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Issues in the collection of FAO data

FAO Statistics Division

1. INTRODUCTION

In recent years agriculture has returned to the centre of the international policy agenda. On the one hand, agriculture is increasingly recognized as an engine for inclusive economic growth and poverty reduction, in addition to its primary importance for food security. On the other hand, the world is confronted with more stringent natural resources constraints, with agriculture identified as a source of the problem, given its impact on land degradation, water use, pollution from fertilizers and pesticides, greenhouse gas emissions, etc. Moreover, price volatility has become a structural characteristic of agricultural and food markets.

The substantial increase in data requirements on agriculture statistics is an immediate consequence of this increased complexity and articulation of policy issues. So too is the increased awareness of the link between the solid evidence base provided by sound statistics, and effective policy development, monitoring and evaluation. The importance of statistics is reflected in its increasing use in monitoring national and international policy targets, including the following uses: FAO's prevalence of undernourishment (PoU) indicator to monitor progress of the first Millennium Development Goal to eradicate extreme hunger and poverty; government expenditure statistics to monitor the Maputo Declaration's commitment for signatory countries to allocate at least 10 percent of national budgetary resources for agricultural and rural development; and both government expenditure and economic accounts data to monitor the agreement by African governments, under the Comprehensive Africa Agriculture Development Programme (CAADP), to increase public investment in agriculture by a minimum of 10 percent of their national budgets, and to raise agricultural productivity by at least 6 percent.

Both national and international statistical agencies are therefore pressed to collect and disseminate more timely, relevant and comprehensive statistics, making the agricultural information system one of the most important building blocks for the formulation of development plans and policies. FAO contributes to the world's agricultural information system as the primary multilateral agency providing internationally comparable food and agriculture statistics.

FAO's contribution to the agricultural information system covers almost all pertinent sectors: from agriculture, forestry and fisheries; to agricultural inputs, like pesticides and fertilizers; to environmental resource use and impacts, such as land, water and greenhouse gas emissions. FAOSTAT, the FAO corporate database, has become an essential global public good that offers free and easy access to this data for 245 countries and territories from 1961 through to the most recent year. FAOSTAT is accessed every month by more than 200,000 visitors worldwide from academia, international organizations, national governments and the private sector.

FAO places great importance on the collection, processing and dissemination of relevant, accurate, and timely food and agriculture statistics. FAO's statistical activities represent a core element of the Organization's mandate, with Article I of the FAO Constitution stating: *"The Organization shall collect, analyze, interpret and disseminate information relating to nutrition, food and agriculture."* Since its inception, FAO has endeavoured to maintain the best possible capacity to collect, process, validate, harmonize and analyse incoming data and generate accurate and timely information.

The quality of data disseminated by FAO depends strongly, however, on the completeness, accuracy and comparability of the national data collected and reported by countries. In order to increase countries' capacity to collect and disseminate the most basic agricultural and rural statistics, FAO works to strengthen national statistical institutions, developing the technical skills and competencies of national statisticians, and improving country methods for the collection, processing, analysis, and dissemination of relevant and timely information.

Unfortunately, the statistical analysis presented in this paper demonstrates deterioration, over time, in the quality of data provided by Member countries. In order to assess country-level performance in collection and reporting of food and agricultural statistics to FAO, this paper provides an overview of the current situation and highlights areas for improvement. While a number of technical divisions in FAO regularly collect country data, this paper focuses on the questionnaires shipped by the FAO Statistics Division.

This paper also seeks to create a discussion on major causes of non-response to or incompleteness of FAO questionnaires in the region, along with other data quality issues. The purpose of this discussion is to understand the source of these issues, and to seek viable solutions to improve data quality and availability, including addressing the statistical capacity development needs of the region.

In order to highlight the data collection issues and generate a discussion on possible remedial actions, the paper has the following structure. Section 2 describes the main issues facing FAO in collecting and processing country data. Section 3 describes the status of data reporting and data quality in the region based on the questionnaires received. Section 4 presents potential causes for low response rates and/or poor data quality. Section 5 proposes possible solutions for discussion. The paper ends with questions and invitations to AFCAS members.

2. INCREASING DATA REQUIREMENTS AND DECREASING DATA AVAILABILITY

In response to the new and increasing demands for a reliable evidence base for agricultural and food policy, FAO has expanded its range of statistical activities, improved its dissemination platforms, modified the content of some of its questionnaires, and moved towards more efficient data collection methods by harvesting, where possible, data collected and processed by other international organizations. This has not always met with satisfactory results. In part, this state of affairs reflects the fact that in the face of increased and more complex data needs, *“many countries, especially in the developing world, lack the capacity to produce and report even the minimum set of agricultural data necessary to monitor national trends or inform the international development debate.”*¹

Within the questionnaire-based data collection from FAO’s Statistics Division, data availability and data completeness in AFCAS Member countries is heterogeneous, with most FAO questionnaires facing a high percentage of non-responses. For many of its questionnaires, this non-response rate has increased over time. Exceptions to this trend seem to occur following targeted statistical training workshops in the region.

Even for responding countries, incoming data are often incomplete, and sometimes inconsistent, either over time and/or with respect to other national data sources. In some cases, national data are not collected according to international standards, making them difficult to compare with data reported by other countries. The incompleteness, inconsistency, and lack of harmonization have been identified during FAO’s data processing and validation.

As the international agency responsible for the dissemination of internationally comparable food and agricultural statistics, FAO invests significant resources in the harmonization and validation of data received from national statistical institutions. In the standardization process, for example, national data are converted to common units of measure, common definitions and classifications. For validation, all datasets go through domain-specific and iterative validation procedures that involve cross-checking with external databases and internal peer-review of FAO experts. Data of low quality are then replaced and data gaps filled with a variety of imputation techniques tailored to the specific data domain and information context. Imputation of missing data is a necessary step for all international organizations to be able to compile world and regional aggregates, as well as to estimate derived indicators or analytical reports, like the Supply Utilization Accounts and Food Balance Sheets.

As a consequence of the processing and validation activities, inconsistencies are found between national and international databases, and sometimes across international organizations. A number of countries are increasingly unhappy with these inconsistencies, especially those monitoring progress towards the achievement of the MDGs. In response to these concerns, the United Nations Statistical Commission (UNSC) in 2012 promoted a “Friends of the Chair” Group to improve the coordination of statistical activities in the UN System. FAO participates in this process, and is interested in establishing a platform to provide countries the opportunity to peer-review imputation methodologies and the data published on the FAOSTAT database. This proposal will be further examined in section 5 of this paper.

