

MODERNIZING NATIONAL AGRICULTURAL EXTENSION SYSTEMS:

**A PRACTICAL GUIDE FOR POLICY-MAKERS OF
DEVELOPING COUNTRIES**



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M. Kalim Qamar
Senior Officer (Agricultural Training & Extension)

Research, Extension and Training Division
Sustainable Development Department
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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CONTENTS

PREFACE	v
EXECUTIVE SUMMARY	vii
I. INTRODUCTION	1
Concept	1
Extension - An essential pillar for agricultural research and development	1
Formal introduction of extension in developing countries	3
Extension function vs. extension organization	5
Increasing diversity of extension function players	5
Challenges to traditional extension practices	6
II. GLOBAL DEVELOPMENTS NECESSITATING REFORMS IN EXTENSION	9
Globalization and market liberalization	9
Privatization	11
Pluralism	13
Decentralization and devolution	13
Client participation in decision-making	14
Natural and man-made disasters	16
Information technology revolution	17
Rural poverty, food insecurity and HIV/AIDS epidemic	18
Integrated, multi-disciplinary, holistic and sustainable development	19
III. FRAMEWORK FOR DETERMINING THE NEED FOR EXTENSION REFORM (FDNER)	21
Framework (FDNER)	21
Policy and organizational structure	21
Financing	22
Staffing	22
Field operations	22
IV. GUIDELINES FOR MODERNIZING NATIONAL EXTENSION SYSTEMS	25
Context	25

V. NORMATIVE FRAMEWORK FOR EXTENSION	
REVIEW AND REFORM (NFERR)	57
Context	57
Rationale and purpose of NFERR	58
Basics of extension	58
Extension reform principles and interventions and their application	59
How to use NFERR	62
Normative Terms of Reference (TOR) for conducting studies	63
Suggested duration	65
REFERENCES	67
Some recent literature on extension	67

Preface

Agricultural extension is taking a new dimension because of a global movement for reforming the national extension systems in developing countries that started late in the twentieth century. New learning needs of farming communities are emerging as the world enters into an era of globalization, democracy, privatization and decentralization, affecting the farmers of both developed and developing countries – albeit in different ways. There is a fresh and firm resolve worldwide to fight the menaces of hunger and rural poverty. Extension workers, no matter whether they belong to government departments, NGOs, private institutions or farmers' associations, could constitute a formidable force in this fight. Extension in the developing countries indeed has a very new role to play and needs the serious attention of policy-makers for its meaningful reform and modernization.

One can find quite a bit of recent literature on extension reforms. FAO's Research, Extension and Training Division also published "Agricultural and rural extension worldwide: Options for institutional reform in the developing countries" in 2001. There has been, however, an increasing demand for practical, action-oriented guidelines which policy-makers could use in reforming extension systems. This particular publication has been prepared to meet that demand.

This paper clarifies the key concept of extension in its opening pages. It is followed by global developments that are posing challenges to the traditional form and methods of the extension organizations. Then a simple framework has been presented for the convenience of policy-makers in determining whether there exists a real need to reform the extension systems. A set of guidelines along with the required key actions has been suggested, which if followed properly, could transform the traditional agricultural extension services into a viable modern force capable of meeting new challenges. As some of the countries have already entered into the reform process, another normative framework has been included in the paper which could be used for assessing the extent of reforms in any extension system. At the end, a list of useful references has been given for those who would like to read more on certain aspect of extension.

The guidelines are neither theoretical nor academic in character, as they have been drawn from years of experience and observations in real-life situations. The real field conditions kept in view throughout the preparation of this document is what gives this publication its great value. Agricultural extension is a vast field, and the coverage of all its aspects is beyond the scope of a brief paper. Increasing advocacy for broadening the technical mandate of extension beyond traditional technology transfer renders such coverage even more problematic.

I trust this publication will be of help to the policy-makers who not only realize the key role of extension in national rural and agricultural development, but are also eager to reform traditional extension systems. FAO stands ready to provide assistance if requested.



Dietrich Leihner
Director
Research, Extension and Training Division
Food and Agriculture Organization of the United Nations, 2005

Executive summary

CONCEPT

For those policy-makers who would like to refresh their knowledge of the concept of extension, this is a function of providing need- and demand-based knowledge and skills to rural men, women and youth in a non-formal, participatory manner, with the objective of improving their quality of life. The function of extension may be applied to several subjects, both agricultural and non-agricultural, such as health; when it is applied to agriculture, it is called agricultural extension.

IMPORTANCE OF AGRICULTURAL EXTENSION

Extension is an essential pillar for research and development. However, unfortunately, a somewhat unhealthy perception of extension prevails in many developing countries, caused by a weak extension lobby, faulty initial organizational set-up, an inherent lack of trust in extension by most of the research organizations, and traditionally poor career development conditions in the profession of extension. Agricultural research agendas remain largely academic unless extension workers provide input in terms of the identified and as-yet unsolved field problems of the farmers. Research focuses on the technical aspects for generating useful technologies, while extension focuses on the acceptance and adoption of those technologies by users. Applied research institutions need strong extension services to work in a field problems-oriented mode, and the extension services need the backstopping of strong applied agricultural research institutions to effectively serve the farming communities. Countries like the United States of America, Canada, Australia and Denmark, which have very advanced agriculture, have always enjoyed strong extension services, first public, and now public and/or private.

EXTENSION FUNCTION VS. EXTENSION ORGANIZATION

Like many other important functions in daily life such as education and health, the extension function is also important for the welfare of farmers, no matter who performs it as long as it is done satisfactorily. The players in the extension function, besides government extension departments could be private extension service companies, private extension advisors, NGOs, universities, farmers' associations, research institutes, and possibly others as we have seen in recent years. Extension organization, on the other hand, means how the agency or department which is responsible for extension function organizes itself for performing this task. This is what differentiates the term "extension function" from "extension organization". If an extension service shows poor performance because of its poor organization, it should never lead to the wrong conclusion that the function of extension is not important.

GLOBAL DEVELOPMENTS NECESSITATING REFORMS IN EXTENSION

The main global developments include globalization, market liberalization, privatization, pluralism, decentralization and devolution, client participation in decision-making, natural and man-made disasters, rural poverty, food insecurity, HIV/AIDS epidemic, and emphasis on integrated, multi-disciplinary, holistic and sustainable development. These developments are creating new learning requirements for both subsistence and commercial farmers in developing countries. These requirements, especially when seen within the context of the revolution in information technology, are challenging decades'-old mandates and operations within traditional extension systems.

The time is indeed ripe for policy-makers in developing countries to challenge and revisit the discipline of extension within a global context, so as to let the extension function be performed with excellence in line with the global challenges to their economies and especially to their agriculture sector. Cosmetic changes to the existing national extension systems will be of little benefit, as will be the repeated training of staff in stereotyped agricultural subjects. Just as well beat a dead horse.

FRAMEWORK FOR DETERMINING THE NEED FOR EXTENSION REFORM (FDNER)

The modernization and reform of national agricultural extension systems is a major undertaking requiring careful analysis of the situation, comprehension of national policy on rural and agricultural development and food security, the leadership's vision of development for the country over the next 20 years or so, and finally taking bold policy decisions – some of which may have political implications, cost considerable amounts in terms of time, money and energy, and require effective monitoring of progress. It is therefore of paramount importance that the policy-makers first have a look at the existing national agricultural extension system to determine whether the system needs to be reformed or not. This paper presents a simple framework for reviewing the aspects of policy and organizational structure, financing, staffing and field operations of the present extension services.

GUIDELINES FOR MODERNIZING NATIONAL EXTENSION SYSTEMS

The following guidelines are presented along with necessary key actions:

- Assess the existing extension organization against farmers' needs and determine whether to strengthen or restructure it.
- Decentralize extension but not before capacity-building of the staff and orientation of relevant elected officials.
- Broaden the technical mandate of extension to aim at broader development of rural human resources.
- Formulate national policy on extension in order to ensure political and financial commitment.

- Give extension profession a long overdue status similar to other agricultural disciplines.
- Bring pre-service education in agricultural extension in line with the modernizing of the national extension system.
- Promote pluralism in extension by involving public, private and civil society institutions.
- Privatize extension partially or fully where it is socially and economically feasible.
- Develop and apply information technology tools to facilitate the work of extension workers.
- Develop original, location-specific, participatory, gender-sensitive and inexpensive extension methodologies and materials instead of applying those methodologies which are promoted as universally suitable.
- Orient extension staff to major food security related global developments that could eventually affect rural livelihoods.
- Encourage the extension services to empower farmers through organizing them into legal associations to constitute a strong lobby for themselves and for extension.
- Encourage bottom-up, grassroots extension programme planning by farmers in order to make extension demand-driven, but also exercise supply-driven, top-down modality for promoting common public good practices such as conservation of natural resources and environment protection.
- If the extension function is to be performed with relatively small number of extension staff, follow appropriate strategies for getting maximum output.
- Ensure effective operational linkages between extension and research and other key relevant institutions.

NORMATIVE FRAMEWORK FOR EXTENSION REVIEW AND REFORM (NFERR)

The paper presents a normative framework for the convenience of policy-makers. This framework has been developed for one main purpose: to review the present rural and agricultural extension systems of developing countries, with the main objective to reform them on the basis of the many normative principles, interventions and lessons that have been drawn from worldwide extension experiences and observations. These normative principles and interventions cut across all regions, but their application must be done according to the “situational context”, which asks for consideration of prevailing political, institutional, economic, social, cultural, religious, agricultural, geographical, infrastructure and technological conditions. Such considerations are necessary for a realistic application of the principles and interventions, but without making too many concessions and compromises.

I. INTRODUCTION

CONCEPT

For those policy-makers who would like to refresh their knowledge of the concept of extension, this is a function of providing need- and demand-based knowledge and skills to rural men, women and youth in a non-formal, participatory manner, with the objective of improving their quality of life. If the extension function is applied to agriculture, it will be called agricultural extension; if applied to health, it will be health extension, etc. Since most of the target population is adult, extension commonly applies the principles of adult education to educational approaches and materials to enhance learning. Extension is essentially education, although it falls outside formal education systems, and as such, aims at bringing about positive behavioural changes among those targeted.

EXTENSION – AN ESSENTIAL PILLAR FOR AGRICULTURAL RESEARCH AND DEVELOPMENT

It is logical that policy-makers first be convinced of the key role of extension in national development before giving serious thought to reforming and modernizing the present national agricultural extension services. This is important because unfortunately a somewhat unhealthy perception of extension prevails, caused by a weak extension lobby in most developing countries, faulty initial organizational set-up, an inherent lack of trust in extension by most of the research organizations, and traditionally poor career development conditions in the profession of extension.

Since the start of structural adjustment programmes in developing countries many years ago, extension services have been a prime target of downsizing. In some cases, the donors concerned have guided the governments in this direction, while in other cases strong lobbies in certain agricultural disciplines – notably agricultural research and economy – have challenged the usefulness of extension. Extension work is a very difficult task in less-developed countries. It is not carried out from air-conditioned offices or laboratories by formally dressed persons, but mostly in the field under severe weather and logistic conditions with minimum facilities. The extension mission of interacting with mostly illiterate and poor rural people with the aim of changing their behaviour positively is indeed a formidable task when compared to working with plants and animals in the comfort of research stations.

This is indeed a misfortune for the developing countries. Extension has been and still is treated as an inferior subject by most agricultural researchers, in spite of evidence that if extension is weak, some otherwise excellent technologies never reach the farmers. During 1960s, extension played a significant role in bringing about the Green Revolution through

Recommendations on meeting the food security challenge

Development of a new and expanded policy agenda by the government for agricultural extension and communication for rural development focusing national attention on food security and income generation of the rural poor.

Building of a platform by the government to promote dialogue and cooperation among relevant institutions and programmes in all sectors with the aim of developing an extension and information services network for food security and income generation.

Activation of institutional change within the public sector, by the government, aimed at supporting and promoting the new and expanded policy on extension and food security and the determinations instituted by the nationwide platform.

FAO.2003. *Agricultural extension, rural development and the food security challenge*, by W.M. Rivera and M.K. Qamar. Rome.

the strategic introduction and promotion of high-yielding wheat and rice varieties and the use of farm inputs as recommended by researchers. Agricultural research agendas remain largely academic unless extension workers provide input in terms of the identified and as-yet unsolved field problems of the farmers. Research focuses on the technical aspects for generating useful technologies, while extension focuses on the acceptance and adoption of those technologies by users. Applied research institutions need strong extension services to work in a field problems-oriented mode, and the extension services need the backstopping of strong applied agricultural research institutions to effectively serve the farming communities.

The common belief among researchers that, if they develop a good technology the farmers will automatically adopt it – therefore, there is no need for extension – is not sound. If this were true, hundreds of good technologies developed by researchers, as pointed out in a major international conference held in Addis Ababa in 1995, in which Sasakawa Foundation was also involved, would not be sitting on shelves to the dismay of good scientists.

The good technologies, in order to be considered by the farmers for possible adoption, must first travel the distance between relevant research institutes and the farmers' fields. Then, they should be introduced to the farmers in non-technical language and the advantages of the technology over traditional practices must be demonstrated in a convincing manner, such as through field demonstration. Next, the necessary ingredients for trying the new technology, such as cost and any risk factors will have to be explained. Later, various adult education methods and participatory decision-making approaches need to be followed in order to encourage discussion on the information provided on the new technology in order to assess both positive and negative issues. Assuming that some progressive farmers are willing to try the new technology, arrangements will have to be made for other farmers to benefit from this limited "sample adoption" opportunity. The regular monitoring of the trial of the technology, including discussion with the progressive farmers, will be required for any trouble-shooting and eventually to assess the overall performance of the new technology under *in situ* field conditions. Good or bad results and possible reasons for them must be conveyed to the relevant researchers who recommended the particular technology. If the

benefits outweigh the problems, the technology will have a better chance of being adopted by other farmers; otherwise, it will have to be categorized as an inappropriate technology and dropped from the list of extension recommendations.

This is an oversimplified explanation of the procedure which every extension worker has to pass through whenever a new technology is recommended by researchers. Now, if there are no extension workers, who will be responsible for following this procedure? One possible answer may be the researchers themselves. If this answer is accepted then in fact the researchers will be performing the function of extension, even without being employees of any extension service, which is perfectly acceptable. But would this solution really be possible in real life, when most researchers prefer to stay within the boundaries of their institutes, making rare visits to farmers' fields, if any. So, logically, if extension services are abolished, researchers should be willing to be trained and work as extension workers – a scenario which is probably unacceptable to researchers at the present time.

In the past, agricultural research institutes in a number of developing countries created small extension units as a part of their organizational structure for publicizing their technologies mostly through publications. While the publications were a source of satisfaction for the researchers, such publicity rarely went beyond the confines of the institutes. Such units were later disbanded. Several research-outreach projects were also tried, within the framework of which research trials were conducted in farmers' fields. This approach gave more positive results, but only in those places where both extension workers and farmers were actively involved in the entire process. Still, the practice was no substitute for a viable extension service.

Countries like the United States of America, Canada, Australia and Denmark, which have very advanced agriculture, have always enjoyed strong extension services, first public, and now public and/or private. Their extension services may look very different from those of developing countries, but so are their farms (mostly commercial), farming operations (mostly mechanized) and the number of farmers (mostly a low percentage of country's population). None of these very developed countries has ever considered the discipline of extension as inferior to other agricultural disciplines at the time of resource allocation.

