

Issues and Concerns for Developed Countries

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[The views expressed are those of the author and not necessarily those of the OECD.]

ABSTRACT: Agriculture in developed countries has undergone profound changes in the recent past. Shifts in governments' attention to related fields, such as environmental issues and rural development, the need for more micro-level data for agricultural sectors, and the globalisation of world economies, have put additional demand on the capacity of statistical systems to deliver answers. Issues are becoming increasingly complex, while options tend to become more constrained and pressures are growing. A well-functioning statistical information system might help to alleviate such pressures to some extent while providing more consistent and internationally comparable statistics. An integrated system approach is needed with respect to the organisation of statistical systems and the information technology in support of these.

1. Introduction

Although the contribution of agriculture to a nation's creation of wealth is generally small and declining in developed countries, this sector receives considerable attention in terms of government policies. At the Organisation for Economic Cooperation and Development (OECD), which groups together the developed countries of the world, key issues and concerns of governments with respect to agriculture are discussed and analysed. Since these invariably translate into data needs, a summary of what they are seems to provide a good starting point for discussion in the context of this short paper. Thus, it starts from a user perspective before addressing key issues and concerns from a provider perspective. Both are interrelated and mutually dependent. Since the increasingly important role and new capabilities of modern information technology (IT) provide opportunities for new or better ways of managing, sharing and disseminating information, statistical organisation and IT issues will also be addressed at the end of this paper.

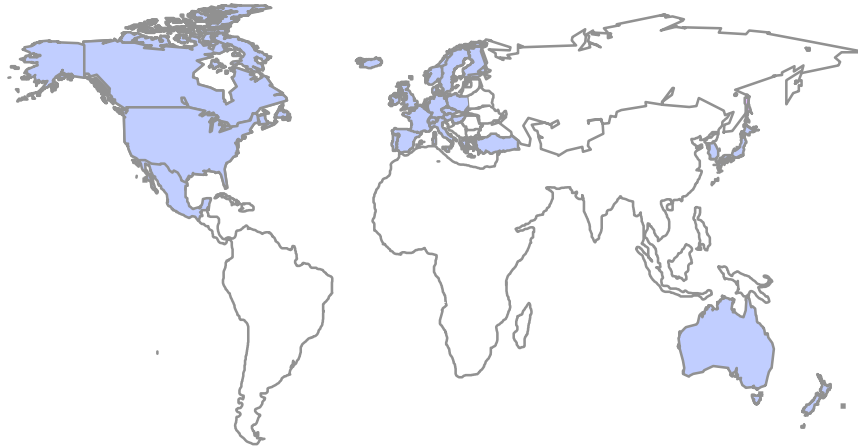
2. Issues and Concerns of Users

As an international organisation which regroups 29 developed market economies across the world, OECD's main role is to provide economic analysis and guidance, including forecasts, and to provide internationally comparable statistics and indicators. Under the general guidelines of the Ministers for Agriculture of OECD's Member countries, the work is determined by the Committee for Agriculture and its subsidiary bodies, which decide on the priorities of the programme of work. This work, therefore, represents a balance of views expressed by these quite diverse and different countries and concentrates on those areas of investigation which have been identified as being important for decision-makers. Membership in OECD has been enlarged since 1994 to include five additional countries, thus widening diversity.

This geographical distribution has implications for OECD's statistical activities since a community from four geographical zones with very different climatic and economic conditions has to be analysed and statistically represented in a consistent and internationally comparable manner. With respect to statistics, this means that OECD is placed between the UN and FAO on the one hand which, through guidelines and handbooks, set worldwide standards for measurement, and on the other hand Eurostat with more European-specific guidelines and recommendations for about half of OECD's members.

Figure 1.

OECD Member Countries in 1997



This means also that for statistical activities, the OECD has to take into account that its Member countries report data to one, two or all three international organisations — a particularly important aspect to be considered when launching or reviewing statistical activities in response to analytical needs. OECD needs consensus amongst Member countries when assessing which measurement standards and conventions can be adopted as they are, since these may be too general (worldwide standards) or too “European”. In any case, *basic concepts and definitions should remain compatible across all three international bodies.*

Figure 2.

