

Expert Meeting Summary Report

**First Expert Meeting
on the Documentation
and Measurement
of the Roles
of Agriculture
in Developing
Countries**

**ROA Project
Publication No. 1**

ROA

**Roles of
Agriculture
Project**



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First Expert Meeting on the Documentation and Measurement of the Roles of Agriculture in Developing Countries

*19 to 21 March 2001
Rome, Italy*

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The full proceedings of the meeting are published as a separate document. Both the summary report and proceedings are available on a CD-ROM and on the project's Web site: www.fao.org/es/esa/roa.

Abbreviations

AFW	Analytical Framework
CCS	Country Case Study
CVM	Contingent Valuation Method
GDP	Gross Domestic Product
GNP	Gross National Product
GTAP	Global Trade Analysis Project
SAM	Social Accounting Matrix
SARD	Sustainable Agriculture and Rural Development
TCM	Travel Cost Method
UNCED	United Nations Conference on Environment and Development
WTP	Willingness to Pay

Welcoming remarks

Hartwig de Haen, Assistant Director-General, Economic and Social Department (ES), FAO

Let me welcome you to this first Expert Meeting on the Documentation and Measurement of the Roles of Agriculture in Developing Countries, on behalf of the Economic and Social Department of FAO and the Agriculture and Economic Development Analysis Division, in particular.

I am very glad to see so many friends and colleagues among this expert group. As the subject of the meeting determines, it is a highly interdisciplinary group, although I do admit that economists prevail. This is an opportune time to be addressing the subject of agriculture's diverse roles. When examining the fundamental issues of food security and poverty alleviation, we need to make all possible efforts to ensure that agriculture receives more recognition in poverty alleviation strategies, and that food security and the fight against hunger are recognised as essential elements of any successful effort to reduce poverty.

At present, various efforts are being made to increase recognition of the importance of agriculture, at least in the fight against hunger and poverty. However, we also need to acknowledge that agriculture, as a whole, continues to be undervalued in certain circles. If this meeting can contribute to the ongoing debate, not only on the strict economic roles that agriculture plays, but also on its contribution to economic development and – in a comparative fashion – to other sectors of the economy, I think we can make progress in drawing a clearer and more comprehensive picture of the roles of agriculture.

The Roles of Agriculture (ROA) Project is financed through extrabudgetary funds from the Government of Japan and is in support of our Regular Programme. One of FAO's responsibilities is to increase awareness about the roles that agriculture plays in development, not only in regard to production, but also in relation to the social, cultural and environmental implications of agriculture.

The FAO's Strategic Framework, adopted at the 1999 FAO Conference, stresses the need to improve policy environments and institutional frameworks in developing countries in order to generate sustainable increases in the availability and accessibility of food and other agricultural products. The ROA Project contributes to this strategic objective. The Project forms part of FAO's



work in pursuit of sustainable agriculture and rural development (SARD), particularly those aspects that concern comparative analysis of the various roles of agriculture in terms of their contributions to equitable development.

This objective is further elaborated in FAO's Medium-Term Plan under the programme entity entitled "Contribution of agriculture to poverty alleviation, rural development and food security" which calls for "reports and technical publications providing comparative analysis of the economic and other roles of agriculture for equitable development". For those of you who are not familiar with FAO's priorities and programmes, it would certainly be helpful to look at the Medium-Term Plan document to ensure that what we do under the ROA Project is fully in line with our Regular Programme's objectives and strategies, as approved by our governing bodies.

It will be useful, during your discussions, to compare this project's theme, the roles of agriculture, with the other concept that we frequently use – sustainable agriculture and rural development (SARD). There is a slight distinction between the two: SARD has a spatial, rural dimension, and refers to the sustainable development of agriculture, fisheries and forestry in rural areas; sustainability includes the economic and technical as well as the social, cultural and environmental dimensions. The objectives of the ROA Project are broader. They extend to the externalities that agriculture may have beyond rural areas, i.e. for society and the economy at large. The Project is not only concerned with the effects that agriculture has on the people living in rural areas, but also with the externalities produced by agriculture inside and outside the agriculture sector. The two concepts are, however, closely related and, although the ROA Project goes beyond SARD, it includes it in many ways.

The ROA Project is also unique in the sense that it is an applied research effort. In this case, we have taken the opportunity to use extrabudgetary resources to examine fundamental issues in much more depth – through empirical studies and case studies in various countries – than would normally have been possible through our Regular Programme activities. This provides the Economic and Social Department with a renewed opportunity to conduct joint research and studies and establish networks of centres of excellence worldwide. Such partnerships will help us to play our role of catalyst and leader in such interdisciplinary and inter-institutional work.

The specific objective of the ROA Project is to explore and document the benefits of agriculture in developing countries. It will take stock of existing knowledge about agriculture's negative externalities, but I emphasize that it is our objective to put a special effort into documenting and highlighting the positive contributions that certain functions of agriculture make to the economy

and society at large. One of the reasons for this is that these positive externalities and public goods are often overlooked and undervalued. This does not necessarily mean that we will look at the entire set of agriculture's roles, but rather that we will try to identify, in a systematic fashion, the beneficial implications of agriculture for the economy, the environment, food security and society. We are aware of the great challenge that this implies, since benefits are rarely ever absolute. Benefits are, in reality, relative in comparison with other situations, other sectors and alternative courses of development. So, trying to establish the benchmark against which to measure and value such effects is certainly a challenge. But, at least this is the start of a research effort in that direction, and so we welcome you and thank you for helping us in this effort.

In my opinion, the greatest challenge facing this Project is to be theoretically sound and credible, in spite of not having the opportunity to carry out a complete comparative analysis to compare the roles of agriculture with those of other sectors of the economy. The Project will be limited to comparing various farming systems in different regional, agro-environmental and socio-economic contexts. The main approach, then, is to carry out country case studies. However, a word of warning, we cannot avoid looking into the comparison between agriculture and what would happen without that agriculture, or at least without that same level of agricultural activity.

I have already mentioned that this Project is fully in line with our Regular Programme. In this context, during one of FAO's Governing Council sessions it was asked whether the Project might be seen as dealing with non-trade concerns and intending to analyse issues that are similar to those included in the concept of "multifunctionality of agriculture" (a concept on which FAO member countries have not yet reached agreement).¹ As I informed the FAO Governing Council: the Project does not deal with trade implications of the roles of agriculture and their related policies, at least not in a direct manner. But everyone who reads the future findings of this Project is, of course, free to interpret and deduce his or her own policy implications. All member countries of FAO will also be free to make use of these findings, which will be published and belong in the public domain. It will be up to researchers, policy-makers and member countries to use their own discretion in accepting or rejecting the findings, and in interpreting them within their own particular situations.

1 Member countries have explicitly agreed that they have no agreement on what it means and on what FAO's role could be regarding multifunctionality.

The main output of the Project will be empirical information to improve understanding of the benefits that the roles of agriculture contribute in developing countries. We expect that an important by-product of the work will be an agreement on methods for producing such information, which could also be used by analysts and policy decision-makers in developing countries themselves.



In FAO, we believe that it is important to raise awareness of the critical, as well as the positive, roles of agriculture. When we look at the developing world, we see how stressed and undervalued agricultural production systems are; we see how much hardship rural people have to face, including conflict, civil strife and the widening gaps between rich and poor. It seems obvious to us that there are still many unanswered questions about the best way of making agriculture, and agricultural development as part of rural development, more sustainable, and of maximising its contribution to overall social and economic development. In this sense, the attempt to look at, or create awareness of, the positive roles that agriculture can play in economic development, if provided with the right environment, is certainly essential for development in general. Of course, hunger and poverty are important issues, but so too are the sustainability of environmental resources, social stability and cultural development, if developing countries are to succeed in improving agriculture. The ROA Project attempts to address these issues.