¹ Re: “Global Strategy to Improve Agriculture and Rural Statistics”, p13, <http://www.fao.org/docrep/015/am082e/am082e00.pdf>

3. Data quality and availability in the AFCAS region

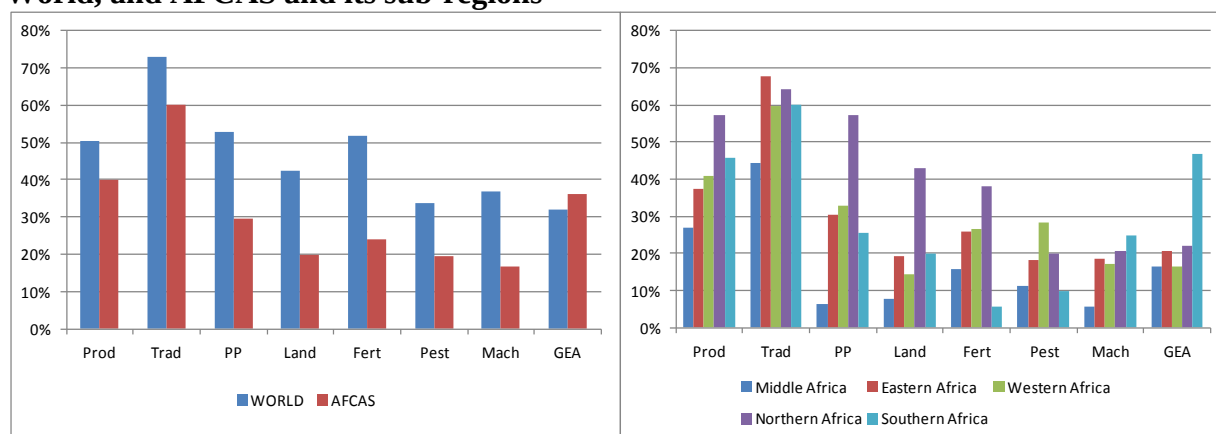
FAO Statistics Division dispatches seven annual questionnaires, covering agricultural production, producer prices, land use, pesticides, fertilizers, machinery, and government expenditure in agriculture (GEA).² This paragraph describes the main patterns and trends in the response rates and completeness rates by data domain, country and sub-region for the annual questionnaires shipped by FAO Statistics Division. Detailed tables are provided in Annex 1.

3.1. Overall patterns and trends in response rates

Response rates among AFCAS countries during 2005-2011 were low in all data domains, and consistently lower than world averages, except for government expenditures (Fig. 1). The proportion of AFCAS countries responding to FAO questionnaires reached 60% for trade flows, 40% for production, 35% for government expenditures and 30% for producer prices. However, for land use, machineries, fertilizers and pesticides, the response rate was less than 25% on average, and for all but pesticides, less than half the average world response rate.

This result, however, masks large differences across sub-regions (Fig. 1). While no sub-region performs systematically better than the world average, Southern Africa outperforms the world average in government expenditures, while Northern Africa outperforms it in production, producer prices, and land. At the other extreme, Middle Africa has the lowest response rates in all domains, except fertilizers, which nevertheless is below 15%. Most troublesome are the large number of domains with response rates of 20% or lower.

Fig. 1: Average response rates by questionnaire, 2005-2011³: AFCAS countries and the World, and AFCAS and its sub-regions



There were no consistent time trends in response rates between 2005 and 2011 (Fig. 2). In 2011, response rates were higher for production compared to 2005; higher for pesticides compared to the 2007 questionnaire⁴; and roughly comparable for land. However, response rates were lower for trade, machinery, producer prices and fertilizers at the end of the period,

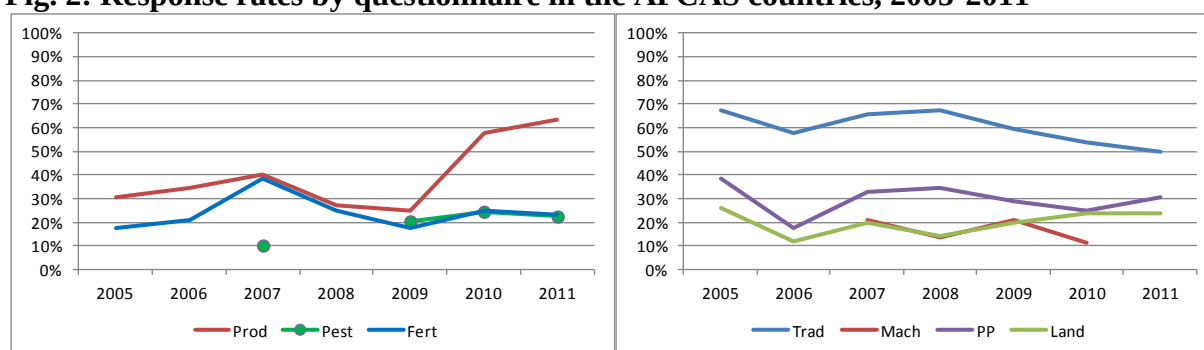
² For data on agricultural trade flows for several domains, FAO uses country-level electronic trade data files. Increasingly, however, FAO relies on other international agencies, such as the United Nations Statistics Division (UNSD), who also receive this data files, and have expanded their activities to meet a wider range of user needs. This reflects the increased trend across international organizations to specialize their statistical activities in areas of comparative advantage, reducing country-level response burden, and increasing efficiency.

³ Machinery response rates refer to the period 2005-2010.

⁴ Pesticide data collection was reintroduced in 2007, and continued in 2009 and every year following.

compared to the beginning. For production, the fall in response rates between 2007 and 2009 was reversed in 2010, largely due to training workshops organized in the region in 2010.

Fig. 2: Response rates by questionnaire in the AFCAS countries, 2005-2011



Looking at the total number of times in which countries responded to FAO questionnaires in the 7 year period from 2005-2011 (Annex 1, Table 2), trade flows had the highest response rates, with an average of 4.2 responses per country out of a maximum of 7. Machinery data were the least available, with an average of 0.7 average responses in the 2006-2010 period, out of a maximum of possibly reflecting the lower frequency with which such data are collected by countries.

To assess response rates for this paper, countries were generally divided in three groups according to the frequency of responses to FAO questionnaires⁵:

- **Never reporting:** countries that have never reported data to FAO, and for this reason, are most likely to lack the institutional capacity to collect or produce relevant data.
- **Irregularly reporting:** countries that report to FAO no more than 4 times out of 7 in the 2005-2011 period; or no more than 2 times out of 4 for pesticides and machinery. Reasons may be linked to institutional or communication issues.
- **Frequently reporting:** countries that report to FAO regularly, for at least 5 years out of 7 in the 2005-2011 period (at least 3 years out of 4 for machinery and pesticides), and for this reason, are unlikely to face major problems in participating in FAO data collection activities.

3.2. Agricultural Production

Agriculture production is one of the most important datasets in FAOSTAT and a key input for the compilation of Supply Utilization Accounts/Food Balance Sheets. The annual questionnaire collects information on crop production, area harvested, yields, livestock and selected processed commodities. Response rates have increased drastically after 2009 throughout the African regions, with the exception of Northern Africa where the increase started one year before. On average the response rates increased from 25% in 2009 to 58% in 2010 and 63% in 2011. Below is the distribution of AFCAS countries in the three groups classified according to their response rate:

⁵ Pesticide questionnaires were sent out in 2007 and 2009-2011, so irregularly reporting refers to 2 out of 4 times, and frequently reporting refers to 3 or more times. As, machinery questionnaires were sent out and recorded in FAOSTAT only between 2006-2010, irregularly reporting refers to 3 out of 5 times, and frequently reporting refers to 4 or more times. Government expenditures, launched globally in 2012, provide a breakdown only of reporting and non-reporting countries for the 2012 data collection.