The Necessity of Compatible Methodologies

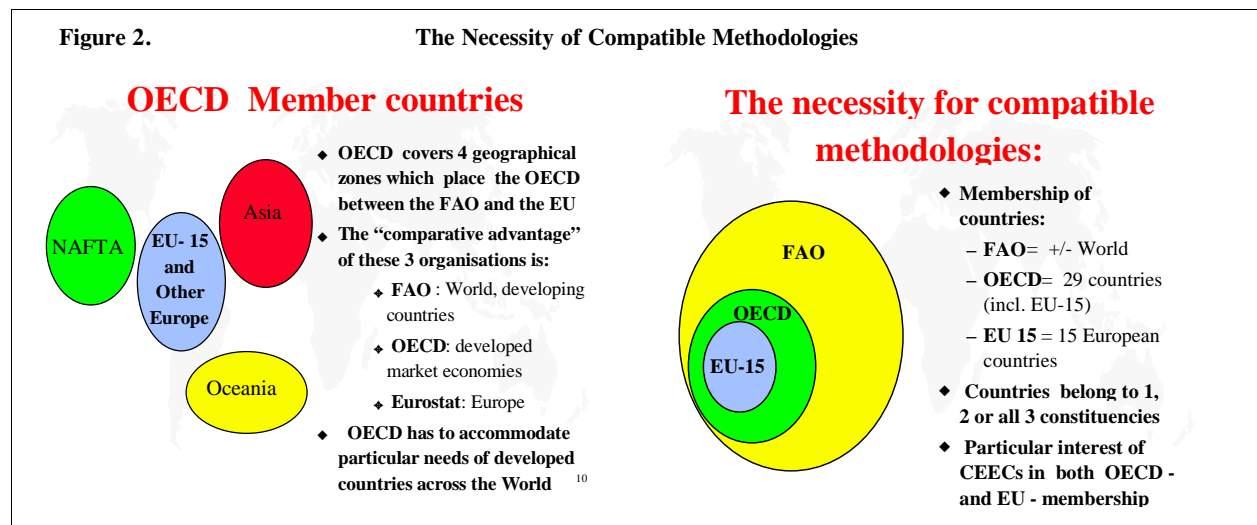


Figure 2 illustrates that very different agro-food sectors and associated policy concerns, actions and needs have to be taken into account. There is, nevertheless, a common pattern across countries which can be distilled from a great variety of economic and social pressures, policies and priorities. They can be summarised as follows:

- *Increasing complexity of issues:* shift in focus from farm gate agriculture to the entire food sector, rapidly changing and less homogeneous agro-food structures, the multifunctional role of agriculture, transparency and equity concerns, trade-offs between conflicting policy objectives;
- *More constrained options:* fiscal restraint, commitments under multilateral and regional trade agreements, application of agreed principles; and
- *Growing pressures:* interdependence of both domestic and international pressures, high budgetary costs and limited effectiveness, increased foreign competition, need to expand markets.

Against this general background, the following main issues and concerns can be identified for developed countries, all of which have a direct bearing on statistical requirements in a forward-looking manner.

2.1 Reducing the Level of Support to Agriculture

Over the medium-term, most OECD countries will have to undertake substantial fiscal restraint and to reduce high levels of public debt. This will preclude major increases in expenditure. New social concerns raise the issue of social equity, that is how to distribute the benefits of economic growth across society according to identified medium- or long-term social objectives. In OECD countries, total transfers to agriculture as measured by the Producer and Consumer Subsidy Equivalents (PSE/CSE) amount to not less than US\$300 billion per year and can equal or even exceed the gross value added of agriculture in certain countries. The pressure is growing to reduce these high levels of support. In addition, the transfer efficiency of support programmes is generally low, leading to much smaller net gains for farmers.

2.2 Increasing the Effectiveness, Efficiency and Equity of Support

The rapid structural change of agricultural sectors towards industrialisation of the agro-food sector, the reduced homogeneity of the sector, and domestic and international market developments have reduced the effectiveness of traditional support policies. There is a need for a more targeted and diversified approach. More emphasis will have to be put on evaluating the economic efficiency of the whole sector. Also, the question of equity of support needs to be analysed more in depth. This requires a more solid information base on the total income of agricultural households, including an assessment of their net worth. It is, thus, the economic status which matters, not only the yearly creation of wealth and income. Also, there is clearly a direct link to tax and social policies.

2.3 The Need to Address Broader Economic and Social Objectives

Increasing international competitiveness is a stated goal of many OECD countries. This brings a new perspective to agro-food policy reform by emphasizing more market orientation, the role of innovation and coordination. This, in turn, would put additional pressures for structural change at all levels of the agro-food chain and confront policymakers with a complex set of difficult issues, such as how to react to out-migration, increased concentration and so forth. The quality of the environment needs to be maintained or rather improved; otherwise, agriculture would not be sustainable in the long run. But this issue is beset by conceptual and statistical measurement problems and also by quite different concerns across countries. How to put a monetary value on both the beneficial and harmful effects of agricultural production on a nation's natural resources? How to measure these externalities and make them internationally comparable? Another related question concerns the promotion of rural

development. An integrated policy approach, encompassing also other than agricultural policies *stricto sensu* might facilitate *inter alia* the necessary agricultural adjustment process. A balanced approach has to be taken with respect to regulatory reform, where there is a need to deregulate in some areas of the agro-food sector, while pressure is growing to have more regulation in others.