With these words, I want to welcome you again on behalf of the Economic and Social Department and, in particular, the Agriculture and Economic Development Analysis Division. I wish you a productive and fruitful debate.

Thank you.

A. Introduction to the meeting

In 2000, in order to promote a more comprehensive understanding of the roles that agriculture plays in relation to human well-being and development, FAO launched the project Socio-economic Analysis and Policy Implications of the Roles of Agriculture (the ROA Project).²

The ROA Project's main objective is to provide policy-makers with specific insights, tools and information for analysing the various roles of agriculture in their societies, and to inform them about policy options that could take such roles into consideration in pursuit of a more sustainable agriculture and rural development (SARD). The ROA Project intends to undertake a global comparative analysis based on a dozen country case studies carried out in Africa, Asia, Latin America, the Near East and North Africa. The interdisciplinary work will combine the inputs of specialists in welfare economics, environmental economics, sociology and anthropology, as well as those of development practitioners and policy analysts.

The objective of the expert meeting organized by the Project from 19 to 21 March 2001 in Rome was to conduct an experts' review of possible methodological approaches to the analysis of agriculture's non-commodity outputs, with emphasis on the positive ones, and to gather advice for the implementation of country case studies. In particular, the meeting was to discuss methods and tools for the documentation, measurement and valuation of the various roles of agriculture in developing countries.

The meeting followed a seminar format in which, for each session, a lead paper previously commissioned by the Project was presented by an expert and commented on by two or three discussants, prior to open debate.

In all, 21 participants from developing and developed countries and 15 FAO professionals attended the meeting (see the Programme and List of participants in the Annex). The participants were comprised of welfare economists, environmental economists, socio-anthropologists, researchers and policy-makers. The selection of participants, which was based on their scientific expertise and experience in theoretical and practical fields that are of direct relevance to the Project's objectives, ensured a fair balance among regions and among the diversity of viewpoints relating to the current global debate about agriculture.

B. Salient features of the papers and discussions

1. Towards an Analytical Framework and country case studies

Two lead papers were presented as central contributions to the debate: the Draft Analytical Framework (AFW), at the beginning of the meeting, and Possible profiles and guidelines for the country case studies, at the end.

Towards an Analytical Framework

The tentative AFW paper draws on the premise that, as well as the decisive role (actual and potential) that agriculture plays in fostering rural incomes and employment, environmental stability and natural resources conservation, it also sustains (actually and potentially) the rural-urban population balance, social stability and cohesion, enhanced food security, cultural traditions and a number of other goods and services that are not the object of market transactions.

² The Government of Japan, under Trust Fund GCP/INT/772/JPN, finances the Project, which became operational in August 2000 and extends until 2003.



In low-income developing countries, where agriculture generates a significant share of gross domestic product (GDP) and ensures a considerable proportion of employment, the major contributions of agriculture to society are widely perceived as being economic development and food security. However, most of the time, its other social, environmental or cultural roles are equally vital for a more sustainable development – and the perception of the importance of these latter roles seems to be increasing as socio-economic development unfolds.

National development policies involving agriculture should address the full range of roles that the sector plays in society. By adopting this comprehensive view, the development assistance provided by industrialised countries might also assist better in checking natural resources depletion, environmental degradation, falling incomes, underemployment, social and cultural disruptions and excessive migration to urban areas, among other issues.

In developed countries, there is currently a growing appreciation of the public goods nature of many of the non-commodity goods and services provided by agriculture. Contrasting with this situation, in most developing countries the positive externalities of agriculture have not been well identified or valued in relation to the broad objective of sustainable development. Given this lack of appreciation, the manifold roles of agriculture are rarely reflected in national and rural development policy options in these countries.

Most of the non-food and non-commodity goods and services that agriculture provides to society in the developing world are currently non-tradables, externalities and contributions to public goods. The great majority of them are jointly produced with the agricultural products themselves during the production process, and any policy affecting the level and nature of agricultural production is conducive to changes in the provision of these other roles. In order to study the roles of agriculture, the concepts of externalities, public goods and jointness of production are, thus, key to the basis of the draft AFW.

3 The order in which these five categories of roles are presented follows the definition of agriculture adopted for this study: “agriculture is the transformation of the environment by human societies in benefit of plant and animal species which are primarily useful for food and other purposes (artisanal, medicinal, industrial and energy uses), providing the possibility to exchange commodities and generate income”. Food security was deliberately kept as a separate category from the social and economic roles of agriculture in order to reflect the specific character of agriculture as a way of life and a means for survival in developing economies and societies.

The draft AFW endeavours to propose a pragmatic methodological process rather than an academic research agenda. As a first step, it suggests the generation of comparable information across countries, which should derive from a process of identification, measurement, valuation (when possible) and analysis of the externalities of agriculture, with special emphasis on the positive ones. The second step would consist in analysing the policy implications that emerge from the factual and documented evidence produced in the first step.

In searching for an improved cross-sectoral and cross-generational allocation of resources that contributes more effectively to the general objective of sustainable development of society, the draft AFW identifies the policy challenge related to agriculture’s roles in society as that of internalising externalities and tackling important market failures. In practical terms, it suggests that the relevant policy implications of the roles of agriculture will emerge for analysis as a result of the gathering of comparable, factual information on the nature and magnitude of the positive externalities of agriculture. Such policy implications will be related mainly to SARD policies, and are expected to have cross-sectoral policy dimensions.

In order to allow for a systematic exploration of the various roles and externalities of agriculture in any national context, the proposed framework groups them into five broad domains: i) environmental, ii) social, iii) food security, iv) economic, and v) cultural. The purpose of this classification is to map out the overall scope of the research and to highlight those domains and roles that are considered the most relevant for the study.³ The interlinkages and reciprocal interdependencies among most of these categories and subcategories are highly significant, and must be kept in mind and taken into account.⁴ While the economic and, to a large extent, the food security

4 For a definition of each domain, see Analytical Framework, paragraphs 3.8 to 3.13.

roles of agriculture are essentially captured by market mechanisms, the other agricultural non-commodity outputs – i.e. environmental, social and cultural – are typically externalities and contributions to public goods.

In its Annex, the draft AFW includes a tentative inventory and chart of recognised methods for measuring and valuating these roles of agriculture, which are proposed as a basic tool for identifying and analysing the various roles of agriculture and their scope in the national context.

Towards country case studies

The lead paper, Possible profiles and guidelines for the country case studies, proposes several features for the overall process of conducting country case studies (CCS).

In order to illustrate and make balanced comparisons among the real agricultural conditions of various regional, agro-ecological and socio-economic contexts, a global typology of the major farming systems should be used as a basis for CCS selection. Countless agricultural farming systems exist worldwide, but a recent FAO Farming Systems Study⁵ has combined these into about 70 major broad types, thereby providing an up-to-date, synthetic overview of the major agricultural systems worldwide from an environmental and socio-economic viewpoint. The paper suggests that this typology should serve as a reference for the ROA Project fieldwork. In each region, some key farming systems should be identified, and a limited number of countries will then be selected as illustrations of these systems. As a result, the study will embrace a representative array of contrasting situations.