Major donors like the World Bank have observed an almost constant decline in resource allocation to agriculture sector during the past decade, but lately the trend has visibly reversed. There are many reasons for this, but the major one is the resolve of rich countries to fight hunger and poverty in less-developed countries, as these two menaces have led to a variety of serious problems with far-reaching effects. The eradication of extreme poverty and hunger, promotion of gender equity and the empowerment of women, combating HIV/AIDS, malaria and other diseases, and ensuring environmental sustainability, are among the declared United Nations' Millennium Development Goals, which are closely related to the extension function. In addition, global emphasis continues on the need for sustainable rural and agricultural development. These facts have not only renewed interest in the potential power of extension, but have also triggered a worldwide movement for reforming and modernizing the traditional extension systems to enable them to play the anticipated role successfully. The new extension services have to be knowledgeable, well-equipped in terms of resources, armed with a broad technical mandate beyond technology

Coordination among research, extension, education and farmers

The Extension, Education and Communication Service and the Research and Technology Development Service of FAO have jointly conducted country case studies on Agricultural Knowledge and Information Systems for Rural Development (AKIS/RD) from 2001 to 2004. The countries covered include Cameroon, Chile, Cuba, Egypt, Lithuania, Malaysia, Morocco, Pakistan, Trinidad and Tobago, and Uganda. The studies were analyzed leading to the generation of the following guidelines on the promotion of coordination among the institutions of agricultural research, agricultural and rural extension, and farmers.

Policy environment

- Formulate a national AKIS policy, plan or formal agreement.
- Direct AKIS policy toward public goods issues.
- Assess the economic efficiency of the agriculture sector, given AKIS.

Institutional structure for supporting innovation

- Establish AKIS/RD units.
- Institute central and branch supervision of AKIS activities.
- Take initiatives to build the capacity of each AKIS institution.
- Decentralize decision-making to lower levels of government and relevant local organizations, while training people at these levels in the processes of management and administration.
- Augment the functional performance of AKIS entities.
- Institute systems for monitoring, evaluation and impact assessment.
- Ensure coordination and joint planning among AKIS institutions.

Conditions for expressing demand for innovation

- Promote demand-driven orientation in relevant public programmes.
- Invest in agricultural market development.
- Improve the availability of and access to agricultural inputs.
- Invest in rural physical infrastructure.
- Mandate joint planning among AKIS agencies.
- Invest in the education and training of agricultural producers to enable them to demand services effectively.
- Promote gender equality and vulnerable groups' access to services.

Partnerships and networks

- Design structures for effective institutional cooperation.
- Promote public-private partnerships (and institutional pluralism).
- Insist on programme participation by agricultural producers and rural producer organizations.
- Promote effective use of traditional communication technologies.
- Invest in computer/Internet and other modern information technologies.

Financing systems for innovation

- Ensure adequate funding for AKIS/RD.
- Promote repartition of costs.
- Explore various types of investments to develop stakeholder capacities.

FAO. 2005. *Enhancing coordination among AKIS/RD actors: An analytical and comparative review of country studies on agricultural knowledge and information systems for rural development (AKIS/RD)*, by W.M. Rivera, M.K. Qamar and H.K. Mwandemere. Rome.

transfer, and truly efficient irrespective of its modality, i.e. whether singular or pluralistic, public or private, or a mixture of the two. Any investment made in reforming and modernizing extension is bound to return to the country in both the short and long term. On the other hand, the absence of an effective extension service in any developing country

at this crucial stage of global development will in all probability leave its farmers significantly uneducated, its agriculture sector underdeveloped and its rural life impoverished.

FORMAL INTRODUCTION OF EXTENSION IN DEVELOPING COUNTRIES

Although the function of extension has been informally performed for centuries in developing countries, agricultural extension (due to application of the function to agriculture) was formally introduced during 1950s by visiting American professors and technical experts in agricultural and rural sciences, and national government officials and university faculty who received education or training in the United States of America. They were inspired by the American Cooperative Extension Service and associated Land Grant College system, which carried out agricultural research, extension and education activities in an impressively coordinated manner. The agricultural extension organizations created in developing countries were entirely meant for receiving improved technologies from agricultural research institutes to deliver them to the farmers. The delivery methods included oral advice to individual farmers or to groups of farmers on their farms or at homes, supplemented by demonstrations of applying recommended technologies in farmers' fields and their good results. The awareness and transfer of technology, and possible adoption by farmers was further facilitated by other communication channels such as printed material, radio and, later, television and video. In most countries, the extension agents were also involved in the distribution of agricultural inputs, notably chemical fertilizers, pesticides, insecticides and herbicides.

EXTENSION FUNCTION VS. EXTENSION ORGANIZATION

Like many other important functions in daily life such as education and health, the extension function is also important for the welfare of farmers, no matter who performs it as long as it is done satisfactorily. The players in the extension function, besides government extension departments could be private extension service companies, private extension advisors, NGOs, universities, farmers' associations, research institutes, and possibly others as we have seen in recent years. Extension organization, on the other hand, means how the agency or department which is responsible for extension function organizes itself for performing this task. This is what differentiates the term "extension function" from "extension organization". However, when any public agricultural extension organization is criticized for its poor performance, it is commonly taken for granted that this criticism is aimed at the extension function, which is not correct at all. Logically, the extension function should not be blamed for the poor performance of the extension organization. If the public extension services are not delivering satisfactorily, they should be reformed or strengthened or abolished altogether, and alternate delivery mechanisms be sought, but under no circumstances should the increasing need and importance of the extension function – especially with enhanced global emphasis on eliminating hunger and poverty – be underestimated or compromised. If the extension function also becomes a victim during disbanding of an unsatisfactory extension

organization by any government as a result of financial constraints and occasionally because of some donors' pressures, the genuine question is how the millions of farmers of that particular country are going to be educated in the areas of personal, professional and village development. The policy-makers of that country should always keep this question in mind when making decisions on investment in extension.

INCREASING DIVERSITY OF EXTENSION FUNCTION PLAYERS

From the very beginning, when extension was formally introduced in developing countries, agricultural extension services were placed under the Ministry of Agriculture. Thus the performance of the extension function became the sole responsibility of the government. In many cases, as the time passed, various departments within the Ministry of Agriculture or within other ministries involved in agricultural and rural development activities were tempted to create their own extension services, using whatever staff they had in the field, however few. Thus services such as livestock extension, plant protection extension, marketing extension and horticulture extension emerged, which worked parallel to the main agricultural extension service. This trend put a very large number of government extension workers in the field, with loyalty to different technical departments, but suffering from a lack of sufficient operational funds and transport facilities, poor career opportunities, low salaries, and, above all, lack of coordination among various extension units. This arrangement demanded much time from farmers and sometimes even created confusion as a result of duplication or conflicts of technical advice. However, since such extension advice was provided to farmers free of cost, there was little accountability for the extension workers.

Another relevant development was the creation of semi-governmental autonomous authorities in many developing countries for certain agricultural commodities. For example, Jamaica created a number of such bodies called Coffee Board, Sugar Board, Tea Board, etc. Since the purpose of creating such bodies was to ensure adequate and proper production and export of these precious cash crops for earning foreign exchange, these powerful and rich organizations created their own mini-extension services by attracting good extension workers and subject-matter specialists from the government extension service, offering contracts with higher salaries, benefits and vehicles as compared to those available in the government service. No doubt, this practice provided the commodity production and export organizations with the highest quality extension experts, but at the same time it deprived the public extension services of these talented and experienced staff. Also, as these extension experts focussed mainly on commercial farmers, the small farmers were deprived of sound extension advice.

While government agencies were engaged in the race for increasing the numbers of their respective field workers, the salesmen of private companies dealing in chemical fertilizers, pesticides, insecticides and herbicides also started delivering extension advice to farmers. Their main purpose was to promote the sales of their products, and there was rarely proper consultation or coordination with the government departments, if there was any at all. Since the 1960s, many of these commercial firms have run and maintained their own mini-extension services.

In recent years, the increasing economic pressures on the governments combined with criticism of the gradually declining performance of public extension services have led to the emergence of private and civil society actors, who are interested in delivering extension services to farmers either cost-free or in return for a fee. However, this development of pluralistic patterns of extension delivery is in a relatively experimental phase, and several positive and negative aspects of the modality have come to light in a number of countries. A process of making useful adjustments in light of the lessons learned so far has already started and is bound to continue for many years to come. In some developed countries, the public extension services have been fully or partially privatized.

CHALLENGES TO TRADITIONAL EXTENSION PRACTICES

Worldwide emphasis on sustainable development, including in rural improvement and agricultural advancement, as well as developments such as globalization, market liberalization, decentralization, privatization and democratization, are creating new learning requirements for both subsistence and commercial farmers in developing countries. These requirements, especially when seen within the context of the revolution in information technology, are challenging decades'-old mandates and operations within traditional extension systems.

The time is indeed ripe for policy-makers in developing countries to challenge and revisit the discipline of extension within a global context, so as to let the extension function be performed with excellence in line with the global challenges to their economies and especially to their agriculture sector. Cosmetic changes to the existing national extension systems will be of little benefit, as will be the repeated training of staff in stereotyped agricultural subjects. Just as well beat a dead horse.

II. Global developments necessitating reforms in extension

Agricultural extension organizations, like most other disciplines and institutions, are not immune to various developments taking place around them. Some major developments and their influence on various aspects of extension are mentioned in this section.

GLOBALIZATION AND MARKET LIBERALIZATION

Globalization aims at creating more interaction and linkages among countries in trade, information flow and finance, encouraging open competition through removal of trade and other national safeguard barriers, supposedly under fair and relatively equal conditions for producers of goods and services no matter which country they live in, thus making it possible to mutually benefit from international contacts and opportunities. The controversy, however, lies in the uncertainty of fair and equal conditions for all producers, irrespective of the advantages, disadvantages, potentials and risks of globalization. Under present conditions, the developing countries cannot compete with the developed nations in the international market in terms of production, quality and exports because of a number of factors such as lack of resources, lack of technology, weak rural institutions, poor infrastructure and communication facilities, etc. The main message transmitted in the by-now familiar demonstrations at economic summits is that globalization will make rich countries richer and poor countries poorer. The WTO conference held in September 2003 in Cancun, Mexico saw serious disagreement between rich and poor countries on agricultural issues, and the event ended in miserable failure. Apart from politics, the phenomenon of globalization will certainly bring both risks and opportunities to the farming communities of less-developed countries. The communities, therefore, must be educated and prepared to modify their agricultural operations within the context of globalization, a responsibility which, by and large, the national agricultural extension systems will have to bear, and they must prepare themselves in time to meet the challenge.

Market liberalization is an integral part of globalization. This calls for removal of trade barriers, tariffs and other regulatory measures that are usually put into force by countries to protect their own industries and products, and to discourage the inflow of articles produced elsewhere in the world. Liberalization asks for the opening of markets, called deregulation, so that goods may move freely between countries. It also advocates the removal of artificial price controls and of public support to the farming sector in the form of farm subsidies so that the market can realistically determine the price of various commodities and products on the basis of their demand, supply and quality, and the consumers can then freely make a choice concerning what is best for them. However, at present, heavy government subsidies in rich countries give a huge advantage to their farmers over the small and poor competitor

Extension in a small island country

The Extension, Education and Communication Service of FAO conducted a study in Samoa to find out agricultural extension and training needs of farmers in small islands. Following are the conclusions and recommendations:

- Farmers are facing problems of pests and diseases and a lack of planting materials, especially for taro. However, advisory officers have not received sufficient agricultural training to enable them to solve the problems. The recommendation, therefore, is that the Ministry of Agriculture, Forests, Fisheries and Meteorology review its training programme for advisory officers, in order to provide the necessary skills needed.
- The Participatory Rural Appraisal (PRA) is the main approach the Ministry's advisory service has been using for extension purposes. Farmers seem to be very satisfied with this method. The recommendation is that the advisory officers be given training in cultural protocols (to ensure village support in PRA exercises), communication skills (to facilitate discussions during PRAs), and analytical skills (to conduct in-depth analysis of farmers' problems for identifying long-term solutions).
- The Ministry's research units need to reduce the high mortality rate of crop resources for trials and on-farm demonstrations in the interest of using limited resources wisely.
- The gender equity is to be addressed as the number of women farmers is on increase. The recommendation is to provide higher education to women in agricultural subjects, and encourage them to accept the positions of advisory officers.

FAO.2005. *Agricultural extension and training needs of farmers in the small island countries: a case study from Samoa*, by M.K. Qamar and S.S. Lameta. Rome.

farmers of less-developed countries, threatening their very survival. For example, small farmers in Mali who have been growing cotton for centuries as their main source of the income may be wiped out if cotton, produced at a low cost in developed countries as the result of government subsidies, continues to be dumped and sold cheaply in the Malian market. Both commercial and subsistence farmers in developing countries are bound to be affected, directly or indirectly, sooner or later, by market liberalization, and national agricultural extension services should be knowledgeable enough to educate the farmers in how to properly enter a liberalized market.

Millions of subsistence farmers produce barely enough for their own consumption; in a very favourable cropping season, they may produce a bit of surplus to be sold at market. However, today there is an all-out force aimed at commercialization of farming even on a small scale. There are both ethical and technical questions, about whether it makes sense to let the subsistence farmers continue as they have been doing for generations, or to allow their operations to be transformed into agri-business, rural enterprise, rural industries or other commercial ventures, or whether very poor farmers of remote, marginal areas should be encouraged to migrate elsewhere because investing in development for them is not cost-effective. These questions are valid in light of the evidence that rural poverty has persisted, if not worsened, and in many countries; and that rural young people, unlike their parents, are less inclined to stay in villages to continue farming. Appropriate agricultural policies and land consolidation laws will be required if privately owned and cultivated small units of land are to be combined or merged to create larger, commercially viable plots. The agricultural extension services will have to come up with the strategies that

could help subsistence farmers in organizing themselves for commercializing their operations profitably, without losing the pride of land ownership.

A global debate is raging on the issue of producing and consuming genetically modified organisms (GMOs). There are various positions which represent different points of view. On the one hand, all possible means should be used to feed increasing populations, but on the other hand, biodiversity must be protected, and people must be alerted about the health risks to humans and livestock potentially resulting from genetically modified diets. In this debate, the most ignorant are the farmers in developing countries who are growing food for millions of people. No agricultural extension services so far have felt the need to educate farmers about this controversial but important subject. Since biotechnology is not yet widespread in developing countries, there is no urgency to start any special extension programmes. But this is precisely the time when necessary steps should be taken for preparing training courses and teaching materials both for extension workers and farmers.

PRIVATIZATION

Many services that were managed in the past by governments are now being managed and delivered by the private sector, especially in developed countries. Many developing countries are following the suit. The underlying reason is dwindling budgets of public institutions, which makes them relatively inefficient and less productive, causing not only financial loss to the government but also creating discontent among people. The private sector, on the other hand, has generally more resources, innovative ideas, and a motive for profit and is thus keen to offer efficient and better services to its clientele.