2.4 International Issues and Pressures

Recent trade agreements confront countries with a number of challenges, such as how to adapt to the new trade environment (emerging markets and economies in transition, new links between countries, etc.), to address potential barriers to trade (for instance, tariff and non-tariff trade barriers), and to move towards more trade liberalisation (notably the implementation of the Uruguay Round commitments). A systematic analysis of causes and effects of distortions is needed.

2.5 Ensuring Food Security

The 1996 FAO World Food Summit identified poverty as a major cause for food insecurity and sustainable economic growth as crucial for improving incomes and access to food. Trade, as one stimulator of growth, is a key element. One challenge consists in ensuring sustainable growth in food production in a context of price variability.

2.6 Linkages with Transition and Developing Economies

The globalisation of the world economy and strong economic growth and exports in non-Member economies will have a strong impact on OECD's agricultural sectors with losers and winners. OECD countries will be more exposed to global competition and growing trade, and in particular high income countries will need to adjust to these pressures.

3. Statistical Requirements

The points made above illustrate which types of questions are likely to be asked in an international context to which agricultural economists and statisticians are called upon to provide answers. This will not be easy since this requires to reconcile and harmonise national statistics in order to be able to carry out meaningful international comparisons. The range and complexity of issues is such that the available information base is likely to not only provide incomplete parts of the required information, but also misleading information. Principal concerns about agriculture have changed considerably in the recent past and pose a full range of challenges to professional information providers. Not only have the basic characteristics changed (from farming *stricto sensu* to agro-food industry), but also the need for micro-level data has drastically increased, sometimes posing problems of consistency with established macro-level frameworks. At the same time, agriculture is to be seen in conjunction with related fields, such as structural and rural development policies, environmental policies, trade issues, and globalisation.

Against the background of key policy questions in an international context, a non-exhaustive list of statistical requirements can be drawn up.

3.1 Improving the Methodology/Analysis of Government Transfers

OECD has developed a statistical tool for a more comprehensive analysis of monetary transfers to agricultural producers and consumers, the PSE/CSE. The Producer and Consumer Subsidy Equivalents (PSEs and CSEs) are essentially transfer measures. The PSE is defined as the total value

of monetary transfers to agricultural producers arising from agricultural policy, and includes both transfers from consumers in the form of higher prices (i.e. higher than border or reference prices), transfers from taxpayers in the form of direct payments to farmers (e.g. deficiency, area or headage payments, income safety nets), and general budgetary payments to the sector as a whole (e.g. infrastructure, marketing, extension services). The CSE is defined as the value of monetary transfers to consumers resulting from agricultural policies. This includes transfers to consumers due to market price support (usually negative) and transfers from taxpayers (usually positive). Alternatively, the CSE can be described as measuring the implicit tax on consumers arising from agricultural policies.

PSEs and CSEs are calculated using a consistent methodology across countries and commodities through the application of coefficients in order to estimate the level of assistance for each commodity generated by policies. To ensure the relevance of the measures, the PSE in particular needs to reflect developments in agricultural policies in a way which is transparent, accurate, timely and analytically useful. Therefore, both coverage and classification are currently under review to better reflect the shifts in the structure of agricultural policies and associated transfers. This shift in focus has implications for national statistical systems to provide required data in such a way that international comparability is facilitated. An international framework is needed to improve:

- *methodology*: improving the classification of transfers from agricultural policy measures and the interpretation of the results of the transfer indicators, including over the long-term; and
- *coverage*: widening the coverage of policy measures and commodities for which transfers are calculated, including improving data on sub-national policy measures.

3.2 Improving and Extending Economic Agricultural Statistics

A satisfactory analysis of agricultural sectors requires statistics that are pertinent, reliable, impartial, accurate and timely. Evolution is taking place in the economic conditions in which agriculture finds itself in OECD Member countries, in the technical nature of production, in the perceptions of the problems that need to be addressed, and in the policies that are directed at agricultural sectors. The substantial revision of the internationally-accepted methodology of national accounting has a direct bearing on agricultural statistics, requiring suitable responses from statisticians who deal with the aggregate economic accounts for agriculture [United Nations 1993]. The SNA 93 revision also has led to a review of the European System of Accounts [Eurostat 1995], followed by a revision of the European framework for the Economic Accounts for Agriculture (EAA) [Eurostat 1997]. At the same time, the FAO issued in 1996 a revised handbook for economic accounts for food and agriculture, which provides a broader framework to bring together various kinds of databases relating to food and agriculture (including forestry and fishing) in an integrated system. Its concepts and accounting structure are based upon the 1993 SNA revision [FAO 1996].