15% Never reporting countries = Cape Verde, Comoros, Djibouti, Equatorial Guinea, Gabon, Liberia, Libya, Swaziland.

56% Irregularly reporting countries = Angola, Benin, Botswana, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, DRC, Eritrea, Ghana, Guinea, Guinea-Bissau, Madagascar, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Seychelles, Sierra Leone, Togo, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.

29% Frequently reporting countries = Algeria, Burundi, Côte d'Ivoire, Egypt, Ethiopia, Gambia, Kenya, Lesotho, Mali, Mauritius, Morocco, Senegal, South Africa, Sudan, Tunisia.

It should be highlighted that questionnaire completeness has also fallen from 2008 onwards, with the number of fields completed within a questionnaire steadily decreasing in most countries, with a few exceptions (notably Angola, Kenya, Mauritius and United Republic of Tanzania). Middle Africa had the lowest completeness on average (22%), while Northern Africa the highest (49%).

In the 2010-2011 biennium, the FAO Statistics Division organized a series of seven regional workshops in different continents, attended by a total of 213 participants from 113 countries. The main purpose of these workshops was to train national statisticians in the compilation of FAO questionnaires and in the use of international standards and methodologies for the collection, production and dissemination of national data. The workshops were also designed to help FAO better understand the key issues that countries face in meeting FAO data reporting requests. The workshop was provided primarily by FAO statisticians working in the production domain.

The expected outcome of these workshops was a notable increase in the number of responses from countries to FAO questionnaires which, in turn, translated into an improved accuracy of FAOSTAT data for the benefit of all users. For the AFCAS region, three workshop were held in: i) Hammamet, Tunisia, from 21 to 26 June 2010; ii) Bamako, Mali, from 12 to 16 July 2010; and iii) Nairobi, Kenya, from 20 to 24 September 2010. The impact of these workshops on FAO data collection was quite significant, with response rates to the production questionnaire more than doubling in the region as a whole from a low of 25% in 2009, to 58% in 2010, and rising further to 63% in 2011. This positive trend in response rates was not, however, matched in terms of completeness of response to this questionnaire, raising questions about how best to increase the quality of data reported, along with increasing response rates. Indeed, the rate of completeness was replicated in all sub-regions as well (Annex 1, Table 1.1).

This raises the following questions for discussion:

- ➔ Should FAO conduct workshops regularly, taking into account their cost? Given that training may have increased response rates, but not completeness, are there more efficient ways to improve both questionnaire response *and* completeness?

3.3. *Agricultural Trade Flows*

Trade flows are collected simultaneously by UNSD and FAO, which ask countries for their electronic trade data files. Response rates that traditionally used to be rather high, at 70% in 2005, started to decline in recent years to about 50%. This negative trend was apparent in all

sub-regions. Some countries stopped reporting trade data after 2008 or earlier, including Chad, DRC, Gabon, Mali, Seychelles and Swaziland. The complete distribution of AFCAS countries in the three groups classified according to their response rate can be found below:

19% Never reporting = Angola, Comoros, Djibouti, Equatorial Guinea, Eritrea, Guinea-Bissau, Lesotho, Liberia, Libya, Sierra Leone
 23% Irregularly reporting = Burkina Faso, Chad, DRC, Gabon, Guinea, Mali, Mozambique, Namibia, Sao Tome and Principe, Seychelles, Sudan, Swaziland.
 58% Frequently reporting = Algeria, Benin, Botswana, Burundi, Cameroon, Cape Verde, Central African Republic, Congo, Cote d'Ivoire, Egypt, Ethiopia, Gambia, Ghana, Kenya, Madagascar, Malawi, Mauritania, Mauritius, Morocco, Niger, Nigeria, Rwanda, Senegal, South Africa, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe

The trade dataset has, however, the highest completion rate among questionnaires, as measured by the percentage of official data, though the rate of completeness fell slightly in all regions between 2005 and 2011, from about 49% to 45% overall.

➔ Do AFCAS members have any suggestion on how to counteract this negative trend in response rates and completion rates?

3.4. *Agricultural Producer Prices*

The questionnaire on agricultural producer prices is completed by approximately 30% of AFCAS countries every year (Table 1.3). This low response rate likely overestimates the availability of producer price data, as many countries report wholesale or market prices instead of prices received by the farmers. No country has responded to the questionnaire in Middle-Africa since 2008. Northern Africa has the highest response rates, with 67% of countries responding between 2005-2011, while Southern, Western and Eastern Africa have a response rate of around 30%. The list below groups countries according to the frequency with which they report their data to FAO:

35% Never reporting = Angola, Benin, Central African Republic, Chad, Comoros, DRC, Djibouti, Eritrea, Gabon, Lesotho, Liberia, Libya, Sao Tome and Principe, Seychelles, Sierra Leone, Swaziland, United Republic of Tanzania, Zambia
 48% Irregularly reporting = Algeria, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Congo, Côte d'Ivoire, Equatorial Guinea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sudan, Togo, Uganda, Zimbabwe
 17% Frequently reporting = Egypt, Ghana, Kenya, Madagascar, Mali, Mauritius, Morocco, South Africa, Tunisia

The rate of completeness of the questionnaires has declined from 44% in 2007 to 22% in 2011. Even when countries report data of FAO the share of official data keeps decreasing. Another problem with producer prices is inconsistency across time. It is not uncommon to detect breaks in time series in which more recent data differing by a significant factor relative to older data. In these cases, it is difficult to understand if the change is genuine, or if it is an error arising from converting data to a standard unit, a change in the price concept, a change in the variety observed, a revision in methodology, or a combination of all these factors.

- ➔ AFCAS members are invited to identify the causes of the decreasing data coverage, to inform FAO of the actual price concept monitored and of the non-standard units that may be used.

3.5. *Agricultural Inputs*

For the four different questionnaires on agricultural inputs, the pesticide questionnaire was halted for a few years, with data collection in 2007, and then annually from 2009 onwards. A new machinery questionnaire was introduced in 2006 (no data quality information is reported in this paper for the old questionnaire), but due to significantly declining response rates and declining data coverage, the 2011 questionnaire data was not disseminate in FAOSTAT, and the 2012 questionnaire has been put on hold till a better data collection strategy is devised.

In providing data on agricultural inputs, it is also worth noting that some countries face confidentiality constraints, particularly when providing data on fertilizers, given the limited number of fertilizer producers within their borders. FAO has attempted to tackle this problem by signing MoU with such countries to ensure them that data will only be disseminated in aggregated format (i.e. sub-regional aggregates) to protect confidentiality.