In recent years, several multilateral and bilateral donors have encouraged the privatization of national extension services. Many arguments are put forth in favour of privatization, e.g. public extension systems have failed or are at best unsatisfactory; since farmers profit from extension advices and the government budgets for public services are decreasing, the cost of delivering advice should be recovered by charging a fee from the farmers; the private sector is actively involved in selling farm inputs and machinery, thus why should it not handle the task of advising farmers on agricultural matters; healthy competition among service providers will lead to better quality and lower costs for services; it is prudent to consider financing and delivery of extension services as separate functions, to be performed by two different sectors, i.e. public and private. The trend to privatize extension services will certainly shake the traditionally friendly and informal relationship between government extension staff and the subsistence farmers in developing countries, because until now the farmers have never been asked to pay for extension advice. Apart from the question of whether total, partial or no privatization of extension is needed in developing countries, the national extension services and their clientele should be well versed in the pros and cons of this major issue.

Several developed countries have fully or partially privatized their agricultural extension services in a variety of ways. Terms like *outsourcing*, *cost-recovery*, and *contracting out* are related to the drive for privatization. Costa Rica has a unique system under which the government provides farmers with extension vouchers which can be used for getting

extension advice from private specialists. In England, the public extension service has evolved over time into a private consulting practice. The positive result is enhanced efficiency of staff, and the negative effect is the deprivation of small farmers of extension services as the result of their inability or unwillingness to pay. It is also said that the government has taken over some previously privatized advisory functions because of dissatisfaction with the private sector. In Holland, about 60% of the extension budget comes from farmers, while the remaining 40% is provided by the government. The benefits include increased efficiency, improved quality, client-orientation, job satisfaction for staff, and expanded marketing opportunities for farmers. The problems faced include loss of government authority, the government's inability to keep financial promises, and weaker communication with the stakeholders because of creation of competition among them. In Albania, the private sector entrepreneurial initiatives to create a long-term relationship with farmers have proved to be successful. The extension services in Nicaragua are both decentralized and semi-private. Bulgaria privatized a number of state farms to be used as demonstration farms, with an objective of establishing private extension service. Since the experiment was not successful, the government decided to establish a National Agricultural Advisory Service (NAAS) with external financial assistance. The NAAS is now being reviewed, with FAO assistance, for possible reform in order to meet new learning needs of farmers, as the country is scheduled to join the European Union in 2007 or soon thereafter. Estonia has both a public extension advisory service for poor farmers and a private service for better-off farmers. Uganda is experimenting with the privatization of extension through the creation of a pool of private extension specialists out of its existing public extension service; registered farmers' associations could call upon this pool through bidding for providing services related to selected enterprises, and pay for the services from the funds given to them by the donors through decentralized government units. It is indeed a bold experiment, but the sustainability of this arrangement remains to be seen after the donors' funding runs out.

In Israel, the efforts to even semi-privatize national extension services have not met with success. The government is still responsible for providing extension advice, but encourages privatization through the standing practice of growers to contribute portion of their income to research and development including extension, public and private partnership in financing and operating units within the extension service, payment for services by commodity production and marketing boards beyond a basic extension package, the provision of more intensive extension activities at the request of needy growers, special agreements with commodity farmers' organizations, extension staff working on their day off in exchange for direct payment from farmers, provision of equipment like mobile phones to extension advisers by growers associations, and direct payment by farmers for participation in training activities.

The advocates of privatization of extension services believe that farmers should pay for the extension advice. However, there is genuine fear that the zeal for privatization would deprive small farmers from benefiting from the services. The small farmers either do not believe that the extension advice is worth paying for, or they simply cannot afford to pay. The common wisdom would dictate that in developing countries, commercial farmers and large cooperatives should pay for extension advice, while the government should continue providing free-of-charge extension services to small producers. Measures are also needed

to protect the farmers from exploitation by the private sector.

PLURALISM

The spread of privatization has shifted many sectors of public services from the government to private companies. Government monopoly is not the most favoured option in the developed countries, especially in matters of development when competent non-public institutions are present in the country. The modality of using more than one organization, whether public or non-public, for delivering extension services to farming communities, is gaining popularity. The obvious rationale is the pooling of all available resources in order to alleviate pressure from low budgets and staff in the ministries of agriculture, as well as to let the farmers benefit from a variety of sources. Many developing countries are already practising pluralism in extension. In Zimbabwe, many NGOs, private companies and semi-autonomous bodies are to be found engaged in delivering extension advice to farmers. Bangladesh's national policy on agricultural extension recognizes, for the first time, the need for partnerships with NGOs and the private sector under a decentralized extension system. In Honduras, where extension services are being privatized and small farmers are unable to pay, 70 NGOs reach about 50,000 farmers living mostly in remote areas. In Indonesia, some projects have not only encouraged NGOs and the private sector, but also agricultural research institutes, agricultural universities and farmers' associations, to participate in the delivery of extension services.

The main challenge in installing a proper pluralistic agricultural extension mechanism is the effective coordination among various agencies, the absence of which could lead to conflicting technical recommendations and creating confusion among the farmers. The governments should take the responsibility for coordination, technical supervision and quality control.

DECENTRALIZATION AND DEVOLUTION

Decentralization and devolution have been adopted in many countries and the trend continues. The main rationale for the move is that decentralized administration shifts decision-making authority to lower administrative and political level units, which – being physically close to people – are supposedly in a better position to plan and implement development programmes with the active involvement of participants. The concept is sound, but its implementation in developing countries has so far not been smooth for various reasons. For example, some central governments are reluctant to relinquish their control over decision-making, especially in financial matters; there is weak capacity of the decentralized units in running government affairs; and the unwarranted interference of local politicians in technical matters in which they are not competent hinders implementation.

Decentralization has, in many instances, placed agricultural extension responsibility in the hands of the ministry of local government. Although decentralization is good in principle, the initial stage shows quite a bit of setback for extension. In case of Philippines, for example, the interference of municipality-level politicians has compromised the effectiveness of extension

Extension needs of farmers with physical disabilities

A study was conducted by the Extension, Education and Communication Service of FAO in the Islamic Republic of Iran in order to identify the extension and training needs of farmers with physical disabilities (FPD). One difficulty faced in conducting the study was to locate the farmers with physical disabilities because they are not concentrated in any one village, but scattered in a large number of villages, some of them at very long distance from one another. Some of the key conclusions drawn and recommendations made were as follows:

- There are no special extension and agricultural training programmes meant for the FPDs. The recommendation is that the government consider the FPDs as a special client target group for extension purposes.
- The FPDs have gained agricultural skills and experience, directly or indirectly, from their relatives, friends and neighbours.
- Some FPDs suggested that farming inputs be delivered and extension training be conducted at their farms or homes.
- The FPDs pointed out that training only will not be enough unless accompanied by farming tools, equipment and machinery especially meant for the people with physical disabilities.
- The relatives of the FPDs expressed that they should be provided with financial support and credit to enable them to provide necessary training to their relatives with physical disabilities.
- The FPDs did not want the extension workers to treat them as a special group but just like other normal farmers.
- Active farmers with physical disabilities have a strong tendency to emphasize their motivation, abilities and capabilities, rather than their disabilities, when talking to extension workers.
- Difficulties in moving, loading and transporting inputs and products were the most important effects of the farmers' disabilities. In spite of this, the FPDs were generally engaged in field activities involving moving, loading and transporting. The recommendation is that the extension workers carry out surveys to select the farm activities that best fit the physical capabilities of FPDs, and should then assist those farmers in engaging in such appropriate farm practices.
- Fish farming, hatching, apiculture, sericulture, floriculture and poultry production are among the "light" farming activities that are extensively practised by able-bodied farmers, but the FPDs are less frequently engaged in them. The recommendation is that the extension workers make special efforts for the FPDs to engage in such activities.

FAO.2003. *Addressing extension and training needs of farmers with physical disabilities: A case study of the Islamic Republic of Iran*, by M.K. Qamar and I. Shahbazi. Rome.

programmes to the extent that persons without diplomas in agriculture have been recruited against agricultural extension vacancies. Also, the career development opportunities of extension staff have been adversely affected. The latest thinking is that since the municipalities are not viable economic units for delivering extension services, the extension responsibilities should be moved back to the provincial level. In Indonesia, extension services have been marginalized because most district governments have certain priorities, irrespective of national policy, which could generate quick revenues, and agricultural extension which, unlike estate crops or livestock, generally gives a long-term return, is not

considered as a priority. United Republic of Tanzania's decentralized extension service at field level suffers from lack of operational budget. In Kosovo, where the government comprises UNMIK (United Nations Interim Administration in Kosovo) expatriates, the decentralized government units do not want to do much with the central government. In Uganda, some district authorities have preferred to spend the extension budget on constructing feeder roads, leaving extension staff without salary for several months.

One reason for this "institutional chaos", which applies to many countries passing through decentralization and devolution, is that the central government did not adequately prepare itself or the local governments in advance before embarking on decentralization. Decentralization is truly a double-edged sword, and if not handled properly, could cause more harm than good. As more and more countries come under decentralization, their extension services are going to face the problems of marginalization and lack of professional identity unless they are prepared well in advance for this critical administrative, technical and physical transition.

CLIENT PARTICIPATION IN DECISION-MAKING

Civil society advocates ever more strongly the reasons why democracy, participatory decision-making, transparency in government affairs and good governance are necessary for eradication of poverty and hunger, uprooting corruption, relatively equal distribution of benefits among various sections of society, welfare of disadvantaged and vulnerable groups, optimum utilization of human and physical resources, sustainable livelihoods, and overall human development. Even the economic aid given by bilateral donors to poor countries, in many instances, has depended on the government's records on human rights and good governance. A large number of strategies have evolved during recent years, which supposedly ensure participatory decision-making and involvement of all stakeholders in joint planning and implementation. All grassroots-level service institutions have been influenced by these conceptual thrusts.

The powerful trend towards empowering farmers through active participation in decision-making has led to various emphases in extension, such as working through farmers' groups, preparation and delivery of client-oriented messages, observance of gender sensitivity, and research-extension-farmers linkages. Certain participatory tools like *PRA* (participatory rural appraisal) and *KAP* (knowledge, attitude and practice) survey have also been developed.

Indonesia has successfully established new institutions called Agricultural Technology Assessment Institutes at provincial level, bringing together farmers, researchers and extension specialists. In Pakistan, groups of highly motivated small farmers established under FAO Special Programme on Food Security have been taking decisions in matters related to group cash savings, quality seed, fertilizer, water-management, cultural practices, farm machinery, income diversification and marketing of produce. The pilot experiment has proved to be so successful in terms of yield increases that the government has embarked upon replicating the approach in thousands of villages. In the northern region of Pakistan, FAO has introduced a demand-driven, bottom-up, gender-

A nationwide strategy

“Extension reform requires policy vision and determination, and a nationwide strategy that holds promise of implementation. Whether to decentralize, privatize, or institute contractual arrangements with the private sector (including venture capital companies, NGOs, rural producer organizations, and extension advisory service firms), or to promote end-user financing (or co-financing) of extension, these are country-specific questions that will require systematic analysis and preparation, and involve gradual change, system coordination and system oversight. Within the framework of such a policy vision, a multi-media communication strategy will also need to be designed and implemented”.

FAO.2003.*A new extension vision for food security: Challenge to change*, by W.M. Rivera and M.K. Qamar. Rome.

sensitive extension service that involves men and women villagers’ groups in preparing grassroots demand-for-services plans. In Argentina, one main factor for success of a federal programme for small- and medium-size farms is the involvement of all stakeholders in major decision-making. Similarly, Jordan’s extension service has established Close Contact Groups of farmers while United Republic of Tanzania has formed Participatory Farmer Groups of men and women farmers. In the Philippines, where extension services have been devolved, an FAO project has assisted citizens in outlining a methodology for participatory, grassroots extension programme development and in preparing an extension delivery partnership mechanism that involves stakeholders such as extension staff, farmers, NGOs, private sector, research institutes and academic institutions.

NATURAL AND MAN-MADE DISASTERS

Human miseries are unfortunately on the rise in an age of civilization and scientific progress, some man-made and some natural disasters. There are conflicts, wars, droughts, famines, storms, earthquakes and epidemics, all of which take an enormous human and physical toll and disrupt the normal course of life. There has been a steep increase in the number of countries afflicted by human-induced disaster, i.e. from an average of 5 in the 1980s to 22 in 2000, mainly because of armed conflicts. Between 30 and 40 countries were engaged in conflict at the end of the twentieth century, adversely affecting thousands of millions of people. Farmers of some countries like Afghanistan cannot farm because of the land mines in their fields. Basic farming ingredients like seed, water and soil are not readily available. Extension services have dissipated and the farmers have no source of technical advice. Infrastructure has been damaged, making the transportation and delivery of farm inputs impossible. Although food aid agencies and NGOs have been active in disaster-hit areas, food handouts work only up to a limit.

In recent years, weather-related and other natural disasters have risen from 10 to 18 incidents per year. In 1998 alone, some 32 000 persons were killed and 300 million were displaced from their homes and livelihoods. The tsunami of December 2004 killed hundreds of thousands of persons in a number of countries and wiped out or seriously damaged farming infrastructure in the coastal zones. The very strong earthquake that

mainly struck the Pakistan-administered Azad Jammu and Kashmir region in October 2005 killed over 50 000 persons, mostly small farmers of the mountainous villages, and destroyed physical infrastructure and livelihoods.

In some countries like Bangladesh and the Caribbean where huge storms hit every year, extension services are being trained to provide assistance in post-disaster situations, but it is true that agricultural extension services have yet to play a significant role in the rehabilitation of agricultural operations after the disasters. It is realized that extension services cannot face such colossal challenge by themselves, but they should work in collaboration with relevant institutions and help the rural population in growing food for survival using whatever resources are available. A comprehensive response from national agricultural extension systems is still awaited.

INFORMATION TECHNOLOGY REVOLUTION

We are in the midst of an information technology revolution which has virtually shrunk the world and has affected almost every walk of life. Information technology is indeed a tremendous power that could be harnessed by organizations for the benefit of humanity, and extension services should not hesitate to utilize this power. They can exploit this potential to strengthen their own capacities and to educate the rural populations who enjoy access to media. The extension organizations in developing countries have two major problems when it comes to having face-to-face contacts with the farmers and researchers: first, physical distances and the second, lack of transportation facilities. The new information technology could bypass these physical barriers to a great extent through the development and application of appropriate, interactive information mechanisms.

Advanced information technology is already making headway in the area of rural and agricultural development. A number of developing countries such as Lao People's Democratic Republic, Viet Nam and Mali, are experimenting with *telecentres*, which have already exhibited their benefits in several Western European countries. Virtual linkages are being established for bringing research and extension together, and one example is the VERCON (virtual extension, research and communication network) tool, which FAO has introduced in Egypt and Bhutan. Under an FAO project in the Philippines, the Internet and interactive e-mail facilities have been established at municipality level for supporting decentralized extension staff. *Expert systems* are also being developed to compensate, to some extent, for the too-rare visits of subject-matter specialists to farmers' fields. The use of cellular phones is by now a routine practice and the equipment is used for rural development projects in Bangladesh. Over 30% of extension staff in Estonia use the Internet. One can find programmes like "virtual gardens" and "virtual farms" on the Internet. The main issue is how the powers of advanced information technology can be harnessed for the benefit of both extension agents and farmers without compromising the importance of unique local factors such as indigenous communication patterns, and also without considering information technology as replacement for the extension agents, which remains a much-needed and –appreciated human element.