The revision process, containing important changes to be introduced in the EAA framework, has been coordinated and discussed amongst Eurostat, the FAO and the OECD. It is of particular importance for the OECD to assess now in detail not only the main implications stemming from the international revision process, but also to grasp this opportunity to invite its Member countries to express their views on the question of which areas OECD could add value to its EAA by, for instance, extending the EAA framework to cover micro-level statistics in a statistically coherent and meaningful way and/or to add capital stock measures for capturing the net worth of agriculture. Achieving this “adding value to an existing framework” would enable the OECD to serve policy needs in an improved manner in a particularly important field and to identify in a forward-looking manner which EAA framework, including possible extensions, should be designed and implemented. To start this process, a complete

and objective assessment has been carried out concerning in which possible directions the EAA could be taken further to better serve policy needs [OECD 1997a]. Following the recommendations made at a Statistical Expert meeting [OECD 1997b], at which this analysis was discussed at length, OECD is currently engaged in work on:

- *development of a revised OECD questionnaire* ensuring consistency and a balanced approach with respect to the SNA and EU-15 recommendations. Main issues to be investigated range from a revision of the commodity list, including volume and price data, and clarification of major conceptual issues to the derivation of income indicators, including the distribution of income accounts, similar to the EU's income of agricultural households sector statistics (IAHS).
- *extension of the EAA framework* through an investigation of possibilities for adding capital stock measures/net worth and development of a harmonised target methodology to better capture the economic status of farmers by completing flow measures through stock measures.

Looking ahead, this revision process represents an important opportunity and challenge for statisticians because it takes a comprehensive approach with respect to reconciling the needs of different country groups while remaining methodologically consistent. This integrated approach is all the more necessary since some transition economies moved (and others will follow) into the category of "developed countries".

3.3 Microeconomic Structural Data

For the reasons summarised earlier, micro-level statistics which permit to identify the key parameters of structural change in an internationally comparable manner constitute another statistical (and analytical) challenge. A case in point is the lack of harmonised data for international comparisons of the total income (and their components) of agricultural households [OECD 1995, Blandford 1996, Hill 1996a]. This lack quite seriously undermines attempts to derive valid conclusions in an international context. Often the situation is such that the statistical evidence is rather anecdotal, limiting comparisons over time and space. Despite recent progress, there is a need to re-examine the concepts, particularly those underlying the income measurement. As the agricultural sector diversifies, a more comprehensive approach seems to be needed to better capture the full range of activities [Davey 1996], going beyond the on-farm/off-farm split.

Another important challenge will be, or should be, the necessary groundwork to be done to enable international comparisons using consistent basic definitions and concepts of micro-level statistics which are compatible with the existing macroeconomic frameworks. Although there exist two different schools of thought, there are compelling reasons from a statistical point of view to elaborate the basis of a consistent micro-macro framework [OECD 1997a].

3.4 The Environmental and Rural Dimension

The OECD is in the process of developing agri-environmental indicators (AEIs) with the objectives of:

- providing information to policy makers and the wider public on the current state of and changes in the conditions of the environment in agriculture;
- assisting policymakers to better understand the linkages between the causes and effects of the impact of agriculture and agricultural policy on the environment, and helping to guide their responses to changes in environmental conditions; and

- contributing to the monitoring and evaluation of the effectiveness of policies in promoting sustainable agriculture.

Since the policy context, objectives and framework, progress achieved and future orientation of this work are covered in another paper presented at this conference [Parris: “Agricultural Statistics for Environmental Monitoring and Policy”], there is no need to elaborate here on this activity.

Another important challenge concerns statistics for rural development. The relative importance of the agro-food sector for rural areas varies considerably across developed countries and primary agriculture tends to be less determinant for rural development. But the significance of the agro-food sector as a provider of employment and income remains [OECD 1998], and there is a clear linkage to the statistical issues addressed under 3.1 - 3.3. More internationally comparable micro-level statistics are needed to capture levels, trends and structural changes of rural and agricultural sectors in a consistent manner.