In general, only a few countries respond regularly to questionnaires on agricultural inputs, with Mauritius as the only country that has responded frequently to all but the pesticides questionnaire, for which no country is a regular reporter. The list below groups countries according to the frequency with which they report their data to FAO:

Machinery

54% Never reporting = Angola, Benin, Burundi, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, DRC, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Guinea, Guinea-Bissau, Liberia, Libya, Mauritania, Morocco, Namibia, Rwanda, Sao Tome and Principe, Sierra Leone, Sudan, United Republic of Tanzania, Zambia, Zimbabwe

44% Irregularly reporting = Algeria, Botswana, Burkina Faso, Cameroon, Cape Verde, Egypt, Gambia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Senegal, Seychelles, South Africa, Swaziland, Togo, Tunisia, Uganda

2% Frequently reporting = Mauritius

Land use

50% Never reporting = Angola, Benin, Central African Republic, Comoros, Congo, Côte d'Ivoire, DRC, Djibouti, Equatorial Guinea, Eritrea, Gabon, Ghana, Guinea, Guinea-Bissau, Liberia, Libya, Mauritania, Mozambique, Nigeria, Rwanda, Seychelles, Sierra Leone, Swaziland, Uganda, United Republic of Tanzania, Zambia

40% Irregularly reporting = Algeria, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Ethiopia, Gambia, Kenya, Lesotho, Madagascar, Malawi, Mali, Namibia, Sao Tome and Principe, Senegal, South Africa, Togo, Tunisia, Zimbabwe

10% Frequently reporting countries = Egypt, Mauritius, Morocco, Niger, Sudan

Fertilizers

40% Never reporting = Benin, Botswana, Cape Verde, Chad, Comoros, Djibouti, Equatorial Guinea, Guinea-Bissau, Lesotho, Liberia, Libya, Mauritania, Mozambique, Rwanda, Sao Tome and Principe, Sierra Leone, South Africa, Swaziland, Togo, Uganda, United Republic of Tanzania

48% Irregularly reporting = Algeria, Angola, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo, Côte d'Ivoire, DRC, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Kenya, Malawi, Mali, Morocco, Namibia, Nigeria, Seychelles, Sudan, Tunisia, Zambia, Zimbabwe

12% Frequently reporting = Egypt, Gambia, Madagascar, Mauritius, Niger, Senegal

Pesticides

58% Never reporting = Angola, Benin, Botswana, Cape Verde, Central African Republic, Chad, Côte d'Ivoire, DRC, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Guinea-Bissau, Kenya, Liberia, Libya, Namibia, Nigeria, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Sudan, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe

42% Irregularly reporting = Algeria, Burkina Faso, Burundi, Cameroon, Comoros, Congo, Gambia, Ghana, Guinea, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Niger, Rwanda, South Africa, Togo, Tunisia

0% Frequently reporting = None

All questionnaires have low response rates in common (less than 25%) as well as decreasing trends in terms of completeness. Also worth noting is that the land use and machinery questionnaires were revised in 2011 to include an annex on land use change and new machinery items, respectively. Both changes were requested by the user community to better estimate the impact of agriculture on climate change, and capital stock and investments in agriculture, respectively. Despite a peer-review process and pilot tests prior to data collection, the decline in response rates and completeness have implications for questionnaire revisions.

- ➔ AFCAS members are invited clarify the reasons for the low response rates, irregular reporting and decreasing data coverage. Detailed information on actual data availability and data collection frequency at country level would also help understanding the capacity issues at country level.
- ➔ AFCAS members are encouraged to express their views on questionnaires' revisions and formulate suggestions on a better way to manage them.
- ➔ AFCAS members are invited to express their views on FAO proposal to sign an MoU with countries having problems to report their data to FAO for confidentiality issues.

3.6. *Government Expenditure in Agriculture*

The GEA questionnaire was started in 2003 in the Africa region. It expanded to the rest of the world in 2012, with the collaboration of International Monetary Fund (IMF), and request eleven years of data from 2001 through 2011, inclusive. The questionnaire sent to countries in 2012 is referred to as the 2011 questionnaire, as its most recent reference period was 2011.

Response rates for the 2011 GEA questionnaire are discussed only, given that this is the only year for which global data were collected. Because of the history of data collection in the African region and the importance of GEA in CAADP and the Maputo Declaration, it should not come as a surprise that response rates in the region were higher for the GEA than the world average response rates. Within the region, Southern Africa had the highest response rate of 60%, followed by Eastern Africa at 44%, while Northern Africa has the lowest rate of 17%. Since only 2011 data are analyzed, countries are classified in two groups; reporting and non-reporting countries.

Completeness rates were generally low for this questionnaire. This was likely due to difficulty in reporting recurrent and capital breakdowns for the sectors and sub-sectors covered: agriculture, forestry, fishing and hunting, the broad agriculture sector (the total of the first three sub-sectors), protection of biodiversity and landscape, and R&D outlays on environmental protection. It may also reflect the difficulty in collecting and reporting data at

all three levels of government (local, state, central) along with the consolidated and general totals, and the breakdown of central government outlays by budgetary, extra budgetary and social security funds. Nonetheless, ensuring that outlays cover all levels of government is important in monitoring progressing towards meeting the Maputo Declaration and CAADP goals, while the capital/current breakdown permits an estimation of the proportion of government expenditures in agriculture going to investment, relative to that going towards consumption.

33% Reporting = Angola, Benin, Botswana, Burkina Faso, Kenya, Liberia, Madagascar, Mauritius, Morocco, Mozambique, Sao Tome and Principe, Sierra Leone, South Africa, Swaziland, United Republic of Tanzania, Zambia, Zimbabwe

58% Non-reporting = Algeria, Burundi, Cameroon, Cape Verde, Central African Republic, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Gambia, Ghana, Guinea-Bissau, Lesotho, Libya, Malawi, Mali, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sudan, Togo, Tunisia, Uganda

Note: The GEA questionnaire was not sent to: Chad, Equatorial Guinea, Gabon, Guinea, Mauritania

3.7. Country Profiles

Countries with stronger statistical and institutional capacity tend to be the more virtuous in terms of response and completeness in most data domains. Though no country has regularly responded to all FAO questionnaires in the observed period, Mauritius is a regular respondent in 7 out of 8 periods (with the exception of pesticides in which no country is a regular respondent), and Egypt in 6 out of 8 (not in pesticides and machineries). Morocco and Madagascar responded 5 out of 8 periods. The experiences in these four countries in developing their statistical infrastructures, training staff, and reporting data may be instructive for other member countries.

Djibouti and Libya have never responded to FAO questionnaires in the period examined. Other countries with difficulties in reporting statistical information include Comoros, Equatorial Guinea, and Liberia, who responded only once, for pesticides (2011), producer prices (2005), and government expenditures (2011), respectively.

All other AFCAS members irregularly report data, which makes it difficult for FAO to build consistent times series in each data domain. These include Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Côte d'Ivoire, DRC, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia and Zimbabwe, who replied only intermittently to the various FAO questionnaires in 2005-2011.

4. POSSIBLE CAUSES DRIVING INCOMPLETE COUNTRY-LEVEL DATA PROVISION

The previous section described the response and quality of country data reported to FAO. The purpose of this section is to help understand the causes behind low country-level participation in FAO data collection, and discuss possible ways to improve it.

Low response rates may be an indirect measure of country capacity to collect the required food and agricultural statistics, particularly when countries never report to FAO. For example, they may reflect an absence of data collection, or a lower than annual frequency of data collection, the latter of which would show up in inconsistent response rates over time.

