAFAP, and furthermore that this individual expertise is not necessarily located in the institutions reviewed earlier, but is often in private consultancy firms.

The level of expertise is also variable from one country to another. In many cases, individual experts exist, but in small number and therefore cannot be mobilized in national partner institutions for longer periods required for monitoring work, given the level of remuneration offered by these organizations.

In the area of analysis of incentives and disincentives, a rapid review of the authors of the documents discussed in section 3.1.2 of this report, shows that only very few are Africans. This is also true, but to a lesser extent in the domain of analysis of value chains (section 3.2.2). Public expenditure reviews have been conducted by national organizations (e.g. by KIPPRA in Kenya or EPRC in Uganda) but with a variable level of quality which sometimes have resulted in the reports not being accepted by those who had commissioned them. The same assessment can be made in terms of the production of more qualitative policy reviews or of sets of monitoring indicators. Valuable reports have however been found in countries visited by the MAFAP team, such as the report on the Evolution of the agricultural sector and households conditions of life in Burkina Faso over the period 1990-2006 prepared by the DGPER in Burkina Faso in collaboration with ReSAKSS or the food security monitoring framework proposed by CILSS and that is being progressively implemented in West African countries.

### **1.3.4 Implications for the MAFAP project**

This assessment has implications on the approach the MAFAP project will adopt and kind of activities it will need to implement.

#### *At country level*

The main implications for the MAFAP approach are that there will be a need to:

- keep senior policy makers continuously informed on MAFAP work through regular briefing and consultations, so as to nurture their support;
- establish and maintain close linkages between organizations or individuals with the required analytical skills and those who are involved in decision making, to ensure that results from analyses will inform the decision process. The best approach to adopt will depend on the particular situation in a given country but could include the establishment of joint teams or the organization of inception and validation workshops that would agree on the focus of the analysis and questions to be answered, the analytical tools and data used. On the basis of such an early agreement, results obtained through analysis are likely to be widely accepted and used;
- strengthen capacities in the appropriate organizations, through training on the MAFAP methodology and through mentoring which associates experienced national or international experts with national team members working in MAFAP activities.

#### *At regional and subregional level*

At this level, the main implications for the MAFAP project are to:

- collaborate closely with the AU Commission and the NEPAD Planning and Cooperation Agency to ensure integration of MAFAP activities at the regional level, including the presentation of MAFAP and of its results at AU/NEPAD events, in order to elicit interest by a greater number of countries and partners
- work closely with Regional Economic Communities and present activities and results of the MAFAP project at their events. Discuss, early in the project, how results achieved in countries participating in MAFAP can be used in the regional policy dialogue

- collaborate with regional or subregional organizations on the selection, development and improvement of the methodology used by MAFAP, in particular of the indicators used for cross country comparisons
- organize capacity development activities jointly with regional or subregional organizations.

## **CHAPTER 2: ANALYSIS OF INCENTIVES AND DISINCENTIVES IN FOOD AND AGRICULTURAL VALUE CHAINS**

This section is structured in four parts. The first part reviews previous attempts to specifically measure policy and non policy incentives/disincentives in the food and agricultural sector. The second part reviews previous experiences in analyzing value chains in Africa. This work is being reviewed on the ground that it is felt that value chain analysis has the potential to help achieve the MAFAP objective by complementing the type of analysis reviewed in the first part in order to (i) disaggregate incentives into those due to policies, poor functioning of markets and excessive costs; and (ii) analyse the distribution of incentives and disincentives faced by various agents along a value chain. The third part introduces a number of research questions covered in the literature related to constraints to the measurement of agricultural performance or value chain analysis. Part four concludes by identifying the main implications for implementing the MAFAP project.

### **2.1 REVIEW OF PAST AND ONGOING WORK ON AGRICULTURAL INCENTIVES AND DISINCENTIVES IN AFRICA**

#### **2.1.1 Defining incentives and disincentives**

In addition to the policy measures in place, market imperfections resulting from the structural characteristics of markets, externalities and existing excessive costs determine incentives or disincentives provided to agents in a particular value chain. Policy measures such as tariffs, taxes and subsidies impact prices in the value chain. Structural characteristics may result in market imperfections such as monopolistic/ monopsonistic practices. Excessive costs due to factors such as poor infrastructure and obsolete technology affect competitiveness and value added. Externalities are costs or benefits incurred or generated by the value chain not reflected in the market. As such, institutions, and their strengths and weaknesses, constitute important factors determining incentives or disincentives in the food and agricultural sector.

Government policies in Africa, as in other less industrialized countries, have contributed to provide two main types of incentives and disincentives to agricultural value chains: price-related incentives and disincentives (also called price incentives) and non-price related incentives and disincentives:

- Price incentives and disincentives are generated mainly as a consequence of agricultural price policies and of several macro-economic policies, especially exchange rate and interest rate policies.
- Non-price incentives and disincentives stem from a multitude of sources; for example, direct income support to farmers (linked or not to production decisions); services provided by the government (infrastructures, R&D, education, extension and others). The incentives and disincentives faced in agriculture are not only a result of direct action – e.g. by protection or taxation of primary agricultural industries - but also of indirect action through policies assisting or penalizing non-agricultural sectors since these policies, if they provide incentives to other sectors, can have an offsetting effect by drawing resources away from the food and agriculture (Anderson, Kurzweil et al. 2008; Anderson and Masters 2009; Anderson, Pingali et al. 2010) .



More broadly, it could be argued that incentives and disincentives also result from additional factors such as the natural environment and endowments, including climate.

Policy-determined incentives or disincentives result from the combined incidence of policy instruments defined for specific policy domains impinging on food and agriculture. These domains include macroeconomic, trade, sectoral (agriculture, fisheries, forestry, environment, industry, etc.), land, research and development, and labour policies, as well as other kind of support and services provided by the state. It has been argued that overall economic policies adopted are likely to have greater effects on agricultural incentives than sector-specific and pricing policies (Krueger, 1991).

In order to detect whether an economic agent (or a set of agents along a value chain) within a specific economic system receives an incentive or disincentive to act, it is necessary to analyze his/her situation relative to the economic environment, i.e. the contribution and/or the burden received by the economic system from the activities carried out by the specific agent. If the agent contributes more to the economic system than what he/she gets, the agent receives a disincentive; if he/she contributes less, he/she receives an incentive<sup>2</sup>. This implies that incentives raise the private profitability of an economic activity above the social profitability; vice-versa for disincentives. Methodologically, therefore, incentives-disincentives to producers should be highlighted as differences between revenues and costs calculated at “observed” market prices, i.e. prices reflecting what the economic agent actually gets or pays for its output, inputs and factors, and revenues and costs calculated at “reference” prices, i.e. prices that reflect opportunity costs and revenues for the socio-economic system as a whole<sup>3</sup>.

However as suggested above in this section, we will limit our focus to four types of directly or indirectly policy related incentives and disincentives in the food and agriculture sectors: direct policies (pricing policy e.g.), structural characteristics, excessive costs and externalities.

Of course, public spending is also considered in the analysis of incentives and disincentives but a more detailed review of existing work on public expenditure and aid flows will follow in Chapter 3: Analysis of Public Expenditures in the Area of Food and Agriculture 0 below.

A key research question addressed in the literature tries to determine what part of the agricultural incentives/disincentives can be attributed to exogenous factors (primarily international prices) and what part is the result of government interventions through domestic policies and expenditure allocation?

Both quantitative and qualitative analyses have been conducted on the extent of policy-determined incentives and disincentives, and in their analyses most authors have tried to anticipate the effects of a removal of such policy induced price distortions. effect on overall economic performance, including on welfare, agricultural trade or agricultural sector performance. Some authors or institutions have also analyzed the effectiveness and efficiency of policy instruments used to create agricultural incentives that result in enhanced sectoral performances in Africa.

The review presented in the following sections introduces a selection of existing work and is not intended to be exhaustive. It focuses essentially on the analyses of policy-induced incentives and disincentives. The work reviewed is classified according to whether it is quantitative or qualitative.

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<sup>2</sup> This approach is consistent with the approach adopted by the FAO VCA-PAM methodology, as well as the DAI/OECD methodologies and most of the literature of Cost-benefit analysis, anchored to the classical welfare economics.

<sup>3</sup> These prices are assumed to be proxies for the positive or negative contribution to the social welfare of producing an output or consuming an input. The detailed way of calculating “reference” prices for selected types of goods (imported, exported, non-traded) is reported in the boxes 1, 2 and 3. WHERE ARE THEY????



More details on the information and data available are presented in the second volume of this review which compiles all the annexes (see Annex 11).

### 2.1.2 Review of previous quantitative analyses of incentives and disincentives

This section presents the methodological characteristics of the main studies relevant to the development of the MAFAP project methodology. **Table 4** summarizes the focus, country coverage, as well as the indicators and approach used in the studies, listed chronologically.

Most of the studies reviewed have used price decomposition methods that generally considered three components: (i) the international price which is often considered exogenous to the country, (ii) the direct price intervention which is policy related and considered endogenous to the country, and (iii) the real exchange rate which is influenced by both exogenous and policy related factors. In these cases, the concepts of Nominal Rate of Protection (NRP) and Effective Rate of Protection (ERP) have been used extensively to capture domestic price interventions in input and output markets. These indicators use direct price comparison for a given commodity between border and domestic farm prices adjusted for margins and quality differences. Indicators used measures of aggregate incentives and disincentives for a given commodity, without considering how these incentives and disincentives affect economic actors within value chains. However, some significant methodological adaptations have been brought to these core indicators to account for additional factors or policy failures influencing the measurement of policy induced distortions such as exchange rate, price transmission, transaction costs, structural impediments to trade and others.

All the projects aiming to measure agricultural incentives and disincentives have developed a methodology using long time series data and simple indicators in order to make use of available data. In other words, these approaches have privileged the analysis of change and effects over the long run as opposed to in depth analysis of the effects in the short run or in a specific year.

The review below regroups the studies into “families” on the ground of similarities or filiations of the method used: (i) studies using a partial equilibrium framework of analysis; (ii) studies using a partial equilibrium framework of analysis which also take into account public expenditures; (iii) studies using a partial equilibrium framework of analysis which take into account public expenditures and cross-sectoral effects; (iv) studies using a general equilibrium framework of analysis; and (v) studies using other analytical approaches.

**Table 4: A chronology of past quantitative analyses of policy-determined incentives and disincentives**

No	Institutions (Authors)	Year	Title	Focus and Main Topic Addressed	Country coverage	Indicators/Approach
1	FAO	(1973)	International Agricultural Adjustment (IAA) work	Monitor industrialized country farm policies impact on world markets for agricultural goods	Selected industrialized countries	Producer Subsidy Equivalent (PSE) Consumer Tax Equivalent (CSE) Tariff equivalent (TE, calculated as a weighted average of PSE and CSE) Foreign Exchange Displacement <sup>4</sup> (FE)
2	World Bank (Krueger, Schiff, Valdés)	(1988)	Agricultural incentives in developing countries: measuring the effect of sectoral and economy-wide policies	The impact of sector-specific (direct) and economy-wide (indirect) policies on agricultural incentives	18 Less industrialized countries, including six African countries (1 MAFAP country – Ghana)	Main indicators: Direct nominal protection rate (DNPR) and Indirect nominal protection rate (INPR) Partial equilibrium analysis.
3	Josling and Tangermann	(1989)	Measuring Levels of Protection in Agriculture: A Survey of Approaches and Results	Describes various ways of measuring protection and support to the agriculture. It argues that the PSE captures the cash value of policy transfers resulting from both price and non price policies. The percentage PSE allows for easier cross country and across crop comparison.	Mainly industrial countries and selected developing where PSE approach is tested.	PSE originally developed by Josling in the early 1970s (Josling, 1973)
4	World Bank (Krueger, Schiff, Valdés)	(1991)	The Political Economy of Agricultural Pricing Policy. Volume	Motivations of policymakers, the economic and political factors determining the degree of agricultural intervention, and the attempts to	Six African countries including one MAFAP country – Ghana.	Main indicators: Direct nominal protection rate (DNPR) and Indirect nominal protection rate (INPR)

<sup>4</sup> designed to indicate the magnitude of the external impact of a country's agricultural policies.

No	Institutions (Authors)	Year	Title	Focus and Main Topic Addressed	Country coverage	Indicators/Approach
			3: Africa and the Mediterranean	reform unsuccessful policies. Impact of pricing policies on output, consumption, government budgets, foreign trade, inter-sectoral transfers, and income distribution		Partial equilibrium analysis.
5	Purdue University (William A. Masters)	(1993)	Measuring Protection in Agriculture: The Producer Subsidy Equivalent Revisited	The potential biases of the PSE due to the use of market prices rather than social opportunity costs (reference prices) in the denominator are analyzed. It is shown that the PSE tends to underestimate the effects of trade restrictions and other price support policies relative to deficiency payments and other income-support policies.	Calculations are provided for thirty three countries worldwide using USDA data base from 1983-1989.	The subsidy ratio to producers (SRP) is proposed as a more accurate indicator to account for both effects of domestic or input-market interventions and product trade policies.
6	World Bank (Townsend)	(1999)	Agricultural Incentive in Sub-Saharan Africa: Policy challenges	The state of agricultural incentives in Sub-Saharan Africa, of the current policy environment and its recent evolution.	16 African countries, including all MAFAP countries except Ethiopia	Incentive indicators are measured through policies diamonds. Policy diamonds are based on a blend of price ratios and qualitative assessments
7	IFPRI (Jensen, Robinson and Tarp)	(2002)	General equilibrium measures of agricultural policy bias in fifteen developing countries	Effects caused by indirect taxes, tariffs, and exchange rates on the relative price incentives for agricultural production	15 less industrialized countries, including two MAFAP countries (Malawi and Tanzania)	Single-country Computable General Equilibrium (CGE) models, based on data that include agricultural detail, for each of the 15 countries.
8	FAO (Josling and Valdés)	(2004)	Agricultural Policy Indicators	Methodological approach for use by FAO to collect, analyze and monitor agricultural policy indicators (API) for less industrialized countries	Up to 100 were foreseen in the project document.	Partial equilibrium analysis. Several indicators such as NRP, ERP, and PSE was envisioned.
9	World Bank (Valenzuela et al.)	(2007)	Annual estimates of African distortions to agricultural	Summary of the annual estimates of covered product NRAs, for each of the focus countries, of Africa key	21 African countries, including nine MAFAP	Partial equilibrium analysis

No	Institutions (Authors)	Year	Title	Focus and Main Topic Addressed	Country coverage	Indicators/Approach
			incentives	distortion indicators defined in Anderson et al. (2008)	countries	
10	IFPRI (Oden, Cheng et al.)	(2007)	Agricultural Producer Support Estimates for Developing Countries- Measurement Issues and Evidence from India, Indonesia, China, and Vietnam -	Evolution of agricultural policies from 1985 to 2002 and empirical estimates of the degree of protection of agriculture	India, Indonesia, China, and Vietnam	Main indicators: Total Support Estimate (TSE), Support to Producers Estimate (PSE), Market Price Support (MPS), Budgetary Payments; General Services Support Estimate (GSSE),
11	OECD	(2008)	The actual PSE Manual was published in 2008 although the PSE methodology is applied by the OECD since 1982	Classification of agricultural support and indicators measuring support	All OECD countries and a selection of others in economic transition (Brazil, India, etc.)	Main indicators: Total Support Estimate (TSE), Support to Producers Estimate (PSE), Market Price Support (MPS), Budgetary Payments; General Services Support Estimate (GSSE),
12	OECD (Portugal)	(2008)	Methodology for the measurement of support and use in policy evaluation	The coverage, definitions, criteria of classification and methods of calculating the OECD indicators of support associated with agricultural policies		Main indicators: Total Support Estimate (TSE), Support to Producers Estimate (PSE), Market Price Support (MPS), Budgetary Payments; General Services Support Estimate (GSSE),
13	World Bank (Anderson and Masters)	(2009)	Distortions to Agricultural incentives in Africa	Distortions caused by agricultural price and trade policies.	21 African countries including all MAFAP countries but Malawi	Main indicators used: NRAs and CTE
14	World Bank (Lloyd,	2010	Agricultural distortions in Sub-	Welfare and trade reducing effects of agricultural price and trade policies in	21 African countries including	Main indicators used: Welfare Reduction Index (WRI) and a

No	Institutions (Authors)	Year	Title	Focus and Main Topic Addressed	Country coverage	Indicators/Approach
	Croser and Anderson)		Saharan Africa: Trade and welfare indicators, 1961 to 2004	Sub-Saharan Africa	all MAFAP countries except Malawi	Trade Reduction Index (TRI) Partial-equilibrium analysis



*(i) Studies using a partial equilibrium framework of analysis*

This group comprises five studies:

- **International Agricultural Adjustment (IAA) work – FAO 1973; Agricultural protection and Stabilization Policies: A framework for Measurement in the Context of Agricultural Adjustment (FAO 1975)**

In the early 1970s, under the technical leadership of Professor Tim Josling, FAO (FAO 1973) proposed the Producer Subsidy Equivalent (PSE), and the Consumer Tax Equivalent (CTE) as the two main indicators to estimate assistance to agriculture. The theoretical basis of this work may be found in previous work by Max Corden (Corden 1970).

The proposed PSE and CSE indicators were expressed in both per unit and percentage terms. In addition, the actual values of the transfers were calculated as the Producer Subsidy Value (PSV) and the Consumer Burden (CB) along with the Exchequer Cost (EC) and the effective protection. These were grouped as “domestic performance measures”.

Two further indicators were also proposed: the first, the ratio of the Tariff Equivalent (TE) to the PSE represented the extent to which the transfers captured in the PSE are trade distorting; and the second, the ratio of the Foreign Exchange Displacement (FE) to the PSV reflecting the external impact per unit of transfer. The tariff equivalent (TE) is calculated as a weighted average of PSE and CSE and the Foreign Exchange Displacement (FE) of the policies is designed to indicate the magnitude of the external impact of a country’s agricultural policies.

In 1975, in a revised methodology, the consumer indicator was re-labelled as the Consumer Subsidy Equivalent (CSE) and changed sign. PSEs and CSEs were calculated for six industrial countries and six commodities (rice, wheat, barley, maize, milk, and sugar) over the period 1968-1974.

This methodology was later adopted and further developed by the OECD in implementing the 1982 Ministerial Trade Mandate (OECD 1982).

- **Agricultural Incentives in Developing Countries: measuring the Effect of Sectoral and Economy wide Policies / The Political Economy of Agricultural Pricing Policy. Volume 3: Africa and the Mediterranean (Krueger, Schiff et al. 1988; Krueger, Schiff et al. 1991) – World Bank project.**

In this study, the impact of sector-specific (direct) and economy wide (indirect) policies on agricultural incentives for 18 less industrialized countries for the period 1975-84 are estimated. The indicators for two periods are (Krueger, Schiff et al. 1991) compared: 1975-79 and 1980-84.

The sector specific (direct) and economy wide (indirect) effects are estimated for a few Sub Saharan African countries (Côte d’Ivoire, Ghana and Zambia). The direct effect is measured by the proportional difference between the producer price and the border price (adjusting for distribution, storage, transport and other marketing costs). The indirect effect includes two components: 1) the impact on the real exchange rate of policies protecting the industrial sector and of a structural current account deficit (making the country a net debtor to the rest of the world) and thus the impact on the relative price of agricultural commodities to non tradable goods of other sectors; and 2) the impact of industrial protection policies on the price of agricultural commodities to that of non agricultural tradable goods (Mellor and Mudahar 1992).

The Krueger, Schiff and Valdes (1988) approach examines mainly two situations: (i) direct taxation (or support) of the agricultural sector through direct sector-specific price policies (or interventions), and (ii) indirect taxation (or support) through trade policies, exchange rate and any

other macroeconomic policies or non-agricultural sector specific policies, . Accordingly the two main indicators used are:

- **Direct nominal protection rate (NPR<sub>D</sub>):** This indicator is also usually simply called the NPR. It measures the proportional difference between the domestic price and the border price of agricultural tradables and measures the magnitude of price controls, export taxes or quotas and the other policies affecting the domestic producer price. Equivalently, the direct nominal protection rate is defined as the ratio of (1) the difference between the producer price and the border price, and (2) the adjusted border price measured at the equilibrium exchange rate and in the absence of all trade policies.

$$NRP_D = (P_i/P_{NA} - P'_i/P_{NA}) / P'_i/P_{NA} = P_i / P'_i - 1$$

Where :

**NRP<sub>D</sub>** measures the effects of price controls, export taxes or quotas, and other sectoral policies on the domestic producer price

**P<sub>i</sub>** is the price of a tradable agricultural product i

**P'<sub>i</sub>** is the border price converted into local currency at the official nominal exchange rate and adjusted for transport, storage, handling and other costs, and quality difference agricultural product i

**P<sub>NA</sub>** is the non agricultural sector price index including both a tradable (which price is P<sub>NAT</sub>) and non tradable component (which price is P<sub>NAH</sub>)

- **Indirect nominal protection rate (NPR<sub>I</sub>):** It measures the effect of the official nominal exchange rate and the effect of trade policy on non agricultural sector price index. The nominal exchange rate E<sub>0</sub> (based on prices adjusted for transport, storage and other costs, and quality difference) obviously differs from E\* which is the equilibrium nominal exchange rate (based on prices adjusted for transport, storage, and other costs).

$$NRP_I = P'_i / P_{NA} / P^*_i / P^*_{NA} - 1$$

Where :

**NRP<sub>I</sub>** measures the effects of the difference between the nominal exchange rate, E<sub>0</sub>, and the equilibrium exchange rate, E\* and the effect of trade policy on P<sub>NAT</sub>. NPR<sub>I</sub> is the same for all tradable products since P<sub>i</sub> does not appear in the equation

**P'<sub>i</sub>** is the border price converted into local currency at the official nominal exchange rate and adjusted for transport, storage, handling and other costs, and quality difference agricultural product i

**P<sub>NA</sub>** is the non agricultural sector price index including both a tradable and non tradable component

The analyses usually do not focus so much on specific year but rather refer to long time series and consist in interpreting the trend in nominal protection rates. For example, Quiroz and Valdes argue that, in the case of Zambia and Zimbabwe during 1980-87, there was a negative trend in nominal protection rate (Quiroz and Valdés 1993). For them, this is the result of increasing transport costs due to deterioration of infrastructure, lack of spare parts, and other non directly policy related problems that these countries have been suffering and that the MAFAP project would analyze as disincentives stemming from the “market development gap”.

The authors found that:

- in almost all cases, the direct effect is equivalent to a tax on exportable goods and to a subsidy for importable goods;
- the indirect effect also taxes agriculture and dominates the direct effect; and,
- the direct policies for both importables and exportables aim at stabilizing domestic producer prices. Generally speaking, there is an observed countercyclical pattern in nominal protection rates for agricultural goods for most developing countries (Schiff and Valdes 1992).



- **Measuring Levels of Protection in Agriculture: A Survey of Approaches and Results (Josling and Tangermann 1989); Measuring Protection in Agriculture: The Producer Subsidy Equivalent Revisited (Masters 1993); Agricultural Policy Indicators: Project Proposal for Africa - FAO (Josling and Valdés 2004)**

In an effort to develop a comprehensive policy monitoring programme, the FAO, OECD, IFPRI and the World Bank formed a Consortium in 2002 to develop Agricultural Policy Indicators (API) for some 100 less industrialized countries, following a methodology developed by Josling and Valdes.

In 2004, the two authors prepared a paper for FAO to collect, analyze and monitor agricultural policy indicators (API). In this paper, they recall that the first attempts at monitoring agricultural policies were made by FAO in 1973. The paper proposes a comparison of the policy coverage in the approaches adopted by FAO, OECD, and USDA.