3.5 Globalisation and Trade

Although the OECD has one of the world’s largest trade databases (as a matter of fact, monthly and yearly trade statistics represent over 90 percent of all data held by OECD), there is a need to complement agricultural trade statistics by information on trade policy measures. The Uruguay Round Agreement on Agriculture (URAA) marked an important step towards freer trade by improving market access and reducing trade restrictions [OECD 1997c]. Most bilateral and regional trade agreements include agriculture as well. The detailed analysis of the effects of trade liberalisation and remaining trade distortions, the impacts on structural adjustment, trade in processed products, changes in the composition of trading partners (with increasing emphasis on non-OECD countries) and food security issues require that trade value/volume data be coupled with qualitative information (tariffication, tariff quotas and reductions, sanitary and phytosanitary measures, and so forth) at such a disaggregated level that the available data on the international level (down to 6 digits) would have to be completed by more detailed national data. This carries implications for database management since different databases with different classifications have to be merged.

3.6 Integrating Emerging Market Economies

Another major statistical challenge of the next years (and going well beyond the year 2000) will be the continuation of helping a number of emerging economies to adapt their statistical systems to the requirements of developed countries, while at the same time intensifying the dialogue and cooperation with a number of emerging and/or developing countries which receive increasing attention, be it because of their economic weight and development, or because of their geographical location. Here again, international organisations can play a useful coordination role and help to accelerate the integration process. In the early-1990s, the OECD started statistical cooperation programmes with most “transition economies” of Central and Eastern Europe, the Baltic States and Republics of the former Soviet Union (CEECs). This statistical cooperation, as well as the economic analyses of these countries, has considerably facilitated the accession process of three transition economies to OECD, namely the Czech Republic, Hungary and Poland, which are now members of the OECD. In the field of agricultural statistics, this cooperation continues to be well coordinated by the Inter-Secretariat Working Group on Agricultural Statistics, IWG.AGRI, comprising the FAO, Eurostat, the UN-ECE in Geneva and the OECD. The fact that these four international organisations, in conjunction with national experts, have been engaged in a continuous dialogue with emerging market economies, organised international seminars on agricultural statistics with particular focus on methodological

questions across the entire spectrum of agricultural statistics, and developed bilateral links, certainly helped these countries to better adapt their statistical systems to new requirements [OECD 1995b, FAO 1996b, Eurostat 1998].

It is obvious that statistical cooperation has to be seen in a long-term perspective. The review and adaptation of statistical systems and measurement techniques to new needs, different, more pertinent questionnaires, an improved statistical and technological infrastructure, all these necessary ingredients of a well-functioning information system in support of policy needs, require time and resources. At the last IWG.AGRI Seminar it became clear again that, despite noticeable progress, CEECs still need a continuing information exchange with developed countries and international organisations with respect to both basic and monetary agricultural statistics. Above all, methodological advice and know-how are needed concerning concrete, well-defined agricultural subjects areas.

4. A Statistical System to Meet Future Needs

An occasional observer might think that the well-established system of agricultural statistics in developed countries can provide the information needed by users. This is not necessarily the case. Some countries have, indeed, a highly developed statistical system and are able to provide at least most information in a timely and statistically sound manner. In other countries, this is much less so. The reasons for shortcomings are manifold, but some key factors can be distilled from a variety of national patterns:

- there is no statistical system, but only systems working in relative isolation from each other;
- institutional rigidity, not sufficiently adaptive to changed statistical needs of the present and likely changes in the future;
- lack of effective communication between providers and users;
- growing resource constraints; and
- sub-optimal use of (available) information technology.