5 FAO. 2000. FAO Farming Systems Study. World Bank Rural Development Strategy Revision. (draft)

The case studies will then follow a two-tier approach to identifying and valuating the various roles of agriculture: a national assessment and a farming systems-based study.

The national assessment should be based on a systematic review, at the national level, of the major roles of agriculture, and will assemble the available information – quantified where possible – concerning the economic, social and food security roles and the environmental and cultural externalities of agriculture. As far as possible, it should encompass both positive and negative externalities, with a special emphasis on exploring and documenting the positive ones, which have tended to be neglected in the past. The scope of the national-level assessment in each country case will depend on the following questions: To what extent can the subcomponents of the five identified domains be documented and measured at the national level with existing information? and To what extent can the externalities of agriculture be documented and measured at the national level? The information should be gathered with a view to analysing the policy implications related to SARD strategies and programmes and national cross-sectoral policies.

A number of externalities defy measurement at the large or national scale.⁶ They can only be analysed in detail for specific sites, areas or farming systems and, where possible, attempts should be made to link the field study results to the national assessment of major roles of agriculture.

6 Many externalities cannot be well captured and documented at the national level because they are highly site-specific, their scope concerns a specific site and they cannot be perceived beyond certain boundaries. For instance, the flood prevention effect of paddy-rice terraces cannot benefit the areas that are located outside the river catchment.

The farming systems-based studies will, thus, assess specifically the positive externalities of agriculture that cannot be assessed at the national level because of their nature or because of a lack of data. The selected farming systems, in addition to being the entry point and major selection criterion for the countries themselves, should also constitute a significant part of the country's agriculture sector so as to give greater relevance to policy implications at the national level.

While precise conclusions from analysis of the externalities of a farming system can only be drawn for the area and system studied, generalisations at various levels – when



warranted – can be enlightening, and the economic, environmental and food security roles of a given system can be very important, even at the national level. This may also be the appropriate level for viewing particular social and cultural roles.

Both the national assessment and the farming systems-based study should adhere to a common set of guidelines and indicators so as to allow comparison and synthesis. Where relevant and possible, the research should be gender-sensitive. There should be at least one multidisciplinary study group for each CCS, composed of experts from the country in which the study occurs. Each of these groups will work for a period of approximately one year, with supervision from the Rome-based ROA team in order to assure a high degree of comparability among the results obtained.

Discussion and conclusions about the Analytical Framework and the country case studies

As a whole, the approach proposed by the draft AFW was supported. The participants endorsed use of the economic concepts of externalities, public goods and jointness of production as the relevant basis from which to conduct the study; they also supported the multidisciplinary approach.

Some criticism was expressed, however. One participant considered that the AFW lacked coherence and focus, in particular from a macroeconomic viewpoint, and suggested that the project should be used as an opportunity for studying the impact of specific forms of liberalisation on agriculture and rural areas.

Another viewpoint was expressed by the remark that “Some developing countries may consider it a luxury to focus on the internalisation of the [non-market] costs of production of agricultural commodities”. Realistically, policy-making in such countries is expected to continue to focus strongly on the economic (and food security) roles of agriculture.

In addition, it was generally felt that there was a need for further identification of the key issues related to the roles of agriculture, the linkages among them and possible innovative ways of addressing them.

In conclusion, however, there was general agreement that the proposed approach for the Project supplies an opportunity to produce:

- valuable information on the basis of which to derive policy implications at a later stage;
- a more balanced general perception of both the positive and the negative externalities of agriculture;
- a complement to the SARD concept as it was adopted at the United Nations Conference on Environment and Development (UNCED), through a particular emphasis on the positive externalities of agriculture; and
- a renewed interest within the donor community towards supporting agriculture in developing countries, after more than a decade of continuing declines in assistance.

It was underlined that the information generated by the Project could be relevant, not only to national policy-makers in the developing world, but also to the donor community, as far as allocation of foreign assistance resources and policies related to public goods are concerned.

The list of roles contained in the AFW was endorsed, and even enlarged in some instances. No individual role was singled out as being irrelevant, although the importance of each role varies according to country conditions. It was agreed that the grouping of roles under five domains was solely for the purpose of convenient presentation and discussion: this grouping does not constitute an analytical feature and should not become a constraint to the analysis and measurement of externalities. A

critical step ahead would be to produce precise definitions of all the roles that the project takes into account, before any further attempt at identifying measurement methods and tools is made. The investigation of roles as externalities, semi-externalities, private or public goods, etc. was also felt to be needed.

It was agreed that the project should document both positive and negative externalities. However, it was recognised that, since UNCED, far more information has become available on the negative than on the positive externalities of agriculture and that, therefore, any information that the ROA Project could generate on the positive effects of agriculture would constitute a new and useful contribution to the debate.

The importance of linkages and interrelationships among roles was stressed. Among such linkages, cases of complementarity, synergy and the production of bundles of positive externalities were mentioned, but the major emphasis was placed on the need to document and analyse the extent to which externalities and the primary production of food and fibre are jointly produced by agricultural activity. Currently, such interrelationships are not well represented in the draft AFW, and they need to become an integral part of the documentation generated by the Project.

A number of participants argued that benchmarks are needed for the concrete assessment and measurement of the roles of agriculture, and for the distinction between positive and negative externalities. However, it was noted that the same externality may bring about positive contributions in certain circumstances and negative ones in others, or that an externality may be valued positively by some observers and negatively by others. In addition, reducing a negative externality is a positive contribution, and vice versa. It was also noted that positive externalities are often ignored until a crisis reveals that their disappearance has negative effects.

It also appeared necessary to document important issues in a dynamic perspective. In this connection, the pragmatic approaches suggested were to conduct diachronic analysis – i.e. comparisons through time of the roles of agriculture in a given country, including retrospective comparisons and future scenarios – and comparisons between what is observed and what is considered desirable.

There was unanimous agreement that policy implications are the final justification of the project. While it was agreed that policy decisions should be based on assessing the net externalities of agriculture versus those of other sectors in the economy, it was also accepted that: i) the analysis of other sectors (which is generally lacking) could not be undertaken by the Project; ii) studying the roles of agriculture would produce useful information and knowledge; and iii) the presentation of Project results must aim to provide all the explanations and precautionary warnings necessary to prevent the possible misinterpretation of the information generated, given the absence of an intersectoral basis for comparison.

It was recommended that policy implications (and possibly recommendations) be formulated at the country level (and below) in the countries investigated – but it was also recognised that indirect policy implications may emerge beyond the national setting. The meeting advised that, within the Project's life span and resource limits, work to be done in the short term has to focus on constructing a basic documentation of agriculture's roles, as a prerequisite to the unfolding of policy implications. It was also agreed that SARD should be the backbone of analysis of policy implications.

The importance of documenting the policy setting for sound analysis of the roles of agriculture was mentioned on several occasions. However, no further guidance was provided on this topic, probably because the subject of the expert meeting was limited to documenting and measuring the roles of agriculture.



Concerning implementation of the CCS, participants supported the proposed process, which is based on a two-tier (national assessment and detailed farming systems-level investigation) and multidisciplinary approach.

It was suggested that the national assessment study should include: i) an inventory of agriculture's roles that are considered relevant in the country concerned; ii) a qualitative assessment and analysis of their importance; and iii) an assessment of their medium- to long-term dynamics.

The use of farming systems as the key classification for country selection and for subnational analysis of the roles of agriculture was fully supported. In this connection, reference to and use of the recent FAO farming systems classification was endorsed.