**Table 5 : Comparison of policy coverage in FAO, OECD, and USDA PSE studies**

	<b>FAO</b>	<b>OECD</b>	<b>USDA</b>
<b>Policies included</b>	Market price support Deficiency payments Input subsidies Storage subsidies Transport subsidies	Market price support Direct income support Indirect income support Research and extension Structural policies Sub-national measures	Market price support Direct income support Indirect income support Research and extension Marketing subsidies Controlled exchange rate
<b>Policies excluded</b>	Administrative costs Social security benefits Income subsidies Acreage control policies Research and extension Structural policies	Administrative costs Social security benefits	Administrative costs Social security benefits

Source: Josling and Valdés, 2004 based on (Josling and Tangermann 1989)

Josling and Valdés (2004) also point to key methodological issues and logistical problems that need to be addressed for implementing a project on monitoring agricultural policies:

- Ensuring soundness of the methodology adopted is necessary but not a sufficient condition for a convincing outcome. More important is the intended use of the indicators and the predominance of particular policies in the participating countries
- The indicators should account for the effect of prevailing policies in any given year relative to world prices of output and tradable inputs for that year.
- The importance to capture government expenditures by direct price comparison. This is possible, for example, if the PSE or ERA indicators are used.
- Due consideration of the base period for any meaningful comparison: many studies have failed to capture the misalignment of policies and incentives in the base period.
- The selection of indicators should account for (i) economy-wide impacts; (ii) inadequate marketing infrastructure; (iii) the consequences of lacking infrastructures on protection measures; and (iv) the problem of assigning the benefits of public goods when methods for estimating these benefits are not in place.
- As indirect effects are more important than effects of sector specific policies for some less industrialized countries it is critical to monitor exchange rate disequilibria. As the purchasing power parity (PPP) exchange rate, which is simple to compute, does not capture exchange rate misalignment, the authors suggest that the evolution of the real exchange rate (price of tradables to non tradables) be monitored for all countries under study, but the in-depth analysis of the nature and magnitude of the exchange rate misalignment using the Krueger/Schiff/Valdés methodology could be restricted to those countries with the necessary data and expertise in this topic.
- The choice of the appropriate commodity coverage including both traded and non traded products is a difficult question.

The authors also underline important logistical and managerial issues when implementing a project similar to the MAFAP project. These considerations are taken into consideration in section 3.3.

(ii) Studies using a partial equilibrium framework of analyses which also take into account public expenditures.

**OECD indicators and measurement methodology: PSE Manual (OCDE 2008); Estimation of agricultural assistance using producer and consumer subsidy equivalents: Theory and practice (Cahill and Legg 1989/90); Methodology for the measurement of support and use in policy evaluation (Portugal 2008)**

These three documents are presented together as they refer to the same methodology and complement each other.

The OECD collects and compiles a wide range of data used to support its agricultural policy analysis and long-term forecasts. Detailed information for production, consumption, trade, stocks and prices are collected for the 34 OECD countries and a large number of other countries (including China, Argentina, Brazil, India, South Africa, Russia and other CIS independent states and many smaller countries in Africa, Asia and Latin America). Most series cover the period from 1970 to the most current year and include updated annual projections for up to 10 years in the future. Often, these activities are carried out in co-operation with other international organisations, notably the FAO and UNCTAD.

Moreover, the OECD reviews agricultural policies for OECD countries and also for Emerging Economies and, accordingly, produces Producer and Consumer Support Estimates for these countries in order to analyse the support provided to agriculture and propose indicators that can be internationally comparable applying the same methodology used for OECD members and available in the PSE/CSE database. Non-member countries involved in the activity include Brazil, Chile, China, India, Israel, Russian Federation, South Africa, Ukraine.

The reports produced assess changes and developments in a form that also enables assessment of the production and consumption effects of policies.

Compiled since 1987, these statistics present the monetary value of transfers associated with all policy measures affecting agriculture. These are classified into a number of major groups that relate to the implementation criteria of the measures. The most important distinctions relate to whether measures are based on commodity output, on input use, on other criteria such as land area, animal numbers, income or revenue, or finally on non-commodity criteria. With the reform of agricultural policies in OECD countries, the number and complexity of policy measures has increased significantly and the classification and nomenclature evolves in response.

The OECD methodology, as has developed over time, now comprises a four-part classification of policy measures.

- **Producer Support Estimate (PSE):** annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. The PSE measures support arising from policies targeted at agriculture relative to a situation without such policies, i.e. one in which producers are subject only to the general policies (including economic, social, environmental and tax policies) of the country.

The PSE itself is made up of Market Price Support (MPS) and Budgetary Payments. The Market Price Support (MPS) is measured by “an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices of a specific commodity measured at the farmgate level” (Portugal 2002, p. 2).

- **General Services Support Estimate (GSSE):** monetary value of gross transfers to general services provided to agriculture collectively, arising from policy measures that support agriculture, regardless of their nature, objectives and impacts on farm production, income or consumption of farm products. These payments for eligible private or public general service are provided to the agricultural sector collectively and not individually to farmers. The General Services Support Estimate (GSSE) for example includes research and development, infrastructure, marketing and promotion payments and inspection services; and any transfers from taxpayers to producers.

- **Consumer Support Estimate (CSE):** monetary value of gross transfers to (from) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on consumption of farm products. The CSE includes explicit and implicit consumer transfers to producers of agricultural commodities, measured at the farm gate (first consumer) level. When negative, transfers from consumers measure the implicit tax on consumption associated with policies to the agricultural sector.
- **Total Support Estimate (TSE):** monetary value of all gross transfers from tax payers and consumers arising from policy measures that support agriculture, net of the associated budgetary receipts, regardless of their objectives and impacts on farm production and income, or consumption of farm products. The TSE measures the overall cost of agricultural support financed by consumers and taxpayers net of import receipts. In other words, the Total Support Estimate (TSE) is the aggregate of the three items MPS, BP, and GSSE. This is equivalent to the sum of transfers to consumers and producers less any budget revenues, such as from import tariffs.

This work is unique in that government officials and statisticians take part in the oversight of the estimates, giving the resulting estimates an implicit degree of approval. As a result, it has widespread acceptance among governments and the media and is the most frequently used measure for modelling policies and constructing models with policy variables (Josling and Valdés 2004) .

- **Agricultural Producer Support Estimates for Developing Countries - Measurement Issues and Evidence from India, Indonesia, China, and Vietnam** (Orden, Cheng et al. 2007)- IFPRI  
This report analyses the evolution of agricultural policies from 1985 to 2002 and presents empirical estimates of the degree of protection of agriculture for the above four countries. None of these countries are in Africa but the discussion on the methodology adopted is relevant to the MAFAP project as it is an attempt to apply the methodology used for OECD countries in less industrialized countries. The report also addresses the effects of exchange rate misalignment on PSE estimates.

Some modifications brought to the OECD methodology are due to considerations relative to less industrialized countries such as Brazil, Chile, China and India:

- Many countries can only utilize border policies or commodity price support programs backed by market interventions and government stockholding. These are policies whose effects are measured in a MPS.
- Less industrialized countries tend to have lesser developed infrastructure , a reality that sometimes increases marketing costs to such an extent that they require further adjustment of the reference.
- Government markets or processing policies and infrastructure investments may raise costs by restricting efficient domestic movement, processing, and marketing. This also influences the observed price gaps that cannot be addressed by price support or border protection measures.
- These countries may be more likely to switch from being an importer to being an exporter of a commodity across years. The relevant international reference price adjustments for internal costs will then differ depending on the trade circumstances.
- Difficulties in assessing the policy component of observed price gaps may be accentuated by imperfect competition in the handling, transportation, processing, or marketing sectors. This may affect the mark-ups with different implications than border or price support interventions.
- Even if competitive market forces are functioning relatively well in the handling, transportation, processing, and marketing sectors, acquiring the requisite data on various costs may be particularly resource intensive (beyond plausible research budgets) or consistent data over a range of years may simply not exist.

(iii.) Studies using a partial equilibrium framework of analysis, take into account public expenditures and cross-sectoral effects

- **Distortions to Agricultural Incentives in Africa (Anderson and Masters 2009) ; Annual estimates of African distortions to agricultural incentives (Valenzuela, Kurzweil et al. 2007) and Agricultural Distortions in Sub-Saharan Africa: Trade and welfare indicators, 1961 to 2004 (Lloyd, Croser et al. 2009) – World Bank; Review of the IMF's Trade Restrictiveness Index. (Allen 2005)**

This project measures agricultural incentives/disincentives with the longest time series data (about 40 years) and the largest country coverage (75 countries). The African component of the Distortions to Agricultural Incentives (DAI) project provides information on explicit policy distortions in 20 African economies (although in some countries for a very limited number of commodities). Indicators used underpin a descriptive analysis at both national and regional levels and allow further general equilibrium modelling efforts.

A major finding of the DAI project is that, while the anti-agriculture bias of policies in Africa has declined in comparison with the 1970s and 1980s, there is still an overall tendency to tax the sector. The sectoral average masks a tendency to provide some protection to import competing products (a nominal rate of assistance greater than zero), which is more than offset by a net taxation of exportables (a negative nominal rate of assistance). This pattern contrasts with other regions dominated by less industrialized countries where the net tendency to tax agriculture has been reversed in the past ten years.

From the methodological point of view, the focus is on those border and domestic measures that are due exclusively to government actions and as such can be altered by a policy decision and have an immediate effect on consumer choices, producer resource allocation, and net farm incomes. The key indicators developed (see description below) are the Nominal Rate of Assistance (NRA), the Consumer Tax estimate (CTE), the effective rate of Assistance (ERA), and the Relative rate of Assistance (RRA). Results are made available in a database.

The data identifies each year the extent to which each commodity in each country is considered an importable, exportable or non tradable, a status that may change over time. By calculating domestic-to-border price ratios, the estimates include assistance provided by all tariff and non tariff trade measures, plus any domestic price support measures (positive or negative), plus an adjustment for the output-price equivalent of direct interventions on inputs. Where multiple exchange rates operate, an estimate of the import or export tax equivalents of the distortion are included as well. The range of measures included in the CTE estimates includes both domestic consumer taxes and subsidies and trade and exchange rate policies.

The main indicators used are:

- **Nominal rate of assistance (NRA):** Since the most common distortion is an ad valorem tax on competing imports (tariff), its effect on producer incentives can be measured as the nominal rate of assistance (NRA) to farm output conferred by border price support ( $NRA_{BS}$ ), which is the unit value of production at the distorted price less its value at the undistorted free market price expressed as a fraction of the undistorted price. A tariff on imports is the equivalent of a production subsidy and a consumption tax equivalent to the tariff rate applied.

Conceptually, the NRA thus differs from the producer support estimate (PSE and CSE) calculated by the OECD in that the PSE and CSE are expressed as a percentage of the domestic price (assumed to be a distorted price) whereas the NRA is a percentage of the border price (assumed to be an undistorted price). It is thus  $t_m/(1+t_m)$  and so for a positive  $t_m$  the PSE is smaller than the NRA and is necessarily less than 100 percent.

On the production side, by calculating the percentages by which domestic prices exceed border prices, the NRA estimates include assistance provided by all tariff and non-tariff

trade measures, plus any domestic price support measures, plus an adjustment for the output-price equivalent of direct interventions on farm outputs. Where multiple exchange rates operate, an estimate of the import or export tax equivalents of that distortion are included as well (see Anderson et al. 2008).

- **Consumer tax estimates (CTE):** measures the effect of the import tariff considered in the NRA on consumer incentives from which to generate a Consumer Tax Equivalent (CTE) on the agricultural product. The CTE — also expressed as ad valorem rates — measures the extent to which consumers are taxed or subsidized by various agricultural, social welfare, trade and exchange rate policy measures. The CTE is similar to the CSE calculated by the OECD but has the opposite sign.
- **Effective Rate of Direct Assistance (ERA):** Where intermediate inputs are used in farm production, any taxes or subsidies on their production, consumption or trade would alter farm value added and thereby also affect farmer incentives. Estimating ERAs requires knowing each product's value added. Getting such data requires in depth value chain analysis every few years. Considering that in most less industrialized countries the use of inputs is limited, distortions to farm inputs are usually very small (except in cases of distribution of free inputs to boost production as in 2008-2009) compared with distortions to farm output prices, and those purchased inputs are a small fraction of the value of output. Anderson et al. decided to account for the significant distortions to input costs by summing each input's  $NRA$  times its input-output coefficient to obtain the combined  $NRA_i$ , and adding that to the farm industry's nominal rate of direct assistance to farm output,  $NRA_o$ , to get the total nominal rate of assistance to farm production,  $NRA$ .

$$NRA = NRA_o + NRA_i$$

- **Relative rate of assistance (RRA):** is used for comparison with the NRA for non-agricultural tradables.

$$RRA = [(1 + NRA_{ag}) / (1 + NRA_{nonag}) - 1]$$

- **Trade Bias Index (TBI):** is used to indicate the extent to which a country's policy regime has an antitrade bias within the agricultural sector. This index has a value of zero whenever the import-competing and export subsectors are equally assisted and its lower bounds reaches -1 in the extreme case of an antitrade bias.

$$TBI = (1 + NRA_{agX}) / (1 + NRA_{agM}) - 1$$

Where  $NRA_{agM}$  and  $NRA_{agX}$  are the average NRA for the import-competing and exportable parts of the agricultural sector.

In their paper “**Welfare and trade based indicators of national distortions to agricultural incentives**”, Lloyd, Croser and Anderson, propose more satisfactory indexes that better capture the welfare and trade reducing effects of all policies directly affecting consumers and producers. The authors define the Trade Reduction Index (TRI) and the Welfare Reduction Index (WRI). These two indexes are interesting for comparison of performances over time, not for the analysis of a single year.

The TRI (or WRI) is defined as the ad valorem trade tax rate which, if applied uniformly across all tradable agricultural commodities in a country, would generate the same reduction in trade (or economic welfare loss) as the actual cross-product structure of NRAs and CTEs for that country. The WRI measure reflects better than the NRA or CTE the true partial equilibrium welfare cost of agricultural policies because it captures the disproportionately higher welfare costs of peak levels of assistance or taxation. Also, the WRI and TRI measures overcome aggregation problems when there are different NRAs for sub-sectors within agriculture. The TRI (or WRI) has the advantage of providing a theoretically sound partial equilibrium indicator of the trade (or welfare) effect in a

single sectoral measure that is comparable across time and place. The TRI and WRI move somewhat closer to what a computable general equilibrium (CGE) can provide in the way of estimating trade and welfare (and other) effects and have the advantage of being able to indicate trends over time, which a comparative static CGE model can do only if it is calibrated to a series of past years. However, this approach does not integrate costs and benefits that might arise from externalities, market failures, and any other beyond-the-border policies, such as for example underinvestment in public goods or international monopolies.

In their 2010 paper Lloyd, Croser and Anderson provide very useful reference indices over a 40 year period for 19 African countries, including Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Mali, Nigeria Tanzania, and Uganda. In the countries analyzed, non tradable products account over time for between 40 and 55 percent of the gross value of production of all covered products.

This paper also brings a valuable methodological contribution regarding the inclusion of distortions on non-tradable and exportable commodities. Distortions to **exportables** are inputted into the TRI as negative values because a positive (negative) price distortion in an exporting industry has a trade-expanding (-reducing) effect, and thus decreases (increases) the TRI. Distortions to **non-tradables** are inputted into the TRI as zero values because a domestic price distortion in a non-tradable by definition has neither a trade-expanding nor trade-reducing effect because of assumed prohibitively high trade costs.

To capture distortions imposed by different policy instruments on economic welfare and trade volume of each African country, Croser and Anderson (2010) define an Instrument Welfare Reduction Index (IWRI) and an Instrument Trade Reduction Index (ITRI). They can be estimated by considering the distortion from a single policy instrument to the producer and consumer sides of the economy. ITRI and IWRI series can be estimated for all types of border (international trade) and of domestic (production, consumption, national trade) distortions.

#### *(iv) Studies using a general equilibrium framework of analysis*

- **General equilibrium measures of agricultural policy bias in fifteen developing countries (Bautista, Robinson et al. 2001; Jensen, Robinson et al. 2002) – IFPRI**

The authors conducted comparative analysis of the extent to which indirect taxes, tariffs, and exchange rates affected relative price incentives for agricultural production in a sample of 15 less industrialized countries in the 1990s.

Challenging conventional wisdom, the authors argue that one potential explanation for the weak agricultural response to structural adjustment is that the agricultural incentive bias at the outset may have been smaller than originally thought. The authors believe that the agricultural bias had been overestimated because studies had relied on a partial equilibrium analysis methodology that missed intersectoral linkages and feedback effects from changes in incomes and relative prices. Moreover, the key assumptions that domestic agricultural products and world market goods are perfect substitutes and that essentially all agricultural goods are traded do not hold. The authors finally argue that capturing the variation in agricultural tradability is crucial for the transmission from trade policy interventions to relative domestic price incentives.

The study is based on the use of Social Accounting Matrices (SAM) using “standard” trade-focused Computable General Equilibrium (CGE) models and builds on previous work in Mozambique and Tanzania by Bautista, Robinson, Tarp, and Wobst (Bautista, Robinson et al. 1998), globally by Arndt, Jensen, Robinson, and Tarp (2000) and Jensen and Tarp (2002). The authors measure how indirect taxes, including import tariffs and export taxes, and current account imbalances have affected relative agricultural price incentives during the 1990s. Finally, a series of simulations of agricultural export taxes, non-agricultural import tariffs, and exchange rate

appreciation and depreciation is carried out to study the impact of trade policies traditionally applied to protect industrial production sectors.

Data sets comprise 15 SAM including (i) disaggregation of production sectors, (ii) disaggregation of primary factors of production, and (iii) inclusion of marketing costs and home consumption of own production. To make simulations comparable across countries, capital was disaggregated into agricultural and non-agricultural capital so as to create agricultural-specific production factors in all country models.

In the context of the MAFAP project, SAM and related CGE modelling could be considered for an additional practical reason which has to do with the description of the policy context. The SAM allows visualizing target commodities or value chains and their role in the economy. SAM can show the extent to which products are traded in the domestic market and home-consumed by households. They also offer a rough description of production chains and the linkages between products and households types on both the supply and the demand side. Indications from the SAM can also be combined with time series data, which warrant dynamic considerations, for instance on nascent sectors which may have good potential. In most countries where the project plans to operate SAMs are already available, as they were built by IFPRI. Getting this type of information is particularly important for the project as in an African context the weight of the agricultural sector in the economy is much greater than in more industrialized economies.

#### (v) Studies using other analytical approaches

- **Agricultural incentives in Sub-Saharan Africa: policy challenges (Townsend 1999)** – World Bank

The study reviews existing policies as well as their recent evolution and discusses ways to improve agricultural incentives in order to raise average agricultural growth and farm incomes. A number of price (agricultural, trade, and macroeconomic policy) and non-price (transportation infrastructure) factors are examined. Following this analysis, several policy challenges to improve these incentives in Africa are highlighted. Country profiles are provided and price policy analysis conducted for 16 African countries.

Both price and non price factors are identified as constraining factors and several quantitative methodologies, together with a descriptive analysis, were used to isolate their effects. Based on an array of price ratios and policy scores, policy diamonds are constructed as incentive indicators reflecting the state of macroeconomic (monetary, exchange rate and fiscal) and agricultural sector policies (export crop, food crop, and fertilizer) relative to a perceived frontier. These indicators combined quantitative and qualitative elements:

- The macro-economic policy scores are developed from an aggregate of monetary, fiscal and exchange rate policies.
- The export crop policy indicator is the ratio of the producer price to the border price.
- The food crop policy indicator is the ratio of the producer price to the world price, supplemented with qualitative assessments,
- The fertilizer policy score is an aggregate score of trade and pricing policies.

Two diamonds are constructed for each country, an outer diamonds, which is taken to represent the perceived policy frontier and an inner diamond, taken to be the current policy stance of each individual country. One of the questions the study addressed is: what are the constraining economic factors that are preventing countries (inner diamonds) from moving towards the frontier (outer diamond)? Findings emphasize the most significant inhibitive factors of which many remain valid today such as high transportation costs, low traded volumes, poor access to markets



and credit, and low reliability of the institutional framework (Brunetti, Kisunko et al. 1997). Therefore many of the policy challenges mentioned remain valid.

Table 6 provides a summary of the main indicators used by the reviewed studies. A full description of these indicators is provided in Annex 1.

**Table 6: Summary on the Indicators used to Measure Distortions to Agricultural Incentives in the Studies Analyzed**

**(Producers and Consumers are considered)**

Measure	Definition and main comments	Proposed/Estimated by	Formula
<b>Price Gap Measures</b>			
Nominal Protection Rate (NPR)	<p>It represents the increase in gross revenue from sales of product relative to no policy situation.</p> <p><b>Key assumptions:</b> Agricultural markets are competitive (the law of one price holds), so wedges between domestic market prices and border prices are interpreted as the additional price received by producers stemming from agricultural policies in a given year. It is a static indicator (effects on quantities of changes in prices are not taken into account) Cross- commodity effects are not considered. The border price is taken as the opportunity cost to national exporters/importers.</p> <p><b>Is the price gap at all market levels the same?</b> Yes, when we assume: that trade/ transaction costs are additive. The product is imported (traded) only at one market level and the world price is given for the importing country.</p> <p><b>Different estimates depending on...</b> Relevant point of competition (border or within the domestic market ) Treatment of exchange rate misalignment (taken into consideration differently in Krueger, Schiff,</p>	(Krueger, Schiff et al. 1988). (named Total Nominal Protection Rate)	$(P_d - P_b) / P_b$ where: Pd is the domestic price Pb is the border price evaluated at an adjusted nominal exchange rate and adjusted for transport, storage and other costs.
		(Anderson, Kurzweil et al. 2008)	$(P_d - P_b) / P_b$ (for an imported commodity) where: Pd is the domestic price (adjusted for transport, storage and other costs to take it to the border) Pb is the border price evaluated at an adjusted nominal exchange rate (when multi-tier foreign exchange rate regimes are in place).
		Tsakok (1990)	$(P_d - (P_b + T)) / (P_b + T)$ where: Pd is the domestic price Pb is the border price evaluated at an adjusted nominal exchange rate T is transaction costs
		OECD (2008)	$(P_d - P_b) / P_d$ where: Pd is the domestic price Pb is the border price evaluated at the official nominal exchange rate

Measure	Definition and main comments	Proposed/Estimated by	Formula
	<p>Valdés, 1988, Tsakok, 1990 and Anderson et al., 2008 and not taken into consideration in OECD).</p> <p>For positive tariff rates, estimates of NPRs expressed as a fraction of the observed domestic market price (assumed as “distorted”) are systematically smaller than those of NPRs expressed as a fraction of the border price (assumed as “undistorted”).</p>		
Nominal Rate of Assistance (NRA)	<p>Increase in revenue including payments not tied to production</p> <p>Key assumptions: as NPR</p> <p>Improves on NPR if direct payments are significant</p>	Tsakok (1990)	$\frac{(P_d - (P_b + T + S))}{(P_b + T + S)}$ <p>where S is a subsidy/tax and T is the transaction costs</p>
		Anderson et al (2006)	$\frac{(P_d + T + S - P_b)}{P_b}$ <p>where S is a subsidy/tax and T is the transaction costs</p>
Nominal Protection Coefficient (NPC)	<p>This is a standard indicator in the literature on Policy Analysis Matrix. It measures the increase in gross revenue from sales of product relative to no policy and or no market failures situation.</p> <p>Agricultural markets are not necessarily assumed to be competitive and the price wedge is interpreted as resulting from both distorting policies and market failures.</p>	Monke and Pearson (1989)	$\frac{P_d \cdot Q}{P_b \cdot Q}$ <p>where:</p> <p>P<sub>d</sub> is the domestic price</p> <p>P<sub>b</sub> is the border price evaluated at an adjusted nominal exchange rate (to account for under/over evaluation of the official nominal exchange rate) and adjusted for transaction costs.</p> <p>Q is the quantity sold</p>
Producer Nominal Assistance Coefficient (PNAC)	<p>Is the value of gross farm receipts as a fraction of the value of production at border prices.</p> <p>Values greater than unity, suggest that there is an additional price received by producers stemming from policies in place.</p> <p>Compared to the NPC, this indicator includes all budgetary and other forms of support to farmers.</p>	OECD Cahill & Legg, (1989/90)	$\frac{VP + BOT}{VP - MPS}$ <p>where</p> <p>VP= Production value</p> <p>BOT= Budgetary and other payments</p> <p>MPS= market price support= (P<sub>d</sub>-P<sub>b</sub>).Q</p>