RURAL POVERTY, FOOD INSECURITY AND HIV/AIDS EPIDEMIC

There have been internationally renewed calls, the latest coming through the Millennium Development Goals, for eradication of rural poverty and hunger, and for support to vulnerable groups such as the rural landless, women and youth. The number of poor has gone up in recent years. Moreover, even though there is enough food produced for everyone in the world, there are still over 800 million people – almost one in seven persons – who do not have enough to eat. Hunger, poverty and vulnerability are inter-linked. While the world celebrated the new millennium, 13 million people reached the brink of starvation in the Horn of Africa, and European farmers and their livestock industry were hit by mad-cow and foot-and-mouth diseases, followed by the avian flu epidemic in some Asian countries and which has now spread to Europe. In 2005, when the G-8 leaders were pledging billions of dollars for development of Africa, a vast famine struck Niger, killing thousands of persons including many children.

According to the estimates from the UNAIDS/WHO AIDS Epidemic Update (December 2004), 37.2 million adults and 2.2 million children were living with human immunodeficiency virus (HIV) at the end of 2004; 3.1 million died that year alone from AIDS. The overwhelming majority of people with HIV (some 95% of the world total) live in the developing world. Sub-Saharan Africa is by far the worst affected region in the world by the AIDS epidemic. The region is home to just over 10% of the world's population, but has over 60% of all people living with HIV. An estimated 3.1 million adults and children became infected with HIV during the year 2004. Around 1.2 million people in Asia acquired HIV in 2004, bringing the number of people with HIV to an estimated 8.2 million. Alarming figures have been reported for other regions of the world. There are indisputable, negative effects on the workforce resulting in the loss of trained, skilled and experienced workers in all disciplines. Farm labour, plentiful in the past, is rapidly diminishing. As studies such as those carried out by FAO in Malawi, Uganda and Zambia show, the epidemic has also affected agricultural extension organizations in the sense that not only there have been deaths and long absenteeism among the staff, but the old, traditional extension approaches have also been rendered unsuitable. This is due to the fact that the labour-intensive cropping patterns have been changed as a result of the weakening physical condition of farmers and lack of farm labour and the emergence of “new farmers” comprising the elderly, widows and young children; the unsuitability of current farm tools; and the unsuitability of existing rural credit approval criteria. Extension organizations in the countries affected by HIV/AIDS, especially in sub-Saharan Africa, must create new extension strategies supported by modified farming systems and appropriate farm tools.

New anti-hunger initiatives are under way, especially since the 1996 World Food Summit in Rome, involving all the institutions that deal with rural populations. Similarly, the New Partnership for Africa's Development (NEPAD) has been launched. It would be difficult for agricultural extension services in frequent contact with rural people to remain isolated from these international efforts against rural poverty, food insecurity and the HIV/AIDS epidemic. Extension services must develop capacity and suitable extension educational strategies and tools to effectively participate in the efforts against these human miseries. FAO has produced useful materials to be used by field extension workers in educating farmers in mitigation of the spread of HIV infection.

INTEGRATED, MULTI-DISCIPLINARY, HOLISTIC AND SUSTAINABLE DEVELOPMENT

The global preference for multi-disciplinary, integrated and holistic approaches to development is now an undisputed fact. The rationale is that simultaneous, multi-sector development is more meaningful than individual sector development. More and more organizations are revising their structure in favour of this choice. The “integrated rural development approach” which was applied during 1960s in many countries is returning in a revised form, including elements of bottom-up planning, participation by stakeholders, emphasis on eradication of rural poverty, and gender-sensitive approaches. Many multilateral donors have adopted a programme approach, abandoning the old project approach. FAO has run an integrated programme in Namibia, Uganda, Zambia and Zimbabwe, with as many as six technical components including research and extension. The *sustainable livelihoods* concept also promotes holistic development. The Neuchatel Initiative Group comprising major donors interested in reforming national agricultural extension systems has been exploring the role of extension in a wider rural and agricultural development context. FAO and the World Bank have been working jointly on AKIS/RD (Agricultural Knowledge and Information Systems for Rural Development), which is aimed at increasing cooperation and joint operations between research, extension, education and farmers. FAO has conducted studies on AKIS/RD in ten countries, in various regions of the world, which were later analysed and synthesized with the objective of learning lessons and making recommendations for bringing AKIS/RD actors closer to one another.¹

There still exists a temptation among various agricultural line departments to maintain individual extension services, but as problems with this approach have been observed and well-documented, extension services are being unified in a multi-disciplinary manner in the interest of optimum utilization of resources and an efficient bureaucracy. Indeed, the farmer’s time cannot and should not be wasted through individual visits of many extension agents, each representing a different agricultural discipline. The creation or strengthening of multi-disciplinary subject-matter specialists’ teams during decentralization of extension services in a number of countries is a popular move. FAO has provided technical assistance to Uganda in the integration of agro-forestry and HIV/AIDS education in the agricultural extension programmes, thus making the extension approach multi-disciplinary. In Iran, FAO, while assisting the government in restructuring the national extension system, has recommended the placement of multi-disciplinary teams of subject-matter specialists at district level, the composition of each district team to be determined by the technical needs and priorities of the particular district. Thus the districts in coastal zones will have a fisheries specialist, and those with dominant livestock activities will have a livestock specialist. In Indonesia, both agriculture and forestry extension have been placed under a single extension service assisted by a World Bank-financed project. The same has been done in Lao People’s Democratic

1 W.M. Rivera, M.K. Qamar, H.K. Mwandemere, Enhancing coordination among AKIS/RD actors: An analytical and comparative review of country studies on agricultural knowledge and information systems for rural development, Rome, FAO, 2005. See http://www.fao.org/sd/dim_kn3/kn3_050901_en.htm to consult this publication online.

Possible extension related strategies to face the challenge of HIV/AIDS

- Formulation of a national policy on AIDS and extension
- Preparation of extension staff
 - Revision of pre-service and in-service training curricula
 - Fast-track training of extension staff
 - Revision of extension strategies and technical messages
 - Preparation of multimedia extension materials on HIV/AIDS
- Possible actions in the field
 - Institutional partnerships
 - Anti-AIDS extension campaigns
 - Preparation of rural leaders for collaboration
 - Extension-HIV/AIDS specific studies
 - Inter-country extension networks on HIV/AIDS

FAO.2003.*Facing the challenge of an HIV/AIDS epidemic: agricultural extension services in sub-Saharan Africa*, by M.K. Qamar. Rome.

Republic. In the Philippines, extension service covers both agriculture and fisheries under the Agriculture and Fisheries Modernization Act. Under a project funded by the Asian Development Bank, Viet Nam's extension services are being reformed, and one of the reform measures will include unification of the present extension services.

The promotion of sustainable development asks for the integration of certain non-agricultural but very relevant elements into extension messages. FAO has been assisting Egypt in integrating population and environment education messages into ongoing agricultural extension programmes. Similarly, Pakistan has been provided assistance in preparing extension services to play a key facilitation and participatory role in educating rural people in managing natural resources properly. FAO's integrated pest management programme (IPM) has been promoting biological control of insect pests for years, thus discouraging excessive application of chemical pesticides.

III. Framework for determining the need for extension reform (FDNER)

The modernization and reform of national agricultural extension systems is a major undertaking requiring careful analysis of the situation, comprehension of national policy on rural and agricultural development and food security, the leadership's vision of development for the country over the next 20 years or so, and finally taking bold policy decisions – some of which may have political implications, cost considerable amounts in terms of time, money and energy, and require effective monitoring of progress. It is therefore of paramount importance that the policy-makers first have a look at the existing national agricultural extension system to determine whether the system needs to be reformed or not. A quick review of various aspects of extension should be sufficient.

The following simple framework contains a set of statements for key aspects of the extension system, which are to be marked as true or false. If false is marked for most of the statements, then the extension system is a good candidate for reform and possible restructuring. The marking results will also help to make a decision about which aspects to concentrate on while reforming the system. However, it should be noted that while this framework provides a useful guide, it should not be considered as a substitute for a thorough examination and analysis of the situation involving field observations and discussions with all stakeholders.

FRAMEWORK (FDNER)

Policy and organizational structure

- The Ministry of Agriculture runs only main agricultural extension services, and none of the technical departments within the Ministry has its individual extension workers in the field. *(True/False)*
- There is an inter-disciplinary committee or unit at the national level, which is responsible for overall coordination, policy advice, and monitoring and evaluation of extension activities. *(True/False)*
- The country does have a national policy on extension. *(True/False)*
- The extension services are fully decentralized, with all key decision-making including financial aspects carried out at district or lower level. *(True/False)*

- The government policy encourages non-public institutions, NGOs, the private sector and farmers' organizations to become involved in the delivery of extension services, in addition to those delivered by the government department of extension. *(True/False)*
- The basis for staff rewards and accountability is objective, based on the performance of each extension worker. *(True/False)*
- The extension professional staff enjoys the same level of salaries, benefits, career development, opportunities of in-country and overseas studies and training, adequate operational budget and physical facilities such as proper housing, availability of transport, etc. as enjoyed by the professional staff of other disciplines, notably of researchers. *(True/False)*
- The extension staff at all levels is given frequent opportunities for receiving in-service training to update their technical knowledge and skills. *(True/False)*
- Extension staff does not feel constrained by logistic difficulties and a lack of sufficient incentives. *(True/False)*
- The pre-service academic programmes in agricultural extension that the would-be extension staff attends at the academic institutions are not just theoretical but of great practical value, and that is why new extension workers feel very confident while talking to experienced farmers. *(True/False)*
- Monitoring, evaluation and impact assessment of extension programmes are carried out on a regular basis. *(True/False)*

Financing

- The main funding source for agricultural extension services is not limited to the government and, sometimes, donor-funded projects; there are other sources of funding for extension activities. *(True/False)*

Staffing

- The technical subject-matter staff is not concentrated (60% or more) at the central and provincial level. *(True/False)*
- About 75% or more of the total staff, including field extension workers, is based at district, sub-district and lower levels. *(True/False)*
- The technical subject-matter specialists and field extension workers all combined include at least 20% female staff. *(True/False)*

Field operations

- The extension staff is mainly accountable to farmers whom they are supposed to serve, and not just to superior officers within the bureaucracy. *(True/False)*

Female extension agents making use of women community development groups

The Extension, Education and Communication Service of FAO designed a case study to assess the female extension agents' perceptions of the usefulness of the women community development group model for delivering extension messages, as compared with the traditional model of contacting individual farmers and farm women. The women community development groups were formed under the IFAD-financed Neelum and Jhelum Valley Community Development Project in the Pakistan-administered Kashmir region. The rationale for adopting this extension modality was that it minimizes the negative effects of such constraints as limited mobility and personal safety and security of female extension agents, and maximizes the convenience of client coverage, access to technical information and coordination of extension services.

Conclusions based on the views and opinions of the administrators, extension assistants and the community development group members affirmed the usefulness and desirability of the community development group model for sustainable development, although some limitations were identified.

FAO.2003. *Extension through women's community development groups: a case study of female extension assistants in Azad Jammu & Kashmir*, by K. Qamar and K. Ijaz. Rome.

- The main sources of improved agricultural technologies and recommendations are not just national agricultural research institutes and research stations; there are many other technology sources used by the extension workers. *(True/False)*
- Main methods used by the extension services are not limited to traditional method-and-result field demonstrations, farm visits, home visits, individual farmer contact, group farmers contacts, mass media, published materials, but they also use innovative extension modalities. *(True/False)*
- The extension services do not follow any single "imported" extension methodology only because it was well known or promoted by any major donor through projects (such as Training & Visit system or Farmer Field School) or because it was being practiced in other countries; the extension services use several original extension methodologies suiting different micro-climate zones of the country, and they have been developed locally based on the social, economic, geographical and agricultural conditions of each climatic zone. *(True/False)*
- The extension services have developed and apply modern information technology tools such as ITC, Internet, etc. *(True/False)*
- The preparation of periodic extension programme plans is not usually done by extension staff at central or provincial level in spite of the fact that they are the ones most aware of farmers' needs as well as of the available budget within which the extension programme is to be prepared. *(True/False)*
- These are farmers' groups at village level whom extension workers involve actively in preparing plans for agricultural extension services, which are then passed on to higher authorities for funding and eventual service delivery. *(True/False)*

- Extension workers do not pay most of their attention to male farmers, nor do they give preference to visiting big farmers, but visit women farmers on an equal basis, if the country has any. *(True/False)*
- The extension services approach is neither supply-driven nor technology-driven but is demand-driven and human-focussed. *(True/False)*
- The main mandate of extension is not only transfer of improved agricultural technologies to farmers, with some non-extension duties, but also includes non-agricultural educational messages such as environment, population, food security, HIV/AIDS, etc. *(True/False)*
- Operational funds for field extension activities are always sufficient and extension staff never complains about shortage of funds. *(True/False)*
- Transport facilities for the field extension staff are adequate to enable the staff to move from village to village to contact farmers. *(True/False)*
- The number of farmers and the geographical area to be covered by each field extension worker are not too large for one person, and farmers do not complain that the extension worker does not visit them often. *(True/False)*
- Operational linkages between extension and agricultural research and other relevant institutions such as those dealing in farm inputs, credit, marketing, etc. are indeed strong. *(True/False)*
- The extension staff has a definite say in ensuring timely supply of farm inputs to farmers, needed for adoption of extension advice based on the recommendations of researchers. *(True/False)*
- Improved agricultural technologies are always tested by extension workers for their environment-friendliness before they are recommended to farmers for possible adoption. *(True/False)*
- The extension services make use of modern information technology, as far as possible, in support of extension activities *(True/False)*

IV. Guidelines for modernizing national extension systems

CONTEXT

In recent years, the national public extension systems have been increasingly criticized for being not that effective for all the investment that has gone into maintaining organization and staff. They have been called a burden on public funds and, as such, have been targeted either for total abolishment or for drastic reforms. Certain extension services have been said to be so large that they are unable to move efficiently because of their own weight. Some of this criticism is genuine and some is not, when the financial, logistical and career development constraints under which extension workers are forced to operate are examined objectively, and when these services are compared to other disciplines such as agricultural research with far better service conditions (including an operational budget). The fact remains, however, that – as explained in an earlier chapter – modernization and reforms are needed in the existing national extension systems as a result of the many global forces that are changing socio-economic and political conditions in the world, creating new challenges and learning needs for farmers in developing countries.

If, after assessing the status of national extension system against the framework presented in the preceding chapter, it becomes clear that the existing extension system has indeed become relatively obsolete, then the guidelines presented in this chapter could help with the process of modernization. In summary, the objective of modernization is to make the national extension system demand-driven, gender sensitive, participatory, bottom-up, and a relatively lean organization, which could efficiently respond to farmers' extension and training needs emerging as a result of globalization, market liberalization, decentralization, and democratization, making use of information technology tools as far as possible.