Concerning the farming systems-based studies, it was made clear that within a particular farming system the use of different technologies and, hence, factor use (in other words, farming practices) can have different consequences in terms of the roles of agriculture, and a question was raised concerning the most appropriate way to take this dimension into consideration. It was suggested that a pilot study be mounted in which this issue could be investigated further. Comparisons among dominant and desirable practices, and the nature and extent of their effects, might prove useful in this connection.

Finally, the warning was frequently expressed that valuations of the same externality, with the same physical magnitude, may vary significantly according to the stakeholder, the time and the country concerned. Accordingly, major factors that influence rural dwellers', the urban population's and – above all – policy-makers' attitudes towards, and valuation of, agricultural externalities should be investigated. Such information is crucial to the derivation of policy implications. It was recommended that the issue be addressed in the CCS and in the Project's final comparative synthesis – possibly based on analysis of the factors that determine or induce differences in perceptions of the same externalities.

2. The environmental roles of agriculture

The lead paper provides an overview of the environmental externalities of agriculture and presents an inventory of the economic tools that can be used to value them. The paper examines and discusses how valuation techniques derived from developed country experience can be transferred to developing countries. Its annexes contain a comprehensive compilation of the state of the art in economic valuation of the environmental externalities of agriculture.⁷

7 The annexes encompass: i) a review of theoretical and empirical issues related to the CVM and TCM; ii) case studies applying both methods; iii) evaluation of the advantages and limitations of various valuation methods; and iv) recommendations for the application of the CVM in developing countries.

The author identifies nine broad types of positive externalities that are produced by agricultural activities: watershed protection; flood control; groundwater recharge; soil conservation; biodiversity and wildlife habitat; open space; scenic vistas; and isolation from congestion. Seven types of negative environmental externalities are also listed: nutrient/pesticide runoff; reduced watershed protection; reduced flood control; soil erosion; biodiversity loss; wildlife habitat loss; and odour.

As with any production activity, agriculture can cause both negative and positive side-effects, or externalities, that are not accounted for in markets. Agriculture's positive environmental services, or externalities (often called "amenities" in industrialised countries), and negative externalities (dis-amenities) are unintended consequences of market activities that have an impact on people other than the producer of the externality. As such, these by-products tend not to be priced in the market and, hence, their economic values are unknown. Many of these externalities have characteristics of public goods – they are non-rival and, at least partially, non-excludable in consumption. Without government intervention, rural negative externalities may be overprovided, and rural positive externalities underprovided.

Because rural positive externalities are non-market goods, they do not have market prices, and measuring their value requires special economic techniques. The main methods for valuing rural amenities are survey approaches, such as the contingent valuation method (CVM), and approaches that make use of existing data that have been collected for other purposes, such as the travel cost method (TCM) and the hedonic method. The CVM is the only available economic tool for valuing non-use rural amenities. The maximum amount of one thing a person is willing to give up in exchange for getting one unit more of something else is considered a fair measure of the relative value of the two things to that person. A monetary value, such as the United States dollar, is a universally accepted measure because the amount that people are willing to pay (WTP) for something reflects how much of all other for-sale goods and services they are willing to give up to get it.

The paper provides advice on the choice of relevant indicators and general guidelines for conducting CVM surveys. It also provides advice for the aggregation of non-market values and makes the point that the ROA Project's approach can be conceived and/or perceived as a benefit-cost analysis that includes non-market values.

Although CVM is the most popular non-market valuation method, the author warns that its implementation in developing countries can result in a complicated, lengthy and expensive process, which must be carefully conceived in collaboration with local people to be sure that the questions are understandable and culturally appropriate for the relevant population. While reliable and consistent information for policy-makers about the broad amenities generated by agriculture has begun to be produced (with CVM as a tool) in industrialised countries, the issues surrounding provision of the positive externalities associated with agriculture have hardly been tackled at all in developing countries.

During the discussion and debate, the importance of what viewpoint underlies any valuation exercise was raised again: "Who values? Whose perspective is being used?". The point was made that technocrats in developing countries are often sceptical about the validity, reliability and relevance of valuation tools. For example, applying concepts such as the polluter pays principle, cost recovery and cost sharing in countries where millions of people are considered to be poor – most of whom are small-scale farmers trying to make a living in marginal lands – may prove politically disastrous to governments and "may invite accusations that academics are insensitive to social and economic complexities of the real world situation". A common primary concern in developing countries is how agricultural production in marginal areas can fulfil its primary functions without depleting the natural resource base.

It was again underlined that the same externality may be positive for some and negative for others, and that perceptions of its magnitude may vary greatly – depending on the individual stakeholder's viewpoint – leading to different valuations. In this connection, gender, regional and ethnic dimensions, as well as indigenous local knowledge, have to be taken into account and integrated into the valuation process. It was suggested that the various stakeholders (e.g. farmers, forest dwellers, tourists, etc.) allocate weights to their valuations. One of the methodological tasks ahead for the Project is the specification of viewpoints, weights and aggregation procedures, in both the individual CCS and the cross-country comparisons.

It was also argued that, owing to their stable or increasing value as scarcity and population pressure increase over time, not all of the lasting environmental "goods" and "bads" of agriculture lend themselves to conventional write-off or discounting procedures. Thus, issues of irreversibility and extinction, as well as the long-term feedback to agriculture from its environmental impacts, need to be included in the analysis but may not be realistically weighted through valuation.



Finally, in relation to the policy implications of environmental externalities, it was argued that the environmental effects of agriculture are public goods that operate at different geographical scales: “carbon sequestration on a world scale, others on a watershed scale or a local scale”. However, these effects cannot be treated in isolation by policies aiming to modify their supply. The example was given of an agronomically and economically integrated bundle of yield increases and stabilisation, which also leads to reduced costs and drudgery, carbon sequestration, elimination of sediment loads, production of clean groundwater, and increases in several aspects of biodiversity. As a result, it was stressed that jointness of production emphasises the need to integrate policy instruments and adjustment policies, mutually, at the international, national and more local levels.

3. The economic roles of agriculture

The lead paper recalls historic approaches to the economic roles of agriculture. The author believes that one aim of the ROA Project is to extend this thinking a step further, in particular to identify those economic contributions about which the market prices of agricultural commodities do not convey enough information to secure an optimal level of the activities concerned.

The author proposes a typology of the economic roles of agriculture that distinguishes the sector’s direct use contributions from its indirect use ones. Direct use contributions include both traditional roles (food, surplus labour, exports, capital/savings transfers, and consumer markets) and non-traditional roles (production of agro-industrial goods, services and jobs; provision of land for urban expansion; tourism; and provision of safe food). The sector’s indirect use contributions include both externalities and public goods, and embrace a more productive workforce, welfare system substitution, productivity growth, rural viability, recreational amenities, cultural and heritage values, landscape values, contributions to equity, enhanced learning capacity, provision of community space, harbouring of unique ecosystems, and provision of safe food – which has both private and public attributes.

The author argues that, while they are easily measurable, the many economic contributions of agribusiness are often ignored by governments and policy-makers, in spite of their dependence on primary production. He also stresses that agriculture’s many contributions as semi-externalities or public goods would not exist without agricultural production, but that producers are not compensated for them. For example, agriculture ensures a number of welfare-enhancing, income transfer and income shock buffer functions. It also tends to provide a broader range of substitutability among factors of production, especially labour and capital, than industry does. Its social welfare role often acts as the most important buffer between poverty (author’s emphasis) and full-blown chronic undernutrition. Agriculture also performs a very important social welfare infrastructure role in remote locations, creating development opportunities and producing basic necessities for isolated communities.