Even when data are collected annually at country level, it is important to bear in mind that not all data are reported to FAO because of inadequacy of existing reporting mechanisms, lack of centralized country-level data collection and reporting, and/or insufficient knowledge by FAO of the appropriate national institutions and individuals to contact.

Listed below are questions for which FAO seeks feed-back from AFCAS members.

- a) Are there consistent reasons (e.g. statistical infrastructure, statistical laws, agricultural statistical programs, and training of national statisticians) why Mauritius, Egypt, Morocco and Madagascar are better at responding to FAO surveys? Are there lessons to be learned from their experiences?
- b) When countries reply only periodically to (specific) surveys, is it due to problems in the reporting mechanism? Is it a matter of addressing the relevant focal institutions or contact person? Or data are not available on an annual basis (with countries undertaking ad hoc additional analysis and estimations to report data to FAO)?
- c) Response rates are systematically low in some data domains (e.g. machinery and pesticides). Are there different and better ways to collect those data than the annual questionnaires? In fact, should all components of these data be collected annually (production, trade, use)?
- d) Is the decrease in data completeness an indication that FAO questionnaires are too complex and/or long to be completed? Is it a matter of resources and/or capacity?
- e) Countries in Middle Africa have greater difficulties in reporting data in almost all domains. This includes Angola, Cameroon, Central African Republic, Chad, Congo, DRC, Equatorial Guinea, Gabon and Sao Tome. Are there institutional or other conditions, such as civic strife, that explain this phenomenon?
- f) Data sent to FAO are sometimes in conflict with other national sources, or are inconsistent over time. To help understand these differences, what can FAO do to encourage AFCAS members to document changes in the time series (different units, different concepts and/or different methodology) with appropriate metadata?
- g) Questionnaire revisions seem difficult to manage by countries. Are these changes too disruptive? Do questionnaires come with insufficient explanations?

5. MEASURES CURRENTLY UNDERTAKEN AND POSSIBLE STRATEGIES FOR THE FUTURE

The insufficient data availability and completeness has an important consequence that deserves attention. FAO Statistics Division is forced to impute missing data to be able compile derived indicators, regional and world aggregates, or analytical reports such as the Supply Utilization Accounts/Food Balance Sheets. This is a common practice among statistical departments of international organizations, which can create misunderstandings between the organizations and the countries who do not recognize or disown national statistics published in international databases. Moreover imputation work is massive and may be based on a weak information base. To ensure some methodological rigour in imputation, FAO has developed a number of imputation techniques for each dataset, though a description of these methods is not within the scope of this paper.

The crucial point is that two aspects of data validation do not actively involve member countries: the peer review of applied methodologies, and the peer review of the final published data. In other words, the current situation is the following: a) countries do not all agree with imputation methods used; and b) imputations are not computed by the countries themselves, who have a wider information basis and more country-specific and event-specific information to use as proxies and rationales.

Improving data, establishing validation processes, building country capacity and strengthening international statistical governance are long processes that need years to develop in order to produce sustainable results. It is therefore necessary to proceed in parallel with actions that generate short-term improvements, and institutional solutions that are more effective but require the long-term to bear fruit.

Short-term solution: enhance data transmission through improved communication between FAO and countries and strengthened statistical capacities

FAO Statistics Division devotes a significant share of time in providing feed-back to countries, up-dating contact lists, searching for additional information, and cross-checking data. On the one hand, keeping a constant dialogue with countries is essential for a deeper understanding of the data and country level issues and trends that drive it. On the other hand, this validation approach is a resource-intensive activity, particularly when the statisticians undertaking it are centralized and distant from the underlying agricultural activities and trends taking place.

Countries could effectively help FAO improve data collection both in the preliminary data collection phase and in providing metadata along with the data. An up-to-date list of focal points (Annex 2) is a pre-condition to ensure that data requests reach the competent national authority, and response rates and completion rates are at the highest level possible. A second aspect is the improvement of FAO questionnaires, to simplify and clarify instructions and reduce difficulties that national officers may have in filling them. Improved metadata are also a necessary support for a deeper understanding and better use of the figures. By informing FAO of the actual availability and frequency of each dataset, and by providing detailed concepts, definitions and methods used, countries will increase the total quality of the data and of the imputation of the missing data.

Perhaps more importantly, understanding the country-level policy uses of data will help ensure FAO disseminates the data, indicators, and analyses in a meaningful way. If this

increases the relevance and use of data at country-level, national governments are more likely to invest in the resources that improve both data collection and data reporting.

With respect to imputation of missing data, country level involvement in the imputation process would improve the quality of imputation. This is because countries can rely on a wider information basis, being closer to the phenomenon being measured. Ideally, at least some imputation should occur at country-level, though this requires jointly establishing guidelines and training for how and when to impute missing data. On this front, countries are invited to define their capacity development needs express their views on the organization of regional workshops imputation techniques.

Long-term solution: establish a platform for peer-reviewing country data published by FAO

Although in the short-term improving communication with countries is a viable solution, in the longer term the institutional involvement of all member countries is fundamental. Therefore, in order to ensure full country involvement in peer reviewing country data, a more formal mechanism of country consultation should be established, such as a Committee on Statistics.

This FAO technical committee would serve as an intergovernmental platform for exchange and decision-making on all matters and processes relating to food and agricultural statistics. It would provide direct interaction with countries, and stronger country ownership and commitment to food and agriculture statistics at all levels. In particular, countries would also have the opportunity to peer-review data disseminated by FAO, which would ensure greater consistency between national and international statistics. It would also provide a forum for discussion and consultation with countries on methodological and statistical capacity development priorities and officially endorse agricultural statistics standards.

The current FAO governance in Statistics includes only two Regional Commissions on Agricultural Statistics (AFCAS and APCAS) and the IICA-FAO Working Group on Agricultural and Livestock Statistics for Latin America and the Caribbean. This current governance structure only provides partial regional coverage and no global coordination or harmonization. The lack of a formal FAO intergovernmental body on agricultural statistics limits proper country involvement on statistical matters. Furthermore, it means a weakened position in terms of decision making as matters cannot be passed upwards to the Conference for discussion or endorsement. It is for these reasons, that a more formal governance mechanism is proposed at global level.

6. QUESTIONS AND INVITATIONS TO THE AFCAS MEMBERS.

AFCAS members are requested to express their views and recommendations to FAO on the following working areas:

Recommendations for short-term solutions to improve data quality:

- Member countries assist FAO in identifying the causes of low response rates to questionnaires and inform FAO of the actual data and metadata availability, including data collection frequency, concepts, definitions and methods used in data collection.
- Member countries identify a single country-level focal point to handle all FAO questionnaires, regardless of the national organization responsible for data reporting, and update the focal point, as required.
- Where there is non-reporting of data due to confidentiality issues, Member countries and FAO sign an Memorandum of Understanding (MoU) on data provision and dissemination, that restricts FAO to disclosing data to third parties in accordance with the respondent's national statistical laws.
- FAO involves Member Countries in a consultative process before adapting questionnaires to emerging needs.
- FAO reviews the effectiveness of training workshops to improve response rates, completeness and quality of response, and consider, jointly with Member countries, cost-effective alternatives. Such approaches could include technical workshops on imputation techniques, and on-line or other computer-based training.