Guideline:

Assess the existing extension organization against farmers' needs and determine whether to strengthen or restructure it

All organizations are built and filled with human resources to serve specific purpose within the context of a policy and mission. Public institutions are funded with the public funds and as such are supposed to serve the public. In case of agricultural extension, the organization is meant for serving the extension, education and training needs of men and women farmers. If it is established that the organization is not delivering effectively and efficiently what it was built to deliver, then it should be reviewed. A quick way will be to assess it on the basis of extension and training needs of the farming communities.

Key actions

- Assessment of extension and training needs of farmers:
 - Preparation of a survey tool, such as detailed structured questionnaire
 - Preparing data-collectors through brief training
 - Selection of survey sample areas
 - Selection of men and women farmer categories sample comprising subsistence, commercial, special interest, landless, etc.
 - Survey for data collection on farmers' responses to the questions through individual and/or group interviews
 - Analysis of data, identification of extension and training needs of different categories of farmers, and their prioritization in light of government policies and goals of rural and agricultural development

- Keeping in view the prioritized extension and training needs of farmers, an assessment of the following with the objective of identifying specific areas in the existing arrangements which need to be revised, strengthened or restructured for meeting the farmers' needs satisfactorily:
 - Existing organizational structure
 - Operational linkages with relevant institutions
 - Present mission and technical mandate (whether too narrow or broad enough)
 - Human resources (total number, number of female staff vs. male staff, specializations, qualifications, experience and location of professional and general services staff)
 - Physical facilities (such as offices, equipment, stationery, audio-visual aids, communication facilities, transport, etc.)
 - Operational budget (realistically adequate or not)
 - The presence or absence of competent or relatively competent non-public institutions including NGOs, farmers' associations, rural community organizations and private companies with adequate staff, interested in delivering extension services under contract with the government

- Keeping in view the gaps identified as a result of the assessment of the above components, as well as the results of farmers' extension needs survey, make a decision whether it will be more cost- and result-effective:

- to continue the public extension organization as it is;
 - or to modify it as necessitated by the field survey results;
 - or to create a mixture of the existing organization and non-public institutions
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- Based on the decision on the preceding point, preparation of an action plan, financing and schedule for overall organizational modification, or strengthening or restructuring of the specific organizational components including revision of terms of reference, with participation of the key staff. If there is evident gap between the technical specialists present in the existing organization and the technical specializations needed on the basis of the farmers' needs identified, assuming that adequate funding is available, then "outsourcing" option, i.e. contracting out relevant extension work to the non-public sector, should be considered rather than hiring new technical staff. This strategy will save time, money and effort.

 - Implementation of the plan.

Guideline:

Decentralize extension but not before capacity-building of the staff and orientation of relevant elected officials

While decentralization is a step in the right direction, it has proved, at least so far, to be disastrous for agricultural extension in several countries. The issue of the temptation of each autonomous district or municipality to go in its own direction without any regard for national policy and priorities is serious, but what has damaged extension most is the unwarranted influence and interference of local politicians and the mentality of local decision-makers and legislators, who cannot appreciate the importance of extension in rural and agricultural development. This has resulted in the diversion of extension budget to other activities, assigning of extension staff to non-extension tasks, use of its few beaten-down equipment and vehicles for personal purposes, and hiring of non-agriculture graduates for agricultural extension positions.

As the local decision-makers mostly depend on central government for their financial needs, their preference is ruled by a strong temptation to earn revenue in shortest possible time in order to reduce this dependency. Agricultural extension, being educational in nature, is understandably a slow process as it aims at changing human behaviour and generally does not show quick and tangible benefits. The local decision-makers, who are elected for two to three years term, prefer to select activities like livestock and estate crops, which give sizable, tangible and relatively quick returns, or to build roads and shopping centres, which could win voters' appreciation and guarantee votes for the next election. This tendency of local decision-makers, most of whom have limited education, needs to be changed through their orientation to national policy and priorities, proper education, sensitization and orientation to the importance and eventual benefits of extension. Unless this important group is "converted", agricultural extension will remain marginalized, or might altogether disappear, under decentralized administration.

The countries like Nepal and Pakistan, which have recently embarked upon decentralization/devolution, can make the process smooth by taking capacity-building measures for decentralized units, and can also draw other lessons from the experiences of countries like Chile, Colombia, Uganda, Philippines, Indonesia, United Republic of Tanzania and Ghana where decentralization came into effect many years ago. This will help in avoiding the pitfalls of decentralization experienced by the "senior" countries.

Key actions

- Prepare extension staff in advance of the decentralization through the following measures:
 - Provide the staff with revised terms of reference
 - Explain to the staff the new organizational and administrative arrangements, including topics such as relationship with the local government officials and the Ministry of Agriculture, relationship with other decentralized units, budget allocation, any major effects on staff employment conditions during transition to decentralization, physical relocation in new offices at district or lower levels, institutional linkages at decentralized level, etc.

- Provide training in the following technical subjects: philosophy of decentralization; participatory extension approach; demand-driven extension; grassroots, bottom-up programme planning; organization of men and women farmers' groups; integration of village extension plans into district development plans; participatory socio-economic impact assessment of extension activities.
- Either include a module on extension in the existing training programme for the elected officials of the local government, or organize special orientation sessions on extension. The orientation should focus on the importance of extension in bringing positive behavioural change among farmers for sustainable rural and agricultural development, even though it takes longer time than short-term investments into cash crops which give quick returns. Other topics could include importance of recruiting well qualified candidates for extension positions, terms of reference of the extension staff which show that they are not responsible for non-extension tasks, transport facilities for extension staff to perform satisfactorily, the importance of the emphasis of extension workers on small farmers as opposed to favouring big farmers, importance of gender consideration in provision of extension services, respect for decisions made by technical subject-matter specialists, avoiding shifting of extension budget to non-extension activities, non-politicization of technical matters, and importance of career development opportunities for the extension staff.
- Consider decentralizing agricultural research at the same time when agricultural extension is being decentralized, because it has been observed that the institutional linkage problems were more prominent in those countries where only extension was decentralized and research was left centralized.
- If there has been no formal decentralization, but the bulk of technical subject-matter specialists and the extension staff are based at national and provincial levels, then exercise "de-concentration" and move bulk of the staff to district and lower levels so that the staff, being physically close to the farmers, could plan and implement the extension activities in collaboration with the farmers. The re-location of the subject-matter specialists should be done in line with the technical needs of respective districts. For example, if a district lies next to sea or river then a fishery expert will be needed, and if the livestock activity dominates in a district then a livestock specialist should be posted.

Guideline:

Broaden the technical mandate of extension to aim at broader development of rural human resources

Extension is basically non-formal education that targets rural adults outside the formal school system with the aim of helping them improve the quality of their lives by gaining useful knowledge and skills. Agricultural extension focuses on the non-formal education of rural adults, in particular farmers, in improved agricultural know-how and skills for increasing farm production, which is meant to result in enhanced income for farmers, leading to improvement in their lives. Sustainable rural and agricultural development, however, goes far beyond improved agricultural technology to enhance production, because it involves not only crops, livestock and fishery but also the protection of environment, management of natural resources, maintenance of appropriate population growth rate, and above all, development of rural human resources.

No other ministry in most developing countries enjoys the presence of such a large number of workers in the field, i.e. extension workers, as does the Ministry of Agriculture. However, the present technical mandate of this precious field staff is extremely narrow, limited to the transfer of improved agricultural technology to farmers. As improved technologies are not generated by agricultural research institutes so frequently that the extension workers can pass on something new to farmers on a daily or weekly basis, this narrow mandate keeps this valuable stock of field workers underemployed. It is also true that no government workers come in contact with the villagers and farmers as often as do the extension workers. Thus, the presence of this field work force provides an excellent opportunity for non-formally educating the rural residents in the knowledge and skills which could promote the concept and practices of sustainable rural and agricultural development. This, however, will require broadening of the technical mandate of extension staff and training of the staff in the concepts and technical components of sustainable rural and agricultural development. It may also require certain changes in the way various technical departments work for developing rural areas.

Key actions

- Immediate preparation of the existing extension staff for non-formal education of farmers in the concept and practices of sustainable rural and agricultural development through provision of in-service training. The following actions will be needed:
 - Preparation of short-term training modules and materials on the following topics: concept of sustainable rural and agricultural development; interrelationship among environment, population and agricultural production; wise management of natural resources; the impact of any major epidemic, such as HIV/AIDS, on farmers and farming practices and how to mitigate it; how to farm under market liberalization conditions; problem-solving and decision-making; managing farm as business; farmers' group dynamics for lobbying; rural leadership for development; participatory decision-making; gender sensitivity in the planning and delivery of extension services; rural youth development for healthy future; self-help initiative and use of revolving fund for development activities; basics of information

technology; food security and how to ensure it throughout the year; off-farm income generation activities during slack period amidst cropping seasons; socio-economic impact of extension activities; grassroots, bottom-up planning of extension programmes; post-disaster rehabilitation of agriculture; rural poverty; food security.

- Preparation of a training plan for provision of in-service training to extension workers, based on the prepared training modules and materials, on as many topics as practically possible, and implementation of the plan.
- Broadening of teaching programme at agricultural colleges and universities in agricultural extension through revision of curricula, books, materials, and teaching methods.
- Short-term training of men and women farmers by the extension services in the subjects of problem-solving, decision-making, management, accounting, group dynamics, leadership, participation, gender sensitivity, rural youth development, good governance, citizenship, initiative and self help, nutrition, programme planning, monitoring and evaluation, information technology, importance of education for children especially for girls, networking with other village organizations and farmer associations, etc.
- Establishment of operational linkages between the Ministry of Agriculture and those ministries and line departments, which are responsible for the technical components, which were never before handled by the extension workers, such as population, environment, HIV/AIDS, with the objective of coordinating the field work for the benefit of farmers.
- Consider changing the name of agricultural extension to agricultural and rural extension, or extension for rural and agricultural development

Guideline:

Formulate national policy on extension in order to ensure political and financial commitment

So far, only a few countries, like Bangladesh, Nepal and Philippines, have formulated a national extension policy. The existence of policy is of great importance because it ensures political commitment, which ascertains financial allocation. The dismally low salaries and operational budgets, and a lack of attractive career development path have been the fate of extension profession for decades affecting the performance of otherwise very experienced and committed professionals. The situation for extension is particularly bleak where decentralization or devolution has occurred. Appropriate policy is indeed needed for protection of extension from immediate negative effects of decentralization to allow it to function normally. It is high time to strengthen the place and role of extension for national development through formulation of extension policy within the framework of broader national agricultural and rural development policies.

The formulation of extension policy should be a collaborative effort, involving all stakeholders, and should take into consideration not only technical issues but also professional development concerns with an aim to provide motivation and morale to extension workers. It should also include the operational linkages and partnerships between extension and other relevant service institutions such as related to research, marketing, environment, commodities, farm inputs, rural credit, agricultural education and training, farmer associations, and information technology.

Key actions

- Organization of a meeting of key stakeholders, and distribution of copies of the national policy on rural and agricultural development. The meeting should be gender-sensitive and the participants should be drawn both from the centre and provinces, and from public and non-public institutions, including small and commercial farmers' representatives. The agenda of the meeting should be:
 - Discussion on participatory drafting of an extension policy within the context of the national policy on rural and agricultural development
 - Formation of a small committee to draft the extension policy by a certain date
- Circulation of the draft policy document, when ready, among the participants of the first meeting for review and comments
- Organization of another meeting of the stakeholders for discussion of the draft extension policy and feedback
- Finalization of the policy document by the policy draft committee members in light of the feedback and comments received
- Approval of the extension policy through necessary government procedure
- Printing of the approved extension policy document

- Distribution of the extension policy document among the relevant public and non-public institutions related to extension work including the academic institutions where extension is taught as a subject, and representatives of farmers and other stakeholders

Guideline:

Give extension profession a long overdue status similar to other agricultural disciplines

For more than a century, agricultural extension has played a vital role in bringing about meaningful agricultural and rural development in countries like the United States of America, Australia, Japan, and the countries of Western Europe. Unfortunately, even though most extension organizations in the developing countries were established over half century ago, the profession of extension has never received the proper status it deserves, that is, in comparison to other agricultural professions.

There should be no doubt that agricultural extension is a tough and demanding profession, both physically and intellectually, yet even today, extension workers in most developing countries suffer from low salaries, meagre benefits, and negligible opportunities for development of their professional career. A look at any major project related to research and extension, such as those financed by major donors like the World Bank, will show that most of the overseas training opportunities are grabbed by the researchers or other agricultural specialists, leaving very few, if any, for the extension staff. No surprise that few young men and women are keen to make extension their career profession after graduating from high school. Suitable candidates will never be attracted to this profession until its service conditions are brought in line with other agricultural disciplines, and the present extension organizations are given adequate operational budget, career development opportunities, recognition, and mobility means, something essential for proper field work. Without this long overdue reform, agricultural extension in developing countries will remain a second-class profession, in spite of its demonstrated importance in bringing about rural and agricultural development in highly developed countries.

The importance of extension in bringing about sustainable development and livelihoods is being recognized all over again as the fight against hunger and poverty expands worldwide. Most of the world's poor and hungry live in rural areas. The extension workers, being relatively frequent visitors to the rural areas, if provided with appropriate service conditions, could constitute a formidable force in combating against the menaces of hunger, poverty, epidemics, and the adverse conditions resulting from natural as well as man-made disasters. However, little action has been taken so far towards improving its working conditions.

Key actions

- Review of the conditions of agricultural extension service in comparison to other agricultural services, and policy action to rectify the situation in case any serious gaps found affecting morale of the employees.
- Meaningful involvement of key extension staff from the very beginning of any major rural and agricultural development programme of the government, such as on food security, sustainable livelihoods, desertification, alleviation of rural poverty, etc.

- Allocation of specific overseas and in-country training opportunities, scholarships for degree-seeking academic programmes and study-tours for extension discipline, and careful monitoring to ensure that they are indeed availed by the extension staff and not taken away by other disciplines.
- Frequent public recognition of extension professionals for their achievements
- A fool-proof mechanism in place to ensure that the few vehicles meant for extension field work are not taken away by non-extension government officials or politicians for personal use
- Appointment of experienced senior extension officials on policy level, decision-making positions related to rural and agricultural development, such as head of any relevant institution

Guideline:

Bring pre-service education in agricultural extension in line with the modernizing of the national extension system

It is a well-known fact that higher education systems in most developing countries need substantial improvement. This is particularly true for the academic programmes in agricultural extension. The pre-service education in agricultural extension at undergraduate level is no more than lip service both in terms of time and content. The curricula are outdated, audio-visual aids are rarely used, suitable educational methodologies are unknown, and above all, the students of extension are given heavy doses of theory, without any exposure to real-life extension work involving rural conditions, farms and farmers. The situation at graduate level is hardly satisfactory. First of all, there are not many students who would like to select agricultural extension as their major in view of partly tough nature of extension work and partly unsatisfactory service conditions and professional development opportunities in the extension service. There is a psychological barrier against accepting the fact that extension is not inferior to any other agricultural discipline by any means and its role is as important in nation-building programmes as of other disciplines. The poor academic programmes in extension churn out new graduates who have no technical competence and professional confidence while facing farmers, some of them for the very first time in their life. Farmers, embarrassingly for the young recruits in extension, happen to know far more of the subject these new employees are supposed to advise on. This is true that not many extension workers have aptitude of living in rural conditions, a result of both faulty selections of students for agricultural extension major as well as almost total disregard for practical training.