Over time, agriculture remains more productive than industry and, as a consequence, the real price of food declines, contributing to increased savings, increased incomes, economic stability and overall total factor productivity. Periods of high agricultural growth rates are associated with falling rural poverty.⁸ The paper also states that agriculture’s role in providing jobs, income and food contributes indirectly to education which, in turn, provides private and public benefits. This contribution is a classic example of the benefits (of increased education) to society being higher than the benefits (of that education) to an individual.

8 Binswanger and von Braun, 1991; Timmer, 1992; Bell and Rich, 1994; Johnson, 1998a; Mellor, 2001, as quoted by Stringer, 2001.

As far as methods for documenting the economic roles are concerned, the paper recommends that both qualitative and quantitative approaches to the non-traditional economic roles should be used to capture the related benefits and values. A narrative

approach would involve analysing the economic roles of agriculture in contributing to agribusiness, local trade and service firms and the social structure of rural communities, as well as analysing the likely influence of new technology and economic stress on the organization and control of agricultural resources. The paper proposes the use of a social accounting matrix (SAM) to explore how agriculture sectors generate the direct use of non-traditional contributions to the overall economy, recalling that SAM data requirements are not problematic for most developing countries and that a great deal of information can be obtained from the Global Trade Analysis Project (GTAP) database.

The first discussant of the paper argued that the dynamic nature of agriculture, and the very objectives of any measurement of its roles, should not be forgotten, and concluded that the direction in which agriculture is to be guided should be very clearly stated.

In this connection, the discussant described a possible future scenario of what he calls “rock-bottom state” in which many of agriculture’s useful externalities are minimised. This state is characterised by: i) a purely commercial agriculture that has minimal externalities, does not differ from any other average industry and responds only to market signals; ii) roles of agriculture that are negligible, i.e. an agriculture that does not have any real competitive advantage in providing socially, economically and environmentally useful externalities; and iii) very large firms providing all agriculture-related services (e.g. environment, tourism), as long as society pays for them. He derived three conclusions from his considerations: i) farm families (in contrast to commercial farms) are at the centre of the current externalities of agriculture, i.e. he called attention to the importance of the human factor in the debate about the roles of agriculture; ii) agricultural systems are moving towards the rock-bottom state anyway; and iii) measurement and documentation of agriculture’s roles has to be linked to finding optimal levels of agricultural externalities.

The second discussant agreed with the speaker’s view that agriculture experiences the highest increases in factor productivity, and stressed the importance of technological change, particularly at the margin, in terms of both transformed agricultural practices and the accrual of benefits. He introduced the concept of the diffusion of urbanization: “agriculture accelerates urbanization, but it also can disperse it”. He compared the cases of African and Asian countries, where two opposite agricultural policies were followed. In the first case, a great failure in achieving agricultural growth has led to tremendous growth in the capital cities, very little growth in small towns and regional centres and a massive increase in urban poverty. In Asia, on the other hand, agricultural growth has stimulated a widely dispersed system of towns and small cities (e.g. Taiwan Province of China, where geographically dispersed urban centres that had initially been built on agricultural incomes and demand soon took on a life of their own, consolidating the dispersed pattern).

Finally, the third discussant warned that, before generalisations can be made about agriculture acting as a buffer during economic or financial crisis, there is a need to look at the conditions under which agriculture can play such a role, i.e. the extent to which the isoquants for agriculture are flatter and can accommodate excess (author’s emphasis) labour force. Not only is capital labour substitution an issue, but so too is the land constraint. He suggested looking into typologies of the conditions under which this safety net attribute of agriculture can occur, its nature and its sustainability. He concluded by suggesting that crises are not a good benchmark against which to assess the welfare substitute roles of agriculture, since shocks can rarely be predicted. A more pertinent question would be: To what extent does the agriculture sector prevent premature urbanization from happening and, as such, to what extent does it prevent negative externalities from happening?



Other questions were raised regarding agriculture's welfare substitute roles: How can it be measured? Can it be measured as the foregone cost of having a welfare scheme in place? What are the implications for policy direction? Is there a need to find a way of "adjusting" the value of agriculture upwards to reflect its welfare safety net role?

It was also stated that rural people bear the brunt of adjustment as the rural sector shrinks and they have to relocate to urban areas. According to the new economics of labour migration, the costs and benefits associated with the decision to migrate are weighted by the rural household, including the cost of placing a migrant in the city or abroad. According to the discussant, city dwellers also pay their share of the marginal cost of rural-urban migration (stress on urban services and public goods, increased crime, etc.).

Regarding the economic contribution of agriculture to alleviating poverty, the discussant agreed with the general argument presented in the lead paper, and pointed out two recent findings: i) agricultural growth alleviates both rural and urban poverty, while growth in the manufacturing sector affects only the latter; and ii) unless income distribution is extremely skewed, agricultural growth has a larger impact on poverty than growth in other sectors has.

During the general debate, which was largely based on the Indonesian experience, it was argued that abrupt increases in food prices may result in social unrest. In such circumstances, the stabilisation of food prices brought about by domestic agriculture is beneficial for social stability. Reducing or controlling inflation is therefore another potential major role of agriculture that could be studied as a semi-externality of the activity.

4. The social roles of agriculture

Based on the case of Mexico, the lead paper focuses on the role of the agriculture and rural sector in relation to poverty alleviation, stating as a premise that the social impacts and roles of agriculture depend on: i) the characteristics of the rural sector; and ii) institutional arrangements and government policies. The main thesis of the paper is that poverty alleviation is an important role of agriculture, but that any strategy to alleviate rural poverty requires a lot more than agricultural support and production-oriented policies.

The paper presents a strategy for reducing extreme poverty in rural areas significantly and a framework for evaluating government social programmes, both of which were implemented recently in Mexico. It provides guidance on how to assess the importance, possibilities and limits of using agricultural policies to attain social objectives (with a special focus on poverty reduction), and it insists on the need for complementary strategies, providing lessons from the Mexican experience.

The paper states that the first step in assessing the externalities of the agriculture and rural sector should be to carry out a sectoral diagnosis, i.e. an assessment of the characteristics of the rural sector. It suggests a standard set of relevant indicators for this exercise, including population size, employment, contribution to gross national product (GNP) and growth of agricultural GNP: the study should consider the total subsidies (including public spending and explicit or implicit fiscal deductions) directed to the rural sector and, in particular, to the agriculture sector. It should also assess the social heterogeneity of the sector, evaluating the severity and depth of poverty among rural people. For example, in rural areas of Mexico, one family out of two is poor and the severity of poverty is three times greater than it is in urban areas. Finally, other characteristics of the rural poor population, such as human capital, geographical dispersion and vulnerability, should be systematically investigated. In this connection, an analysis based on identification of the leading risks by age, region and income

group might be helpful. Such an analysis draws on social risk theory to identify the main risks across the life cycle, and uses household survey information to calculate indicators of risk for the poor compared with the average population. This may be linked to an evaluation of current policies, in order to assess their effectiveness in reaching target populations and coverage.

Institutional arrangements and government policies directed to the agriculture and rural sector, together with governmental resource allocation, are the second driving force in shaping the social roles of the sector, and the second aspect that could be documented in CCS. Institutions and policies have to be critically reviewed, in particular the production-oriented programmes and targeted social programmes that provide, not only short-term assistance, but also opportunities for changing the structural conditions of poverty in the medium term. The paper reviews Mexican institutional arrangements, current policies and programmes, their efficacy and efficiency, related strategies, and proposed tentative guidelines for similar exercises in other countries.