Measure	Definition and main comments	Proposed/Estimated by	Formula
Effective Rate of Protection (ERP)	<p>Increase in value added (gross revenue less input costs) relative to no policy situation</p> <p>When greater than zero, suggests that the commodity or the inputs involved in its production are protected (or both).</p> <p>Volatile when denominator gets small or negative</p> <p>Improves on NPR when input subsidies (policies on inputs in general) are significant.</p> <p>The ERP was not computed in Krueger et al., 1988. Initial inspection in the sample countries however suggested that input subsidies were inframarginal and that value added to output did not vary significantly across crops within countries.</p> <p>Data constraints lead the DAI project team to decide against computing ERPs and ERAs. Product-specific distortions in input costs were captured by including, when possible, estimates of the equivalence in terms of a higher output price of these distortions in NRA for individual agricultural industries. (see Anderson K. and W.A.Masters, 2007).</p>	Monke and Pearson (1989)	$\frac{\left( Pd_j \cdot Q_j - \sum_{i=1}^n Pd_i \cdot X_i \right) - \left( Pb_j \cdot Q_j - \sum_{i=1}^n Pb_i \cdot X_i \right)}{Pb_j \cdot Q_j - \sum_{i=1}^n Pb_i \cdot X_i}$ <p>(for commodity j)  where  Pd<sub>j</sub>= is the domestic market price of commodity j  Q<sub>j</sub>= is the sales quantity of commodity j  Pd<sub>i</sub>= is the adjusted border price of the ith input used in the production of commodity j.  X<sub>i</sub> is the quantity of the ith input used in the production of commodity j  Pb<sub>j</sub>= is the adjusted border price of commodity j  Pb<sub>i</sub>= is the adjusted border price of input i used in the production of commodity j</p>
Effective Protection Coefficient (EPC)	This is also standard indicator in the literature on Policy Analysis Matrix. It measures the increase in value added (gross revenue less input costs) relative to no policy/market failures situation	Barber (1955)	$VA / VA^* = (P - I) / (P^* - I^*) = \frac{Pd_j \cdot Q_j - \sum_{i=1}^n Pd_i \cdot X_i}{Pb_j \cdot Q_j - \sum_{i=1}^n Pb_i \cdot X_i}$ <p>(for commodity j)</p>

Measure	Definition and main comments	Proposed/Estimated by	Formula
	<p>Agricultural markets are not necessarily assumed to be competitive and the price wedge is interpreted as resulting from both distorting policies and market failures.</p> <p>When greater than unity, this indicator suggests that either the commodity or the inputs involved in its production (or both) are protected and/or affected by market failures</p> <p>In the context of highly protected activities the denominator (VA<sup>*</sup>) may become very small or even negative which would make the EPC difficult to interpret (Masters 1993).</p>		<p>same notation as for ERP</p> <p>VA is the value added at market prices</p> <p>VA<sup>*</sup> is the value added calculated at social opportunity costs (reference prices)</p>
Effective rate of Assistance (ERA)	<p>Increase in value added (<u>including budgetary and other payments</u>) relative to no policy situation</p> <p>It improves on ERP for the wider consideration of producer support.</p> <p>It improves on NRA for the consideration of protection on the input side.</p> <p>Volatile if value added is small or negative</p>	Anderson (2004)	$\frac{\left( Pd_j \cdot Q_j - \sum_{i=1}^n Pd_i \cdot X_i + S_j \right) - \left( Pb_j \cdot Q_j - \sum_{i=1}^n Pb_i \cdot X_i \right)}{Pb_j \cdot Q_j - \sum_{i=1}^n Pb_i \cdot X_i}$
Producer Subsidy Equivalent (PSE)	<p>Provides an aggregate tariff equivalent measure of many different types of interventions.</p> <p>“The level of producer subsidy that would be necessary to replace the array of actual farm policies employed in a particular country in order to leave farm income unchanged. It can be thought of as the ‘cash’ value of policy transfers occasioned by price and non-rice policies” (Josling and Tangermann 1989). The PSE does not take into account variation in marginal productivity or substitution effects or any general equilibrium or cross-price effects.</p> <p>The narrowest PSE would include only tradable</p>	Josling (1973)	<p>PSE= (ΔP – ΔI)/P = [(P – P<sup>*</sup>) – (Σ<sub>i</sub>α<sub>i</sub>P<sub>i</sub> – Σ<sub>i</sub>α<sub>i</sub>P<sub>i</sub><sup>*</sup>)] / P</p> <p>where</p> <p>P is the product’s market price</p> <p>P<sup>*</sup> is the reference price or product’s social opportunity cost</p> <p>ΔP and ΔI are the net effects of policies on product price and input costs</p> <p>α<sub>i</sub> is the input-output coefficient</p> <p>P<sub>i</sub> is the market price of the commodity i</p>

Measure	Definition and main comments	Proposed/Estimated by	Formula
	inputs (like the EPC) whereas a broader PSE could include factor payments (such as deficiency payment).		
Producer Support Estimate (PSE)	<p>The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income.</p> <p>The key assumption is competitive agricultural markets and validity of the law of one price. It is a static indicator which does not account for cross- commodity effects.</p> <p>The MPS for the overall agricultural sector is obtained by assuming that the commodities for which MPS has not been measured have the same MPS as the average of the measured part.</p> <p>The BOT includes payments based on: outputs, input use, current revenues/income (i.e., income tax concessions), on area/animal numbers (i.e., crop insurance payments), etc.</p>	OECD (1991)	<p>PSE = MPS + BOT where: BOT= Budgetary and other payments and</p> $MPS = \text{Aggregate Market Price Support} = \sum_{j=1}^n MPS_j$ <p>and <math>MPS_j = (Pd_j - Pb_j) \cdot Q_j</math> with j= 1...n</p>
Subsidy Ratio to producers (SRP)	<p>SRP like the Producer Subsidy Equivalent (PSE) is an index number which has no cardinal meaning.</p> <p>The SRP proposes a measure of farmers' revenue at border prices (or social opportunity costs) rather than at market (domestic) prices as is the case in the PSE calculation. In that sense, the SRP is similar to the Nominal Assistance Coefficient (NAC) computed by the OECD (see above).</p>	Masters (1993)	<p><math>SRP = (\Delta P - \Delta I) / P^* = [(P - P^*) - (\sum_i \alpha_i P_i - \sum_i \alpha_i P_i^*)] / P^*</math></p> <p>where P is the product's market price P* is the reference price or product's social opportunity cost ΔP and ΔI are the net effects of policies on product price and input costs α<sub>i</sub> is the input-output coefficient P<sub>i</sub> is the market price of the commodity i</p>

Measure	Definition and main comments	Proposed/Estimated by	Formula
Trade Bias Index in Agricultural Assistance (TBI)	<p>Provides an estimate of a country's anti-trade bias within the agricultural sector as generated by the policies in place.</p> <p>Relies on the Lerner (1936) Symmetry Theorem which demonstrates that in terms of a farmer's incentive, a tariff that protects import-competing commodities has the same effect as an export tax on agricultural exports and that if both the tariff and the tax are in place, this results in a double effect.</p> <p>This indicator is useful when countries have very different policy regimes for import-competing and exportable commodities. In such situations, farmers have indeed an incentive to switch resources from one sub-sector (the one which is protected) to the other.</p>	Anderson et al., 2006	$\left[ \frac{(1 + NRA_{ag\ x})}{(1 + NRA_{ag\ m})} \right] - 1$ <p>where <math>NRA_{ag\ m}</math> is the weighted percentage NRAs for agricultural import-competing commodities and <math>NRA_{ag\ x}</math> is the weighted percentage NRAs for agricultural exportable commodities</p>
Relative rate of Assistance (RRA)	<p>It is the rate of assistance to agriculture relative to the nominal rate of assistance to non-agricultural activities:</p> <p>It is calculated to account for the negative effects on farmers of protection to the non-agricultural sectors. All other things equal, higher protection in non-agricultural sectors implies an incentive to deviate resources from agriculture to the non agricultural sector.</p> <p>Allows comparing across countries and over time the extent to which the policy regime in one country has a bias in favour or against the agricultural sector.</p>	Anderson et al., 2006	$\left[ \frac{(1 + NRA_{ag})}{(1 + NRA_{non-ag})} \right] - 1$ <p>where <math>NRA_{ag}</math> and <math>NRA_{nonag}</math> are the NRAs for the agricultural and non-agricultural sectors respectively.</p>
Total Support Estimate	It represents the annual monetary value of all gross transfers from taxpayers and consumers arising	OECD	$TSE = PSE + GSSE + TCT$

Measure	Definition and main comments	Proposed/Estimated by	Formula
(TSE)	<p>from policy measures that support agriculture, net of associated budgetary receipts, regardless of their objectives and impacts on farm production and income, or consumption of farm products.</p> <p>It can be calculated as the sum of transfers to producers (PSE), to general services (GSSE) and consumers (TCT), or alternatively, as the sum of transfers from consumers and transfers from taxpayers.</p>		
<b>Trade Restrictiveness Indexes</b>			
Trade Restrictiveness Index (TRI)	<p>Provides a country's overall trade policy stand</p> <p>Intended to provide a baseline of a country's overall trade policy stand to be compared to the trade policy stand of the country after the implementation of the Trade Liberalization Programs of the IMF.</p> <p>Subject to criticism with respect to its limited policy coverage, the weights assignment criterion and the fact that it does not account for the production bias induced by trade policies.</p>	International Monetary Fund, Allen (2005)	n. a.
Mercantilist Trade Restrictiveness Index (MTRI)	<p>Is the uniform tariff that applied in all countries would entail the same level of trade volume as the one produced by the actual structure of tariffs and barriers.</p> <p>The computation of this index requires a model of the whole economy (such as a simple Computable General Equilibrium Model-CGE-), collection of several national income account items, and specific assumption on the elasticities of demand and supply.</p>	Anderson and Neary (2005)	n. a.



Measure	Definition and main comments	Proposed/Estimated by	Formula
Overall Trade Restrictiveness Index (OTRI)	<p>It measures the reduction in trade volume resulting from trade policies. This is a variant of the MTRI by Anderson and Neary (2005)</p> <p>Estimated econometrically. Instead of calculating the MTRI using a computable general equilibrium model, the OTRI uses an econometric approach to estimate the index. The OTRI does not suffer from the drawbacks of simple or import weighted tariff averages and allows the impact of both tariffs and NTBs to be estimated. The methodology entails the estimation of import demand elasticities by country and product at the 6-digit level of the Harmonized System (HS) of product classification.</p> <p>The impact of barriers and tariffs on imports is estimated following Leamer (1990), where predictions of imports are derived using factors endowments (and strong assumptions on technology and factor prices).</p>	<p>World Bank</p> <p>(2004 WB Global Monitoring report)</p>	n. a.
Trade Reduction Index (TRI)	<p>It is the ad valorem import tariff/export tax rate which, if applied uniformly to one individual commodity in all countries, would result in the same reduction in the volume of trade as the actual structure across countries of NRAs for that commodity.</p> <p>The demand and supply side can be analysed separately.</p> <p>Would require a model of the whole economy.</p> <p>However, estimates of the TRI have been obtained in a partial equilibrium framework by making the following assumptions: (i) the country's share in global trade is small, thus the quantities traded do</p>	Lloyd et al, 2009	<p><b>Producer Distortion Index (PDI)</b></p> <p><math>P_i^p = P_i^* (1+s_i)</math> where <math>s_i</math> is the rate of distortion of the producer price in percentage terms for commodity i</p> <p><b>Consumer Distortion Index (CDI)</b></p> <p><math>P_i^c = P_i^* (1+r_i)</math> where <math>r_i</math> is the rate of distortion of the consumer price in percentage terms for commodity i (<math>s_i</math> and <math>r_i</math> are generally different)</p> <p><b>Trade Reduction Index (TRI)</b></p>

Measure	Definition and main comments	Proposed/Estimated by	Formula
	<p>not influence world prices; (ii) commodities demand and supply are functions of own domestic price alone (cross-price elasticities are ruled-out), (iii) the price elasticity of supply (demand) for one individual commodity is the same in all countries.</p> <p>The neglect of the cross-price effects makes the analysis partial equilibrium.</p> <p>Whether TRI is above or below NRA depends on the type of policy in place, because while import tariffs reduce the trade volume, export subsidies tend to increase it.</p> <p>Estimates show that TRI was above NRAs for tropical products where there was a strong trade reducing effect of both import taxes of some high income countries and export taxes of some low income countries</p>		<p>T = (Champ, Boyle et al.)</p> <p>where R is the PDI</p> $R = \left[ \sum_{i=1}^n r_i u_i \right] \text{ with } u_i = p_i^{-2} dx_i / dp_i^c / \sum_i p_i^{-2} dx_i / dp_i^c$ <p>and S is the CDI</p> $S = \left[ \sum_{i=1}^n s_i v_i \right] \text{ with } v_i = p_i^{-2} dy_i / dp_i^p / \sum_i p_i^{-2} dy_i / dp_i^p$ <p>and</p> $a = \sum_i p_i^{-2} dx_i / dp_i^c / \sum_i p_i^{-2} dm_i / dp_i$ $b = \sum_i p_i^{-2} dy_i / dp_i^p / \sum_i p_i^{-2} dm_i / dp_i$
Welfare Reduction Index (WRI)	<p>It is the ad valorem import tariff/export tax rate which, if applied uniformly to one individual commodity in all countries, would result in the same reduction in the global economic welfare as the actual structure across countries of NRAs for that commodity</p> <p>Has been estimated assuming: (i) the country's share in global trade is small, thus the quantities traded do not influence world prices; (ii) commodities demand and supply are functions of own domestic price alone (cross-price elasticities are ruled-out), (iii) the price elasticity of supply (demand) for one individual commodity is the same in all countries.</p>	Lloyd et al, 2009	<p><b>Welfare Reduction Index (TRI)</b></p> $W = \{ R'^2 a + S'^2 b \}^{1/2}$ <p>where R' is the PDI</p> $R' = \left[ \sum_{i=1}^n r_i^2 u_i \right]^{1/2} \text{ with } u_i = p_i^{-2} dx_i / dp_i^c / \sum_i p_i^{-2} dx_i / dp_i^c$ <p>and</p> <p>S' is the CSI</p>

Measure	Definition and main comments	Proposed/Estimated by	Formula
	<p>In the special case of linear demand and supply functions and same average producer and consumer price distortions, the loss from a tariff is proportional to the square of the tariff rate.</p> <p>The estimates provided by Lloyd et al., 2009 show WBI higher than NRA for all commodities, both because the welfare loss is proportional to the square of the NRAs, and because negative NRAs offset positive NRAs in the process averaging them, while welfare cost is positive for both positive and negative NRAs.</p>		$S' = \left[ \sum_{i=1}^n s_i^2 v_i \right]^{1/2} \text{ with } v_i = -p_i^* \frac{dy_i}{dp_i^p} / \sum_i p_i^* \frac{dy_i}{dp_i^p}$ <p>and</p> $a = \sum_i p_i^* \frac{dx_i}{dp_i^c} / \sum_i p_i^* \frac{dm_i}{dp_i}$ $b = - \sum_i p_i^* \frac{dy_i}{dp_i^p} / \sum_i p_i^* \frac{dm_i}{dp_i}$

Source: Balié and Tortora, 2010

### 2.1.3 Qualitative Work on Incentives and Disincentives in Africa

This section presents some few qualitative studies that are relevant to the analysis of incentives and disincentives envisaged under the MAFAP project.

“**The Political Economy of Economic Growth in Africa from 1960 to 2000**” (Ndulu, O'Connell et al. 2008) highlights the influence of the political context on policy choice. The key argument of the book is that a large proportion of African countries followed suboptimal economic policies in four distinct ways, which the authors label "anti-growth syndromes" and which relate directly to the politics in each country. The "regulatory syndrome" describes a policy regime in which economic efficiency is sacrificed for the sake of politically motivated rent seeking, and the "ethno-regional redistribution syndrome" describes one in which the government redistributes income to specific ethnic groups in ways that compromise economic efficiency. The book provides a clear description and analysis of disincentives arising from non policy factors illustrated by country examples.

Other factors resulting in incentives or disincentives to agriculture are also flagged in various publications. **Agricultural Development in Sub-Saharan Africa** by FANRPAN (Hårsmar 2007) analyses the main physical, institutional and policy constraints for small farms and suggests best investment strategies for pro-poor growth. Possibilities for increasing African agricultural productivity are discussed for a few commodities (Nerica Rice,...) including non-tradables (Cassava) and some specific issues such as input access (fertilizers, technology innovation, R&D) are discussed. Specific attention is given to some economic problems such as transaction costs, global commodity chains, producer and buyer driven value chains, and the concept of power. Similar considerations can be found in “**Price incentives, non-price factors, and agricultural production in Sub-Saharan Africa: a cointegration analysis**” (Thiele 2003) which identifies, apart from price incentives, four categories of non-price factors that affect the agricultural supply response: physical capital, human capital, technology and agro-climatic conditions.

“**Africa's Infrastructure: A Time for Transformation**” (Foster, Briceño-Garmendia et al. 2009) highlights the results of the Africa Infrastructure Country Diagnostic (AICD) conducted by a partnership of institutions including the African Union Commission, African Development Bank, Development Bank of Southern Africa, Infrastructure Consortium for Africa, the New Partnership for Africa's Development and the World Bank. This is one of the most detailed studies ever undertaken in Africa and which comprised surveys in 24 countries. The results were derived from detailed analysis of spending needs (based on country-level microeconomic models), fiscal costs (which involved collecting and analyzing new data) and sector performance benchmarks (covering operational and financial aspects as well as the country's institutional framework). The poor state of infrastructure in Sub-Saharan Africa—its electricity, water, roads and information and communications technology (ICT)—cuts national economic growth by two percentage points every year and reduces productivity by as much as 40 percent. To close the infrastructure gap with other parts of the world, meet the Millennium Development Goals and achieve national development targets in Africa within 10 years, an annual spending of \$93 billion would be required, of which almost half for power supply.

The importance of infrastructure is further confirmed in “**Experiences of food market reform and price stabilization in Eastern and Southern Africa**” (Jayne, Tembo et al. 2006) which underlines that addressing market failure will require increased commitment to investing in public infrastructure (e.g. road, rail and port infrastructure) but also in other public goods (R&D, agricultural extension systems and market information systems) and improved institutions. The authors lament that the large share of government expenditures devoted to food and input marketing operations represents a high opportunity cost in terms of foregone public goods investments to promote the functioning of viable food markets.

According to the authors of “**An African Growth Trap: Production Technology and the Time-Consistency of Agricultural Taxation, R&D and Investment**” (McMillan and Masters 2000),

changes in technology or institutions can enable producers to escape taxation or retaliate against it. The authors also argue that suitable changes enabling governments to make credible pro-growth commitments are likely to have a high payoff in promoting a more favourable policy environment for producers as well as consumers. The authors posit and test an inter-temporal political economy model in which the government sets tax and R&D levels while investors respond with production. Equilibrium policy and growth rates depend on initial cost structure. They find that in many (but not all) African countries, low tax/high investment regimes would be time-inconsistent, primarily because production technology requires relatively large sunk costs. For pro-growth policies to become sustainable, long term commitment of policy makers in addition to new production techniques resulting from but not limited to technology transfers would be needed.

**Table 7: Summary of additional existing works on incentives and disincentives in Africa**

No	Institutions (Authors)	Year	Title	Focus and Main Topic Addressed	Country coverage	Indicators/Approach
1	World Bank (Khan)	2001	Agricultural taxation in developing countries: a survey of issues and policy	The evolution of direct and indirect agricultural taxation.	35 less industrialized countries	Quantitative methods
2	Kiel Institute for World Economics (Thiele)	2002	The Bias Against Agriculture in Sub-Saharan Africa: Has It Survived 20 Years of Structural Adjustment Programs?	Evolution of the direct and indirect prices incentives for agriculture in Sub-Saharan Africa (SSA) over the period 1975–98.		Two different proxies – the black market premium and a model-based indicator were employed to measure the indirect effect of general economic policies
3	World Bank (Wodon and Zaman)	2008	Rising Food Prices In Sub-Saharan Africa	Policy response to the rising food prices and effects		Quantitative and qualitative analysis
4	IFPRI (Bouet, Mishra et al. 2008)	2008	Does Africa trade less than it should, and if so, why? The role of market access and domestic factors			Quantitative method
5	IFPRI/ReSAKSS (Johnson, Omilola et al)	2008	Monitoring Agricultural Sector Performance, Growth and Poverty In Africa Annual Trends report			
6	African Union Commission, AfDB, Development Bank of Southern Africa, Infrastructure Consortium for Africa, New Partnership for Africa's Development,	2009	Africa's Infrastructure: A Time for Transformation	Spending needs, fiscal costs and sector performance benchmarks	24 African countries	Country-level microeconomic models, detailed analysis on operational and financial aspects as well as the country's institutional framework.

No	Institutions (Authors)	Year	Title	Focus and Main Topic Addressed	Country coverage	Indicators/Approach
	the World Bank					
7	World Bank (Yepes et al.)	2009	Making Sense Of Africa's Infrastructure Endowment	The evolution of Africa infrastructures over the period 1960 to 2005	155 countries	Qualitative and quantitative methods.
8	World Bank (Ehui and Tsigas)	2006	Identifying agricultural research and development investment opportunities in sub-Saharan Africa: A global, economy-wide analysis	Defining priorities areas for public investment in R& D. Comparison between investment in R&D in crops and livestock.		Simulation method
9	World Bank (Place)	2009	Land Tenure and Agricultural Productivity in Africa: A Comparative Analysis of the Economics Literature and Recent Policy Strategies and Reforms	The convergence and divergence of results from economic studies of the relationships between land tenure security and agricultural productivity in Africa and how these results have been incorporated into recent agricultural, poverty alleviation, and land policy documents.		There are both areas of convergence and divergence in the economics literature. Similarly, the attention given to land tenure and its perceived effects on productivity varies considerably in the policy literature.
10	IFPRI (Adato and Hoddinott)	2008	Social protection opportunities for Africa	The role, effects and evolution of social protection in Africa		Qualitative analysis
11	Future Agricultures (Devereux)	2009	Social Protection for Agricultural Growth in Africa	Review of all the instruments of social protection for agricultural producers in Africa		Qualitative analysis

## 2.2 REVIEW OF PAST AND ONGOING WORK ON VALUE CHAIN ANALYSIS IN AFRICA

The value chain is a resourceful analytical approach for the MAFAP project for it allows vertical price decomposition along the value chain. It is therefore complementary to the type of analyses reviewed under section 0 above. Furthermore, value chain analysis is a unique approach to disaggregate information down to the level of the economic agent, including prices faced, costs incurred, value added and rents captured. It helps to compare the situation of a particular agent vis-à-vis the other agents in the chain.

This information is extremely relevant and useful in analyzing the effect of policies on specific actors in the agricultural and food sectors and to analyze how incentives and disincentives are distributed among agents of the chain. Besides adding a distributional dimension into the analysis of incentives and disincentives, it also brings in the spatial dimension of market differentiation and mobilises and analyses the data required to disaggregate non-policy incentives /disincentives, such as transport costs, characteristics of agroprocessing technology and related costs, profit and rents captured by various agents of the value chain.

Governments, development and business communities have recently experienced a tremendous resurgence of interest in promoting value chains analysis as a way to analyze policies and, more particularly, as a way to identify sources of potential increase in welfare and rural household incomes, to understand how the value added generated is distributed along the chain, how to lower transaction costs and to diversify rural economies. Value chain analysis stems from different schools of thought and uses concepts that are hereafter presented.

### 2.2.1 The value chain concept

The concept of value chain is multifaceted. Michael Porter was the first to use the term value chain in the 1980s.