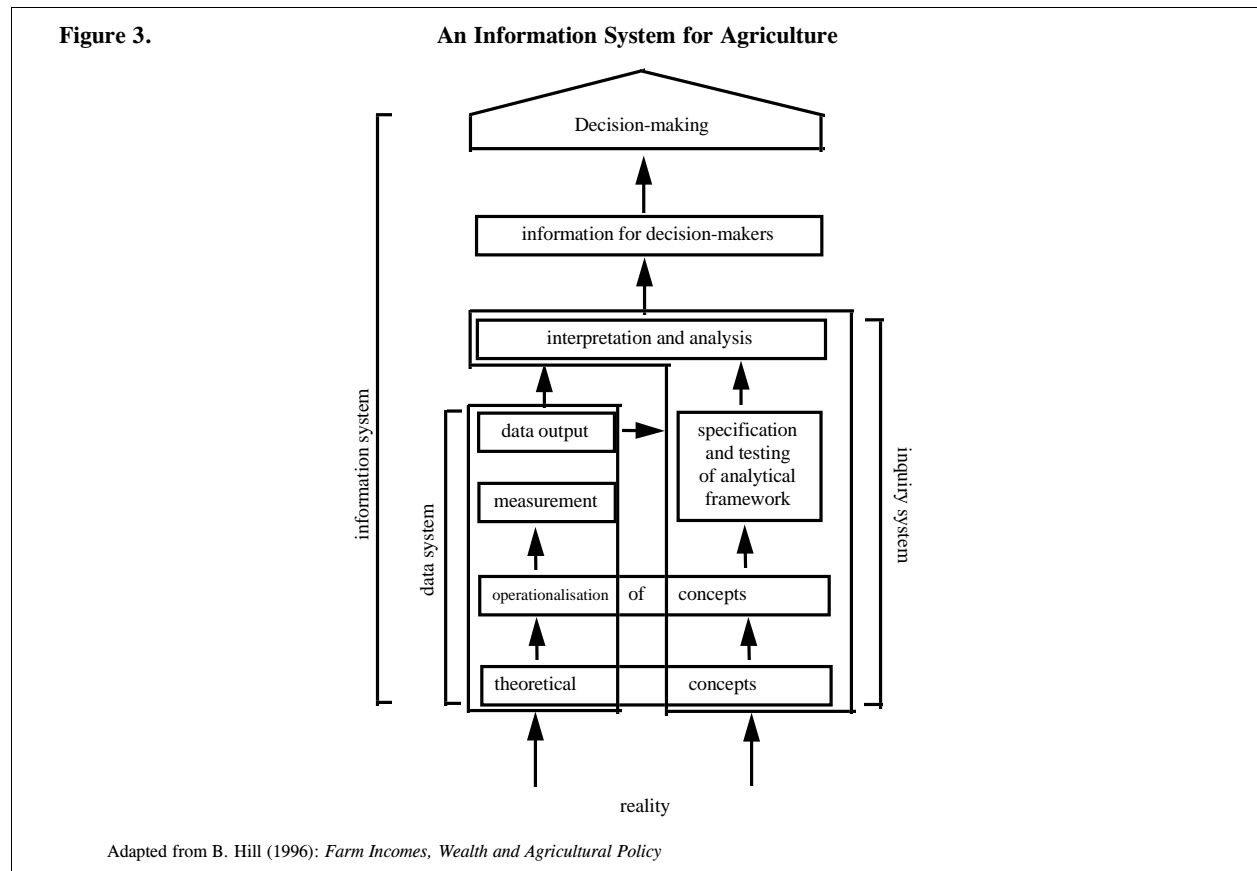
There is, thus, a mix of factors of which some components can be changed, others not (e.g. resource constraints). This leaves statistical services (as many others) with no other choice than to try to do “more with less”. Three avenues seem worthwhile exploring, if possible in conjunction.

1. Establish a forward-looking needs profile of which statistics are to be seen as the key factors to answering today’s policy questions and those which are likely to become more important over the medium term.
2. Review the ability of the system to meet these needs and identify necessary steps to ensure better planning, coordination, and synergies.
3. Optimise the use and proper application of information technologies for database management.

Pertinent, reliable, accurate, impartial and up-to-date economic statistics are more and more important in today’s agricultural policy context. As stated, one of the main reasons is that decision-makers face growing budgetary constraints and need to know where scarce public resources are most likely to yield desired results and which measurable alternatives exist. But there is also a detectable trend that decision-makers today need not only more data for being able to solve emerging policy needs, but also different data, not necessarily available as such. This is in particular true for micro- and macroeconomic, monetary agricultural statistics, which tend to increase in importance and policy-relevance. The reasons for this gap are manifold. It may be that statistical concepts and methods have not kept pace with economic and policy developments. There is a certain degree of *conceptual*

obsolescence which limits the usefulness of statistics. It may also be that the statistical *system* which evolved over decades is itself hindering an effective provision of relevant data. Finally, a changed or new focus of policy interest and concern may touch upon areas which so far have not been sufficiently explored by statisticians to devise a conceptual framework providing the necessary indicators. This is not necessarily the fault of the statisticians; it rather points to a *lack of communication* between users and providers of statistics.

It is only through the symbiotic relationship of both the data system and the inquiry system (Figure 3) that the necessary synergy can be created to prevent obsolescence of statistical concepts while avoiding misinterpretations of data by analysts. It is fundamental that those who provide the data (the data system) through selecting the appropriate concepts, then transforming these into practical entities for which quantification is possible, and then proceed to the actual measurement, are working closely together with those who use the data (the inquiry system). This does not mean that they have to work at the same place, but the testing of the analytical framework, the interpretation and analysis of results carried out by the latter provide an indispensable feedback to the data providers to avoid the conceptual obsolescence of the data system mentioned above and would allow to fulfill the requirements of an information system which provides the right information for decision-makers.