One important step, according to the author, is to evaluate whether the country has an integral and coherent rural development strategy and an explicit poverty reduction strategy that provides both productive and social lines of action while differentiating between actions directed to promoting rural productive activities and those that target poverty alleviation. The author suggests that this differentiation should be based on a conceptual framework that identifies the objectives and incidence of rural policies and whether they provide public or private goods. The evaluation should assess the extent to which these lines of action allow greater competitiveness in the rural sector, and the degree of impact that they have on agriculture's positive externalities. It should review the extent to which government support of specific public goods (public productive and social infrastructure; animal and plant health; innovation and technology transfer; actions for regulatory modernisation; legal certainty of property rights; temporary employment programmes for productive infrastructure, etc.) contributes to these objectives.

In general, the papers stress that, depending on the demographics and socio-economic setting of the country, the solution to alleviating poverty by increasing income might lie outside the primary sector. Part of the solution might be in other areas of the economy that allow more orderly migration, not only to the urban sector but also to the secondary and tertiary sectors in the rural sector.

The first discussant commented that the lead paper is a valuable contribution to the study of both the poverty alleviation roles of agriculture, as a sector, and the social policies that target that sector. Until the late 1980s, the Mexican Government had tended to act as if rural poverty alleviation was practically synonymous with agricultural development. By contrast, and based on the concrete results of impact monitoring and evaluation of public expenditure in recent social programmes in rural Mexico, the lead paper shows that social development programmes (such as education, health, nutrition, income transfers and pensions) have had, and can have, a significant impact on rural poverty alleviation, above and beyond the contribution that is attributable to agriculture per se. As stated in the presentation, "a strategy to alleviate rural poverty involves a lot more than agricultural support and production-oriented policies". According to the discussant, "a significant part of rural non-farm employment [in Latin America] is now only very indirectly related to agricultural production processes."⁹

The discussant stressed the implications of the lead paper for the design of the ROA Project AFW and CCS, particularly regarding policy implications in middle-income countries. In such countries as Mexico, significant positive externalities for social development are likely to be associated with agriculture, but there is a need to examine these externalities carefully in order to avoid overstating the case in favour of

9 Berdegue, Riordan et al., March 2001. World Development.



- 10 Gaurav Datt and Martin Ravallion, 1996. How important to India's poor is the sectoral composition of economic growth. World Bank Review, June 1996. Vol. 10
- 11 According to Akinwumi, "it is no coincidence that most major celebrations in developing countries take place during or soon after harvests of major staple foods".
- 12 Happiness in rural settings can be understood as the husband's capacity to fulfil his role as the breadwinner by filling the barn with grain to last the whole year through. Akinwumi recalls a woman telling him that "a husband is only worthy if he assures his family of food throughout the year".
- 13 A longstanding tradition in most northern villages of Nigeria is the annual gathering into a common pool of "zaquat", or 10 percent of each farmer's grain yield. This store is supervised and controlled by the village head and provides food for the sick, strangers and the religious leader. Any farmer who lacks seed collects from the pool. The food security implication is obvious.

productive support of agriculture. The discussant also underlined that, in the least-developed countries, the role of agriculture in poverty alleviation would probably appear to be much more important than it is in cases similar to that of Mexico, owing to a stronger linkage of agricultural production to rural employment as shown, for example, in the well-known work on India by M. Ravallion.¹⁰

Drawing on African experience in particular, the second discussant underlined the importance of some other social roles of agriculture which are not addressed by the lead paper: the contributions of agriculture to social stability, by reducing potential social conflicts (because agriculture keeps "people occupied, as a way of life"); and its contributions to cultural heritage, by allowing the perpetuation of a society's traditions and values (such as the celebration of various family, communal, city or national festivals involving ancestral worship), which fulfils people's cultural aspirations.¹¹ This latter role also contributes to maintaining and transferring local knowledge of medicinal plants for traditional medicine; family cohesion, by contributing to better intrahousehold and gender relations;¹² and social capital, by encouraging intracommunity solidarity and the community management of common resources.¹³

Regarding rural heterogeneity and demographics, the discussant argued that the case of Nigeria differs from that of Mexico, and that the remittances sent by migrants to their families play an important role that should be studied. As for the articulation of social welfare and productive social policies, he agreed on the need to provide both productive assets and social infrastructure, such as education, health and sanitation, but added that these should be assigned the role of helping the poor to make positive contributions to overall social well-being.

Regarding methods and measurement tools for documenting the roles of agriculture at the rural community level, he suggested that samples should be relatively small and that surveys should extend over a significant time period in order to provide accurate observations. Focus group discussions have been found to be a reliable approach to data collection in Nigeria. These can be complemented by "key informant" interviews, especially if a history of development is needed. The oldest people in a community should be interviewed in depth as a way of identifying trends, changes over time, and opinions regarding such changes. Finally, the discussant emphasised the need for making the ROA Project case studies truly participatory. Stakeholders should not only be consulted or given a final report at the end of the project cycle, but they should also be involved in all stages of the process.

In the general discussion, one point that was made forcefully was the need to avoid confusing stability with absence of change, since dynamic transformation is critical for development.

5. The cultural roles of agriculture

The lead paper suggests that, when addressing traditional agricultural societies, researchers should first understand the relationship among three variables: the productive system, the environment, and the culture. Examples of pastoral societies and flood recession farming were used to illustrate this.

In order to document the tight and mutually reinforcing relationships among food production systems, climate and the environment, and the issues of culture and traditional values, the author advocates the use of cultural and political ecology. The economic, social and cultural dimensions in which people live are affected by agriculture and agricultural practices, and agriculture is, in turn, affected by climatological factors and the physical and biological environments. During discussion of this paper, it was mentioned that three major agricultural production systems have emerged from this interrelationship: extensively cultivated land-surplus agriculture in

Africa; intensively cultivated labour-surplus agriculture in Asia, with “unimodal” land distribution among small marginal farms; and dualistic agriculture in Latin America.

Quoting the work of B. Miller, the author also points out some of the negative externalities that are produced by agriculture under given circumstances. The costs of agriculture may include “social inequality; disease; despotism; and destruction of the environment from soil exhaustion and chemical poisoning, water pollution, dams and river diversions”.

He uses the example of swidden farming (bush fallowing, shifting cultivation or slash-and-burn) to show how many development practitioners have not properly understood traditional practices. If an adequate fallow period is maintained, swidden cultivation is not only environmentally sound but also, compared with its alternatives, economically appropriate. Yet, from one society to another, there is a good deal of variation in the ways in which swidden farming operates, even in comparable and adjacent regions.

The paper recalls that, according to Cernea, there are four causes of patrimony loss (excluding warfare):

- natural causes – losses from earthquakes, flooding, storms and the like;
- economic causes – including infrastructure building, technical changes that render handicraft production obsolete, agricultural expansion (especially irrigation) and air pollution;
- social causes – including increasing population, the adverse effects of tourism, looting (such as at Angkor Wat in Cambodia), neglect and ignorance;
- institutional weaknesses – including policy vacuums, organizational weaknesses; and
- inadequate financial support.