A value chain consists of all value-generating activities, sequential or otherwise, required to produce, deliver and dispose of a commodity (Schmitz 2005). More specifically, it “describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformations and the input of various producer services), to delivery to the final consumer and final disposal after use” (Kaplinsky 2000; Kaplinsky, Memedovic et al. 2003).

In the mid-1990s, Gereffi introduced the concept of Global Commodity Chains (GCC), “linking households, enterprises and states to one another within the world economy” (Gerrefi and Korzeniewicz, 1994). The paper developed by Raikes et al. (2000) provides detailed descriptive accounts of two important methodological approaches for analyzing the political economy of global production and trade:

- The Anglophone Global Commodity Chain (GCC) analysis developed by Gary Gereffi, which initially mainly focused on internationally traded industrial goods.
- The older Francophone “Filière” tradition developed by INRA and CIRAD in the 1960s. In the French tradition, the concept of “filière” refers to the meso-economy and describes interdependent groups of economic agents that are in relation through a processing flow of products. This concept includes all the dimensions relating to the technical and technological changes along the chain (Morvan, 1985).



There are similarities and differences between these main two approaches. In combining them it seems possible to fill their respective lacunae (Raikes, Friis-Jensen et al. 2000).

Within the value chain analysis domain there are three types of analysis:

- Technical analysis. Depending on the objectives, value chain analysis can consist in the precise description of the technical operations and choices at various levels of the chain, the analysis of the technical performance of the factors of production and the identification of the technical constraints to be overcome. This analysis usually leads to drawing the diagram of the successive operations in the value chain, analyzing quantitatively the chain (relation between quantities of inputs and products, impact of the technology on the quality of the product, etc.) and to link the results to technical obligations (schedule of conditions, bottlenecks...).
- Economic analysis. One aspect of economic analysis is the analysis of economic performance which aims at evaluating the costs and the benefits of operations at each stage and for each category of agents in the chain, the contribution of the value chain to the national economy and the sensitivity of the chain to the variation of the economic environment (price, costs, taxes, etc.). Various tools and methods exist to analyze prices and costs, to calculate the gross and net margins, to establish the financial and economic accounts of agents, to measure the direct and indirect added value, to calculate the coefficients of productivity and competitiveness of the value chain. These indicators make it possible to evaluate the impact of the value chain in terms of distribution of income and spillover effects.

The economic analysis of a value chain can also be used to assess the immediate effects of policy measures on agents, farms or value chain performance. A very common tool for this type of analysis is the Policy Analysis Matrix (PAM)<sup>5</sup> developed by Monke and Pearson (Monke and Pearson 1989) and further refined by Tsakok (Tsakok 1990). The purpose of the PAM is threefold: (i) ranking of competitiveness of commodities and related value chains, (ii) ranking of efficiency of systems; (iii) measurement of transfer effects of policies.

- Organization and institutional analysis. The analysis of the value chain includes studying the role of the actors involved and the way in which they interact and coordinate. This analysis bears on the institutional framework of the chain, the strategies and rationale of the main actors and the relations among agents (horizontal and vertical coordination, power and forces, conflicts over the resources, synergies, etc.). The aim is to understand the operation and structure of the chain in order to identify elements constraining the development of the chain and possible remedial actions. The concepts of hierarchy, dependences and asymmetry in access to information and other resources is central to the analysis and allows identifying the most vulnerable actors within the value chain. It has also been used to analyze problems of logistics and their effects on market performance and cost reduction for example by R. Green (INRA France).

The literature reviewed here demonstrates that value chain analysis is increasingly used for quantitative economic analysis to generate information on sectoral performance, to conduct competitiveness analysis and to provide policy advice based on the analysis of economic indicators (e.g. indicators presented in the policy analysis matrix).

## 2.2.2 Some essential methodological references

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<sup>5</sup> <http://www.stanford.edu/group/FRI/indonesia/documents/pambook/Output/pamtoc.html>

Many institutions have contributed methodologically to value chain analysis in an African context. A selection of the main methodological sources is presented below. They range from purely analytical work to more action- and decision-oriented support.

- **FAO**

Several divisions within FAO have developed material on value chain analysis and performed analyses in Africa.

In 1993, the Policy Analysis Division (ESP) published a methodological note on value chain analysis for economic analysis of policies (Fabre 1993). The methodology included the descriptive analysis of various economic agents, a structural analysis including analysis of physical flows, a financial analysis including analysis of transfers and effectiveness, and an economic analysis. A companion document (Fabre et al., 1993) presents an application of these methods for an export oriented value chain in Africa.

More recently, the Policy and Programme Development Support Division (TCS) adopted the Value Chain Analysis (VCA) framework as one tool to analyze policies and their socio-economic impacts, highlighting various dimensions such as the profitability of activities of different agents involved in a chain, the creation and distribution of value added, competitiveness and protection under different policy and institutional set-up scenarios.

The VCA approach for policy analysis adopted by TCS borrows from different strands of the economic analysis and related literature. These include book-keeping for economic activities and farm management (income statements, crop and farm budgets), industrial economics (production coefficients and vertical integration), national accounts (value added analysis, generation and distribution through classical distributional channels, such as wages, interest, rents and profits), Cost-Benefit Analysis (CBA) for investments (counterfactual scenario analysis, discounted annual-equivalent investment costs), welfare economics (social optimum benchmarking), international trade (competitiveness and protection), contract and game theory (negotiations, strategic behaviour of agents along the chain) and others. Due to the multiple dimensions it embodies, the VCA framework naturally lends itself to extensions and cross-linkages with other complementary analytical approaches, including qualitative.

As VCA can be a very data-calculating intensive exercise, FAO/TCS developed the “VCA-software”<sup>6</sup>, a tool which:

- guides the user through basic standard steps in economic analysis of value chains;
- facilitates the systematic storage of information;
- calculates standard margins and indicators at different levels of the chain, such as value added and profits;
- provides guidance and tools for calculating reference prices for tradable and non-tradable goods and services, and,
- assists in the building of Policy Analysis Matrices (PAMs) and the generation of nominal and effective protection coefficients (NPCs, EPCs) competitiveness and comparative advantage indicators, such as Domestic Resource Cost (DRC) ratios.

The VCA-PAM approach has been extensively used to support FAO’s policy assistance work in a variety of countries in Africa, Asia and Latin America. In Burkina Faso and Kenya, this work has led to training of local staff, elaboration of policy documents based on quantitative and qualitative analysis, support to policy dialogue and institutionalization of the analysis in a local pole of

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<sup>6</sup> Version 2 of the FAO VCA software is available at: [www.fao.org/easypol](http://www.fao.org/easypol) , a FAO on-line repository of policy-relevant materials. Version 3 is scheduled to be released by mid-2010.

expertise<sup>7</sup>. In supporting the above-mentioned activities, a progressive didactical approach was adopted, from simple to more complex analytical approaches. Along this path, value chain has been integrated with other approaches for policy analysis, such as Computable General Equilibrium models (CGE) and poverty-inequality analysis using household-level data. Complementing VCA with other approaches for policy analysis helps the analyst to overcome some intrinsic limitations of the VCA approach, notably the lack of modelling of behavioural aspects, the related “fixed-price” limitation and its “partial” approach, as VCA normally analyses portions of economic systems, rather than economic systems in their entirety.

FAO/TCS has published on its dedicated web site ([www.fao.org/easypol](http://www.fao.org/easypol)) material regarding quantitative value chain analysis. The purpose of placing web accessible didactical material is to contribute to FAO’s efforts to build capacities of policy analysts for value chain analysis. Several training paths are proposed including exercises and examples for using the value chain analysis (VCA) software developed by L. G. Bellù, N. Guilbert and C. Cappi for FAO. The material available comprises notes explaining concepts such as functional analysis of the value chain, financial analysis, impact analysis using either market or shadow prices. Examples of applications to the irrigated rice chain or suburban horticulture in Mali are also available online. Upon request, more information is available on the use of the VCA software.

The Rural Infrastructure and Agro-Industries Division (AGS) developed “Guidelines for rapid appraisals of agrifood chain performance in developing countries”(Da Silva and De Souza 2007). These guidelines have been implemented in the context of several projects on value chain analysis worldwide and more particularly in Africa. The guide proposes a rapid appraisal methodology that can be readily followed by field practitioners interested in examining agrifood systems with the purpose of understanding their organization and functioning and identifying possible areas for performance improvement. In this guide, value chain analysis is presented as a tool:

- to enhance the performance of agriculture, food and fibre systems.
- to help create a shared vision among value chain participants regarding challenges and opportunities, thus facilitating the development of collaborative relationships, or the promotion of coordinated linkages among producers, processors and retailers.
- for economic analysis, helping the quantitative measurement of value addition and improving understanding of how value is created and shared among chain participants.
- to analyze the ‘rules of the game’ – laws, regulations, policies and other institutional elements - as well as the support services, which form the environment where all activities take place.

The key methodological elements include chain delimitation, collection analysis of information followed by identification of information gaps, and scope and information validation by value chain stakeholders. The guide highlights several issues: (i) the problem of making a clear delineation of a particular chain; and (ii) the question of whether or not to include the inputs segment. In terms of methodology, the document does not propose a specific approach for economic analysis of policies affecting the performance of a value chain. AGS has also conducted work on the financing of value chains.

Besides TCS and AGS, the Agricultural Development Economics Division (ESA) and the Trade and Market Division (EST) have both conducted value chain analyses within their respective research programs on agricultural markets. ESA developed guidelines based on Latin American countries that could be easily transposed to the African context (Hellin and Meijer 2006).

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<sup>7</sup> For the documentation of the analyses of various value chain analyses in Burkina Faso, see : DGPSA (2007a): *Analyse des impacts des politiques de développement agricole et rural et des filières Agro-sylvo-pastorales sur la pauvreté et la sécurité alimentaire: résultats synthétiques*. Ouagadougou, Burkina Faso 2007.

- **World Bank**

The World Bank/FAO “**Competitive Commercial Agriculture in Africa**” (CCAA) study (Keyser 2006) provides a standard methodology for quantitative analysis as well as practical instructions to follow for CCAA country teams based on the use of MS Excel templates.

The primary objective of the CCAA study is to explore the feasibility of restoring competitiveness and growth in selected African countries by identifying seven key commodities (cassava, cotton, maize, soybeans, rice, sugar, and cattle), production systems, and marketing arrangements that are capable of underpinning rapid development of commercial agriculture. Competitiveness is analyzed using primarily value chain analysis with a focus on:

- qualitative features of selected value chains, including the policy, institutional, and organizational factors that affect costs and shape relationships among the various actors;
- quantitative information, in particular financial costs and time requirements.

For each of the five case study countries (Brazil, Mozambique, Nigeria, Thailand and Zambia), existing value chain studies were identified and reviewed. The value chain analysis covered seven commodities and grouped farms in three categories in each country under review. The three farm categories were defined in terms of their management system and labour supply with the emphasis being on commercial agriculture, rather than subsistence farming.

The value chain analysis generated a number of **key performance indicators** that provide insights into the international competitiveness of the targeted commodities and the data is used to build a Policy Analysis Matrix (PAM):

- Average yield = average yield (in kilograms/hectare) achieved using recommended production practices and economically efficient levels of inputs. This is a good indicator of potential physical productivity at the farm level.
- Farm-level shipment value (SV) = Domestic Value Added + Foreign components, with Domestic Value Added being: Domestic costs and mark-ups + Official duties and tax + Unofficial charges and extra costs. The farm-level SV is a good indicator of the unit value of producing the unprocessed commodity and an important benchmark for use in cross country comparisons. The SV is a better indicator of farm level competitiveness than yield, because high yields do not necessarily mean high value added as sometimes high production levels require high levels of expensive inputs. The factors that most influence farm-level SV are those that determine comparative advantage: (i) agro-climatic conditions in the production zone, (ii) prior investments in technologies and modifications of the natural resource base through infrastructure, and (iii) institutions that shape incentives faced by producers.
- Import competitiveness ratio = Shipment value (SV) at main domestic consumption point / import parity price at main domestic consumption point.
- Export competitiveness ratio = Shipment value (SV) at border/export parity price at border.
- These competitiveness ratios can be interpreted in much the same way as resource cost ratios used in domestic resource cost (DRC) analysis.

- **French cooperation**

The collective document prepared by CIRAD and titled “**AgroFood value chains in Africa : How to improve market effectiveness?**” (Griffon, Boutonnet et al. 2001) considers several aspects of value chain analysis including methods, theories, tools and models aiming at assisting decision making for improving markets in Africa. The report includes numerous references of work on value chain in Africa classified as general studies focusing on topics such value chain concept (Fabre 1994; Fabre and Ali 1997), market failures (Brown 1992; Daviron 1998) and transaction cost (Fafchamps, De Janvry et al. 1995), institutional analysis (Griffon 1992; Chedanne 1999; Eicher 1999; Griffon 2002), regulation theory and value chains (Boyer 1998), international competitiveness of value chains (Griffon and Hugon 1995; Daviron and Losch 1998),

impact of globalization (Lelievre 1998; Egg 1999; Lancer 1999) and studies focusing on specific commodity chains mainly Western Africa such as rice (Baris, Coste et al.; Dupressoir 1998; Mariko, Chohin-Kuper et al. 1999), inputs for cereal production (Coulibaly and Diakite 2001), dairy (Vatin 1996; Le Masson 1997; Duteurtre 1998; Sangare and Diallo 1998), cocoa (Heidhues, Kamajou et al. 1995; Daviron 1996; Gielbert 1997; Aulong, Dury et al. 1999).

The report proposes a selection of nine groups of concepts, methods, and tools. Some of these groups are mainly descriptive while others are geared towards decision making. However, the report does not provide much in terms of quantitative analysis of policy induced distortions.

In this report, we will only describe five main conceptual approaches presented that can be relevant in the context of the MAFAP project. We also note that based on these various conceptual approaches, Philippe Hugon (2000) designed a typology of agricultural and agrifood markets forms in Africa. A summary of this typology is presented in the **Table 8**.

**Table 8: Forms of coordination**

Organization of competitiveness and decentralization	Information and products gathering in one place	Market place Auctions: ✓ Ascending ✓ Time bound ✓ Auction clock..
	Provision of information on price and agents	Posted market prices Access to companies' accounts
Organization of decentralization	Monopoly	Public or private monopolies Oligopolistic arrangements
	Price controls	Floor and ceiling prices
Organization of Coordination	Horizontal	Buying groups Selling groups Mutual guarantee Agreements to control supply Sub-contracting
	Vertical	Contracts – trade routines
Concentration of Capital	Horizontal	Concentration by acquisition Cooperatives
	Vertical	Concentration by integration Inter-professional agreements

Source: Griffon et al., 2001

The five main conceptual approaches presented are:

- **Perfect competition** : This term is proposed here as a useful concept for identifying market "imperfections" or "distortions". Moreover it is also useful to analyze important characteristics of African markets that contrast with the hypothesis of perfect competition in many ways:
  - highly diverse products, which by nature cannot be restricted to the concept of "commodity" which implies homogeneity, while reality in Africa is quite diverse (e.g. sorghum can come in a variety forms for a wide range of uses),
  - imperfection in the financial markets (credit, savings and insurance),
  - serious imperfection in price information systems,
  - local monopolies and oligopolies,
  - lack of appropriate trade law, deficient enforcement of law, and violence and lack of security surrounding transactions.

- **Economics of organization and imperfect competition** suggest that "imperfection" is often the rule and that economic agents therefore seek to be efficient in the real context in which they operate. Agents are prompted to "create organization" to cope with uncertainty and the variety of risks that affect them. There are many possible forms of organization, such as marketing organizations, to access markets more easily when there are barriers to entry; cooperation, to benefit from economies of scale; or producer organizations, to share information on prices and influence supply.
- **Contract theory** (neo-institutionalism) provides a framework for detailed analysis of risks related to transactions. The main analytical tool is the concept of transaction cost. In Africa as elsewhere, transaction cost analysis provides information about the nature of trade risks and about the level of efficiency (or degree of imperfection) of markets.

**Table 9: Reference theories and concepts for market analysis**

Theories	Concepts, tools, models, methods	Scientific domain
Perfect competition	Individualism, homogeneity of goods, complete markets, atomicity, fluidity of flows, clearing	Mathematical economy
Economics of organization and imperfect competition	Asymmetry of information, adverse selection, moral risk, economies of scale, power asymmetries,	Economy
Contract theory	Transaction costs, complete contracts	Economy- law
Theory of conventions	Conventions: competitiveness, traditions, hierarchy, functionality, solidarity.	Socio economy
Theory of institutions and social choice	Institutions- regulations (laws contracts, conventions, agreements,...	Economy and law anthropology
Theory of regulation	Institutional forms, modalities of accumulation, modes of regulation	Economy
Game theory	Profit function, interactions of decisions	Mathematical economy
Game of actors	Cooperatives or uncooperative games, scenarios	Sociology
Meso-economics	Value chain analysis, simulations, scenarios	Socio economy - accounting

Source: Griffon et al., 2001

- **The theory of interaction of actors** (Pask and Zeeuw 1992; Pask and Zeeuw. 1992; Phillips 1992; Phillips 1995; Kovenock and Phillips 1997) is extremely useful to describe the market in the African context. By stylizing complex situations of competition, these methods show up convergences and divergences and offer an understanding of the social dynamics related to the market. They can be used, for example, to simulate the possible solutions to situations of opposition between actors in the same export channel in different price contexts. Depending on the balance of power, profit and risk will be shared in a context of stable or unstable cooperation, or opposition.

- **Meso-economics** (Philippe Hugon) seeks to combine the advantages of many alternative theories. From micro-economics, it borrows different methods of behavioural analysis. From macro-economics, it borrows the accounting framework needed to study the most efficient economic sub-group for market analysis: a sub-sector, i.e. all the actors and transactions relating to a product at the various stages of production. Meso-economics is the only theoretical construct that attempts to represent the market in a concrete manner on the scale of a specific economic sub-group, i.e. a sub-sector. Each sub-sector is described in terms of its "mercatecture" (all the agents and transactions) and its "technotecture" (all the techniques used). The economic analysis is first an accounting analysis (breakdown of agents' accounts). It then draws on the various existing theories to identify the nature of risk and uncertainty, existing behaviour (balance of power, opportunistic behaviour) and emerging forms of organization aimed at reducing risk and uncertainty (rules, institutions, organizations). Meso-economics is an effective and comprehensive analytical tool, compatible with alternative theories and useful for decision-making.

The “**Elément pour l’analyse économique des filières agricoles en Afrique sub-saharienne**” (Fraval 2000) looks at some key concept in original ways. For example, it presents competitiveness, usually analyzed through comparative advantages and endowments, as the construction of long term “competitive advantages” through quality oriented organizational strategies, aimed at creating increasing returns to scale. New perspectives for action can be found in the same way, in several fields: tax system, prices stabilization, inputs markets, credit or privatization policies.

More generally this report argues that in order to increase the chances of successful institutional change in the agricultural sector and transition towards a predominantly market oriented but equitable economy, the State has a crucial role to play, both legal (right of producers to organize themselves and defend their interests, design of clear rules for marketing/trade) and material (creation of communication infrastructures, improvement of the reliability and speed of information circulation among people, whenever it comes to the supply and sharing of common pool resources or public goods).

▪ **German cooperation (GTZ)**

**The Methodology of Value Chain Promotion (*Value Links*) (GTZ 2007)** presents the *ValueLinks* methodology promoted by the GTZ to perform value chain analysis. *ValueLinks* is a systematic compilation of action-oriented methods for economic development with a value chain perspective. It provides essential know-how on ways to enhance employment and the business income of micro and small-sized enterprises and farmers by promoting the value chains in which they operate. In this methodology, the value chain:

- connects the different yet related business activities (production, transformation, marketing, etc.) necessary for serving customers, and
- joins and coordinates the enterprises (primary producers, processing industry, traders, etc.) performing these business activities.

*ValueLinks* is entirely action-oriented and has been developed on the basis of a review of real-life experience. It builds on lessons learned with rural development programmes and private sector promotion supported by GTZ. The *ValueLinks* manual is structured into 12 modules organized according to the project cycle. First the manual deals with the decision whether to engage in value chain promotion at all and how to combine it with other development approaches (module 0). The first step in value chain promotion is the identification of the value chain (module 1), followed by value chain analysis (module 2) and the formulation of a chain upgrading strategy (module 3). Module 4 focuses on facilitation of value chain promotion projects. The following modules (5 to 10) are all devoted to the implementation of projects. Several major fields of action are distinguished: business environment and linkages, public-private partnerships, services, quality standards and financing. The final module deals with monitoring and managing impact. Value

Links does not prescribe any particular sequence in which the modules should be used. In fact, the methodology is iterative on the ground that practitioners usually have to move between implementation and analysis. Monitoring is found in the last module but is expected to be conducted throughout the process.

In value chain promotion, GTZ gives preference to private-sector solutions. The fields of action are:

- improving market transparency, especially through analysis of value chains and provision of market information,
- development of producer associations and initiation of business contacts,
- establishment and development of competitive services for investment projects, technological upgrading, quality management and training,
- provision of advice to the public and private sectors on issues relating to market development and regulation and the introduction of quality standards.

In a MAFAP context, the approach promoted by GTZ is quite complementary to the analytical work undertaken in the framework of the project and could help to implement in a participatory way the policy and investment recommendations arising from analytical work.

Other references include: “**Reader: Agribusiness and Value Chains**” (GTZ 2008) and “**Rural economics development**” (GTZ 2010).

#### ▪ **USAID**

The value chain analysis method adopted described in **Three Steps in Value Chain Analysis (Neven 2009)** has three main stages:

- identification of the main functions and types of firms in the value chain,
- analysis of structural connections, and
- analysis of dynamics.

The first stage uses a similar approach to those already reviewed but considers a set of attributes to the value of the end-product to the end-consumer (price, taste, convenience, image, etc.).

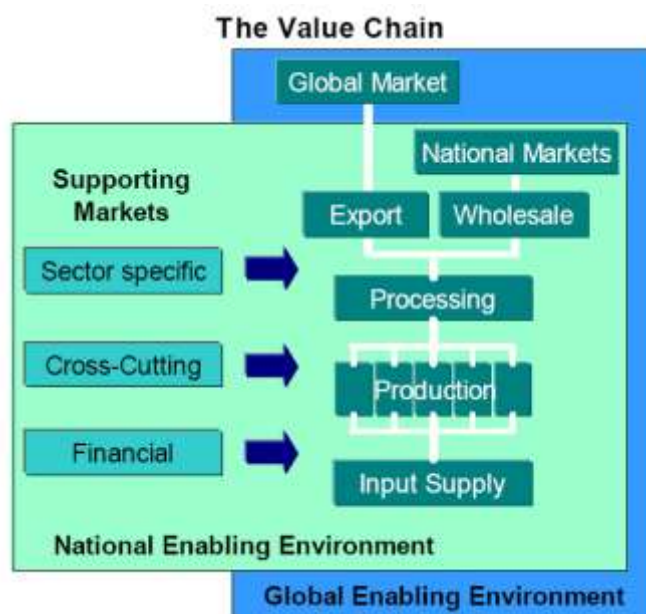
The second stage analyzes how the various firms are structurally connected, using the framework depicted in Figure 1.

There are five structural elements: end-markets, the business enabling environment, vertical linkages, horizontal linkages, and supporting markets. Value chain analysis starts from an end-market analysis which looks at market sizes and growth rates, market segmentation, consumer behaviour, supplier requirements, competitive position (benchmarking), network relationships, etc. It also takes the process of globalization into account.

The third stage analyzes the dynamics that affect how the structure changes over time and driving or blocking factors: market demand, technology, available services, profitability, risk, barriers to entry, large-firm behaviour, input supply, and policy. Change spreads through a number of dynamic elements, including: upgrading through investment by individual firms, value chain governance, power exercised by firms in their relationships with each other, inter-firm cooperation and competition, and the transfer of information and learning between firms.