Recommendations for long-term solutions to improve data quality:

- The action plan of the Global Strategy to Improve Rural and Agricultural Statistics (GS) develop and implement targeted statistical capacity development programs in the region, given the low general availability of data for AFCAS countries.
- FAO establish a Committee on Agricultural Statistics at the Global Level in order to: (a) better coordinate and standardize activities and recommendations emanating from Regional Commissions and bodies; (b) provide a global forum for Country Representatives to review and endorse methodological and other normative work; and (c) create a peer-review process for data published and methodologies used by FAO.

ANNEX 1. FAO QUESTIONNAIRE RESPONSE RATES AND DATA QUALITY, 2005-2012

TABLE 1. RESPONSE RATES TO FAO QUESTIONNAIRES, BY DOMAIN AND REGION, 2005-2011

Table 1.1 Agricultural Production, 2005-2011

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)						
			2005	2006	2007	2008	2009	2010	2011
Middle Africa	9	9	33%	33%	22%	0%	11%	44%	44%
Eastern Africa	16	16	25%	31%	56%	38%	19%	44%	50%
Western Africa	16	16	38%	31%	31%	25%	25%	63%	75%
Northern Africa	6	6	33%	50%	33%	33%	83%	83%	83%
Southern Africa	5	5	20%	40%	60%	40%	0%	80%	80%
Regional Total	52	52	31%	35%	40%	27%	25%	58%	63%
WORLD	227	190	38%	48%	47%	46%	50%	61%	62%

Table 1.2 Agriculture Trade flows, 2005-2011

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)						
			2005	2006	2007	2008	2009	2010	2011
Middle Africa	9	9	56%	44%	56%	56%	44%	33%	22%
Eastern Africa	16	16	75%	69%	63%	69%	69%	69%	63%
Western Africa	16	16	56%	44%	69%	75%	56%	63%	56%
Northern Africa	6	6	83%	67%	67%	67%	83%	33%	50%
Southern Africa	5	5	80%	80%	80%	60%	40%	40%	40%
Regional Total	52	52	67%	58%	65%	67%	60%	54%	50%
WORLD	227	190	75%	75%	75%	73%	72%	71%	69%

Table 1.3 Agriculture Producer Prices, 2005-2011

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)						
			2005	2006	2007	2008	2009	2010	2011
Middle Africa	9	9	33%	0%	11%	0%	0%	0%	0%
Eastern Africa	16	16	31%	25%	44%	31%	25%	25%	31%
Western Africa	16	16	38%	13%	38%	44%	38%	25%	38%
Northern Africa	6	6	67%	50%	33%	67%	83%	67%	67%
Southern Africa	5	5	40%	20%	20%	40%	20%	20%	20%
Regional Total	52	52	38%	17%	33%	35%	29%	25%	31%
WORLD	227	190	57%	39%	57%	53%	51%	55%	58%

Table 1.4 Land use, 2005-2011

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)						
			2005	2006	2007	2008	2009	2010	2011
Middle Africa	9	9	22%	0%	0%	11%	0%	11%	11%
Eastern Africa	16	14	29%	21%	21%	7%	29%	7%	21%
Western Africa	16	16	13%	13%	13%	19%	6%	25%	13%
Northern Africa	6	6	50%	17%	67%	33%	50%	67%	17%
Southern Africa	5	5	40%	0%	20%	0%	40%	40%	0%
Regional Total	52	50	26%	12%	20%	14%	20%	24%	24%
WORLD	227	204	38%	37%	45%	42%	44%	45%	45%

Table 1.5 Fertilizers, 2005-2011

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)						
			2005	2006	2007	2008	2009	2010	2011
Middle Africa	9	9	22%	11%	33%	11%	11%	22%	0%
Eastern Africa	16	16	19%	19%	38%	31%	13%	31%	31%
Western Africa	16	16	19%	31%	50%	19%	25%	19%	25%
Northern Africa	6	6	17%	33%	50%	50%	33%	33%	50%
Southern Africa	5	5	0%	0%	0%	20%	0%	20%	0%
Regional Total	52	52	17%	21%	38%	25%	17%	25%	23%
WORLD	227	186	n.a.	n.a.	63%	52%	47%	49%	49%

Table 1.6 Pesticides, 2005-2011

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)						
			2005	2006	2007	2008	2009	2010	2011
Middle Africa	9	9	n.a.	n.a.	0%	n.a.	22%	11%	11%
Eastern Africa	16	15	n.a.	n.a.	7%	n.a.	13%	33%	20%
Western Africa	16	15	n.a.	n.a.	7%	n.a.	33%	40%	33%
Northern Africa	6	5	n.a.	n.a.	40%	n.a.	20%	0%	20%
Southern Africa	5	5	n.a.	n.a.	20%	n.a.	0%	0%	20%
Regional Total	52	49	n.a.	n.a.	10%	n.a.	20%	24%	22%
WORLD	227	173	n.a.	n.a.	28%	n.a.	32%	36%	39%

Table 1.7 Agricultural Machinery, 2006-2010

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)						
			2005	2006	2007	2008	2009	2010	2011
Middle Africa	9	9	n.a.	n.a.	11%	0%	0%	11%	n.a.
Eastern Africa	16	16	n.a.	n.a.	19%	13%	19%	25%	n.a.
Western Africa	16	16	n.a.	n.a.	19%	13%	31%	6%	n.a.
Northern Africa	6	6	n.a.	n.a.	33%	17%	33%	0%	n.a.
Southern Africa	5	5	n.a.	n.a.	40%	40%	20%	0%	n.a.
Regional Total	52	52	n.a.	n.a.	21%	13%	21%	12%	n.a.
WORLD	227	209	n.a.	n.a.	37%	37%	37%	36%	n.a.

Table 1.8 Government Expenditures in Agriculture, 2011

Region	# Countries	# Quest. requested	Response rate for questionnaires requested (%)
Middle Africa	9	6	33%
Eastern Africa	16	16	44%
Western Africa	16	14	29%
Northern Africa	6	6	17%
Southern Africa	5	5	60%
Regional Total	52	47	36%
WORLD	227	158	32%