A worldwide movement is currently on for reforming the traditional and, by and large, obsolete agricultural and rural extension systems due to the fresh recognition that extension is bound to play a very significant role in meeting the emerging learning needs of farming communities as a result of several global developments. However, only re-orientation or in-service training of the existing extension staff will not be sufficient. The reform and modernization of national extension systems will remain a dream if measures are not taken for reforming pre-service education in extension. Any serious effort at reforming the national agricultural extension systems should logically start with the reform in extension education at agricultural academic institutions, which currently produce ill-prepared graduates for working in a modern extension service.

Key actions

- Creation of a committee for review of pre-service education in agricultural and rural extension, comprising representatives from the national and provincial planning bodies, academic institutions, most relevant key government departments, non-public institutions related to rural and agricultural development, experienced and senior extension professionals, small and commercial farmers, etc., and distribution of the latest literature on extension reforms and modernization as well as on national policy on rural and agricultural development, and terms of reference for the review

- Critical review of both under-graduate and graduate education in agricultural extension at relevant academic institutions by the review committee in order to assess the present quality and scope of the programmes against the national policy on rural and agricultural development, national development goals, and a vision of how extension services be made most useful in practical terms to face the challenge of meeting new learning needs of men and women farmers, in line with world developments. At least following aspects should be covered and recommendations for improvement made on:
 - Curricula
 - Teaching methodologies
 - Text books and other learning materials
 - Types and extent of audio-visual aids to facilitate learning
 - Training of faculty of extension in innovative pedagogy
 - Amount of practical vis-à-vis theory emphasis, especially the period to be spent in rural areas on farms with the farmers
 - Internships under real-life conditions in the field
 - Financial assistance to extension majors
 - Linkages of academic institution with the agricultural extension department and other institutions engaged in real-life extension work
 - In-country and overseas opportunities in advanced education in extension
 - Linkages with agricultural research institutions
 - Linkages with farmers' associations
 - Realization, recognition, and emphasis on gender importance in farming and extension work
 - Gender balance in the selection of students for extension major
 - Quality and number of extension faculty and their working conditions for satisfactory teaching
 - Follow-up of the graduates after a few years in service
- Preparation of an action plan for translating the committee's recommendations into action over a specific period of time, seeking technical or financial assistance from bilateral and multi-lateral agencies, if needed.

Guideline:

Promote pluralism in extension by involving public, private and civil society institutions

In early days when agricultural extension was introduced in developing countries, there was hardly any private company or meaningful non-public institution that was keen to engage in delivering extension services. That is why extension remained monopoly of the government agricultural extension departments for a long time. The situation has changed now, and one finds several public and non-public actors as well as civil society institutions, which are actively engaged in extension or extension-like activities. These actors are eager to join any formal mechanism or project through which they can make development contributions, sometimes on voluntary basis and sometimes at a fee. Today, this is not only the government agricultural extension field worker who meets farmers to give advice, but salesmen from various commercial companies dealing in farm inputs who not only sell their products but also give advice on their use. Then, there could be several field workers belonging to charity organizations and NGOs, who are involved in extension type activities in rural areas. If extension services have been privatized in a country then individual advisors or the agents of private advisory companies keep in touch with farmers. Some researchers who conduct research outreach activities, such as on-farm trials, also engage farmers in conversations during which quite a bit of extension advice is delivered. The same is true for university faculty and students, who come in contact with farmers for data collection purposes. Thus many countries are enjoying a pluralistic pattern of extension, but in a sporadic and haphazard manner. Most of the time, there is no well-organized system that makes possible the active collaboration of stakeholders in both planning and implementation of extension programmes.

A well-structured, pluralistic mechanism of extension planning and delivery will alleviate much of the personnel and financial pressure on the government. In addition, the farmers could benefit from a variety of human information sources, that is, in addition to the media. However, a clearly defined role of government is needed, which could comprise policy guidance, coordination, quality control, technical support to weak private organizations and NGOs, and settlement of disputes, in order to safeguard the interests of farmers.

Key actions

- Preparation of a list of the public and non-public institutions and organizations (other than government agricultural extension department) such as private companies, NGOs, farmers' associations, rural community organizations, agricultural academic institutions, agricultural research institutes and stations, etc., in every province and/or district, which are delivering or are interested in delivering agricultural extension advice to farmers. The main aspects to be covered for each institution should be as follows:
 - The year of establishment
 - Location
 - Technical specializations

- Men and women professional and general services staff, with academic qualifications and field experience, whether on temporary contracts or permanent, etc.
 - Motive behind doing extension work
 - Physical facilities such as transportation, office equipment, communication facilities, audio-visual aids
 - Operational linkages with relevant institutions
 - Financial aspects such as total annual staff and programme budget, expenditure in previous year, sources of funding and their sustainability (to be kept confidential)
 - Any major current programmes or those completed in recent years
 - Does the organization work on volunteer basis or some fee is charged? If latter, details of fee.
 - Is the organization willing to provide extension services on contract basis?
 - Does the organization need any specialized training before it accepts contract for substantive extension work?
 - Any reports and brochures about the organization
 - Geographical area of programme coverage
 - Type and number of people served
 - Type of extension work the organization is interested in such as for small farmers, commercial farmers, women only, rural youth, etc.
 - Any other important information that could not be covered through above questions
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- Assessment of extension and training needs of farmers in various districts and decision whether the existing government agricultural extension service is able to meet those needs. If not, the option of “outsourcing” be considered under which funding of extension and delivery of extension are considered as separate functions, and as such contracts for delivering specific extension services are given by the government to the relevant public and non-public institutions, other than the government extension department.
 - Preparation of documents for outsourcing and public-private partnership, and training of the district extension staff in outsourcing the extension work to other institutions, forging public-private partnerships, and in monitoring the quality of the work done
 - Periodic review and updating of the list of public and private providers of extension services
 - Arrangements by the government to play its role effectively in pluralistic extension pattern in order to safeguard the interests of farmers, including responsibilities such as provision of policy guidance, ensuring coordination and quality control, provision of technical support to weak private organizations and NGOs, and settlement of disputes

Guideline:

Privatize extension partially or fully only where it is socially and economically feasible

In developed countries, the private sector is well developed and takes responsibility for provision of several key services, which in the developing countries are still handled by the government. The public sector is definitely dominant in less-developed countries. However, the trend towards privatization in several developing countries is quite active these days.

Agricultural extension services have been fully privatized in several European and Latin American countries. There have been calls from certain donors and economists for privatizing extension in developing countries and in fact some countries like Uganda are engaged in privatizing their extension services. However, in recent years certain developments such as the disbanding of public extension services in some Latin American countries but at the same time dissatisfaction of farmers with the alternate extension services, government taking back certain components for helping farmers from the privatized advisory services in some developed countries like the United Kingdom, and uncertainty about the ultimate success of privatization in countries where majority of farmers are subsistence, are indeed important warning signals against blind plunge into privatization of extension in developing countries. This should, however, not be interpreted as failure of privatization, but as underlining the need to carefully study the feasibility of privatizing extension, keeping in view the differences between the agriculture and farmers of developed countries and those of less-developed countries.

The challenge is not to privatize entire extension services for all farmers, but to privatize extension where it makes sense. Under the present conditions, hundreds of millions of subsistence farmers are neither able nor willing to pay for extension advice, the quality of which in most cases does not make a convincing case for cash payment. If the extension advice is worth paying for because it enhances farmers' income, then commercial farmers, cooperatives and producer associations will be inclined to pay. In case partial privatization of extension is opted, proper rules, regulations and procedures will be needed both for private extension advisers and their client farmers to protect the interests and rights of all parties. In addition, the government will have to take measures for quality control of extension advice to protect farmers from being exploited. It will be prudent for developing countries to try various methods which have been tried elsewhere in the world to lessen the burden on public budget and encourage non-public parties interested in delivering extension services.

Some of the pre-requisites for proper privatization of extension services include: the existence of competent private extension companies and individual extension advisors, strong farmers' associations with legal status which could not only effectively demand extension services but also evaluate their quality and be willing and able to pay for the advice, and a suitable government mechanism for supervision and quality control of extension services to be provided by the private sector.

Key actions

- A survey to find out the type and number of commercial farmers, large cooperatives, and agri-businesses, which are willing and able to either hire private extension advisors or use private extension advisory services on fee basis; the larger number of willing farmers means a strong case for privatization of extension for these particular groups and vice versa.
- A survey to find out whether a reasonable large pool of active or potential competent private extension advice providers exists or not; retired extension professionals may also be considered as potential service providers.
- A study to assess the willingness and ability of farmers' organizations, in case they exist, to pay for extension advice; the larger the number of willing farmers' associations the stronger the case for privatization
- Assuming that the results of the surveys and the study show that the country does indeed have a strong case for fully or partially privatizing agricultural extension services, the preparation of required rules and regulations and documents thereof such as contract preparation, remuneration rates, payment methods, negotiation and conflict resolution, a booklet containing a list of all private extension services providers in the area, with their qualifications and experience, technical areas of specialization and how to contact them, government's role in supervision, quality control and conflict management, etc.
- Capacity building of individual farmers and their associations in topics such as demanding extension services, book keeping, assessing the quality of extension advice, etc.
- Retaining of an appropriate public extension force by the government for provision of free extension advice to those farmers who are either unable or not willing to pay for extension advice, and for those residing in marginal areas.

Guideline:

Develop and apply information technology tools to facilitate the work of extension workers

As organizations benefit from the development of various kinds of technologies, extension organization could also benefit from the information technology advances. The extension offices located where electricity is available could use Internet, e-mail and various advanced audio-visual equipment in their daily work. In the field, however, the benefit will be limited because of the fact that most rural areas in developing countries have neither electricity nor regular telephone facilities apart from cellular telephones.

There have been some voices calling for replacement of extension workers with information technology centres in the villages. This technology- and hardware-driven approach is not healthy, because the information and communication technology should be used for developing necessary tools that could be used by extension workers. It is well known that, in some countries, when technical recommendations were made on radio, some farmers misinterpreted the advice and damaged their crops. This was particularly true in case of recommended doses of chemical pesticides and insecticides. Later, research showed that those radio programmes for farmers which were backed up by extension workers personally, such as through radio listeners' groups, truly benefited from the extension programmes on radio.

Key actions

It is difficult to prescribe any specific application of information technology for any specific country because conditions differ from place to place. However, the following is suggested in a generic way, which may be adapted to particular situations. As a rule of thumb, the efforts to apply information technology should be started at locations which have necessary infrastructure and pre-requisites. The other areas, obviously, will have to wait.

- A study to be conducted by a team comprising two specialists, one in electronic communication technology and the other in extension and training, in order to:
 - identify specific activities in extension work where modern information and communication technology may be realistically applied;
 - identify the extension work related locations in the country which have necessary infrastructure for installation and use of electronic technology tools;
 - prepare a plan for developing and installing necessary tools;
 - prepare a plan for training of the staff that will use those tools;
 - prepare cost estimates for the entire work
- Interactive electronic linkages may be established between extension and relevant institutions. An example is VERCON (Virtual Extension Research Communication Network), a tool developed by FAO for facilitating operational linkages between research and extension, which remain unsatisfactory in most developing countries due to physical distances and poor conventional communication means, among other factors.

- Extension data bases may be created, containing information on last few years' prices of various commodities and projections for the near future, records of climate for the last few years and any expected unusual weather conditions in the near future, proven useful agricultural technologies, contact mailing and e-mail addresses and telephone numbers of subject-matter specialists and agricultural produce buyers, demand for grains and vegetables, etc. This database may be used by the extension workers in their work.
- A variety of attractive extension and training materials may be prepared with the help of computer, using creative techniques.
- *Telecentres* may be established in the areas, which are not normally covered by extension workers for reasons like remote location and inadequate staff, ensuring that periodic human follow-up is available.

Guideline:

Develop original, location-specific, participatory, gender-sensitive and inexpensive extension methodologies and materials instead of applying those methodologies which are promoted as universally suitable

By and large, most developing countries have been following top-down extension methodologies for years. The Training and Visit (T & V) system of extension, which was introduced by the World Bank in 1970s and dominated extension work in a large number of countries for over two decades, was also a top-down extension model, which later came under criticism on several grounds. Another major, popular methodology has been Farmer Field School (FFS), which was initially used for FAO-supported projects on integrated pest management (IPM) in the Philippines and Indonesia and became best practice for this purpose. The FFS was favoured over the T & V system due to its emphasis on learners' participation. Basically, both of these extension methodologies were not really developed locally, and in spite of some good features, reportedly suffer from common weakness of being too costly especially for up-scaling, hence their questionable sustainability.

Unfortunately, apart from some small but well appreciated efforts in experimenting with new extension methods under some projects such as those funded by certain bi-lateral West European donors, there has been little zeal for developing any situation-specific methodologies as developing countries do not seem to have gone beyond the two main extension methods mentioned above. Presently, T & V system is out of favour and most countries have either dropped it altogether or have modified it to the extent that only some resemblance has been left to the original model. The FFS method is still expanding in some countries under the patronage of certain donors although it has been subject of criticism on various grounds. It is feared that although the FFS is a good methodology for educating farmers in IPM like technical subjects, the forceful push by its sponsors for its universal application as an extension methodology for all technical subjects and geographical regions, just as was done in case of the T & V system, may eventually end up with the same fate as the T & V model. There is indeed a strong case for developing location-specific extension methodologies.

To make efforts for universal application of any single extension methodology is neither logical nor technically sound. One fact, established through field observations and experience over so many years in many countries, is that no single extension methodology, no matter how successful it proved to be in certain situation, could be suitable for all situations, irrespective of donors' insistence on its adoption. The situation comprises people and their characteristics, farming patterns, geographical terrain, climate, population density, type and diversity of extension service providers, political environment, institutions, infrastructure, local customs, and possibly some other factors, which must be taken into consideration while developing an appropriate extension methodology. Therefore, a country like Nepal, which has plains, high mountains, irrigated areas, and rain-fed areas, could rightly end up with several extension methodologies to cover each unique set of circumstances. In fact, the T & V system of extension, which was applied throughout Nepal under the World Bank-financed projects, worked very well in the irrigated plains which had the benefits of improved technologies of rice and wheat cultivation as well as good infrastructure for

extension workers to move around, less than satisfactory in the western rain-fed region where the technology available was grossly inadequate, and was almost a failure in high mountainous areas where mobility of farmers and extension workers was extremely limited due to unfriendly terrain, in addition to extreme weather conditions. Similarly, the extension methods will be different for people who farm in the islands, or under desert conditions. The type of farmers will also count in designing appropriate extension methodology, that is, whether the farmers are subsistence, commercial, male or female, and physically fit or disabled due to, for example, HIV/AIDS or some other reason.