**Figure 1: Description of the value chain**



**“Value Chain Approach to Poverty Reduction: Equitable Growth in Today's Global Economy” (USAID 2007)** considers four key factors that affect competitiveness:

- inter-firm cooperation and coordination is crucial to competitiveness
- distribution of benefits creates incentives or disincentives for performance
- relationships among firms in a value chain can influence the distribution of learning and benefits
- learning and innovation are essential for creating and sustaining competitiveness

Another important reference is **“Lessons Learned on MSE Upgrading in Value Chains”** (USAID 2006) which reflects on experience with developing micro and small enterprises (MSEs) in order to offer opportunities to increase the income of the poor, enhance the competitiveness of a value-chain, and thus contribute to economic growth.

### 2.2.3 Empirical quantitative value chain analysis

There are numerous examples of studies using VCA for various purposes. In this review it was decided to restrict to analyses dealing with policies and market failures affecting the functioning of value chains. **Table 10** provides a list of the main value chain analyses performed in the 10 potential MAFAP countries.

The value chain approach has been applied for a variety of purposes such as:

- the place, role and improvement of the situation of specific economic agents (**Table 11**)
- the assessment of competitiveness (**Table 12**)

- understanding the effects of policy reform and assessing the effectiveness of specific policy instruments on farm performance (**Table 13**)

A substantial part of the literature also addresses Global Commodity Chains and African Export Agriculture. Recognizing the changes in agricultural markets and trade associated with structural adjustment and liberalization in the recent decades, authors have investigated the implication of new marketing arrangements for global commodity chains and producers in Africa. For example Daviron and Gibbon (Gibbon 2003) provide a historical framework for examining international trade in tropical agricultural products, with brief illustrations of the specific trajectories of Africa and some African countries within that framework. They also show how a number of issues are explored in the case studies presented, including how current changes might affect the future prospects of smallholder ('peasant') production of tropical export crops (Daviron and Gibbon 2002)

An important ongoing project of relevance to MAFAP is the **Global Food Security Response (GFSR): West Africa value chain analysis protocol (USAID 2009)**. Late 2009, USAID started to produce a set of multi-layered comprehensive studies aimed at improving food security and raising rural incomes in West Africa. The studies will include 7–9 food staple value chains assessments and will cover several West African countries including Mali, Ghana, and Nigeria. The research is likely to be multi-level and multi-disciplinary. Several types of data will be collected and analyzed spatially to understand the interactions among various factors influencing food security and rural incomes. In this project, value chain analysis is presented as different from but complementary to the analysis usually conducted by agricultural economists who aim to identify where interventions can have the greatest benefit or pay off. Such analysis focuses on the returns to change, not the obstacles to change, i.e., the benefits of alleviating constraints but not the feasibility of addressing constraints or how to address them. USAID/EGAT's value chain approach, with its focus

**Table 10: Main Value Chain Analyses Performed in selected MAFAP Countries**

Potential MAFAP Countries	Commodities analyzed	Year	Originator and contact	Comment on type of analysis, method and tool
Burkina Faso	<ul style="list-style-type: none"> <li>• Fisheries</li> <li>• Fire wood</li> <li>• Horticulture</li> <li>• Livestock and meat</li> <li>• Grains</li> <li>• Aquaculture</li> <li>• Arabic gum</li> <li>• Rice</li> <li>• Cow milk</li> </ul>	2007     2008	Direction de la Planification et des Statistiques Agricoles et Alimentaires with FAO support	Quantitative – VCA software
Kenya	<ul style="list-style-type: none"> <li>• Cotton,</li> <li>• Mango,</li> <li>• Sugarcane,</li> <li>• Cow milk</li> </ul>	2009	National capacity with FAO support	
Mali	<ul style="list-style-type: none"> <li>• Maize</li> <li>• Rice</li> </ul>	2001	2 different value chain analysis IER/CIRAD and BECIS	Quantitative – PAM & DRC
Tanzania	<ul style="list-style-type: none"> <li>• Coffee</li> <li>• Tea,</li> <li>• Cotton</li> <li>• Cashew</li> <li>• Artemisia</li> </ul>	2008-2009	TechnoServe   2 different analysis by TechnoServe and Match Maker Associates	Quantitative -
Cameroon	<ul style="list-style-type: none"> <li>• cassava,</li> <li>• cotton,</li> <li>• maize,</li> <li>• palm,</li> <li>• plantain,</li> <li>• poultry</li> </ul>	2008	CCAA study (Seck, Keyser et al. 2008)	Quantitative – Keyser’s methodology

on end markets, is presented as a good complement to analysis of the factors that determine the location of potentially high-productivity production areas.

The USAID value chain approach has been developed in three MAFAP countries including Kenya for three activities, Tanzania for four activities, and Uganda for four activities.

(<http://www.cyesnetwork.org/activities/55>).

**Table 8 : Value Chain Analyses Applied to Specific Economic Agents**

Country	Authors/Year	Economic Agent
<b>Ghana</b>	Afari-Sefa (2007)	Smallholders and horticulture exports
<b>Kenya</b>	Chamberlin and Jayne 2009	Smallholders' proximity to infrastructure, markets, and services improvement
	(Okello, Narrod et al. 2009)	Factors that disfavoured farmers participation such as the incapacity to comply with international food safety standards
	(Alex Mend, Ibrahim Amadou et al. 2007)	Small scale horticulture subsector -
	(Barrientos, Dolan et al. 2003)	Horticulture, global value chain and gendered economy approaches

**Table 9 : Value Chain Analyses Applied the Assessment of Competitiveness**

Country	Authors/Year	Focus
<b>Burkina Faso</b>	World Bank 2007	Landlocked Country Significant trade takes place on an informal basis with neighbouring countries, which does not show up in official data Need to improve performance on exports and foreign investment
<b>Ethiopia</b>	World Bank 2006	Roses, road construction, housing construction, leather products, and garment industries Addressing issues of market structure and other industry characteristics
<b>Ghana</b>	Govindasamy et al. 2006	Factors impeding profitable marketing of natural products
<b>Kenya</b>	World Bank 2005	Investment Climate Assessment Infrastructure, tax administration, and corruption as major constraints to doing business
<b>Mali</b>	World Bank 2003	Mangoes Exports controlled by foreign agents Innovative strategies relying on connecting farmers to markets Promoting private investment in rural areas, furthering multiple and cross-border partnerships, supporting agricultural diversification, and facilitating trade export logistics

Country	Authors/Year	Focus
<b>Mali</b>	Dolo, Sako et al. 2005 FAO	Fisheries Evaluation of the socio-economic contribution of the fisheries sector to GDP and rural development
	Pierre Baris, Jean Zaslavsky et al. 2005	Rice in Mali: competitiveness and market perspectives
<b>Tanzania</b>	Anna A. Temu, Winter-Nelson et al. 2001	Coffee Marketing system after liberalization Emergence of private, vertically integrated exporters
<b>Uganda</b>	Gibbon 2006	Organic production Company size and ownership, standards, certification costs, total export values, value-added in Uganda, marketing channels, crop procurement systems, management of organic operations Coffee, cotton
	(Baffes 2006)	Coffee. Restructuring Uganda's coffee industry. Poor marketing position in the global market, weak regulatory framework, and poor infrastructure
	Fafchamps et al. (2004)	Coffee Major impediments to higher performances and the main prices and costs characteristic
<b>Benin, Burkina Faso, Cameroon, Mali, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe</b>	World Bank 2008	Cotton Detailed comparative description and performance assessment of quality control (seed cotton grading and lint classification) methods and their impact on prices Transmission of market signals on to producers

**Table 10: Value Chain Analyses, Effects of Policy Reform and Effectiveness of Specific Policy Instruments on Farm Performance**

Country	Authors/Year	Focus
<b>Ethiopia</b>	(Woldie and Siddig 2009)	Subsidies on grains production Subsidies on petroleum products
<b>Ghana</b>	(Vigneri and Santos 2008)	Effect on price competition of the deregulation of the cocoa chain
<b>Uganda</b>	(Coulter 2007)	Marketing of staple food commodities
<b>West Africa (Ghana, Nigeria)</b>	(Lançon and Benz 2007)	Rice Linkages between trade regimes and development policy objective such as food security Fertilizer subsidy Diet transition DRC

#### 2.2.4 Descriptive value chain analysis

Similar to the methods dealing with organization and coordination of value chains, several authors have focused their research on the power of specific agents in the value chain with particular attention given to the international segment of value chains and to the role of transnational companies. Gibbon (2003), for example, analyses the effects of regulatory interventions in the EU, South Africa and France aiming at diminishing bargaining power of supermarkets in marketing transactions and their effects on smaller-scale farmers (Gibbon 2003).

In “**Market Access and Agricultural Product Marketing : Promoting Farmer Initiatives**” (2010), Lothoré and Delmas propose an analysis of the obstacles farmers face to sell their agricultural products including the difficulty of accessing markets, low and fluctuating prices, unfavourable power relations and others. Through case studies, this paper examines some of the “solutions” to overcome insufficient dialogue among stakeholders affecting local dynamics that ultimately penalize farmers and proposes different ways to improve market access. This very valuable document is the result of a long process (2004 to 2008) of collective thinking conducted within the Working Group “Market access and agricultural product marketing”, which was hosted by Inter-réseaux ([www.inter-reseaux.org](http://www.inter-reseaux.org)) with hundreds of participants from sub-Saharan Africa.

In the same domain, Swinnen, Vandeplas and Maertens (Swinnen, Vandeplas et al. 2007) have analyzed Commodity Value Chains in Africa focusing on governance and arguing that it is a crucial element for efficiency and distributional effects – including for growth and food security. Their paper uses a conceptual model to show that governance itself is endogenous in an environment of weak contract enforcement and imperfect markets and, importantly, depends on the value in the chain. The authors relate predictions of the theory to empirical evidence on differences in supply chain governance in Africa across different commodity types. An explanation is provided as why private sector governance systems with interlinked market transactions have emerged for higher value crops but not for staple food crops. The paper discusses the efficiency and equity effects and the implications for policy. It also points out that supply chain governance – or the way economic transactions in supply chains are coordinated (Gereffi, Humphrey et al. 2005)– is crucial in determining how economic surpluses are generated and distributed along the chain. It has been argued and empirically demonstrated that the degree of vertical coordination in supply chains indeed influences economic outcomes, in particular efficiency and equity.

To conduct their analysis, the authors develop a general model of value chains which allows comparisons across commodity types. To understand what is (not) occurring in the staple food sectors the authors think it is essential to not focus merely on the staple food crop sector but to relate and compare its characteristics and economic performance to other agricultural subsectors. A simple classification of low, medium and high-value commodities is used. Moreover, the authors explicitly use an “interlinking market” approach. The paper builds upon the literature on supply chain governance (Dolan and Humphrey 2000; Kirsten and Sartorius 2002; Swinnen 2005; Maertens and Swinnen 2006) that often draws a distinction between market-based governance and contract-based governance.

In terms of finding, authors show that the functioning of markets (highly imperfect in many SSA countries) and the contract enforcement environment (often very weak) play an important role in the emergence of specific systems of supply chain governance. These institutional aspects are therefore specifically accounted for. The authors show that market imperfections and weak enforcement institutions are important in determining the distribution of surpluses in commodity value chains (Swinnen, Vandeplas et al. 2007).

## 2.3 METHODOLOGICAL CHALLENGES AND PRACTICAL HINTS

With its overall objective of informing policy making and investment identification in support to food security, poverty reduction and sustainable management of natural resources, the MAFAP project will need to combine measurements of incentives and disincentives by commodity (see page 22) with a more disaggregated analysis along some of the most important value chains (see page 55) in order to generate quantitative information on the incidence of existing policies and their consistency with the stated objectives to serve as a basis for formulating recommendations for policy change (including addressing the question of missing policies) and identifying priority areas for investment.

This review helped to see the main methodological challenges that will have to be addressed by MAFAP and learn from what past experience. These lessons and practical recommendations are presented briefly here, along with references where more details can be found.

- **How has the issue of price and cost determination been addressed?**

The choice of the **reference price** is an important issue for discussion. Since a substantial amount of data is required to calculate the price wedges between observed and reference prices, attempts to assess support to producers in an African context will face the challenge of minimizing sources of measurement errors. The importance of errors related to various within-country adjustments to the reference price will vary depending on the commodity and the level of complexity of its value chain, in particular the existence of processing stages. For example, in comparing domestic price to reference price, it is necessary to adjust the reference price to account for costs such as transport, handling, storage, insurance at one given point of comparison in the marketing chain (farm gate, wholesale, or retail level). In most cases the wholesale level is chosen as the point of comparison because the wholesale price is often the easiest one to get. Moreover, in the case of commodities that require complex processing, it may be possible to compute the support received at different processing stages by using a comparison between the reference price of the processed commodity and the domestic price of that commodity at the wholesale level. Such a comparison might be more accurate and help distinguish protection given to economic agents operating at various stages of the value chain (farmer, processor, wholesaler, trader, retailer, etc.). It can also help identify inefficient or non competitive agents in the value chain (Cahill and Legg 1990; Doyon, Paillat et al. 2001; Orden, Cheng et al. 2007).

The issue of **competitiveness analysis based on the use of the world price when this price is distorted** is also of concern to several authors. In the literature, the international price for a particular good is usually defined as equal to the marginal cost of production for the least competitive producers able to export to the world market. Producers who are not able to export because they have a higher marginal cost of production than the world price are then considered to be non competitive for this particular good. Because agriculture is heavily subsidised in some countries, it reduces the cost of production of their farmers and makes them more competitive on the world market, although in an artificial manner. This is then reflected in the world price which is reduced artificially by the additional supply available at a subsidy-dependent low production cost. Estimates have been made of the reduction of world prices for some key agricultural commodities that are due to subsidies in OECD countries (Dorward, Fan et al. 2004; Polaski 2008; Swinnen 2010). It is clear that with a reduced world price due to subsidies, those farmers who produce at a cost that is between the world price in a no subsidies situation and the distorted world price in a with subsidy situation, will wrongly appear to be non competitive. In other words, choosing the subsidy distorted FOB/CIF price as the reference price will bias the interpretation of competitiveness and cannot be used to measure adequately the incentives or disincentives arising from national policies in a price-taker country as in this case the

competitiveness margin will be larger than it would appear using the FOB/CIF price (Dupaigre, Baris et al. 2006).

It is therefore often argued that agricultural commodities that more exposed to international competition (cotton, rice, sugar, etc.) are penalized by this artificially low reference price which among other does not allow for an economically justified remuneration of labour since competitiveness of African agriculture and more particularly of small African farming is characterised as low capital and labour intensive.

Despite these important limitations, the world price captured through CIF/FOB prices are chosen in most cases to set the benchmark for judging whether a policy measure or a market failure constitutes an additional incentive or disincentive.

The following situations can be distinguished:

- The case of tradable products

As for many agricultural products the international price is influenced by the substantial policy support provided by governments of exporting countries, there is a need first to make an assessment of the basic characteristics of the world market of the commodity being analysed. In case it is warranted, an adjusted world price should be taken as reference.

Moreover, it is also possible that the reference price or international price is higher than the market price as a result of major beyond the border policy interventions such as export subsidies for example. This may occur for some products that are not or little internationally traded – such as coarse grains - or for products with substitutes which price in the international market are depressed to such an extent that they depress supply on the domestic market. This would for example be the case of tomato or chicken legs or any other case of scrap or by-products of the industrialized countries.

- The case of non traded or non tradable products

Estimating the economic value of non traded outputs and inputs is a tricky question. Goods may be non traded for different reasons. Sometimes goods and services are non traded because of government policy decisions that they should not be exported or imported. In other cases, they cannot be traded for technical reasons (e.g. the good is too perishable as is the case for sugar cane). Other goods may be non traded because their cost and quality are such that, although they can be sold in the domestic market, there is no international market for them. In the case where non traded inputs or outputs have close substitutes that are traded – for example, domestic firewood can be converted into the calorific equivalent of kerosene or gas - the equivalent in traded products can be used to provide the reference price for the non traded products. However, this is only a rare occurrence. For other cases, the literature suggests that non traded goods used as inputs should be valued at their marginal economic costs of extra supply. See specific section on non tradable and non traded products below.

In some cases, the attention of analysts focused on the adequate approach for **input support measurement**. In some countries, there are preferential (subsidized) prices for such inputs as fertilizer, electricity, irrigation, and transportation. This phenomenon is more important in less industrialised countries than in others. In the “*PSE methodology*” used by the OECD, these subsidies are categorized as budgetary payments, though subsidies on tradable inputs at the farmgate level may be better measured through a price gap method analogous to the calculation of market price support (MPS) for output commodities than by government expenditures because the incentive effect is otherwise likely to be diluted and therefore more difficult to attribute to farmers, as Gulati and Narayanan (2003) have demonstrated. For payments such as input subsidies or general subsidies such as tax or capital grants, calculations of allocation across commodities are required. In this case, the payments are often distributed on the basis of each commodity’s share in total value of agricultural production (Melyukhina 2002). Other criteria, such as the share of acreage, also provide plausible approximations, although each may introduce a measurement error. In any case, care should be taken to avoid any double counting (at commodity level and as a general public expenditure).



Some authors have suggested ways to overcome some **assumptions underpinning indicator calculation**.

Several authors have suggested that agricultural support indicators for less industrialized countries be measured based on the quantity of marketed surplus rather than on the entire quantity produced, since a large portion of the output produced by smallholder farmers is consumed on the farm and is not directly affected by support policies ((Swinnen, Gorter et al. 2000; Josling and Valdés 2004; Swinnen, Vandeplas et al. 2007).

NRA, CTE, TRI, WRI indicator are based on the assumption that the domestic price elasticities of supply (demand) are equal across commodities within a country. They could thus be refined by relaxing the assumption. This would entail a move to ‘marginal welfare weights’, instead of production and consumption share weights when estimating the producer distortion index (PDI) and consumer distortion index (CDI), respectively (Lloyd, Croser et al. 2009) and (Kee, Nicita et al. 2009).

Also related to the issue of price determination, authors have raised the **issue of large scale countries**. The way price is measured in the case of a large scale country is of particular interest especially regarding some specific commodities for which the trade status and therefore price vary from region to region. Moreover the MPS in large scale less industrialized countries is also to be considered as in this case, it is possible that producers in some regions benefit from policy interventions, while those in other regions lose from them. Different adjustments for internal transport and marketing costs could lead to different MPS by region when, for example, one uniform farmgate price support is provided by the government. One useful distinction when state-level analysis is necessary for a particular commodity is to separate states in a country that are “net surplus” producers of that commodity from those that are “net deficit” regions. To get more on this issue government see (Orden, Cheng et al. 2007) p11. In addition in large countries with segmented markets, there are several segmented ways of trading with neighbouring countries. This is the case for instance of Tanzania with respect to Burundi, Kenya, Uganda, Mozambique and Zambia, and the rest of the world. It would therefore be misleading to consider that Tanzania presents a homogenous trade patterns when it actually varies quite significantly depending on not only trading partner countries but also commodities (Conforti and Sarris 2009).

Another debate regards the **choice of the price at a particular moment of the year**. Should the analyst select the annual average or harvest price? Orden, Cheng et al. (2007) note that the choice of annual (calendar year, crop year, or fiscal year) or average harvest season prices can also affect the results, particularly in less industrialized countries. The OECD (2003) uses annual average prices in the MPS and PSEs it computes for its member countries. In many cases, owing to capital market inefficiencies and limited on-farm storage facilities, smallholder farmers in less industrialized countries sell their products immediately after harvest. Under these circumstances, it may be more appropriate to use harvest season farmgate prices rather than annual average prices, keeping in mind that both the time of year and the duration of the harvest season are commodity- and region specific.

Authors have also analyzed the implications on price measurement of **change in commodity trade status**. The importing or exporting status of a country for a specific commodity can be affected by several factors including market prices fluctuations, level as well as change in government price interventions, domestic supply or demand shocks, etc. The likelihood that any of these factors will result in change of trade status is greater if a country is close to self-sufficiency for a particular commodity. In such a case, Byerlee and Morris (1993) argue that the conventional method of comparing domestic price to an import or export adjusted reference price can lead to incorrect estimates of the level and direction of the protection. A corrected protection measure needs to be calculated based on a domestic market-clearing equilibrium price at the adjusted reference price rather than the import or export price, especially when a country has relatively high internal or external transport costs (which is very often the case in less industrialized countries), so that there is a wide gap between the adjusted reference prices for imports versus exports. Byerlee and Morris also suggest a

more systematic approach to select the adjusted reference price in order to evaluate the MPS component of the PSE. Rather than relying on the current direction of trade, they suggest to analyze the relationships among the autarky equilibrium price and the adjusted reference prices for imports and export. For more details, see (Byerlee and Morris 1993) and (Orden et al., 2007).

Lastly, some research has raised the issue and proposed approaches to **take family farming into consideration**. For example, according to (Dupaigre, Baris et al. 2006), family farming remains the basis of agricultural production in West Africa, and will likely remain so for long. This type of production system presents advantages in terms of management of common goods, intensive use of labour (family) and is not contradictory to some concentration of capital through contractual forms of coordination between units of family production. Moreover, product diversification is not the main feature of family farming since under conditions of price stability and assurance systems for crops, farms - whatever their form of organization - will tend to specialize in order to benefit from some economies of scale (savings on fixed costs). Family farms in West Africa are generally inserted in the market. Even the units called "self-subsistence" define their choice of self-consumption as a trade-off between the marketing of their agricultural production in conjunction with the purchase of food consumption and food production directly used by the household. Therefore prices and potential return are the real driver of production of farms - including for family farms.

- **How were transaction costs taken into consideration?**

Some studies have tried to better capture the incentives and disincentives effects of all forms of transaction costs particularly on specific agents of a marketing chain. Indeed, economic agents in the value chain receive incentives or disincentives to produce from various interrelated sources, such as:

- “autonomous” shifts in prices of outputs, inputs and factors – this refers to changes in prices due to changes in prices of complements or substitutes, shifts in consumers’ income, changes of tastes etc
- features of input-output markets and related changes. This refers to factors affecting the relative position of the agent with respect to surrounding economic partners (customers, suppliers), such as entrance, exit, consolidation, transformation of partners in the economic sector-segment in which the agent operates, including mono-oligopolies, mono-oligopsonies and other market features allowing for rent-seeking behaviours;
- changes in infrastructural services available to the agent (including changes in the provision of public goods);
- commodity-sector specific policies affecting output and input prices or commodity-sector specific policies affecting technological choices, portfolios of technological options, technical progress etc.
- macro-economic policies affecting all the above;
- external shocks (external to the economic system) affecting all the above (international price shocks natural-climatic events, etc)
- other sources of incentives or disincentives (context-specific, such as geo-political and geo-strategic changes etc)

- **How have various studies handled the issue of non tradable and non traded commodities?**

The issue of non tradable/non traded has been pointed out in most of the studies but as not been clearly solved. In Africa only 10 to 15 percent of the total agricultural output is traded. The question of integrating non traded commodities is therefore key in monitoring agricultural and food policies particularly when the focus is on monitoring country performances in achieving food security.

In this regard a distinction needs to be made between non tradable and not traded as commodities falling in the latter category can sometimes be considered as tradable commodities depending on the reasons that explain their non traded status.

One way of looking at the non traded-non/tradable issue is to refer to previous works on non tradable inputs and treat non tradable commodities in a similar way as inputs. Corden and Balassa each proposed a different approach to account for non tradable products with significant consequences in estimating value added.

In his method Corden treats non-traded inputs in value added exactly like primary factor inputs e.g. labour, land or capital by valuing them at their marginal cost or productivity. The marginal cost will differ between situations where spare capacity already exists and only variable operating costs will increase, and situations where there is no existing spare capacity, and the marginal cost will include a capital element as well. In either case, the traded component of the marginal cost structure can be valued at border prices, and the economic value of any remaining non traded element in the marginal cost structure can be approximated by use of a group or standard conversion factor. Use of the marginal cost of supply converted to its economic value will fully account for the differences between domestic market and world prices.

In the Balassa method, it is assumed that non tradable inputs have a zero level of nominal tariff and they are treated in the same way as the traded inputs.