TABLE 2. NUMBER OF RESPONSES TO FAO QUESTIONNAIRES, BY COUNTRY AND LATEST RESPONSE AVAILABLE, 2005-2011

Country	Production		Trade		Producer prices		Land use		Fertilizers		Pesticides		Machinery ⁶	
	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received
Algeria	6	2012	6	2011	5	2011	1	2007	2	2011	2	2011	1	2007
Angola	3	2012		n.a	0	n.a.	0	1992	1	n.a.	0	1996	0	n.a.
Benin	1	2012	5	2010	0	n.a.	0	1998	0	n.a.	0	No	0	n.a.
Botswana	3	2012	7	2011	1	2008	4	2010	0	n.a.	0	1992	1	2009
Burkina Faso	3	2011	3	2011	3	2010	1	2008	2	2009	3	2011	1	2007
Burundi	5	2012	5	2010	2	2008	1	2005	1	2005	1	2009	0	n.a.
Cameroon	4	2012	7	2011	2	2007	2	2008	3	2010	3	2011	2	2010
Cape Verde	0	n.a	7	2011	2	2009	3	2011	0	n.a.	0	2001	2	2010
Central African Republic	3	2012	6	2011	0	n.a.	0	2002	2	2010	0	1995	0	n.a.
Chad	2	2010	4	2008	0	n.a.	2	2011	0	n.a.	0	1997	0	n.a.
Comoros	0	n.a	0	n.a	0	n.a.	0	1989	0	n.a.	1	2011	0	n.a.
Congo	4	2011	6	2010	1	2005	0	1997	1	2007	1	2009	0	n.a.
Côte d'Ivoire	5	2012	7	2011	4	2011	0	1997	2	2006	0	1996	0	n.a.
Democratic Republic of the Congo	4	2012	2	2008	0	n.a.	0	1979	2	2007	0	n.a.	0	n.a.
Djibouti	0	n.a	0	n.a	0	n.a.	0	1983	0	n.a.	0	n.a.	0	n.a.
Egypt	6	2012	5	2011	7	2011	6	2011	6	2011	0	1993	2	2009
Equatorial Guinea	0	n.a	0	n.a	1	2005	0	1968	0	n.a.	0	n.a.	0	2007
Eritrea	3	2010	0	n.a	0	n.a.	0	2000	1	2007	0	2001	0	n.a.
Ethiopia	5	2012	7	2011	4	2011	2	2009	3	2011	0	2001	0	n.a.
Gabon	0	n.a	2	2006	1	2007	0	1995	1	2007	0	n.a.	0	n.a.
Gambia	5	2012	5	2011	2	2008	2	2011	6	2011	1	2007	1	2009
Ghana	4	2012	6	2011	6	2011	0	2000	3	2008	1	2009	1	2009
Guinea	3	2008	1	2008	2	2008	0	1996	1	2007	2	2010	0	n.a.
Guinea-Bissau	4	2011	0	n.a	2	2011	0	1993	0	n.a.	0	2001	0	n.a.
Kenya	7	2012	6	2010	6	2011	3	2009	2	2007	0	2001	2	2009
Lesotho	5	2011	0	n.a	0	n.a.	2	2009	0	n.a.	1	2011	1	2008
Liberia	0	n.a	0	n.a	0	n.a.	0	1987	0	n.a.	0	n.a.	0	n.a.
Libya	0	n.a	0	n.a	0	n.a.	0	1985	0	n.a.	0	n.a.	0	n.a.
Madagascar	2	2008	7	2011	7	2011	2	2007	5	2011	3	2011	1	2008
Malawi	3	2011	5	2011	1	2007	1	2009	3	2011	1	2009	2	2010
Mali	7	2012	4	2008	6	2011	2	2007	4	2011	2	2011	1	2007
Mauritania	4	2011	6	2011	1	2007	0	1998	0	n.a.	3	2011	0	n.a.
Mauritius	5	2012	6	2011	7	2011	7	2011	7	2011	2	2010	4	2010
Morocco	6	2012	6	2010	6	2010	6	2011	4	2008	1	2007	0	n.a.

⁶ Though 2010 data were received in the machinery questionnaire sent out in 2012, the response rates and completeness was of such poor quality that this data was not reported in FAOSTAT.

Country	Production		Trade		Producer prices		Land use		Fertilizers		Pesticides		Machinery ⁶	
	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received	Num. received	Last received
Mozambique	3	2012	3	2011	2	2009	0	n.a.	0	n.a.	1	2010	1	2010
Namibia	4	2011	4	2008	2	2006	1	2005	2	2010	0	1993	0	n.a.
Niger	4	2012	5	2011	3	2011	6	2011	5	2011	3	2011	2	2009
Nigeria	3	2011	5	2008	1	2008	0	1997	2	2009	0	n.a.	1	2007
Rwanda	4	2012	7	2011	2	2011	0	2002	0	n.a.	2	2011	0	n.a.
Sao Tome and Principe	1	2006	1	2009	0	n.a.	1	2005	0	n.a.	0	n.a.	0	n.a.
Senegal	6	2012	7	2011	1	2009	1	2006	5	2011	0	2001	1	2009
Seychelles	2	2012	3	2007	0	n.a.	0	1996	4	2010	0	1998	1	2010
Sierra Leone	2	2011	0	n.a.	0	n.a.	0	1999	0	n.a.	0	n.a.	0	n.a.
South Africa	6	2012	7	2011	6	2011	2	2011	0	n.a.	1	2007	2	2009
Sudan	6	2012	4	2009	3	2011	5	2011	1	2011	0	2000	0	2008
Swaziland	0	n.a.	3	2007	0	n.a.	0	2000	0	n.a.	0	n.a.	1	2007
Togo	3	2012	6	2011	4	2011	3	2011	0	n.a.	2	2011	2	2009
Tunisia	5	2012	6	2011	5	2011	3	2011	3	2010	1	2009	2	2008
Uganda	3	2011	7	2011	1	2007	0	1997	0	n.a.	0	1995	1	2007
United Republic of Tanzania	3	2012	7	2011	0	n.a.	0	2002	0	n.a.	0	1995	0	n.a.
Zambia	2	2008	7	2011	0	n.a.	0	1994	1	2008	0	1996	0	n.a.
Zimbabwe	3	2011	6	2011	2	2007	1	2006	2	2011	0	1998	0	n.a.

TABLE 3. DATA QUALITY AND COMPLETENESS BY REGION, COUNTRY AND YEAR, 2005-2011**TABLE 3.1 PROPORTION OF OFFICIAL RECORDS IN FAOSTAT, BY DATASET, REGION AND YEAR (%)⁷****Table 3.11 Agricultural Production**

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	23%	21%	24%	28%	24%	22%	16%	22%
Eastern Africa	33%	32%	31%	32%	32%	31%	29%	31%
Western Africa	34%	35%	35%	36%	35%	33%	27%	34%
Northern Africa	45%	50%	51%	54%	49%	50%	47%	49%
Southern Africa	34%	28%	30%	29%	29%	26%	20%	28%
REGIONAL TOTAL	38%	39%	40%	41%	39%	38%	33%	38%

Table 3.12 Agricultural Trade

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	36%	31%	27%	30%	34%	30%	20%	30%
Eastern Africa	57%	48%	56%	57%	60%	61%	52%	56%
Western Africa	48%	34%	52%	55%	42%	51%	46%	47%
Northern Africa	53%	41%	53%	38%	55%	28%	43%	44%
Southern Africa	47%	46%	66%	45%	44%	43%	44%	48%
REGIONAL TOTAL	49%	39%	55%	48%	46%	43%	45%	46%

Table 3.13 Agricultural Producer Prices

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	2%	2%	10%	10%	16%	16%	16%	10%
Eastern Africa	27%	32%	32%	27%	16%	22%	18%	25%
Western Africa	35%	36%	39%	29%	21%	18%	17%	28%
Northern Africa	38%	46%	48%	47%	50%	48%	22%	43%
Southern Africa	51%	46%	46%	46%	46%	46%	43%	43%
REGIONAL TOTAL	38%	41%	44%	38%	35%	33%	22%	36%

Table 3.14 Land use

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	26%	22%	23%	25%	26%	31%	18%	24%
Eastern Africa	34%	25%	26%	30%	27%	37%	25%	29%
Western Africa	34%	23%	25%	22%	23%	33%	23%	26%
Northern Africa	78%	71%	72%	74%	65%	65%	44%	67%
Southern Africa	30%	28%	36%	38%	34%	51%	36%	36%
REGIONAL TOTAL	38%	30%	33%	33%	31%	40%	27%	33%

⁷ Data for a particular year may have been reported in a questionnaire given in a later year, so these tables do not necessarily coincide with the reference year questionnaire.