Key actions

- Formation of a small team of field-level experienced extension staff to undertake the following tasks for developing original, situation-specific extension methodologies:
 - Through active and long consultations with men and women farmers, identification of various traditional and contemporary cost-free or low-cost non-formal educational methods for various technical and non-technical subjects and skills, prevalent in rural areas of various regions in the country, including those evolved over centuries which have been passed on from generation to generation, meant for mainly illiterate men and women and do not use the criteria of the formal education system, with emphasis on those methods which pass the learners through practical real-life experiences, as far as possible
 - Keeping in view the situational factors of each location (people and their characteristics, farming patterns, geographical terrain, climate, population density, type and diversity of extension service providers, political environment, institutions, infrastructure, local culture and customs), application of the principles of client participation, gender-sensitivity, bottom-up programme planning and decision-making, and client-focus to the identified major non-formal education methods
 - Re-writing of various principles-based non-formal education methods in the format of well structured extension methodologies and preparation of relevant audio-visual materials which could enhance learning
 - Field-testing of each extension methodology and relevant training audio-visual materials over a period of several months, involving men and women farmers of various agricultural interest categories at different locations, followed by the assessment of the extent to which the learned farmers are applying the new knowledge and skills in real life
 - Giving each extension methodology an original suitable local name
 - Determination of simple, culture-based patterns for organizing various categories of farmers into gender-sensitive groups at different specific locations for learning purposes through application of most applicable location-specific extension methodologies

- Preparation of a manual on various original location-specific extension methodologies, including the audio-visual materials, for various categories of farmers, for use by the extension workers in different locations
- Preparation of a training plan and implementation schedule for the training of extension workers in using extension methodologies in real-life situations and adapting the methodologies to the specific prevailing situation

Guideline:

Orient extension staff to major food security related global developments that could eventually affect rural livelihoods

So far, in most developing countries, no real need has been felt for educating the farmers in developing countries in the issues related to globalization, liberalization of markets, genetic engineering and biotechnology which are sooner or later going to affect their communities. This is due to general opinion that these global level developments are of no direct concern to farmers, and in any case, are too sophisticated to be understood by them. This opinion may be right at present but it is only matter of time when these developments will start affecting the rural livelihoods.

For example, China has recently been admitted to the World Trade Organization (WTO), and this is bound to result in significant reconsideration of existing national policies and procedures of agricultural production, agro-processing, storage, marketing, export and quality control. That is why China's national extension system must be equipped with necessary knowledge and skills in order to start educating farmers in possible effects and expectations resulting from the country's entry into WTO.

Farmers will also confront the issue of farm subsidies within the context of liberalization of markets. In fact, it is already happening. For example, small farmers in Mali who have been growing cotton for years are in serious trouble because they are unable to compete with the very low price of the imported cotton, which the overseas farmers produced at very low cost due to heavy farm subsidies received from their respective governments.

The environmental aspects of agricultural technologies have received so far little attention both from researchers and extension workers in less-developed countries. The mandate of almost all the national agricultural extension services remains quite narrow, that is, limited to the transfer of agricultural technology. As long as a new technology can raise yields, the extension agents will fervently promote it, without any thoughts to its environmental friendliness. During 1960s, most of the credit for the Green Revolution, besides good extension support, went to the breeding and cultivation of high yielding varieties, proper irrigation, and application of high doses of fertilizers and pesticides. That recipe for gaining high yields is, however, currently under criticism due to its unfriendliness towards conservation of environment and natural resources. This is the reason that the technologies like IPM have received favourable attention.

Rapid growth in population also needs to be given serious consideration as it offsets any gains in agricultural production. For example, between 1970 and 1995, in spite of the fact that human fertility declined in most parts of the world, Asia's population increased by 60%, i.e. an addition of over one billion people. Although a very close relationship exists between population, farm production and food security, very few extension services have paid attention to educating farmers in this very important aspect.

It may seem a bit premature at this moment, but the time is not too far when farmers will be asking extension agents the questions about biotechnology and genetic engineering.

Extension services should start developing simple training materials and capacity-building programmes in these areas.

Key actions

- As short-term measure, develop short orientation and training programmes in market liberalization, farm-market-chain-links, quality production and market of exportable commodities and the type of strong extension support to be provided to the producers, environment sustainability, natural resources management, genetically modified crops and vegetables, and organic farming for the training of extension staff at all levels.
- Develop and use extension methodologies like APEX (Agriculture Population Environment Extension) developed by FAO, which integrate population and environment educational messages into ongoing agricultural extension programmes, after providing necessary training to the stakeholders involved.
- As a long-term measure, update various aspects of pre-service education, taking steps as explained under the guideline “Bring pre-service education in agricultural extension in line with the modernizing of the national extension system”.

Guideline:

Encourage the extension services to empower farmers through organizing them into legal associations to constitute a strong lobby for themselves and for extension

The trend to transform farming into agri-business or a commercial enterprise is visible throughout the world. The continuation of subsistence farming is being questioned on economic grounds. In many developing countries, farming has been left to old people because the new generation does not see much future in this profession. Other global developments, such as mentioned earlier in this paper, are also hinting that the farmers cannot depend just on farm income but must diversify their income-generation habits.

There is no doubt that the farmers, if operating individually rather than collectively, will never be able to run their small farms as agri-business or commercial enterprise nor will they be able to create a strong lobby for themselves for safeguarding their interests. They must organize themselves initially in small, informal groups then gradually in special interest groups and then into larger groups, which should be registered with the government as legal entities.

A strong lobby of farmers will not only work for farmers' rights but also for demanding effective agricultural extension services from the government, especially in those countries where decentralization or devolution has happened, thus ascertaining more budget and staff needs for the extension services. Farmers' grouping will also facilitate the application of participatory extension approaches. In summary, all these benefits will expedite the process of agricultural and rural development.

Key actions

- Provide refresher training courses to extension workers in organizing special-interest groups of men and women farmers.
- Direct extension services to organize farmers in groups and associations and have them registered with the government to enjoy legal status.
- Provide training to farmers' associations so that they could possess necessary knowledge and skills for exercising their influence in requesting specific services (such as extension advice from public and private institutions and assessing their quality when delivered, credit, farm inputs, marketing matters, etc.) as well as for converting their farms into agri-business and commercial enterprise.

Guideline:

Encourage bottom-up, grassroots extension programme planning by farmers in order to make extension demand-driven, but also exercise supply-driven, top-down modality for promoting common public good practices such as conservation of natural resources and environment protection

Men and women farmers need to be encouraged to form groups and prepare demand-based extension services plans with the assistance of extension workers. These services may be provided in their entirety by public extension services, entirely by private sector, or by a mixture of public and private institutions. However, the absolute demand-driven approach for services will not make much sense if used for promoting the public good practices as the farmers may consider these services as low priority. This is because farmers, in general, are not aware of or pay little attention to common public good practices such as preservation of natural resources and environmental protection. The government approach for these common public goods, therefore, should be top-down and supply-driven in the best interests of sustainable development.

An example of the common public good is a common pasture used by many rural people to graze their cattle – without, however, anyone caring about the maintenance and replenishment of the pasture's fertility. When excessive grazing depletes the pasture, the herders simply move to other fertile grazing grounds. The government should consider introducing certain legislation for proper use and replenishment of such common grazing areas with full involvement of its users, and its maintenance should be an essential part of any extension programme in the area.

Key actions

- Training of extension workers in playing the role of facilitator in helping farmers' groups in preparing demand-for-services extension programme plans, with the support on complex technical issues drawn from subject-matter specialists
- Training of rural community leaders in bottom-up grassroots planning for preparing demand-for-services plans of extension with facilitation by the extension workers
- Merger of several groups' demand-for-service plans into village plans, and merger of several villages' demand-for-services plans into cluster demand-for-services plans
- Integration of cluster demand-for-services plans into government's district development plans, making sure that the implementation measures for government instructions on the use of common public goods are also incorporated in the district extension programme
- Delivery of the services either by government line departments and/or by non-public institutions under outsourcing contracts based on the demand-for-services plans

- Monitoring of the timeliness and quality of the delivery of services, and impact assessment jointly by farmers' groups and extension workers with the assistance of subject-matter specialists

Guideline:

If the extension function is to be performed with relatively small number of extension staff, follow appropriate strategies for getting maximum output

In several developing countries, the structural adjustment programmes caused severe downsizing of the human resources in the public extension departments. Some public extension services have been criticized for having huge human resources but still ineffective. It is not possible to have just one single formula for calculating an ideal number of extension staff as it will differ from place to place depending on many factors such as geographical terrain, density of farming population, infrastructure, transport means, availability of electronic media, and possibly some others. The old concept of covering a certain number of farm families by each extension agent should now be changed as the information technology revolution presents new opportunities to extension organizations for contacting farmers and other institutions.

Key actions

Each of the following approaches or a combination of them will help in overcoming the staff shortage in delivering extension services. Some of them have been explained elsewhere in this paper:

- If funding is not a big constraint, exercise the option of “outsourcing”.
- Make use of information technology tools and media but with adequate human backstopping
- Review and revise the terms of reference of various categories of staff and merge those staff positions which have overlapping or closely similar terms of reference.
- Following the “pluralism” modality, divide extension services delivery responsibilities among public and non-public, civil society actors such as NGOs, making sure that the delivery is properly supervised for quality control.
- Consider hiring short-term staff on contracts or on when-actually-employed contract rather than hiring only against permanent positions.
- Identify progressive farmers and those who could work as facilitators in extension activities along with extension staff.
- Move bulk of extension staff from provincial level to sub-district level and village level, reducing the staff at the central level, if the country is not exercising devolution, and provincial level if devolution is in progress, limiting the upper most staff strength to a small secretariat.
- Treat extension financing and extension delivery as two separate functions.
- Follow group extension approach to eliminate individual farmer contact as far as possible.

Guideline:

Ensure effective operational linkages between extension and research and other key relevant institutions

Extension is a service devised for the benefit of farmers, with a traditional mandate of transfer of improved agricultural technology, now being broadened in the interest of sustainable agricultural and rural development. The most important operational linkage that has been emphasized for extension since its formal introduction in the developing countries is with research. This linkage is indeed important in view of the fact that agricultural research institutes are the main source of technology for extension organizations. This is painful fact, however, that this particular linkage has been persistently and notoriously weak hence a topic of much academic and practical interest to relevant professionals for many years.

Several modalities have been tried to enhance coordination between research and extension during the last five or so decades. Some of them are mentioned below:

One strategy followed by some countries was to put the two disciplines organizationally under the same administration. The intentions were good, but unfortunately, no matter which developing country took this route, extension was grossly overshadowed and undermined by research. Research almost always ended up with the lion's share of the budget allocated. Even in major donor-financed projects, it was commonly observed that a very high percentage of overseas fellowships were taken away by research even though the project design emphasized on a fair distribution between extension and research.

Another strategy to bring research and extension closer in some countries was to create small extension units in research institutes. Such units, however, did not go beyond publishing brochures and booklets on research done by those particular institutes, which was more for publicity and served as a source of pride for the researchers. In some exceptional cases, these units made research outreach efforts. The only extension (in some cases media) specialist running the unit found himself isolated from his professional colleagues with almost zero chances of professional growth and promotion amongst all researchers. This strategy did not work.

Yet another strategy started under the World Bank-financed projects that followed the Training and Visit model of extension, was the pattern of compulsory meetings between researchers and extension workers that took place just before the start of main cropping seasons. The purpose of the meetings was to discuss the expected field problems, identification of key messages to be passed on to "contact farmers" by the field extension agents, and other issues related to the approaching cropping season. This modality was found to be useful, providing a productive platform for the specialists from research and extension to discuss farmers' concerns and problems. However, like the Training and Visit model, these meetings, although useful, also did not prove to be sustainable and died down with the end of particular projects.

A very promising research-extension coordination mechanism has been developed during the last few years in Indonesia under the World Bank-financed Applied Research

Management II Project. Under the project, Agricultural Technology Assessment Institutes have been established in several provinces. Their staff comprises both researchers and extension specialists who have been obtained after disbanding dozens of small research stations and extension information centres. All the staff have the same job description, and under a ministerial decree, same employment benefits. The institutes are headed either by senior researchers or by senior extension specialists. The institutes field-test, in collaboration with farmers, those technologies which are sent to them by central commodity research institutes, on 50-hectare plots. If the technologies tested are found to be promising, they are further tested on 500-hectare-plots on cost-sharing basis with farmers, with involvement of the district extension officers, and if the technologies still perform good, then extension service starts up-scaling them. These institutes do not only collaborate with the public research institutes, but also with the research faculties of universities as well as private companies under “competitive research grant” modality. This model is so far the best hope for research and extension to work not only hand in hand but also with full involvement of farmers, extension service and other stakeholders.

Lately, the efforts to bring research and extension closer have started taking advantage of advances in information and communication technology and virtual linkages are being established between relevant institutions.

Key actions

- Do not repeat the old practice of putting research and extension under the same administration, as this has undermined extension. Instead, put research and extension under separate administration and take the following measures for coordination between the two disciplines:
 - Form a joint committee comprising senior officers from research and extension at the central or provincial level, depending on whether these services have been decentralized or not, for the purposes of policy advice and promotion of coordination at all levels.
 - Appoint researchers as subject-matter specialists at district level to technically backstop extension workers. If research has not been decentralized, such appointments should be for a period of about three years, during which the researchers (subject-matter specialists) should work under overall supervision of the district extension officer. Each researcher should spend about 30% of his time in working for his parent research institution and 70% time on supporting the extension activities in the field. The liaison between these researchers and their parent institutions is of great importance, as it not only helps the researchers to maintain technical links, but also allows their seniority to be counted, and opportunities for promotion in their respective institution will not be lost. These researchers, upon returning to their parent institutions will be considered as resource persons due to their first hand field experience leading to exchange of professional ideas with their colleagues. Working on rotation basis, these researchers should be replaced by other researchers. As most researchers do not like

to be assigned at district level, special field allowance should be considered for such placements for motivation purposes.

- Initiate a process at field level for drawing research agenda through consultation among researchers, extension workers and farmers with the objective of making the agenda field problem-oriented.
- Making use of modern information and communication technology, establish virtual interactive linkages among research and extension institutes.
- Make sure that there is no bias in the allocation of operational funds, establishment of service conditions, gender considerations and provision of career development opportunities to both disciplines.

V. Normative framework for extension review and reform (NFERR)

CONTEXT

There are certain facts about the discipline of agricultural extension which really do not require any further investigative studies. First, most public extension systems in developing countries have proved to be expensive and less efficient than intended during their launching, for several well-known reasons. Second, during the last ten plus years, extension has been subjected to vigorous and untested reform measures, which in many cases were better termed “experiments”. The hasty alternate solutions in many instances did more damage than benefit. In certain parts of the world, such as in Latin America, there is a growing and somewhat bitter realization that many of those experiments have indeed failed, and with the disappearance of public extension services some time ago, the farmers are left with no one to satisfy their knowledge, information, skills and institutional needs. Surprisingly enough, some of those experiments are still continuing in some countries, and there is understandable pressure from donors on the governments to take extension reform measures. This pressure on the governments, without having viable extension alternates, has sadly resulted in further downgrading of extension services. The importance of extension is, however, once again being recognized in view of recent worldwide developments. Most of the governments in developing countries are keen to reform their extension systems, and would prefer to carry out this reform sooner than later.

While substantial resources have gone into reform experiments, one positive outcome of the exercise is that many useful lessons have been learnt. Many countries, which started some of these major reform measures many years ago, had to face several pitfalls due to lack of sufficient field-testing and validation of reform measures. They learned by doing over a period of several years. The many lessons learnt from these “senior” countries should be seriously examined by those countries, which are just embarking on some of these reforms and want to avoid unnecessary pitfalls.