Josling and Valdes (Josling and Valdés 2004) note that most of the empirical work using the effective rate of protection (ERP) estimates in less industrialized countries has adopted the Corden (1970) method which is for them the best solution. Another approach in analyzing non tradable products, also mentioned by Josling and Valdés (2004), consist in analyzing a traded substitute. However, in the frequent case where the two products are not perfect substitutes, a bias is introduced that should be estimated. The extent of the bias will depend on the values for the substitution elasticity which are usually not available in practice.

#### • **How have previous analysis accounted for the Exchange Rate Misalignment?**

The level of the exchange rate and its degree of misalignment plays an important role in determining the reference prices in domestic currency and hence in the values of market and producer support estimates (Harley 1996; Bojnec and Swinnen 1997; Melyukhina 2002). Indeed if one considers the context of a negative trend of the nominal protection rate which results in a price disincentive for the producers, an upward movement in the real exchange rate would further worsen the price disincentive. This issue is particularly important for less industrialized countries where capital surges or macroeconomic instability, together with delayed or insufficient adjustments in exchange rates, have led to significant crises and exchange rate movements. The evolution of the real exchange rate and related exchange rate misalignment is often the combined result of factors depending on world market conditions and those related to government policies (Quiroz and Valdés 1993). This is therefore another difference between non-OECD and OECD countries (OCDE 2007). In the case of African countries, for example, what is required for examining policy effects, especially prior to the 1990s, has to do with exchange rate policies and their substantial impact on agricultural incentives.

While there is general agreement that use of misaligned exchange rates introduces a bias in market and producer support calculations, there is much less agreement on the appropriate alternative. Previous studies (Liefert, D. Sedik et al. 1996; Shick 2002) have used certain adjustments to the shadow exchange rate mainly based on the purchasing power parity (PPP) to determine the equilibrium exchange rate in the PSE calculation. The problem here is that calculations based on PPP are sensitive to the selection of a base year in which the exchange rate is assumed to be in equilibrium.

Harley (1996), rather than using the PPP preferred using a decomposition analysis to provide a measurement of the contribution of annual variation in different PSE components, including the exchange rate, to the overall annual PSE change.

In Agricultural Price policies, Tsakok adopts Shadow Exchange Rates (SER) when calculating Nominal Protection Coefficients (NPCs) (Tsakok 1990) .

Krueger, Schiff and Valdés accounted for the effects of exchange rate misalignment through another type of decomposition method. They adjusted their measures for Equilibrium Exchange Rates (EER) which "would have prevailed in absence of [tariff-tax] interventions" (Krueger, Schiff et al. 1988).

Recently an equilibrium approach that relates the real exchange rate to underlying economic fundamentals has gained prominence among both macroeconomic practitioners and policymakers in addressing issues of exchange rate misalignment and testing for over- or undervalued currencies. This approach was adopted by Orden et al. (Orden, Cheng et al. 2007) to analyze exchange rate misalignment and then assess its effects on the total PSEs of India and China. Once exchange rate misalignment has been evaluated, the analysis of its effects on agricultural support explicitly takes into account the degree of exchange rate pass-through to domestic agricultural prices and budgetary payments when PSEs are presented under the counterfactual assumption that the exchange rates move to their equilibrium annual values. These analyses of exchange rate equilibrium and pass-through utilize more advanced time series econometric techniques.

Anderson et al.(Anderson 2006; Anderson, Kurzweil et al. 2008; Anderson 2009) adjust exchange rates where foreign currency is rationed. Anderson et al. (2008) suggest this issue be treated somewhat differently focusing on the differential impact across commodities of dual or multiple exchange rates rather than on overall real exchange rate misalignment. They only include deviations arising from direct distortions in the market for foreign currency such as via multiple exchange rate system. This ensures the indicators for distortions to prices of individual commodities, provided by Anderson et al., can be direct price-wedge inputs into the database of computable general equilibrium (CGE) models.

- **How have global value chains (GVC) been considered in past work?**

Some authors, like Jodie Keane for the overseas Development Institute (Keane 2008) , have focused their attention on beyond the border dimensions of value added distribution. Incentives to farmers and other agents in the food and agriculture system may be affected by excess beyond-the-border costs and rents. Excessive costs and rents beyond the border may lower the f.o.b. price received by exporters or raise the c.i.f. price paid by importers relative to the non distorted international price. In some cases, such as those where there is vertical integration between the national and the international agents in export value chains, the border price (i.e., f.o.b. price) reflects a "cross-border transfer" within the same economic agent (Josling 2009). Hence, the border price cannot be taken as an opportunity cost for the national economy, on which the incentives-disincentives analysis can be based. A different benchmark price must then be worked out.

In such cases, choosing as benchmark a "standard" international price, or even the price actually paid by international traders can lead to under-estimating disincentives received by producers in such an economic and institutional set-up. These cases are particularly relevant for countries with commodity-based exports and they deserve careful analysis for the choice of the benchmark price.

Box 1 :provides an example of the issues at stake with transnational value chains.

**Box 1 : Beyond the border excess costs and rents: The case of the Cotton Value Chain in Burkina Faso**

**Market structure:** Cotton is the main export crop of Burkina Faso, covering between 50 to 60% of the export revenues, depending on the years. Three main stages characterize the cotton value chain in Burkina Faso: primary production (seed cotton), ginning (cotton fibre), bailing and trading. Primary production is a relatively small-scale farm activity (350,000 producers with 8 hectares on average). Seed cotton is non-tradable internationally and needs to be processed (ginned, cleaned and bailed). Collection and ginning activities are organized as local monopsonies (Cotton Companies). Since 2004, a national law attributed to the former national monopsonist SOFITEX, a joint venture of the government Burkinabè with the state-owned French company DAGRIS, the local monopsonies in the west provinces of the country. Two additional ginning companies were created and were attributed to two local monopsonies: the FASOCOTON and the SOCOMA, covering the central and eastern provinces respectively.

FASOCOTON is controlled by the Swiss multinational company REINHART, one of the major cotton traders world-wide, while SOCOMA is controlled by DAGRIS. The partial privatization of DAGRIS by the French government in 2008 shifted the control of DAGRIS, as well as SOCOMA, to the French holding GÉOCOTON. This company is controlled by ADVENS (51%), a French multi-national corporation which owns interests in agro-industrial, logistics and transport activities in Senegal and Mali, and participated by the French CMA-CGM (49%), the world's third-largest container shipping company. These local monopsonies export cotton mostly through REINHART, and DUNAVANT<sup>1</sup>, the American largest private-owned cotton merchandiser in the world.

**Seed cotton pricing mechanism:** At the beginning of the season, the monopsonists announce a floor price for the seed cotton (the same for all the three monopsonists), which is the 95% of the "Pivot price", a reference price based on the past five-years average Cotlook A index, an index of the international cotton-fibre index, taking into account a technical conversion factor between seed cotton and cotton fibre (around 3:1) and some standard processing costs. During the campaign, farmers are paid the floor price at the delivery of the seed cotton, net of the cost of the inputs they received at the beginning of the campaign and related interest. At the end of the campaign, the "ex-post" price of seed cotton is calculated using the same criteria applied for the pivot price but this time, the past five-year average Cotlook A index is replaced by the average "Cotlook A index" recorded during the last campaign. If the "Ex-post" price is lower than the floor price, the monopsonists receive a compensating payment from a stabilization fund ("*fond de lissage*"). If the "ex-post" price of the seed cotton is between the "floor price" and 101% of the "pivot" price, the monopsonists pay to the farmers the difference between the "Ex-post" price and the "floor" price. If the "Ex-post price exceeds 101% of the "pivot" price, the part up to the 101% goes to farmers, while the part exceeding the 101% goes partly to the "stabilization" fund, partly to the monopsonists and partly to the farmers, according to an algorithm which considers the level of the surplus and the needs of the fund.

Note that at the beginning of the season, the cotton companies act under uncertainty making assumptions on the cotton fibre price that will prevail in the markets where they operate. Therefore:

- 1) the cotton companies do not pay the producers on the basis of the price they actually receive by the international traders, but on the basis of an index that is, by construction, a systematic underestimation of the actual market prices. This could bring about a systematic "disincentive" to cotton seed producers, not captured by the gap between the "official" international price (the Cotlook index) and the price received by the producers.
- 2) This "disincentive", as long as the producers' supply curve is rigid, might translate almost exclusively in a reduction of their income, rather than also in a reduction of output, which would affect also the cotton companies. This rigidity could be the result of institutional factors, such as the influence of cotton companies on farmers via agricultural input availability, "informal" social pressure etc.

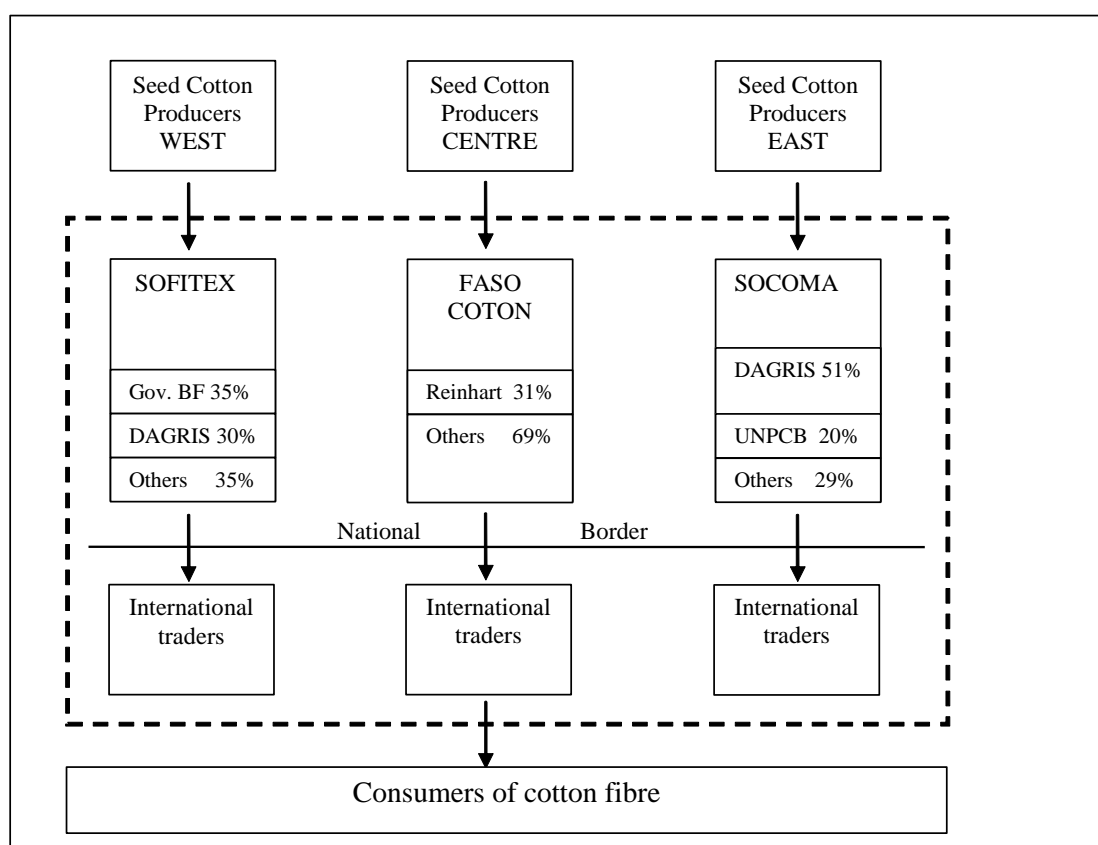
**Downstream vertical integration:**

The cotton companies rely on the services of the international traders for selling cotton fibre worldwide and have limited power to verify the performances of the international trader. On conceptual grounds, this can be seen as having some analogies with the classical “Principal-Agent Problem” (Eisenhardt 1989). However, in this case, at the same time the cotton company (the principal) is directly or indirectly under the control of the international traders (the agent). This might prevent the cotton company to freely choose to operate through other traders that would maximize the company’s revenue, i.e. who pays the highest price for cotton. The control of the foreign traders on the cotton companies makes them -to a good extent- two sides of the same economic subject and substantially (if not formally) vertically integrated. This sort of vertical integration between part of the cotton companies and the international traders is represented in the graph below by the dashed rectangle surrounding both the cotton companies and the international traders.

A consequence of this relationship between cotton companies and traders is that international traders could pay cotton companies a lower price compared to that actually received on international markets. This is a well known mechanism used by transnational companies (Brealey and Myers 2007) to inflate and expatriate profits. In this way, international traders could generate profits downstream and shift losses upstream. From the standpoint of primary producers, this hybrid relationship between cotton companies and international traders could results in lower seed cotton prices, which would constitute a further disincentive not captured by the gap between the “official” international price and the price actually received by the producers.

Situations where hybrid relationships exist between domestic and international agents require careful investigation in order to choose the benchmark price, in such a way to capture all incentives and disincentives that are or could potentially be under the control of policy makers and other domestic stakeholders.

**Figure 2: Schematic structure of the cotton value chain in Burkina Faso**



- **How have externalities and public goods been captured in previous analysis focusing on policy distortions?**

As shown above, analysis of incentive and disincentives to measure policy distortions is based on relative prices and costs. These prices and costs are obtained from market observation and corrected by different factors when the analyst believed the market does not reflect efficiency (i.e. correction of transport costs with efficiency factors). Externalities by definition are not captured by markets unless there is an explicit policy intervention to correct it or clearly defined and enforceable property rights over the resource on which the externality occurs. In such cases externalities are internalised into the market. However, even if any of these options are in place it is unclear whether the price for the internalised externality is efficient. So, a first conclusion would be that the analyses reviewed above do not take into account externalities. However after a closer examination it can be seen that some efforts have been made although the challenge of including externalities in the analysis of policy distortion remains.

Works on policy distortions in agriculture have commodities as the focus of study. Commodities can be linked to two types of externalities, output or input. Output externalities occur when production of the commodity also produces some other goods or services that has a value but is not captured in markets. For example coffee which is produced in an environmentally friendly manner can provide as an externality the protection of specific habitats<sup>8</sup>. In this case the way to include externalities in the analysis is to assure that products compared are alike. The same way there are quality adjustments to assure comparability when local and international products are not the same, one could envisage environmental output or externality adjustments when the local product has an output externality which the international one has not. If the externality is positive (as the case for coffee mentioned above) the adjustment would be positive and vice versa. To estimate the value of the externality, non-market valuation techniques<sup>9</sup> could be used and these estimates deducted or added to the price of the good which has (or has not) the externality effect (Champ, Boyle et al. 2003).

In developing economies, market prices for natural resources and public goods, such as water for irrigation, are often absent. If we focus on effective rather than in nominal measures of support then the use of inputs as public goods or which generate externalities is also an issue to be taken into account. The World Bank has tackled this problem in two studies suggesting ways to estimate implicit subsidies embedded in water fees. In Egypt (World Bank, 2001) and in India (Gulati and Pursell, 1993) charges on the farmers for irrigation water covered a small fraction of the infrastructure's maintenance, which is consequently overlooked or paid for by local authorities. Therefore when calculating effective rates of protection estimates of the cost of water were used based on cost recovery criteria as opportunity costs (which would reflect a functioning market price) could not be calculated. Including such a correction for natural resources pricing significantly changed the size of the incentive for water intensive crops, even changing the sign of the incentive for Indian agriculture in the 1980's if full water cost (operating and maintenance plus annualised capital cost of investments) was considered.

Externalities are present also in non-agricultural markets, which have become increasingly relevant for evaluating incentives to farmers. Indeed, policies in favour of non-agricultural sectors – including infrastructure development – may spill over onto agricultural sectors via input demands, affecting margins and possibly offsetting the direct subsidies to agriculture. In OECD countries this indirect component of subsidies has become negligible over the past three decades while in many developing

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<sup>8</sup> For example the rain-forest alliance promotes coffee production which respects wildlife by maintaining traditional, forested coffee farms ([www.rainforest-alliance.org/agriculture/crops/coffee](http://www.rainforest-alliance.org/agriculture/crops/coffee)).

<sup>9</sup> The interested reader is referred to Champ, Boyle and Brown (2003) for a good review of non-market valuation techniques.

countries, it is very relevant. Unfortunately, non agricultural incentives are not included in the estimates of distortions entailed in producer support estimates (PSE) and consumer subsidy equivalents (CSE), (Anderson, Kurzweil et al. 2008).



## 2.4 SUMMARY OF FINDINGS, LESSONS AND IMPLICATIONS FOR THE MAFAP PROJECT

### 2.4.1 On the methodological aspects of the analysis of incentives and disincentives

The studies reviewed here comprise one set that specifically focuses on the analysis of incentives and disincentives and that generally lumps together policy-induced incentives and disincentives to producers and consumers (including those arising from various types of public expenditures), and another, using the value chain approach, that performs a more disaggregated analysis that has the potential to discriminate between policy-induced price wedges and those stemming from non-policy causes (malfunctioning markets and excess costs) and considers incentives and disincentives going to a particular agent within a value chain. While the first set of studies usually generates relatively broad indicators, the second set complements it by generating disaggregated indicators and suggestions of investments and policy changes that may help to increase the efficiency of value chains and contribute to the achievement of non-efficiency development objectives such as poverty reduction, food security and sustainable management of natural resources.

#### *Key sources of the studies reviewed*

On the one hand, there is an impressive amount of references (approximately 200) related to agricultural incentives and disincentives that relate to the Africa context to some degree. These references include institutional reports, books, journal articles, working documents and few unpublished documents gathered in FAO. The leading institution of this topic is the World Bank with Kym Anderson and colleagues being by far the most prolific authors. Most of the materials gathered on this topic have been written after 2000 with few notable exceptions including for example the following contributions (Krueger, Schiff et al. 1988; Balassa 1990; Hay 1990; Krueger, Schiff et al. 1991; Schiff and Valdes 1992; Bautista and Valdés 1993; Jayne, Shaffer et al. 1997). Most of these authors have however produced significant analyses after 2000.

On the other hand, a lot of the work that has been performed in Africa on value chain analysis was conducted by a wide range of international agencies such as the World Bank, IFPRI, FAO, or bilateral agencies such as CIRAD or DFID, or by universities and their research centres like MSU. In significant proportions national institutions have also performed value chain analysis as show the cases of DGPER/DPSAA in Burkina Faso, IER in Mali, Tegemeo in Kenya and TechnoServe in Tanzania. International or regional institutions have generally analyzed major value chains (often export oriented) trying to assess their competitiveness as demonstrated by the case of the UEMOA (Dupaigre, Baris et al. 2006). Researchers have shown variety of interest including also analysis of very specific commodities or specific themes such as income distribution among agents within a value chain.

#### *Scope of the studies reviewed*

The focus of these various papers on agricultural incentives and disincentives analysis in general and particularly in Africa goes well beyond agricultural price or agricultural trade related price wedges and considers many others fundamental sources of agricultural incentive/disincentives stemming from land, infrastructure, but also education, macroeconomic and other policies. No attempt could be traced however to quantify non-price incentives due to, for example, lack of infrastructure, absence of market or inefficient markets, insufficient human capacities, or climate constraints. Some sources of agricultural incentives or disincentives are not well covered. They include factors such as those related to natural resources and endowments, effects of off-farm growth or transfers, effects of cross-sectors linkages, disincentives arising from excessive or illegal transaction costs, effects of the overall

performance of the economy on the agricultural sector, constraints arising from distortions on international markets due to power concentration and oligopolistic positions of some major export transnational trading or distribution companies. There is a low level of attention given in the documents reviewed to externalities. This stresses the high level of ambition that MAFAP is trying to achieve by seeking to disaggregate the incentives and disincentives observed and how they affect different agents in the food and agricultural sectors. Of course, the value chain approach can to some extent help explain the complexity and variability of production systems. For example, it has the potential to determine the net margins producers and other economic agents in the food and agricultural sector can make from different enterprises. Based on this type of information, policy makers may leverage those productions that are profitable to the producer and at the same time present an advantage for the community (in terms of employment, land potential, earnings of foreign currencies, etc.), with the view, for example, to reduce poverty.

Moreover, regarding the scope there is a more fundamental question on methodological suitability and relevance arising from the assumptions adopted in most of the existing studies based on partial equilibrium models and directly applied to the agricultural sector in Africa. Unlike the OECD countries and other non-OECD countries for which the PSE has been applied, agriculture in most African nations is the pillar of the economy and can constitute up to 41% of the GDP and also employ up to 80% of the labour force for countries such as Ethiopia (CIA World Factbook, Ethiopia, 2010). As such the agricultural sector for many African countries will have general equilibrium effects while indicators such as PSE, which were initially devised for OECD economies, NRA or NRP are computed in a partial equilibrium framework. In measuring the PSE, NRA, or NRP there is the assumption that the agricultural sector, (which constitutes a small proportion of the GDP in most OECD economies) does not affect certain aspects of the economy such as balance of payments, employment, exchange rates and interest rates.

### *Data*

Regarding the issue of data, price at producer, wholesale, consumer levels and at the border are required by virtually all the methods reviewed. The value chain approach demands further decomposition of prices faced by agents at various levels of the value chain as well as data on costs including transaction costs, production costs met. This information is indispensable for the more disaggregate analysis value chain analysis entails, and for discriminating among the various sources explaining the difference between observed prices and prices that would prevail under a perfectly efficient free market, which is generally used as reference (see discussion in 0 above). Much of these data are specific to a particular value chain. More data are required if attempts are made to factor in positive or negative externalities that may exist in some value chains.

Access to data from past studies is difficult if not impossible in most cases. Almost all studies highlight the major constraint posed by data both in terms of availability and reliability while recognizing that some African countries have substantially improved their statistics and data set with respect to others. In general detailed information on costs and prices decomposition along the value chain is not made available by the authors in published documents. They tend to only present summaries of findings with mostly aggregated data. A significant exception is the World Bank project on Distortions to Agricultural Incentives (DAI) which provides an on-line database including some of the primary information as well as published documents, papers and books. MAFAP teams at country level would therefore have to contact authors of past studies, identify and contact sources of primary data that may exist in the country, and, if the data are incomplete or too old, get involved in primary data collection, resources permitting.

### *Methodology*

In terms of approach, method and tools used in the studies reviewed, several points should be highlighted here:

- There is considerable experience with estimating quantitatively the incentives and disincentives to agricultural production resulting from policies that affect directly agricultural input and output markets, trade and exchange rate policies, policies supporting or penalizing non-agricultural sectors compared to the agriculture sector, public expenditure/budgetary payments on food and agriculture (e.g. direct payments, subsidized public goods and services), intersectoral linkages and feedback from changes in incomes and relative prices (in a general equilibrium framework only). All these approaches have much in common from a theoretical point of view as well as in terms of the kind of data that is required to conduct the analysis. The approaches based on partial equilibrium models have mainly built upon the work done by Krueger Schiff and Valdés (1998) and have seen many attempts to improve the accuracy of policy-induced distortions measurement. They culminated with the recent work published by Lloyd, Croser and Anderson (2010) who advocate for the use of the TRI and WRI estimates in order to overcome the limitations of previous indicators including NPR, NRA, and PSE.
- Indicators, particularly those resulting from partial equilibrium approaches, need to be interpreted with care. There is no single indicator able to measure all policy effects. For example, the popular PSE is only one of several indicators which measure assistance to producers and it mainly focuses on the measurement of the gross costs to consumers and taxpayers of the transfers to the agricultural sector. Several other dimensions of potential policy effects are not captured. Moreover, partial equilibrium-based indicators do not constitute dynamic measures of policy signals.
- Existing methods and resulting indicators have failed to solve major problems or limitations resulting from some assumptions that are highly questionable particularly in the African context, such as competitive markets, perfect information, and generally high degree of substitutability between commodities. Specific measurement problems such as benefits or costs to producers that might arise from informal transaction costs, externalities, market failures, any other behind-the-border policies and underinvestment in public goods are not integrated in most analyses. Besides Africa is characterised by extreme heterogeneity of products.
- The review suggests that the analysis of the extent to which incentives are actually aligned with country overall development objectives is generally missing. This is largely because the analyses conducted have focussed on analysing distortions between observed prices and efficiency prices, with the attention being on the objective of economic efficiency rather than other objectives such as poverty reduction, food security or sustainable management of natural resources. Within this approach, any policy-induced price wedge or “distortion” carries a negative connotation, a persistent theme in the New Conventional Wisdom (NCW) which stipulates the need to “eliminate distortions” in the process of agricultural development.
- There is therefore ample scope for MAFAP to monitor incentives/disincentives in the view of development and sector objectives fixed by governments, and in a context where markets are often highly imperfect, at national level but also, for some commodities, at international level, and may result in an income distribution that is not “acceptable” given national development objectives. Moreover, it can be argued that direct government intervention to overcome market failures is needed at the early stages of agricultural development when conditions are less favourable (Dorward, Kydd and Poulton, 2007). In such a “second best” context, policy interventions and their subsequent incidence in terms of price wedges created may be positive and even “optimal”. The challenge is then to find sets of policy instruments which minimize some of the highly undesirable consequences of intervention, rather than to regard these consequences as sufficient reasons in themselves for excluding any form of price intervention (Howell 2005; Devereux 2009).