Table 3.15 Fertilizers

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	11%	15%	14%	12%	17%	12%	12%	13%
Eastern Africa	17%	19%	19%	19%	19%	13%	14%	17%
Western Africa	9%	11%	10%	11%	8%	9%	9%	9%
Northern Africa	17%	15%	15%	15%	18%	10%	12%	9%
Southern Africa	19%	20%	16%	8%	12%	9%	10%	14%
REGIONAL TOTAL	12%	13%	12%	12%	11%	9%	10%	11%

Table 3.16 Pesticides

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	23%	23%	23%	23%	23%	14%	23%	21%
Eastern Africa	25%	24%	21%	21%	21%	20%	13%	21%
Western Africa	36%	38%	38%	30%	36%	27%	11%	31%
Northern Africa	26%	30%	15%	15%	30%	0%	0%	16%
Southern Africa	11%	11%	22%	17%	22%	22%	22%	18%
REGIONAL TOTAL	29%	31%	29%	24%	32%	19%	10%	25%

Table 3.17 Agricultural Machinery

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	0%	0%	7%	0%	0%	100%	n.a.	18%
Eastern Africa	41%	86%	89%	68%	69%	56%	n.a.	68%
Western Africa	53%	74%	78%	69%	46%	5%	n.a.	54%
Northern Africa	94%	94%	96%	80%	69%	0%	n.a.	72%
Southern Africa	99%	96%	97%	56%	11%	0%	n.a.	60%
REGIONAL TOTAL	57%	77%	80%	62%	48%	31%	n.a.	59%

Table 3.18 Government Expenditures in Agriculture

Region	2005	2006	2007	2008	2009	2010	2011	AVERAGE (2005-2011)
Middle Africa	1%	2%	1%	2%	2%	1%	0%	1%
Eastern Africa	2%	3%	3%	3%	5%	5%	2%	3%
Western Africa	2%	2%	2%	2%	2%	2%	1%	2%
Northern Africa	1%	1%	1%	1%	1%	0%	0%	2%
Southern Africa	13%	12%	13%	13%	19%	3%	0%	1%
REGIONAL TOTAL	3%	3%	4%	4%	5%	2%	1%	3%

TABLE 3.2 AVERAGE PROPORTION OF OFFICIAL RECORDS IN FAOSTAT, BY COUNTRY AND DATASET, 2005-2011 (%)

Country	Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditures
Algeria	61%	54%	36%	72%	17%	57%	100%	3%
Angola	33%	2%		25%	2%			4%
Benin	44%	43%	36%	24%	3%			14%
Botswana	27%	60%	0%	38%	0%		84%	7%
Burkina Faso	38%	30%	26%	25%	3%	62%	100%	12%
Burundi	31%	45%	17%	25%	18%	12%		
Cameroon	32%	57%	11%	37%	39%	52%	53%	
Cape Verde	5%	76%	39%	27%	29%		57%	
Central African Republic	15%	24%		29%	0%			
Chad	13%	4%	33%	20%	0%			
Comoros	0%	0%		29%	0%	57%		
Congo	11%	49%	0%	16%	5%			
Côte d'Ivoire	47%	70%	32%	22%	18%			
Democratic Republic of the Congo	51%	15%		22%	18%			
Djibouti	8%	1%		24%				
Egypt	58%	57%	63%	55%	10%		90%	2%
Equatorial Guinea	0%	1%	0%	29%				
Eritrea	35%	13%	0%	2%	1%			
Ethiopia	49%	71%	35%	55%	6%	64%		
Gabon	1%	22%		32%	6%			
Gambia	29%	47%	0%	44%	13%	40%	60%	
Ghana	38%	63%	27%	29%	7%	33%	87%	
Guinea	17%	12%	10%	16%	7%	14%		
Guinea-Bissau	18%	2%	28%	17%				
Kenya	51%	68%	41%	33%	30%		89%	15%
Lesotho	38%	1%		52%		82%	73%	7%
Liberia	0%	3%		29%				4%
Libya	9%	1%		29%	6%			
Madagascar	8%	69%	17%	31%	11%	57%	90%	
Malawi	40%	51%	18%	34%	15%	0%	100%	
Mali	47%	41%	36%	25%	9%	93%	100%	
Mauritania	19%	48%		29%		29%		
Mauritius	62%	64%	41%	37%	37%	60%	84%	26%
Morocco	55%	57%	35%	71%	26%	25%		2%
Mozambique	28%	1%	21%	36%	8%	0%	88%	2%
Namibia	14%	4%	3%	22%	9%			
Niger	41%	52%	22%	54%	8%	33%	68%	

Country	Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditures
Nigeria	39%	16%	20%	24%	10%		100%	
Rwanda	38%	59%	38%	19%	6%	48%		
Sao Tome and Principe	1%	12%		11%	0%			9%
Senegal	63%	74%	80%	30%	18%		64%	
Seychelles	14%	36%		6%	31%		93%	
Sierra Leone	13%	1%		6%	0%			9%
South Africa	43%	90%	64%	42%	24%			40%
Sudan	60%	10%	35%	71%	3%			
Swaziland	3%	38%		21%	0%		100%	1%
Togo	31%	51%	30%	17%	6%	88%	93%	1%
Tunisia	39%	57%	40%	83%	15%	10%	92%	
Uganda	40%	69%		37%	15%		97%	
United Republic of Tanzania	26%	75%	14%	33%	27%			6%
Zambia	29%	68%	53%	31%	19%			5%
Zimbabwe	9%	45%	2%	16%	18%			6%
Regional Total	38%	46%	36%	33%	11%	25%	53%	3%

Annex 2: Focal Points in AFCAS Members Countries

Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Algeria							
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Angola							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Benin							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Botswana							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Burkina Faso							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Burundi							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Cape Verde							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Central African Republic							
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Chad							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Congo							
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Democratic Republic of Congo							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Côte d'Ivoire							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Egypt							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Eritrea							
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Ethiopia							
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Gabon							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Gambia							
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Ghana							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Guinea							
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Guinea Bissau							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Kenya							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Liberia							
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Libya							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Madagascar							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Mali							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Mauritius							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Morocco							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Namibia							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Niger							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Nigeria							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Rwanda							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Sao Tome and Principe							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Seychelles							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
United Republic of Tanzania							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Tunisia							
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Uganda							
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Production	Trade	Prices	Land	Fertilizers	Pesticides	Machinery	Government Expenditure
Zambia							
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