It seems to be a fairly safe assumption that resources for agricultural statistics in developed countries will rather tend to stagnate or decline, while at the same time information needs intensify and diversify. There is, thus, a compelling need for setting priorities and for creating the capacity to evolve and adapt to changing priorities. A centralised statistical system has a major advantage in priority setting, while a

decentralised system would have great difficulties in articulating, let alone implementing, system-wide priorities [Fellegi 1995]. The term “central” should not be misinterpreted as referring to one single statistical body doing all statistics, but rather as a central coordination body entrusted with statistical work and also having clearinghouse and coordination functions for statistics carried out elsewhere. A system which works well should not only meet current user needs (this is a static question), but be inherently adaptive to evolving needs (the dynamics). It should also be effective in exploiting existing statistical data and be credible with respect to the quality and objectivity of its statistical output.

Such a system would help to ensure the capacity to:

- adapt to evolving priorities,
- mobilise the necessary resources for high priority areas of investigation,
- harmonise concepts and definitions,
- provide one access route for clients covering the full range of available data, and
- avoid duplication of effort and benefit from existing synergies and infrastructure.

It is indispensable that such a system operates under the recognized and independent authority of a Chief Statistician.

It is noticeable that efforts towards the direction indicated above have taken place in transition economies and at OECD itself. A recent OECD review of statistical systems in eleven transition economies revealed that these countries tended to confer more responsibilities to their Statistical Offices in order to cope with new demands and conditions in a more systematic way [OECD 1997d]. Also at the OECD, where statistics are an integral part of the main mandate, a reflection process about how to better organise statistics and to accommodate changing needs led five years ago to the creation of a Statistics Directorate with a Chief Statistician as Director. The Statistics Directorate is currently the only OECD Directorate able to increase its number of staff through transfer of statistical professionals from other OECD Directorates.

Such a system would also facilitate the necessary review of agricultural statistics, namely the matching of current and expected data needs with existing information. Such a comprehensive review would, obviously, involve both providers and users and should be as detailed as possible. Interrelated subject areas need a particularly close examination as well as micro-macro linkages, which become more and more important for policy analysis. This would also necessitate a comprehensive review of methodologies and definitions to see to what extent multiple usage and joint frameworks could be developed for hitherto separated data gathering activities. The bottom line of such a review would be the questions, “For what purpose has this data collection been set up? Is this purpose still the same or can it be seen in conjunction with another one?”

A second step would then consist of identifying data collections which could be eliminated or streamlined to make room for taking on board new activities and/or extending priority activities. This “housekeeping” seems all the more appropriate for agricultural statistics, a well-established discipline with a long historical record. Without scrutiny, a number of data collections tend to perpetuate themselves, hence a critical, but fair, fresh look might help to re-balance the range of data collected. This is a difficult task for a number of reasons. First, a discontinuation of a data collection should be decided only after extensive consultations with all interested parties. It is expensive and difficult to re-launch a discontinued activity, because it regains importance a couple of years later. Second, any linkages to other related fields need a careful impact analysis; otherwise, an apparent saving could actually have more costs. Third, without a reference framework and an integrated system approach, mistakes are likely to be made.

The past decade has brought a revolution in information management, in particular in developed countries, since the high costs associated with this change in terms of investment and training could be accommodated. The importance of the role played by information technology, requiring a change in how to manage information, cannot be underrated and will be a determining factor of success in the future. In essence, modern societies moved from the central mainframe systems with closed architecture (limited evolution/communication capacity) via the emergence of stand-alone desktop computing added to central systems (a rather chaotic phase) to the networked computing environment capable of global internal and external communication, and this on a worldwide scale through its compatibility with Internet technology. This revolution had, has and will have a direct bearing on the management of statistics from data collection through processing to dissemination.