The author adds a fifth cause of patrimony loss: the intentional destruction of patrimonial resources by acts of government policy. In his example of the Senegal River, environmentally and socially sustainable production from floodplains was a primary victim of hydropower development, since the conventional management of large dams terminates the annual flooding on which such production systems depend, replacing it with the retention of waters in an upstream reservoir and their release only when needed by the turbines. While there is a rich literature on the need to compensate people who are forcibly relocated from the reservoir area, there is relatively little that deals with the downstream victims, who are not forced to relocate but who cannot maintain their pre-dam production systems. The author claims that, recurrently, governments and development planners support the replacement of “primitive” flood-recession systems with irrigation, because of the latter’s seemingly larger returns per unit land. However, the calculations on which this comparison is made rarely, if ever, include the returns from fishing and herding. The author’s research along the Senegal River demonstrates that the true returns from the “traditional system”, when all the factors of production – land, labour, capital – are taken into account, vastly exceed even the best forecasts of what is anticipated from irrigation.

An important, and often overlooked, positive externality of food production systems is the contribution they make to intergroup harmony under ethnic diversity. For instance, with the Manantali Dam imposing changes in the flow regime and the anticipated conversion of the land into capital-intensive irrigated perimeters, there were a series of explosive ethnic conflicts.

The author praises and encourages the inclusion of the cultural roles of agriculture among the ROA Project’s objects of study, but warns that this must not “imply universal commitment to a particular value system, a total embrace of a historical tradition, and obscure the significant segmentations that exist everywhere”. These segmentations are not always evident to “visitors”. He also stresses that, while conceptually it is possible



to separate the empirical arenas contained within the rubrics cultural, environmental, social, food security and economic, the boundaries among them may not correspond at all to local realities, neither may insistence on selecting one scientific discipline as having analytical “rights” over which arena best advances understanding.

The first discussant considered that the issues regarding the documentation of cultural roles of agriculture still need to be properly defined. She proposed a typology of four main observable phenomena through which the cultural roles of agriculture can be documented: i) production systems; ii) consumption systems; iii) indigenous knowledge; and iv) artefacts.

The second discussant concentrated on African collective landholding systems and on the role of clans and lineages in regulating, maintaining and preserving land use over generations. Outside political or economic contact and population pressure tend to break down traditional forms of land tenure and use, ending the delicate balance between cultural forms and livelihood systems that has, in many cases, developed over centuries.

When badly planned and executed, development projects can also have diverse impacts on local culture and society. The disruptive impact of land privatisation during past World Bank projects on agricultural, socio-economic, and cultural patterns was criticised. The discussant offered an example of how members of one agricultural system, freed of traditional social controls in ancestral areas, had badly damaged the physical environment in zones that were pioneered for groundnut cultivation. The transposition of a farming system outside its original social and cultural context removes time-honoured constraints that allow that system to be sustainable in its original location.

As a whole, the major cultural roles that seem to arise from the meeting’s discussion embrace cultural identity and diversity; cultural heritage; traditions and customs; beliefs, values and religion; and indigenous knowledge. The importance of differentiating stakeholders’ viewpoints during valuation activities was repeatedly underlined.

6. The food security roles of agriculture

The lead paper argues that domestic agricultural production plays a key role in hedging against possible shortages of food supply or sharp increases in import prices. It stresses that food security must be attained with minimum costs by the optimal combination of domestic production, importation and stock management, and that it is not desirable to maintain extremely low or high levels of food self-sufficiency. In the long term, as development proceeds, food security may be better achieved by lowering the food self-sufficiency level, shifting resources to the production of non-food export crops or manufacturing goods, and importing staple food requirements.

The paper provides a useful set of food security indicators which have been rearranged on the basis of the definition and elements of food security and aim at documenting the food security roles of domestic agriculture in the ROA Project study. It also gives an example of a methodology for deriving a composite index of the contribution of domestic agricultural production to food security, based on assessment of the opportunity costs and risks associated with food security in different conditions of national self-sufficiency, international competitiveness and purchasing power.

The first discussant stated that, despite its extremely useful identification of issues and suggestions, the paper falls short of providing a sufficiently detailed analysis of the issues, and focuses too much on trade.¹⁴ The hypothetical example of how to calculate the contribution of domestic agriculture to food security is not followed by practical guidance on how to use this analysis in the CCS.

14 While no one can dispute the importance of trade, it is important to strike a balance between the relative contributions of agriculture and agricultural trade in the promotion of food security (Broca, 2001, Session 6: Food Security Roles of Agriculture).

In response to the question of how agriculture can enhance availability, the discussant stressed the need to focus on its productive aspects. On the issue of the role that agriculture can play in enhancing access to food, he suggested focusing on the income-generating aspects of agriculture. Agriculture provides income to those who own land and grow agricultural commodities; and it also provides income to those who work on other people's land, even if they themselves are landless. In addition, the agriculture-generated income itself provides a source of demand for the products of the rural non-farm sector, a facet that is receiving increasing attention. Regarding the issue of agriculture's role in promoting stability of access, the example of the Indonesian crisis of 1997 was given – large numbers of people returned to the land and managed to stave off starvation only because they had access to food grown by themselves or their relatives. Finally, regarding the roles of agriculture in ensuring food quality, the discussant stressed that these depend on the type of production techniques used and on the extent to which farming is an industrialised business.

Expanding on the speaker's detailed list of indicators, the discussant suggested that, in developing countries, it might be useful to base the analysis on food availability and food access indicators to see whether any patterns emerge. For example, regarding availability, it is easy to find information on the natural conditions of agriculture, factor endowments and infrastructure, among other issues. On the other hand, information on the institutional environment of agricultural production, although available, tends to be somewhat variable in quality. If such information can be collected and combined in a way that produces an indicator of availability, that indicator could be calibrated against data on the actual availability of food in order to improve its reliability. Such an indicator, when found to be reliable, could offer a simple and relatively inexpensive way of measuring availability in a country.

The second discussant commented on the author's model of food security by suggesting that the livelihood effects of any changes in the composition of national food supply (trade, domestic production, stock) should be examined.

He also pointed out that the cost of domestic production does not depend only on the production function, but also on the institutional set-up of agriculture and, in particular, on gender relations. He stressed that the issue of women not owning land is very relevant, and that it has significant consequences on the working of agrarian systems, the productivity of those systems, and accumulation of and access to food. He considered that the actual or potential feminisation of agriculture should be analysed in terms of its impact on agricultural production and income realised from agriculture.

The discussant suggested that the indicators proposed in the lead paper should be expanded to include indicators that represent, on the one hand, the effect of gender relations on food security and, on the other hand, the situation of regions that are food-deficit within state boundaries. Such indicators are: women's share in landownership (production function); their share of food consumption (accessibility); and monopolies and interlinked markets for food-deficit regions (physical accessibility).

C. Conclusions

In general, the draft AFW and CCS methodologies that were proposed to the participants for discussion were welcomed, and their concepts and overall approach were endorsed. In addition, the participants agreed that, in highlighting the need to consider and value the positive externalities of agriculture, the Project complements the SARD concept. Many of the socio-economic and environmental positive externalities of agriculture have already been contemplated by Chapter 14 and other chapters of Agenda 21, which provide the blueprint for the promotion of SARD policies. However, so far, the design and implementation of SARD policies and programmes



have focussed mainly on minimising agriculture's negative externalities, rather than on enhancing its positive externalities. As a result, the timing of the ROA Project study was felt to be particularly appropriate because of the Rio plus Ten review of Agenda 21 that will take place in 2002.