- For MAFAP, adopting a partial equilibrium framework will likely imply some bias in the estimates of incentives or disincentives as intersectoral linkages and feedbacks will not be considered as could be obtained using general equilibrium approaches. Moreover, the relatively high weight of the agricultural sector in the economy of most African country suggests that any significant change in the sector in terms of policy measures or investment through expenditure may have general equilibrium effects. However, adopting a general equilibrium framework which would take these feedbacks into account, would probably be too demanding for MAFAP, with the resources and timeframe within which it operates. Besides the uncertainty, in the African context, of the value of some highly sensitive parameters (e.g. elasticities and cross-elasticities) required in a general equilibrium framework could then be used to challenge the robustness of the results obtained.
- The documents reviewed, particularly those dealing with qualitative value chains analyses, suggest that for a better understanding of the various sources of incentives and disincentives, it is essential to comprehend the policy context and the interests, roles and influence of multiple actors by conducting political economy analyses. From that perspective MAFAP may want to adopt some of the tools and approaches used by FAO to conduct its policy intelligence work (FAO, 2009).
- Little was found in the papers reviewed about a major area of concern of the MAFAP project, namely the distribution of incentives and disincentives among different types of agents although the kind of analysis conducted in the value chain approach potentially generates the information required for this purpose.
- The indicators found in the literature vary a lot depending on scope, purpose and focus of a particular study. The MAFAP project should seek to adopt the indicators suitable for long term monitoring within and among countries in Africa, comparable across a large number of countries, and that can be computed based on country level capacities to ensure national ownership.
- The regional dimensions of agricultural and food policies have not been adequately analyzed in the work reviewed and MAFAP could bring a significant contribution in proposing new ways to look at the potentially huge regional spillover benefits that could be obtained through regional collaboration. Regional collaboration has indeed in several instances proven to have positive effects on the effectiveness and efficiency of policy instruments (Abdulai, Diao et al. 2005; Dorward, Kydd et al. 2006; Foster, Briceño-Garmendia et al. 2009; Freund and Rocha 2010)
- Because of their recognized importance, factors that are not necessarily directly related to policies should be considered when assessing sectoral performances. They should be reflected in MAFAP reports and studies, although these elements may not be always directly analyzed by the project.

#### **2.4.2 On the project management aspects of the analysis of incentives and disincentives**

In terms of project management, several lessons and implications can be drawn from the work done in the past on policy analysis and monitoring. The main points to be considered include the logistical issues raised by Josling and Valdés (2004):

- Country buy-in and ownership: It appears that the majority of the studies reviewed were conducted as research work with little involvement from African country capacities. The study led by Anderson for the World Bank, for example, was sometimes performed with African consultants, but it neither sought to improve individual and institutional capacities for policy analysis and monitoring, nor helped to increase the depth of policy dialogue in Africa. The purpose of the MAFAP project is very different in that it foresees intensive participation from African partners and aims at enhancing policy dialogue first and foremost in Africa. The selection of counterparts at country level needs to be conducted with utmost attention considering key

factors such as long term assignment, interest and ownership, continued employment, delivering capacities and commitment, to ensure the sustainability of the work initiated.

- Time management. Data gathering, processing and analysis is likely to take more time than initially expected. Institutionalization of the analyses conducted in MAFAP, through intensive capacity development activities, is also likely to necessitate a long period of time. All together the MAFAP project time table needs to reflect these. Similarly clear MAFAP milestones need to be identified and monitored.
- There is a need to provide a clear, workable, agreed and shared methodology to all analysts involved before starting work at country level, while also ensuring a certain degree of flexibility to account for country specificities and needs. In all cases, experience from other similar projects suggests that deviations to the agreed methodology would need to be documented and approved ex-ante by the MAFAP project management.
- Ensuring consistency of the work performed across countries. The role of the MAFAP support team that will be constituted for overseeing country level work and ensuring consistency across countries is an essential ingredient for success.

## **CHAPTER 3: ANALYSIS OF PUBLIC EXPENDITURES IN THE AREA OF FOOD AND AGRICULTURE**

### **3.1 INTRODUCTION**

Public expenditure as well as the part thereof that is funded by external aid is one instrument used by governments to pursue policy objectives and a crucial ingredient in a country's development (WorldBank 2009). Public resources are limited and have competing demands; hence, prioritization is critical. Policymakers must know what public spending in each sector will have the largest impact on poverty, food security and sustainable use of natural resources, for example, and how resources should be allocated among different sub-sectors (Chilonda, Olubode-Awosola et al. 2009).

Allocation of public expenditures including aid offers significant opportunities for promoting growth and the equitable distribution of its returns. Investments in basic social services - primary education, primary health care, safe drinking water, sanitation, nutrition, and family planning - yield high payoffs for individuals as well as for society. Investments in rural infrastructure and new agricultural technologies are essential for raising the productivity of farmers and constitute indirect incentives to agriculture. Therefore, public expenditures are essential for human and physical capital formation, providing income support for the poor and for improving equity and social justice (WorldBank 1998).

These are some of the main reason for which tracking of public expenditure and aid flows (to provide global budget support, finance sector wide approaches or fund more specific programmes and projects) is seen as an important exercise for reviewing and analyzing government policies. Conducting expenditure reviews and tracking aid in less industrialized countries allows examining the way governments convert public resources into development results: without this information, policymakers will find it difficult to fund and deliver the high-quality public services needed by their citizens. Monitoring public spending and aid flows is therefore an essential component in the development of effective public sector governance.

Effective monitoring and evaluation of public expenditures is vital for well-functioning and accountable government. Adequate public expenditure analysis allows assessments of the efficiency and equity of allocations of large amounts of government resources and for guiding future investment priorities in different sectors. Hence, monitoring public spending plays an important role in linking and defining the connection between national economic and sector specific concerns with overall objectives of promoting growth and reducing poverty (IMF 2001).

As a general starting point, relevant interventions important to analyze in the agricultural sector include those that affect: i) agents directly in the agriculture and food sector, including producers, consumers, and other agents along the chain such as middle men; and ii) the "general sector", such as research, training, infrastructure and markets related to agriculture but that could also be extended to support to rural development more generally as is being proposed by the MAFAP methodology.

There are different types of pertinent work related to public expenditure analysis. In particular, public expenditure reviews (PERs) analyze the allocation and management of public expenditure. PERs can cover all government expenditure or focus on a few priority sectors (e.g. health, basic education, agriculture, water, roads). They can be used to inform strategic planning and budget preparation and to identify ways to improve the efficiency and effectiveness of resource allocations. Increasingly, PERs also review expenditure management systems and institutions, recognizing the fact that the institutional framework, organizational capacity, and everyday expenditure management practice of government determines the allocation and management of public expenditures.

Additional analytical work in PERs typically involves analyzing secondary information on already collated data. This includes analyzing monitoring and evaluation reports for every project and programme involving a disbursement component but also the budget lines corresponding to technical departments of Ministries and their regional offices across the agriculture and food sectors. Analyzing such an amount of information can be too ambitious and in most cases an unrealistic task. **For instance, John Channon of Oxford Policy Management explains that** a decision must be taken early on regarding which areas should be excluded and which should be the main focus. Generally, the focus is on those programmes that are most important in terms of overall expenditure and those which are of most immediate relevance to the food and agricultural policies being analyzed.

In this review we focus on the analysis of public expenditures and aid flows to the agricultural sector and rural areas. The review covered 10 potential MAFAP countries.

**Table 11: AgPERs identified in MAFAP countries.**

Country <sup>10</sup>	Title/scope	Year	Institution
Burkina Faso	”Revue des dépenses publiques dans le secteur de l’agriculture au Burkina Faso”	2009	Université de Ouagadougou, MoA
Cameroon	<i>none</i>		
Ethiopia	Agriculture and Rural Development PER	2008	WB
	”Ethiopia PER for Agriculture and Rural Development Phase II.”	2010	WB (expected May-Aug. 2010)
Ghana	<i>none</i>		
Kenya	PER - Chapter Agriculture (draft)	2010	KIPPRA
Malawi	<i>none</i>		
Mali	<i>none</i>		
Nigeria	AgPER	2008	WB / IFPRI
Tanzania	AgPER	2009	Min. of Agriculture Food Sec. and Cooperatives
Uganda	AgPER: Phases I & II (Tracking of expenditure)	2007	OPM/WB
	Review of Public Spending to Agriculture	2007	WB / DFID
	AgPER: Phase III. (efficiency/effectiveness)	2009	Economic Policy Research Centre (EPRC)
	AgPER	2010	Uganda Government

<sup>10</sup> The World Bank (ADR) already reviewed public expenditures in Ethiopia, Nigeria and Uganda between 2009 and 2010.

Details of existing work in these countries are shown in Table 11 which in this case relates to AgPERs made available in recent years. Beyond AgPERs evaluation of programmes and projects are also relevant work insofar as they look at expenditures and aid, and, as is discussed later, other analysis such as PSE reports provide information similar to the one found in traditional AgPERs. The review conducted shows that AgPERs have been performed in seven of the ten MAFAP countries. No AgPERs have been identified for Cameroon, Malawi and Mali. However, for these countries and Ghana the OECD led a PSE exercise which included considerations for public spending in agriculture.

This type of review work has particularly been conducted by the World Bank (WB) but also by governments, national organizations and foreign agencies, such as IFPRI, OPM and IMF. At national level, relevant statistical institutions and those involved in budgeting and spending have been consulted on what public expenditure reviews or similar studies are available. Other studies with an approach similar or not to that of MAFAP's methodology on public expenditure and that may be important as sources of data have also been identified and reviewed.

From the review conducted, it appears that the World Bank is by far the major player on public expenditures reviews (PERs) and agricultural PERs. Other institutions have also been found to be involved in the process of financing or conducting PERs in the agricultural sector, among these IFPRI, OPM, SIDA and DFID, but in most cases<sup>11</sup> the WB is involved either by financing, commissioning or providing assistance to the PERs.

The World Bank released the Agriculture Public Expenditure Analysis (APEA) toolkit which proposes extremely useful indications as well as lessons on how agriculture PERs should be conducted (add reference with endnote). The APEA report provides a wealth of extremely useful information on AgPERs and this chapter draws extensively on these findings.

In addition to more specific AgPERs, a total of 34 PERs have been produced by the World Bank in 10 potential MAFAP countries and provide relevant and valuable information on expenditures in support of agricultural sector and rural development. This information is displayed in Table 12 below. The areas and sectors covered include education, health and infrastructure in rural areas for example. These additional "rural" PERs are relevant to the topics covered by the MAFAP project. As can be derived from the titles these PERs generally cover more than one topic.

Table 12: PERs identified in potential MAFAP countries led by the World Bank

Country	Report Title	year	Topics covered
Burkina Faso	Burkina Faso - Rural water and sanitation sector: public expenditures review	2008	Water
	Revue des Dépenses Publiques. Au-delà du Paradoxe Burkinabé Feuille de Route pour une Décentralisation Réussie et une Dépense Publique plus Efficace"	2009	General
Cameroon	(no PERs found)		
	Public Expenditure Management (PEM) System (IMF/WB)	2000	General
	"Country assistance strategy for the period FY10-FY13" (WB. 2010) discusses PER to be undertaken	2010	
Ethiopia	Ethiopia - Public Expenditure Review: The emerging challenge	2004	Education; Health; Water

<sup>11</sup> One exception is Burkina Faso in which the Ministry of Agriculture, Water and Fisheries and the University of Ouagadougou conducted an AgPER



Country	Report Title	year	Topics covered
Ghana	Ghana - 2009 external review of public expenditures and financial management	2009	Health; Water; Education; Transportation
	Ghana - 2007 external review of public expenditure and financial management	2008	Health; Education
	Ghana - Rural water and sanitation sector : public expenditures review	2008	Water; (rural water)
	Ghana - 2006 external review of public financial management	2006	Health; Education
	Ghana - 2005 external review of public financial management	2005	Education; Health
Malawi	Malawi - Public expenditure review 2006	2007	Education; Health; Roads
	Sustainable Land Management in Malawi: A Public Expenditure Review (unpublished)	2009	Land
Mali	Mali - Public expenditure management and financial accountability review	2008	Health; Water; Education; Transportation
Mali	Mali - Rural water and sanitation sector : public expenditures review	2008	Rural water and sanitation
Tanzania	Tanzania - Public expenditure review of the water sector	2009	Water
	Tanzania - Public Expenditure and Financial Accountability Review : FY05	2006	Education; Health and other social services; Transportation; Water
Uganda	Uganda - Fiscal policy for growth : public expenditure review 2007	2007	Education; Health and other social services

Additional information gathered on Ag PERs and PERs is available in **Error! Reference source not found.** while **Error! Reference source not found.** proposes an overview of the research and analytical work on public expenditure and aid in Africa.

## 3.2 SCOPE OF AVAILABLE WORK ON PUBLIC EXPENDITURE FOR AGRICULTURE IN AFRICA

- *What is typically included in a review of expenditures?*

In prevailing work on public spending in the agriculture sector, substantial differences on how to define “agricultural expenditure” exist and, as a consequence, what is ultimately included in reviews varies considerably. Examples of expenditure whose inclusion is commonly debated include:

- expenditures in the forestry or fisheries sub-sectors – particularly when these sub-sectors have a separate ministry;
- roads - where to draw the line between rural and non-rural roads, what share of road expenditure should be considered as their construction also has numerous other purposes and;

- sectors already reviewed in other PERs such as health and education are often not revised in agriculture related PERs.

Most Agriculture PERs (AgPERs) have a section explaining what, in each particular study, is included and perceived as pertaining to the agricultural sector. However, many AgPERs (of a comprehensive nature) have common objectives, even if their scope and emphasis vary according to country situation, context and study origins.

The **Classification** of the Functions of Government (COFOG) was developed in its current version in 1999 by the Organisation for Economic Co-operation and Development (OECD) and published by the United Nations Statistical Division as a standard classifying the purposes of government activities.

The COFOG classification is useful in that it helps understand the scope of measuring public expenditures beyond their classification itself. However, the way agriculture is defined also influences the type of classification adopted. For example, depending on the breadth of this definition, other areas such as rural development, food security and poverty reduction may or may not be included. The COFOG Classification has a narrower definition of agriculture than FAO and therefore MAFAP which includes rural development and natural resources. Actually the COFOG definition of agriculture includes three subsectors: *agriculture, fisheries and forestry*, followed with the narrow definitions of each of them (*crops, livestock, fishing, forestry, water-for-production, and agriculture-land related issues*). FAO's definition of "agriculture" instead includes *crops, livestock, forestry, fisheries, and natural resources*.

Despite the fact that the COFOG classification is recommended by NEPAD<sup>12</sup>, none of the ten potential MAFAP countries strictly follow this structure<sup>13</sup>. This situation obviously adds to the heterogeneity in which expenditures are reported and classified. Reports often mention that the classification used in the AgPERs is adjusted as much as possible to COFOG, given the circumstances. In several cases ad-hoc solutions of classifying data have been adopted to solve difficulties in expenditure classification.

### • **What are the main objectives of PERs?**

The objectives of the studies presented in Table 11 range from pure tracking of expenditure to alignment of public expenditure with national strategies and to analyzing the effectiveness of public expenditure. Depending on the stated objective of a PER there are three different methods identified for measuring public expenditure:

- *Efficacy* tracking of expenditure looks at how the government's expenditures are distributed as well as how the spending is "monitored" from an accounting perspective. Related studies are sometimes referred to as PETS (Public Expenditure Tracking Study) in the terminology encountered.
- *Efficiency* looks at the alignment of public expenditure with national strategies. This is a way of comparing how public spending adapts with stated national strategies for improving the agriculture sector. The purpose here lies in analyzing how a government's budgeting complies with its own set objectives.
- *Effectiveness* refers to a qualitative measurement to assess the impact of interventions: a "value for money" indicator.

It should be noted that these three terms are often used interchangeably in PERs and they should therefore be handled with care.

<sup>12</sup> CAADP's Maputo Declaration has bound countries to use the standard COFOG classification for tracking expenditures.

<sup>13</sup> The re-organisation and re-classification of data is discussed in Nigeria's and Uganda's AgPERs

The first two categories are the most common and manageable as they mainly apply quantitative measuring. They can be described as more “static” analyses in contrast to effectiveness measurement.

An elaborate attempt at measuring effectiveness has been done in Uganda (AgPER Phase III ) where a *Community Score Card* (CSC) was applied to qualitatively assess the effect of the government’s interventions. Among many studies aiming at evaluating the impact of public spending, Burkina Faso provides another example where the review attempts to link spending to strategic objectives and also relates interventions to geographical areas in order to evaluate the impact on more vulnerable areas. The aim is monitoring efforts on poverty distribution.

**Table 13: Example of objectives identified for some potential MAFAP countries**

Country	Stated Objectives
Nigeria (2008)	(1) Establish a robust data base on public expenditure in the agricultural sector; (2) Diagnose the level and composition of agriculture expenditure in the recent past; (3) Understand the budget processes that determine resource allocation in the sector; (4) Draw preliminary policy recommendations for improving the efficiency of public expenditure in the agriculture sector.
Ghana (2008)	Generate critical insights to improve the capability of the ministry, related largely to public expenditure management, manpower and organizational processes, to effectively implement the strategy that it is currently developing. More specifically, the review seeks to answer the following questions: - Are adequate investments made in the sector? - How effectively are the funds spent in the sector and the ministry and what are the returns? - Broadly, what are some reforms that can be implemented to make the Ministry of Food and Agriculture more effective in leading the transformation of agriculture? The review has two distinct but related components: an expenditure review that deals with the first two questions and the institutional review that examines the last question. The report integrates the expenditure and the institutional review to offer common recommendations
Uganda (Phases 1 & 2, 2007)	The study was part of a wider review of public expenditure in the sector which helped identify best types of spending for pro-poor growth. It provides a comprehensive assessment of public financing in the Agriculture Sector using the definition of the Sector set out in COFOG. The study aims at assisting the Ministry of Agriculture (MAAIF) undertake further PER work in the sector and provide tools and methods to support this.

Source: (WorldBank 2008)

- ***What does a PER usually include and how long does a review last?***

The request for a PER is normally made by the Minister of Finance. Discussions with Government and other key stakeholders result in an agreed action plan and process for each country. The recipients of AgPERs undertaken through World Bank assistance are: The Ministry of Agriculture, Animal Industry and Fisheries, Ministry of Finance, Economic Planning and Development.

The scope of the AgPERs reviewed applies to several dimensions:

- The current and historical patterns of allocation within the sector.
- The source of funding (government and donors).
- The mode of financing (loans/grants/etc.).
- The level at which the expenditures are made.
- The cost associated with budget and expenditures administration

Some of the studies reviewed for this report were designed to be carried out in one phase while others in several phases. The latter is generally the case for the reviewed AgPERs led by the World Bank, and that reflected a specific demand by the country's senior government officials. Such country-driven demand usually widens the scope for meaningful dialogue and follow-up assistance as it tends to include a variety of issues that are particularly interesting for policy makers and other national stakeholders.

- ***How do PERs address decentralization?***

An issue that arises in several PERs is the complexity in monitoring expenditures due to different levels of decentralization. Depending on the level of decentralization, the complexity of institutions involved in gathering data changes. An example of this is a federative system where the central government disburses funds to regional authorities and delegates authority to carry out the actual payments. Such a “decentralized” system results in bookkeeping responsibility at sub-national levels and in the hands of local or regional authorities/governments. The more expenditure is decentralized, the more institutions and authorities at a regional/local level need to be taken into account as sources of data. As examples, the PERs of Nigeria and Ethiopia, the former having a federal administration, the latter a decentralized system mandates are delegated to a regional level.

It is worth noting that in several countries, where the decentralization process is more advanced, a significant share of the annual budget goes directly to the districts that are themselves often responsible for providing most of the public services. The analysis of public expenditure thus needs to be conducted both at the national or central level and at the district or local government levels.

## **3.3 CLASSIFICATION AND DISAGGREGATION OF PUBLIC EXPENDITURES**

### **3.3.1 Information collected regarding potential MAFAP countries**

The detailed classification of public expenditures varies from country to country. The classification and disaggregation of public expenditures in PERs were to a large extent driven by, often limited, data availability. Government's bodies responsible for public spending in the agricultural sector usually have their own system of accounting and presenting the information on expenditures that conforms to government norms and regulations. These were usually taken as a basis for presentation of public expenditures in the PERs. Furthermore, PERs' classifications/disaggregation are aligned with their particular objectives and those differ from study to study as demonstrated above.

As a result both, the particular categories and the depth of disaggregation differ significantly across countries.

In most countries, as exemplified by **Kenya**, the agricultural sector is compartmentalized with responsibilities for narrow sector or subsectors attributed to numerous ministries or public organizations. As a consequence it is more difficult to get a comprehensive and detailed picture of the budget allocation and even less about actual expenditures. In the case of **Malawi**, on the contrary, the same Ministry of Agriculture and Food Security is responsible for crops, livestock and irrigation but also for Fisheries and Forestry. In this case it is easier to identify budget allocated to agriculture but sometimes the level of disaggregation is not sufficient to allow an in depth analysis on public spending performances.

In **Ethiopia** and **Uganda** very detailed level of information is available (down to project level), a level sufficient to fit the proposed MAFAP classification of public expenditures as displayed in the MAFAP project methodology document. Other countries' PERs provide rather aggregated categories following

the government structure and programs within the given government bodies (see Annex 5 for details on country-specific classifications and disaggregation).

For the countries reviewed, the classifications and disaggregation of public expenditures in PERs were to a large extent also driven by an often limited availability of data. On top of access to data, the question of collation of data – bringing data together and finding a conformity formula – is an important issue for AgPERs.

Expenditure examination usually follows a breakdown by economic and functional classifications. There is an increasing demand by international practitioners to have data on the economic and functional composition of public spending which is an issue directly related to expenditure classification at country level. Generally, this type of classification of information allows for comparison of public spending across countries.

Among the most common categories identified in existing AgPERs, those that are also MAFAP relevant are:

- agricultural research,
- extension,
- training,
- pest and disease control,
- veterinary services,
- infrastructure (though not always detailed whether roads or irrigation), and
- marketing.

Those for which more details need to be obtained include:

- food security including food aid, food for work programme, etc.,
- crops,
- livestock development,
- lands,
- water capacity development,

It's not clear whether further disaggregation could be immediately possible. In any case it seems that an extra effort would be required to obtain more detailed data.

Another issue is how to handle administrative costs. The question is whether administration – “headquarter spending” for example but not limited to it– not directly benefiting the agriculture sector should be included when considering the benefits provided by an intervention. However, in all potential MAFAP countries, PERs provide distinction between administrative costs and investments in the sector. Some of them, e.g. AgPERs for Kenya, Tanzania and Ethiopia, provide information on the shares of recurrent expenditures (such as input subsidies) and one-off development initiatives. All PERs, except in Nigeria, disaggregates expenditures into those coming from the national budget and those financed by external aid. Some countries (Kenya, Tanzania and Uganda) also provide information disaggregated by district/region. The MAFAP methodology already addresses this important issue and proposes how to separate the administrative costs from other expenditures.