The key to success will be the capability of a statistical information system to respond to the growing demand for cross-subject products and analyses. In analogy with what has been said so far, this means that the traditional stovepipe organisation of statistics is obsolete. Corporate data and metadata management becomes a necessity and the need for statistical coordination cannot be overemphasized. This applies to both national and international statistical organisations. The one-to-one relationship between survey and data collection, a main cause for identified inconsistencies and shortcomings, needs to be associated with cross-survey coordination and control to accommodate needs across data collections and across surveys. This requires a clearinghouse function within statistical organisations to match diverse needs with existing possibilities provided by various surveys. A typical feature of current and future needs for agricultural statistics is the necessity to combine data from different surveys. To do this in a responsible manner, a statistical organisation must coordinate definitions of observation objects and observation variables. This register function (registers, classifications, catalogues, data dictionaries), which is likely to become more visible in the future, gains considerable weight through possibilities offered by information technologies. An effective statistical information system architecture should provide a common framework for individual information systems corresponding to:

- survey functions,
- clearinghouse functions,
- register functions, and
- analysis functions.

Furthermore, this common framework should promote efficient coordination and data and metadata exchange within and between components of the statistical system in such a way that they form part of one integrated, yet open-ended system, one flexible, efficient, and powerful information infrastructure, to the benefit of internal and external users [Sundgren 1997].

5. Concluding Remarks

Agricultural statistics have to face new challenges. Not only developed agricultural sectors from farming to complex, multi-functional agro-food sectors, but more and more related information is required to better capture reality. Over time, these statistical requirements translated rather into “add-ons” to existing information or separate, isolated data gathering than into a coordinated and comprehensive extension of a system which encompasses the natural resource base of a country. A consolidation and strengthening of the agricultural information system is necessary, which implies both streamlining and further development of certain components. Also, a greater and more systematic involvement of statistical and methodological expertise is desirable for new fields of analytical inquiry to better prepare the grounds for future policy decisions. From both a statistical and technological perspective, more networking between statistical information systems and between providers and users,

together with a strong methodological base, would greatly facilitate the provision of pertinent, needed information while being resource effective.

References

- Blandford, D. (1996), "Overview of microeconomic results in OECD countries and policy interests: characteristics of incomes in agriculture and the identification of households with low incomes," in B. Hill (1996a) op cit.
- Davey, B. (1996), *Income Statistics in Countries Outside the EU and their Relevance to Agricultural and Rural Development Policies in the 1990s: Lessons from Canada*, Ottawa, Ontario, Canada.
- Fellegi, I. (1995), "Characteristics of an Effective Statistical System," Morris Hansen Lecture, Washington Statistical Society.
- Sundgren, B. (1997), *An Information Systems Architecture for National and International Statistical Organisations*, Methodological report presented to OECD, Paris, France: OECD.
- Eurostat (1995), *System of National Accounts*, ESA 1995, Luxembourg.
- Eurostat (1997), *Manual on the Economic Accounts for Agriculture and Forestry (Rev. 1)*, Luxembourg.
- Eurostat (1998 - forthcoming), *Agricultural Statistics for Central and Eastern European Countries; Proceedings of the fifth IWG.AGRI Seminar, Budapest, 12-14 November 1997*, Luxembourg.
- FAO (1996a), *A System of Economic Accounts for Food and Agriculture*, FAO Statistical Development Series 8, Rome, Italy.
- FAO (1996b), *Proceedings of the fourth IWG.AGRI Workshop on Agricultural Statistics for Central and Eastern European Countries, 11-14 October 1995, Brno, Slovenia*, Rome, Italy.
- Hill, B. (1996a), *Income Statistics for the Agricultural Households Sector: Proceedings of the Eurostat International Seminar*, Luxembourg.
- Hill, B. (1996b), *Farm Incomes, Wealth and Agricultural Policy*, second edition, Aldershot, United Kingdom: Avebury.
- OECD (1995a), *Adjustment in OECD Agriculture: Issues and Policy Responses and A Review of Household Incomes in OECD Countries: Notes by Country*, Paris, France.
- OECD (1995b), *Agricultural Statistics and Database Management, Proceedings of the third IWG.AGRI Workshop, 25-29 April 1994 in Minsk*, General distribution document OCDE/GD (95)38, Paris, France.
- OECD (1997a), *Future Development of Economic Accounts Statistics: Issues and Directions*, General distribution document OCDE/GD(97)108, Paris, France.
- OECD (1997b), *Outcome of the Second Meeting of the Expert Group on Statistics and Information Systems*, Paris, France.
- OECD (1997c), *The Uruguay Round Agreement on Agriculture and Processed Agricultural Products*, Paris, France.
- OECD (1997d), *Statistics in Transition, Overview of current Agricultural Statistical Systems in Eleven Transition Economies and of Developments in Statistical Laws and Institutional Organisations*, Paris, France.
- OECD (1998), *Agricultural Policy Reform and the Rural Economy in OECD Countries*, Paris, France.
- United Nations (1993), *System of National Accounts 1993*, published by the Commission of the European Communities, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, World Bank.