In the views expressed by participants, the roles of agriculture debate may promote wider awareness in the donor community, and in developing countries themselves, of the strong positive roles that agriculture has played, plays and can play in shaping societies, guiding natural resource use and tackling social injustice. If brought to a successful and persuasive conclusion, the Project could help to rebalance the negative or depressed perception of agriculture that prevails in certain circles, and that has contributed to the decline of investment in the sector. The ROA Project could be a useful instrument for national policy-makers, for the donor community and for those shaping public opinion and mobilising political support, in helping to place agriculture and rural development higher on the agenda that addresses the pervasive problems of poverty, hunger and the environment.

The manifold roles of agriculture have existed ever since the activity existed. They are not new. What is new is the increased awareness of the importance of non-traditional roles and of the varied valuations attached to them by policy-makers and society. The diverse roles or functions of agriculture have become an issue for debate in international circles. Many free trade advocates suspect that this concept is used as an excuse for continuing trade-distorting protection measures. So far, the debate has taken place mostly among developed countries. The weak participation of most developing countries is, of course, the result of the priority that they grant to the economic and food security, market-driven roles of agriculture. It is also, in part, owing to the lack of documented, factual, quantified and comparable evidence concerning the many positive externalities of agriculture.

As stated in one of the lead papers at the expert meeting, the ROA Project can be perceived as part of a broad endeavour to carry out a benefit-cost analysis of agriculture that embraces both market and non-market values. As a result of the meeting, the Project's current phase will focus, as far as possible, on generating data concerning the benefits, while taking stock of some of the documented costs. It is assumed that, by adopting such a perspective, the Project can contribute to a better understanding of the diverse roles of the agriculture sector in developing countries on the part of policy advisers and policy-makers.

Annexes

Annex 1: Expert meeting agenda

Agenda

Monday, 19 March 2001

Opening ceremony

Hartwig De Haen, Assistant Director-General, Economic and Social Department (ES), FAO

Session 1

Draft Analytical Framework to document the roles of agriculture in developing countries: overall approach and concepts of studying the roles of agriculture

Speakers:

Frédéric Dévé
ROA Project Coordinator,
Comparative Agricultural
Development Service (ESAC),
FAO

Discussants:

Raghav Gaiha
Professor, Faculty of
Management Studies, University
of Delhi
Ryohei Kada
Professor, Graduate School of
Agriculture, Kyoto University,
Japan

Moderator:

Jacques Vercueil
Former Director, Agriculture and
Economic Development Analysis
Division (ESA), FAO

Session 2

The environmental roles of agriculture: environmental externalities, their measurement and valuation in developing countries

Speaker:

Joseph Cooper
Resource Economist, United
States Department of
Agriculture/Economics

Discussants:

Orapan Srisawalak-Nabangchang
Adviser, Natural Resources and
Biodiversity Institute (NAREBI),
Ministry of Agriculture and
Cooperatives, Thailand
Christine Amoako-Nuama
Consultant, Natural Resources
and Environment; Former
Minister for Lands and Forestry,
Ghana
Robert Brinkman
Former Director, Land and Water
Development Division (AGL),
FAO

Moderator:

Changchui He
Service Chief, Environment and
Natural Resources Service
(SDRN), FAO

**Session 3****The economic roles of agriculture: the secular and non-secular economic roles of agriculture, their measurement and valuation****Speaker:**

Randy Stringer
Deputy Director, Centre for
International Economic Studies,
School of Economics, University
of Adelaide, Australia

Discussants:

Rashid Pertev
Coordinator, World Bank Project
for Restructuring Agricultural
Sales Cooperatives in Turkey,
International Federation of
Agricultural Producers (IFAP)

John Mellor

Former Director, International
Food Policy Research Institute
(IFPRI); current Vice-President
Abt Associates, Inc., United
States

Kostas Stamoulis

Senior Economist, Agricultural
Sector in Economic
Development Service (ESAE),
FAO

Moderator:

William Meyers
Director, Agriculture and
Economic Development Analysis
Division (ESA), FAO

Tuesday, 20 March 2001

Session 4

The social roles of agriculture: income distribution and poverty, urbanization, the viability of rural communities, social stability; their measurement and valuation

Speaker:

Evelyn Rodriguez Ortega
General Director, Programming and Budget for Agriculture, Social Development and Natural Resources, Ministry of Finance and Public Credit, Mexico

Discussants:

Alberto Valdés
Consultant; Former Agricultural Adviser, World Bank
James Akinwumi, Deputy Vice Chancellor, University of Ibadan, Nigeria

Moderator:

Santiago Funes
Director, Rural Development Division (SDA), FAO

Session 5

The cultural roles of agriculture: scope, documentation and measurement

Speaker:

Michael Horowitz
President and Executive Director, Institute for Development Anthropology, New York; Professor of Anthropology and Director, Centre for Research on Environmental Systems, Binghamton University, New York

Discussants:

Brave Ndisale
Independent Consultant, Head of Poverty Alleviation Programme, Étude, Conseil, Formation Développement (ECODEV)
Gérard Ciparisse
former Rural Development Division (SDA), FAO

Moderator:

Philip Boyle
Senior Social Economist; Consultant, ROA Project

Session 6

The food security roles of agriculture: the role of domestic agriculture in national food security, access to food, strategic food security and related externalities; their measurement and valuation

Speaker:

Jaeok Lee
Senior Fellow and Research Director, Korean Rural Economic Institute, Republic of Korea

Discussants:

Sumiter Broca
Economist, Agricultural Sector in Economic Development Service (ESAE), FAO
Dev Nathan
Independent Researcher/Consultant

Moderator:

David Wilcock
Coordinator, Food Insecurity and Vulnerability Information and Mapping System (FIVIMS), FAO

**Wednesday, 21 March 2001****Session 7****Possible profiles and guidelines for country case studies: orientation and preparation of guidelines to conduct country case studies****Speaker:**

Kunio Tsubota
Chief, Comparative Agricultural
Development Service (ESAC),
FAO

Discussants:

Tim J. Aldington
Consultant; Former Senior
Technical Adviser for the Office
of the Assistant Director-
General, Agricultural Department
(AGD), FAO
Pantjar Simatupang, Researcher,
Centre for Social Economics,
Agency for Research and
Development, Indonesia
Bingsheng Ke
Director; Research Center for
Rural Economy (RCRE) Ministry
of Agriculture, Beijing, China

Moderator and session wrap-up:

Jacques Vercueil
Former Director, Agriculture and
Economic Development Analysis
Division (ESA), FAO

Annex 2: List of participants

Speakers

Cooper, Joseph
De Haen, Hartwig
Dévé, Frédéric
Horowitz, Michael
Lee, Jaeok
Rodriguez Ortega, Evelyne
Stringer, Randy
Tsubota, Kunio

Discussants

Akinwumi, James
Aldington, Tim
Amoako-Nuama, Christina
Brinkman, Robert
Broca, Sumiter
Ciparisse, Gérard
Gaiha, Raghav
Kada, Ryohei
Ke, Bingsheng
Mellor, John
Nathan, Dev
Ndisale, Brave
Pertev, Rashid
Simatupang, Pantjar
Srisawalak-Nabangchang, Orapan
Stamoulis, Kostas
Valdés, Alberto

Moderators

Boyle, Philip
Funes, Santiago
He, Changchui
Meyers, William
Vercueil, Jacques
Wilcock, David

Observers

Bellu, Lorenzo
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*“Agriculture is the mother
of all arts.
When it is well conducted,
all other arts prosper.
When it is neglected,
all other arts decline”*

*Xenophon, (430-355 BC),
The Economics*