### ***3.3.2 The FAO experience with expenditure classification***

The classification approach proposed by FAO and used in a recent study for 16 Latin American countries (FAO 2007) makes the distinction between public and private goods. Example of such a classification could not be found in Africa. The interest in this type of classification is that it provides an opportunity to engage government planners and policy-makers in an important policy discussion

regarding appropriate and evolving roles of the state, and corresponding “orientations” in public expenditures.

One of the practical issues is to get the level of disaggregated data (to activity level) in order to classify expenditures in the right categories. Recognizing that in the cases where disaggregated data is not available, there may be a need to attribute expenditures to more than one expenditure category which is interesting from an analytical standpoint but must require attention to avoid double-counting when summing expenditures.

In the FAO classification, different items of Agricultural Public Expenditure are grouped in three categories: (i) private goods, (ii) public goods y; (iii) equity and poverty reduction oriented, and are as follows:

***Private goods***

- Commercialization
- Production promotion
- Forestry promotion
- Fishing and aquaculture promotion
- Targeted rural productive promotion (50%)
- Irrigation (50%)
- Integrated Rural Development Programs (25%)

***Public goods***

- Training
- Communication and information services
- Soil and natural resources conservation
- Rural electrification

- Irrigation (50%)
- Land programs (Agrarian Reform)
- Associative promotion
- Housing
- Water rights regulation
- Agricultural property regularization
- Education
- Research
- Justice
- Rural roads
- Phyto and Zoo sanitation
- Recreation and Sports

***Equity and poverty reduction oriented***

- Targeted rural productive promotion (50%)

- Integrated Rural Development Programs (75%)
- Public services in rural areas
- Social infrastructure for rural communities
- Promotion of agrarian groups
- Promotion of ethnic groups
- Promotion of women
- Promotion of rural families
- Basic sanitary conditions in rural areas (water and sanitation)
- Water for rural communities
- Health and nutrition

### ***3.3.3 The OECD experience with expenditure classification***

The OECD’s PSE work (OCDE 2008) proposes the most disaggregated approach to classifying public expenditures on agriculture. The approach has been designed for classifying policy measures (including public expenditures) in industrialized countries and consequently classification reflects different issues related to decoupling that are not relevant for African countries.

Nevertheless, some of the principles of disaggregation and classification adopted by the OECD may be very useful in classifying a country’s public expenditures on agriculture. In particular, OECD’s PSE classification is based on economic characteristics of different expenditure measures allowing better understanding of the incidence of given policy measures and their potential effects as well as providing a good basis for further evaluation. Besides, the OECD (2008) provides guidelines on how to capture all relevant monetary transfers when measuring public expenditures in agriculture.

### 3.4 EXTERNAL AID AND PUBLIC EXPENDITURE LINKAGES IN AFRICA

In agriculture, a considerable share of spending derives from aid. With varying estimates, according to (Akroyd and Smith 2007)), in fact, a majority of expenditures by African countries in the sector come from aid. Estimates vary as it is difficult to get a complete picture of the total aid contribution to the sector; however, various sources (WorldBank 2009) (Fan, Omilola et al. 2009);(Ndirangu 2009; Ndirangu 2010) affirm that figures from Burkina Faso, Ghana and Kenya all exceed 80 percent.

In the PER for Burkina Faso (WorldBank 2009) for instance, agriculture expenditure was 4.5 percent of GDP in 2007. Of this, only 11 percent of the support to the sector was financed from national budget, while the remaining 89 percent was external aid. According to (Ndirangu 2010) Kenya's Ministry of Finance splits the funding source by distinguishing between government and donor. Donor support arrives at 14 percent for Agriculture and Rural Development ministries but it is noted that this figure may not incorporate some off-budget spending. These hidden contributions are also expected to be considerable.

ODI (2009) explains that the global volume of official development assistance (ODA) to agriculture decreased by nearly two-thirds between 1980 and 2002 (from US\$ 6.2 billion to US\$ 2.3 billion, in 2002 prices), despite an increase by 65% of total ODA. The share of ODA to agriculture fell from a peak of 17% in 1982 to 3.7% in 2002. ODI (2008) also reports that in Sub Saharan Africa, the reduction in agricultural aid was less dramatic but still sizeable – from \$1,450m to \$713m over the same timeframe (in 2002 prices). Over the recent period, there has been a decline of area-based or crop-based projects; and an increase in agricultural policy and administration support (Foster and Killick 2006). Moreover, until the food security crisis of 2008-2009, reductions in support to agricultural inputs, services (including finance), agricultural education and research were observed, with very few agencies providing inputs such as fertilizers, chemicals, seeds and machinery. However, in the aftermath of this food price volatility crisis, this situation has changed and policies to support inputs have been revived.

Nonetheless, as mentioned in many of the PERs supported by the World Bank, measuring the aid component contribution to the agriculture sector is difficult for a number of reasons:

Firstly, aid flows are not always accounted for in the data on spending in the agriculture sector. Aid to the agricultural sector may also come through “off-budget” expenditures (spending not captured in national accounts) and in many African countries that may be a quite high share of overall aid. In case of Uganda off-budget aid is estimated around 20% of overall agricultural aid (PER 2007). In other countries this share may be even more important. In the case of Ghana, for example, the share of agricultural spending in total spending was less than two percent in 2006. However, according to (Fan, Omilola et al. 2009) under-reported off-budget contributions account for a “substantial portion of agricultural funding” in Ghana. Information on the proportion of the agriculture budget financed through donor or other “off-budget” funding varies highly between the PERs analyzed for this review. In the cases where the national accounts do specify a budget line from a donor it is likely that it is under-reported as in the mentioned case of Ghana.

Secondly the PERs that deal with aid's contribution to agriculture spending state that there is no mechanism for monitoring the flow of external aid into the sector. The aid that is specifically destined for the agriculture sector is often directly allocated to any given sector through a specific project or programme and thus often by-passes the national accounts. Hence in most cases there is no budget-line on the government's side indicating this aid money as “spending”. Without a system for systematically tracking external aid, the PERs reverted to contacting donors directly for an overview of their sector support. This was allegedly the practical way to compile a non-government component of expenditures. However, there are exceptions to this general case. The PER of Burkina Faso, for example, clearly shows the shares of aid in the overall sector spending. In other countries information

may be available but not always actually and effectively analyzed in PERs e.g. Uganda. Some authors therefore suggest that a mechanism and procedures for consistently monitoring these funds be developed (Fan, Mogues et al. 2009). A more immediate and practical approach for the MAFAP project would consist in screening through available sources of information (not only PERs) to identify the countries for which this issue may result in a problem.

Thirdly, if aid is given as general budget support to a government's total budget, the monitoring of how these particular monies (each dollar arriving from abroad) is distributed between different ministries is usually not tracked. No proxy for how aid is distributed by proportionally splitting it between the total number of budget lines in the national accounts has been found.

The fourth reason why the monitoring of aid is difficult is due to the fact that, as already mentioned no countries strictly use the COFOG's method to classify their budget allocations to agriculture, fisheries and forestry. Again, even if aid is tracked and if information exists on its allocation into governmental projects or programmes, these may not necessarily specify whether these interventions are "agriculture" related. However, if aid can be tracked down to government budgets and programmes or projects, it could then be categorized either as general sector support or agriculture-specific support.

These obstacles are all a matter of administrative deficiencies and could theoretically be solved through better classification of budgeting and expenditures on both the recipient's (country) side as well as the aid (donor) side. In this respect, OECD's *Creditor Reporting System*, CRS, is a database that provides basic data for analyzing aid flows. What specific area or what policy objective is actually targeted by aid can be examined as well as how donors comply with their commitments. Aid Data (2010) is another source of collated data on aid. Similarly to CRS it also collects data on *project/programme-level from multilateral donors and non-DAC bilateral donors*. However, Aid Data is still in its Beta version and not all information the database would like to release is already available. The Aid Data's user guide suggests that Aid Data is a very important complement rather than a substitute to the CRS database as Aid Data draws on the CRS information as well. Once the two products are final, a more thorough analysis of both Aid Data and CRS on actual data availability would be useful.

Aid data may also be obtained from donors directly. For example, in case of Uganda, where off-budget aid contribution is important, spending was obtained directly from two major donors - USAID and SIDA. Further, information from donors may complement data in national accounts, since in many countries information on aid is said to be "fragmented and difficult to obtain" (WorldBank 2009).

FAO is also working on aid data collection in relation to investment in agriculture. For tracking aid data, FAO mainly uses three sources: The ODA data base of the OECD, annual reports of the regional banks and the world bank, and own survey and research. The Statistics division of FAO has been building its own data base on aid which adds to the what is reported in the Creditor Reporting System based on DAC countries the contributions of multilateral agencies. Moreover, since the Maputo declaration in 2003, FAO's mandate also includes reporting on government expenditures. To do that FAO builds on three sources: its own questionnaires to governments, its worldwide network on agricultural and food statistics to mainly report on changes in capital stocks, and increasingly its cooperation with the IMF which host a huge data base on government expenditures.

Given the above restrictions on how to track aid flows, reports and estimates on how big the aid's proportion is to agriculture are poorly documented. Some possibilities on how to capture faulting information necessary for MAFAP are mentioned in the following section.



## **3.5 DATA SOURCES FOR AGRICULTURE PERS AND APPROACHES TO RESOLVING DATA GAPS**

### **3.5.1 General considerations**

The efforts required to gather data on public expenditure are affected by its availability and quality. In general, the quality of data is not discussed extensively but the availability of data presents many more difficulties. A lot of the data provided is not structured in a way that it is easily compatible with the “desired structure” of measuring spending (Pradhan 1996). Poor recording of expenditures and their effects make it difficult to accurately assess the scale, relevance, efficiency and impact of less industrialized country spending in agriculture. Meanwhile, lack of data on costs and quality of services provided makes obtaining reliable information on spending efficiency difficult.

To a large extent the issues of data availability and quality are related to discussion on existing capacity within countries and regions of Africa. AgPERs or PERs are generally conducted by non-government bodies. In most cases, countries receive external assistance and the World Bank generally supplies a “PER project leader” as was the case in Burkina Faso (2009) and Uganda (2009) and the rest of the team is composed by experts from the country or the region.

However, a national capacity for conducting PERs does exist in many occurrences. In Tanzania for example it is becoming normal practice to undertake PER regularly and these exercises are performed by national teams even though the capacity does not necessarily belong to the government.

In Tanzania, the government and the donor working group have agreed that each year, as part of the annual budgetary cycle, the government and a donor working group would carry out a “rapid” expenditure analysis, as an input into the annual budgetary preparation process. The Tanzania “Rapid Budget Analysis for Annual Review 2008 Agricultural Sector” provides an excellent example of a well focused expenditure analysis. This budget analysis presents the “Highlights”, and Summary and Recommendations (supported by a number of clear and informative descriptive tables on key expenditure topics), and a short annex on a very specific issue (in this case, involving the effectiveness of fertilizer subsidies). However, the question of existing capacity to sustain similar efforts over time remains in Tanzania and in other countries.

Each expenditure analysis reviewed faced the issue of needing to resolve the data gap constraints especially where there was a desire to establish clear causal links between expenditures and outputs/outcomes/impacts.

The challenges posed by data availability and quality vary from country to country and the data reporting system existing in each country.

### **3.5.2 Data sources**

In reviewing and analyzing public expenditure, the sources from which data is gathered vary little. For data at aggregated level (defined by broader sectors such as agriculture, fisheries, forestry), getting information through national accounts is generally straight forward. The functional and economic raw data are generally obtained from the IMF Government Finance Statistics database (GFS) and national government agencies.

Typically, the Ministry of Finance along with the Ministry of Agriculture (or equivalent, depending on government structure and delegation of affairs) is a main source of information. Through either of these or a governmental statistics branch, details on spending can usually be gathered, either directly or through separate division dealing with sub-sectors (livestock, fisheries, etc.). According to the World Bank (APEA), in numerous and growing number of countries, Ministries of Finance have

established and operate some type of a National System of Public Investment, which endeavours to compile and consolidate public expenditure data for all government agencies. Such systems offer a wide range of ways to organize, present and analyze the expenditure data, according to program, project, and activity budgets.

For Ag.PERs, however, acquiring detailed and disaggregated data can often be cumbersome. A general concern and biggest obstacle raised by these studies is the rather high level of aggregation of data, as mentioned above (see section 0 above). The varying level of aggregation appears to be a consequence of data of availability and data classification from the data sources.

### 3.5.3 Country examples

The Nigeria Agriculture PER (2008/NAGPER), presented in Box 2, illustrates sound approaches to collecting essential agriculture expenditure data and also many of the data challenges faced by countries.

Sub-national data are not readily available from a central source. This is a common problem in many countries. Data on state and local government expenditures need to be collected at the state and local government levels.

Some aspects of the data issue can be exemplified by the cases of the Ghana and Nigeria Agriculture PERs (2008) reported by the World Bank and presented in Box 3 and **Error! Reference source not found.** respectively.

## **Box 2: Data collection: The case of Nigeria Ag. PER**

### The situation at central level

The public expenditure data used in preparing the NAGPER were obtained from Ministries of Agriculture, other key ministries and agencies (for example, those responsible for finance, budget, local government, etc.), as well as agriculture-focused parastatals, all operating at the federal, state, or local government level. In addition, other public finance data were used (for example revenue data), as well as public expenditure data from other sources. The core data set included both budgeted and actual expenditures, classified where feasible along economic, programmatic, sectoral and functional lines. Despite repeated efforts, it was not possible for the study team to obtain a complete and detailed breakdown of agriculture expenditure by the Federal Ministry of Agriculture. An important lesson learned from NAGPER experience is that public expenditure work focusing on the agriculture sector of Nigeria faces four major data challenges (often similar to what is found in other countries):

- (a) Agricultural expenditure data obtained from different sources in Nigeria are inconsistent;
- (b) From some years, it is unclear what constituted the official government budget;
- (c) Many recurrent costs (especially operational costs) are misclassified in government accounts as capital spending;
- (d) “Off-budget” expenditures and donor-provided funds are inadequately documented.

### The situation at decentralized level

State and local governments in Nigeria account for about 46 percent of all public expenditure in Nigeria. The proportion is thought to be even higher in the agriculture sector. This means that it is necessary to go beyond the federal budget and get expenditure data at the lower tiers of government. Resource constraints ruled out the possibility of collecting data from a large number of states and local governments, so the study team used a case study approach as a practical compromise. Six sub-national level authorities were selected for in-depth analysis, including data collection. The selection was based on the following considerations: (i) high importance of agriculture in the economy of the state; (ii) capacity within the sub national-level public institutions to provide information and data; (iii) expressed interest in collaborating with the Ag. PER team; (iv) location in different geo-political zones. The original study design called for a period of coverage of at least 10 years, but the time frame was shortened after it became apparent that few data are available prior to 2000, especially at subnational level.

Source: (WorldBank 2008)

### **Box 3: the case of the Ghana Agriculture PER (2008)**

The expenditure review primarily involved the collection and analysis of data; the institutional review was more participatory. The participatory aspects included two organized consultations with senior management and consultations with a group of retired staff.

The study chose to examine the workings of district offices, as organizational strengths and weakness are likely to be most noticeable at the points of service delivery. The data were collected in four districts (Wassa West, Wassa Amenfi East, Tolon Kumbungu, and West Gonja).

The study utilized data collected through a survey by ISSER and IFPRI as part of the project “Making Rural Service Provision Work for the Poor,” focusing on rural water supply and agricultural extension. The survey covered households, elected or appointed District Assembly Members, District Assembly staff, farmer-based organizations, agricultural extension agents, and organizations involved in rural water supply.

The data on public agriculture expenditure (PAE) were obtained primarily from the Controller and Accountant General’s Department (CAGD), MoFA, CSIR, COCOBOD, Ministry of Road Transport, Ghana Statistical Service, and many other institutions and published data. The information from the above agencies and from the case study interviews was used to analyze a number of factors relating to institutional performance.

In examining the expenditures, the following were done: trend analysis to assess the size and composition of public (mainly government) expenditure in the agricultural sector; Unit cost analysis to assess the efficiency of providing public goods and services in the sector; Benefit incidence to assess the effectiveness of delivery and utilization of public goods and services in the sector; Case studies to identify the binding constraints for improving public agriculture expenditure management and delivery and utilization of public goods and services in the sector. Source: (WorldBank 2008)

## 3.6 CONCLUSIONS AND IMPLICATIONS FOR MAFAP

The analysis of public expenditure and aid flows is the second pillar of the MAFAP methodology. Hence collecting expenditure and aid related information is critically important for the success of the project. A great deal of PER work has been undertaken, but there is still room for expanding its scope and extensiveness so as to further be able to relate them to existing and future policy and strategies. MAFAP aims at complementing and building on existing work and approaches to enhance expenditure and aid analysis for enhancing evidence based policy making and dialogue and ensuring that public resources are geared towards improving food security, eradicating poverty, and sustainably use natural resources.

The importance of external aid in agricultural spending cannot be overseen since it is estimated to make up a considerable part of total spending in the sector. However, the full extent is difficult to establish due to monitoring complexities. The *Creditor Reporting System*, CRS and other databases exist that are useful in improving the monitoring of aid flows.

### Box 4: Summary of findings

#### - Ag PERs and related work in potential MAFAP countries:

For all potential MAFAP countries studies on public expenditures are available. For Burkina Faso, Ethiopia, Kenya, Nigeria, Tanzania and Uganda, Public Expenditure Reviews there are PERs on the agriculture sector. In Cameroon, Ghana, Malawi and Mali, PERs on sectors relevant for other rural sectors are available. Of the last four, the PSE study also covers all but Malawi in providing MAFAP related information. In Ethiopia and Kenya, AgPERs are on-going. Outputs are expected during coming months. Besides OECD's PSE work, conducted in three of the MAFAP countries (Cameroon, Ghana, and Mali) is a good starting point for MAFAP.

#### - Scope, classification and data:

The different objectives of existing PERs have determined what data is included.

The classification systems differ from country to country. Data collection and data collation (i.e. degree of aggregation) tend to be performed on ad-hoc basis in each country. The lack of homogeneity across countries makes a comparison difficult.

The extent of decentralization of administration influences the degree of data disaggregation found at different levels of government. This can complicate the process of data consolidation.

Although some of the categories in existing classifications at country level are immediately useful from the MAFAP methodology development perspective, others would need to be disaggregated further to answer the needs of the MAFAP project. Aggregated data (using the COFOG structure) is generally available but as the level of disaggregation increases, so does the difficulty of availing detailed data.

#### - Aid:

Aid and other financial flows not captured by national accounts are thought to be considerable relatively to government spending. The identification of the total aid contribution to the agriculture sector is generally poorly monitored.

The main conclusions and implications for MAFAP are:

- By combining efforts to estimate spending to the agricultural sector (national expenditures and aid) and measurement of incentives or disincentives resulting from policies or due to the so called “market development gap”, the MAFAP project represents another attempt to measure the overall support or penalisation from one nation to its farmers. As was noticed at the beginning of this review, incentives can arise from many sources but in most studies they have been measured against changes in support provided to farmers through markets or indirect and direct money transfers. On the expenditure side, it is obvious that the investment of public resources in rural areas, for example, for roads, irrigation, transport, storage, but also education and health care provide direct and indirect incentives to producers. This type of support is what the WTO has been trying to measure and classify in its green, blue and amber box. The latter includes all domestic support measures considered to distort production and trade (with some exceptions) and is expressed in terms of a “Total Aggregate Measurement of Support” (Total AMS) which includes all supports for specified products together with supports that are not for specific products, in one single figure. Similarly the OECD captures the overall support received by producers through its aggregate PSE indicator. The OECD also publishes the Total Support Estimate (TSE) which adds to the PSE an estimate of the General Services provided to producers (GSSE) encompassing collective subsidies in kind to farmers such as agricultural research, extension, sanitary services, infrastructure, marketing promotion, etc. The GSSE is close to the traditional green box (i.e. without the allegedly fully decoupled direct payments).

However, the MAFAP project adds two specific dimensions as it also aims at

- i. distinguishing the incentives or disincentives received by farmers as a result of policy in place or on the contrary as a result of “market development gap” which could be interpreted in many instances as a consequence of missing policies;
- ii. breaking down prices gaps from the farm level to the level of the wholesaler or the consumers for some value chains and will thus differentiate between explicit policy protection and excessive costs and rents benefiting particular agents in the chain.

Despite this incremental efforts with respect to past attempts the MAFAP project does not yet envision to include the effects in terms of support arising from aid flows through small NGOs to localised projects and programme including producers and that cannot be captured by national accounts, for example.

- As existing PERs and PSE work provide relevant but not fully satisfactory information on spending and payments in the food and agriculture sector, MAFAP will need to generate a *sui generis* classification and analytical approach.
- MAFAP is an opportunity for countries involved in the project to establish a common classification system for public expenditures. By applying the classification proposed by the MAFAP methodology, it is expected that countries will improve their analysis of expenditures with respect to efficacy, efficiency and effectiveness. With a common classification, comparison across countries will be eased. As the World Bank is the main driver of PERs in Africa, MAFAP work on classification should be closely coordinated and consistent to what the World Bank does.
- Databases on aid flows – amounts, sector-wise allocation, tying and ear-marking – could be used to set-up a system for monitoring coherently and sustainably external aid’s contribution to public expenditure in the food and agriculture sector. From what has been found in PERs, this data on aid for agriculture is said to be missing or inadequate. In Ghana, for example, specific attempts had to be made to institute a device for tracking aid-funded expenditures at sub-national level (WorldBank 2009). OECD’s Credit Reporting System (CRS) database readily has data on aid provided by OECD members and other major contributors such as the EC and several UN agencies. It is closely linked with the NEPAD and the L’Aquila Food Security initiative which

focuses on mapping and tracking aid dedicated to food security in Africa. Moreover, the CRS provides substantial information on how much aid is allocated to the agriculture sector. It should be noted that CRS monitors what donors register as flows to agriculture. By definition this is not the same as measuring actual spending. By including and making use of available databases, MAFAP could bridge the alleged gap on information on donor support.

- Analyzing public expenditure and aid offers governments of MAFAP countries as well as donors an overview of how much is actually spent in agriculture. How aid is given is of importance for a government in deciding of how to specifically allocate this funding. Aid earmarked for a specific project reduces the flexibility of the national budget and the possibility to align it with national strategies. An example of this is Burkina Faso where aid was provided through projects and for predefined activities.<sup>14</sup>
- Given diversity of sources of data (?), there could be benefit for MAFAP could establish a “library” of sources for data collection in the involved countries. This would require working in close relation with the Ministry of Finance, the Bureau of Statistics and ministries responsible for food and agriculture, thus establishing a platform for continuity of monitoring food and agricultural policies.
- Capacity within “source institutions” is important for obtaining reliable data. Therefore, MAFAP countries should have the opportunity to, where needed, have their capacity and institutions strengthened. But this is beyond the scope of MAFAP with its current resources.
- Besides collaborating with the World Bank, the MAFAP team will also need to draw on the results of analyses carried out by other institutions (e.g., IFPRI, ODI, OPM and others). This would allow taking a longer view and in some cases a historical perspective. The challenge will then be how best integrate the data and results of other studies. In the case this is not possible, a system should be put in place whereby this kind of analysis will be conducted nationally from now on.
- The World Bank (WorldBank 2008) reports that in some cases the AgPER teams have devoted substantial effort to document the way the key data gaps were identified and addressed as part of the PER work. It is suggested to adopt such a study process as a usual practice when performing MAFAP related AgPERS as it can contribute to developing improved AgPERs approaches including actions to enhance institutional capacities and resolving some of the data gaps already highlighted.

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<sup>14</sup> “Revue des Dépenses Publiques. Au-delà du Paradoxe Burkinabé: Feuille de Route pour une Décentralisation Réussie et une Dépense Publique plus Efficace” World Bank. 2009

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