A normative framework, such as this one, was needed for reviewing the national extension systems to assess the application of reform principles and interventions, and to determine how those principles and interventions may be realistically applied to all relevant aspects of any extension system. Some of these aspects are in fact prerequisites for certain reform measures which must be met before reforms can be meaningfully introduced. The main logical assumption behind the normative framework is that while reform principles and interventions remain unchanged, situations within a country and between countries are different from one another, and that therefore, the application of the principles and interventions will take on varying intensities, forms and procedures at different locations.

RATIONALE AND PURPOSE OF NFERR

This framework has been developed for one main purpose: to review the present rural and agricultural extension systems of developing countries, with the main objective to reform them on the basis of the many normative principles, interventions and lessons that have been drawn from worldwide extension experiences and observations. The application of all or some of these principles and interventions to various aspects of an extension system, within the context of specific country situation, has shown promising results. These normative principles and interventions cut across all regions, but their application must be done according to the “situational context” (SC), which asks for consideration of prevailing political, institutional, economic, social, cultural, religious, agricultural, geographical, infrastructure and technological conditions. Such considerations are necessary for a realistic application of the principles and interventions, but without making too many concessions and compromises.

The NFERR, which was developed by the author of this paper and used in 2005 to conduct studies on extension covering several countries in Central America and in Burkina Faso, will help in close review of the existing rural and agricultural extension systems for the following purposes:

- Determination of the extent to which these principles and interventions have been or are being applied to various aspects of extension systems for reform purposes;
- Identification of the partial or total gaps in application of principles and interventions;
- Based on the review and analysis of the SC, recommendations on realistic, practical, workable, inexpensive options to apply all or most of these principles and interventions to various aspects of extension.

The NFERR is optimistic, forward-looking and action-oriented in character. As such, it is not meant for in-depth studies of traditional extension systems and some obviously failed experiments in extension in order to identify their weaknesses and reasons for failures. Too much literature already exists on this subject. Valuable sources should not be used for reaching the same expected and known conclusions time and again but for the enforcement of ongoing positive efforts. In addition, several countries are already trying to apply many of the principles and interventions to their extension systems or services, and the purpose of the NFERR is to further encourage and strengthen their efforts.

The NFERR, however, should not be considered as a finished product. Because, as the process of extension reform continues and lessons continue being learnt, the NFERR will likewise be enriched through periodic updates for maximum benefit to its users. This is a continuously evolving tool.

BASICS OF EXTENSION

- Extension is a function and can be performed by any person or public or private institution technically qualified in the subject of extension. The view that extension is dead because most public extension systems did not work effectively may be termed shortsightedness, at best.

- Extension is adult and continuing education of men and women producers who may or may not be formally educated but certainly enjoy years of practical experience in decision-making in their daily life. Farmers, throughout the world, know instantly when they see something to their advantage.
- Any advice or technology recommended by extension workers to the farmers has slim chances of being widely adopted if the ingredients or pre-requisites to adopt the technology are not timely available, or too expensive to afford, or the technology is too complicated to follow, or too risky to try within limited resources of farmers. However, because of low or no adoption of such technology, poor farmers are wrongly blamed as change-resistant.
- Extension cannot be effectively productive if it works alone, in isolation from the *farm-to-market-chain-links* (FMCL) actors and institutions.
- General goal of extension in developing countries is to satisfy knowledge, skills and FMCL needs of all types of farmers in order to help them in running their farms efficiently and to become good citizens to improve their quality of life.
- Extension will take different organizational structures, human expertise, strategies, approaches and methodologies to be determined by SC, which will be different in different locations, and therefore, dependence on any single organizational structure, human expertise, strategy, approach or methodology which proved promising in some other location, will not be logically right and may be counter-productive.

EXTENSION REFORM PRINCIPLES AND INTERVENTIONS AND THEIR APPLICATION

Extension reform principles and interventions	Aspects of extension systems to which particular principle or intervention may be applied
Participation	Grassroots extension programme planning; National extension policy formulation; Improvement of extension organizational structure for more effectiveness; Organization of farmers for empowerment and group extension approach; Methodologies for training extension staff and farmers; Development of gender, age, culture and religion sensitive extension and training materials; Monitoring and evaluation of extension activities; Economic and social impact assessment of extension interventions; Use of indigenous communication methods, media and modern information technology tools; Preparation of research agenda by researchers; Original extension approaches and methodologies to be developed within specific situation context; Establishment of farm-to-market-chain-links .
Gender-sensitivity	All the aspects, mentioned above under “participation”.

Client-focus	Identification of types of farmers whose extension needs are to be addressed with tailor-made extension strategies, methodologies and materials (examples: subsistence farmers, commercial farmers, farmers in HIV/AIDS-affected areas, mountain farmers, desert farmers, small islands farmers, farmers with physical disabilities, women farmers, part-time farmers, rural youth, special interest groups of growers, rural land-less poor, etc.): Grassroots extension programme planning.
Demand-driven	Grassroots extension programme planning; Cost-sharing agreements between farmers and extension; Organization of special interest groups in villages; Capacity-enhancement of farmers in making demands for services; Establishment of farm-to-market-chain-links; Evaluation of extension services delivery; Accountability of extension service providers; Extension services quality control; Impact assessment of extension interventions; Government's role in covering those technical subjects, which are of public interest, such as protection of environment and natural resources.
Pluralism	Grassroots extension programme planning; Inventory of competent, experienced and willing public and private extension service providers including farmers' associations, community organizations, and NGOs; Separation between extension financing and extension service delivery functions; Governments' active role in co-ordination among extension service providers, control of quality of extension services, capacity-enhancement of non-public extension service providers, and impact assessment of services provided; National pluralistic extension policy formulation; Combining several communication methods; Development of several situation- and purpose-specific extension methodologies.
Privatization	Organization of farmers groups and a strong lobby; Grassroots extension programme planning; Verification of the type and number of farmers willing and able to pay for extension services; Verification of the existence of a pool comprising private extension providers who are experienced, competent, well-staffed and with the mentality of not just profit-making but serving the farmers; Government's role in separating extension financing from extension service delivery, protecting farmers' interests, quality control of extension services, capacity-enhancement of non-public service providers, provision of free extension advice to resource-poor farmers, extension coverage of subjects of public interest such as protection of environment and natural resources, and co-ordination among various extension services providers; Capacity-enhancement of farmers in making service demand, negotiation skills, contract preparation, monitoring of services delivery, book-keeping, legal options in case of damage from private extension advice; Establishment of farm-to-market-chain-links.
Decentralization	Organization of farmers' groups; Meeting pre-requisites of decentralization for smooth transition (includes orientation to extension staff and subject-matter

	<p>specialists on decentralization philosophy and transition measures, new role definition for extension and other subject-matter specialists vis-à-vis elected officials of local government, capacity-enhancement of extension staff in grassroots planning by farmers' groups, pre-service training of elected local officials in the importance of bringing positive behavioural change among farmers through investment in extension); National government's role in the provision of general policy direction to decentralized units and in taking measures against possible politicization and marginalization of extension under decentralization through practices such as recruitment of non-agricultural candidates for extension positions, lack of attention to career development of extension staff, and shifting of extension budget to non-extension activities.</p>
Location- and purpose-specific, original extension methodologies	<p>Development and field-testing of the extension methodologies originally developed (not imported or imitated), based on the situational context, and which are participatory, gender-sensitive, client-focused, in-expensive, with low-cost replication and up-scaling potential, flexible enough to absorb changes in extension environment, simple to follow, emphasizing user-friendly, innovative, practical learning-by-doing educational methods, whose results could be verified, sustainability, and supported by audio-visual aids, study tours and demonstrations.</p>
Staff motivation for effective performance	<p>Formulation of national extension policy; Salary, status, benefits and in-country and overseas career development opportunities for extension staff at least at par with other professional staff in agricultural disciplines; Sufficient operational budget; Physical facilities for field work such as mobility, equipment and access to data especially on marketing, needed for advising farmers.</p>
Broader technical mandate of extension in line with global developments	<p>Formulation of national extension policy; Change from agricultural extension to rural and agricultural extension; Revision of pre-service education in extension; In-service training of existing staff in sustainable rural and agricultural development, post-disaster rehabilitation of farming population, alleviation of food insecurity and rural poverty, addressing special extension needs of farming population in HIV/AIDS-affected areas, sustainable rural and agricultural development, human resources development in terms of decision-making, leadership, problem-solving, effects of globalization and market liberalization on farmers.</p>
Development and application of information technology (IT) tools	<p>Assessment of indigenous, traditional communication methods, applicable media within situational context to be combined with modern IT; Development and field-testing of IT tools in support of extension activities; Feasibility assessment of infrastructure for installation of IT tools; Capacity-enhancement of extension staff in IT; Creation of a small group of literate farmers trained in IT equipment operation and maintenance; Back-up of the use of IT tools by human resources with the objectives of getting optimum</p>

	benefit without replacing extension workers; Linking to existing websites of farmers' interest such as price information of different commodities.
Monitoring, evaluation and impact assessment	Formulation of national extension policy; Grassroots extension programme planning; Organization of farmers; Establishment of farm-to-market-chain-links; Capacity-enhancement of farmers in monitoring, evaluation and socio-economic impact assessment of extension interventions; Development of necessary tools to be used by extension staff and farmers.
Institutional linkages	Formulation of national extension policy; Grassroots extension programme planning; Organization of farmers; Establishment of farm-to-market-chain-links; Platform for collaboration and periodic meetings of all stakeholders including farmers, subject-matter specialists, extension, agricultural research, farm inputs agencies, marketing, agri-business, agro-processing, storage, climate institutes, transportation.
Others, as identified during the continued extension reform process and lessons being learnt	To be identified as appropriate.

HOW TO USE NFERR

1. Study a national agricultural and rural extension or advisory system carefully in order to identify various policy-related, organizational, strategic and operational aspects.
2. Hold discussions with relevant government officials, farmers, specialists at public departments and non-public institutions including NGOs, and professional staff of donor-financed rural and agricultural development projects and programmes, review literature, and make field observations, for the purpose of identifying the ongoing or pipeline extension reforms.
3. Examine the identified reforms and determine to what extent specific reform principles and interventions have been applied to various policy, organizational, strategic and operational aspects, identified earlier under Step No.1.
4. Take note of the full or partial gaps in application and find out reasons for the same and if the government is willing to fill in those gaps.
5. Keeping in view the situational context, make realistic, practical, inexpensive, and doable recommendations to fill in the gaps, which may be implemented in short, medium and long term.
6. Be creative as all situations are different and generally demand unique extension solutions.

NORMATIVE TERMS OF REFERENCE (TOR) FOR CONDUCTING STUDIES

The following normative TOR may be used for conducting studies on assessing extension reform situation. Slight adjustments may be needed in the TOR in line with prevailing conditions in the country of the study. The study may be conducted by an institution or by individual consultant.

- Using the Normative Framework for Extension Review and Reform (NFERR), perform the following tasks:
- Assess the current knowledge, skills and institutional linkage needs of the following categories of farmers:
 - Small/subsistence men and women farmers
 - Commercial men and women farmers
 - Special farming interest organizations such as farmers' cooperatives, crop associations and boards.
- Assess if the current extension advisory system, whether public, private or mixed, is adequate to meet the identified knowledge, skills and institutional linkage needs of various categories of farmers. Describe reasons for adequacy or non-adequacy of the extension system.
- Review the extension system to what extent each extension reform principle or intervention (mentioned in the first column of the NFERR) has been applied to specific aspects of extension (mentioned in the second column of the NFERR) against each principle or intervention. Any additional specific aspect of extension, identified during the course of the study in a particular country, but missing in the second column of the NFERR, may be added.
- Assess government's attitude towards reforming the current national extension system. However, irrespective of the government's favourable or unfavourable attitude,

Extension problems during initial decentralization

Several organizational, technical, financial and attitudinal problems and issues have already surfaced while decentralizing extension service in the country. The budget for district extension offices has been sent to the District Development Fund, and within the District Development Committee (DDC), Local Government Officer has been made the leader. However, the DDC is ill prepared for its supervisory role. Moreover, there is an overlap between the role of the Local Development Officer and the Regional Director of Agriculture. After the full integration of the extension service, there is possibility that the role of the mid-level agricultural technicians might change from the conventional extension work to a more market-oriented and politically influenced activities and the professionals do not seem to be prepared at the moment.

FAO.2003.Nepal: *A study on issues and problems arising from decentralization of agricultural extension services*, unpublished report of a study conducted by M.K. Qamar and K.N. Pyakuryal. Rome.

APEX: An extension strategy for educating farmers in population and environment issues within the context of farming practices

Preparatory activities:

- Identification of the recipient population for APEX messages
- Organization of the target population for participation purposes
- Composition of the APEX field teams
- Technical preparation of the APEX field teams
- Preparation of training curricula
- Creative, innovative training techniques and materials
- Multiplier effect and cost-effective training strategy
- Extension, education and communication materials

Field activities:

- Strategic message-blending
- Group contacts
- Rural household visits
- APEX knowledge contests
- APEX rural theatre and play contests
- Targeting decision-makers
- Intensive APEX campaigns
- Post-awareness educational demonstration and advice
- Impact assessment

FAO.2004.APEX: *An extension strategy for educating farmers in population and environment issues within the context of farming practices* (brochure), by M.K. Qamar. Rome.

continue the study of the existing extension system to assess whether the system does implicitly or explicitly follow any reform principle or intervention, even though it is not called as reform. The extent of the adequacy of the application may be assessed as follows:

- For convenience in assessing the application of reform principle or intervention, divide each extension aspect into various sub-components. For example, some of the sub-components of grassroots extension programme planning will be needs identification by farmers' groups, prioritization of needs, assessment of available resources, preparation of a grassroots extension plan based on priorities, etc. Then, examine each sub-component of the aspect to see whether particular principle is applied or not, and to what extent.
- How long has the reform principle or intervention application to specific extension aspects been in operation?
- Is the application giving any benefits? If yes, mention and describe them in specific terms.
- If the application has shown any negative effects, mention and describe them in specific terms, giving whatever major political, physical, technical, social, economic, cultural, religious reasons are responsible for that.

- If the application of certain reform principles or interventions is not clear-cut but vague, then explain as such, but remaining alert for detecting any dominant trend.
- Based on the close review, identify the main gaps in the application of the reform principles and interventions, i.e. various extension aspects where the application has been either totally absent or only partial.
- Make realistic, doable short- medium- and long-term action recommendations for filling in the identified gaps taking into consideration existing government policy on rural and agricultural development, knowledge, skills and institutional linkage needs of farmers and organizations, and various conditions prevailing in the country.
- Prepare a report on the study, containing the introduction (brief description of the country or countries studied, purpose of the study, methodology, TOR of the study, etc.), knowledge, skills and institutional linkage needs of various categories of farmers, adequacy of application of various extension reform principles and interventions within the context of the NFERR, main gaps, realistic action recommendations on filling in the reform gaps, necessary appendices.

SUGGESTED DURATION

Two months including report preparation

References

SOME RECENT LITERATURE ON EXTENSION

- Alex, G., W. Zijp, D. Bylerlee et al.** 2002. Rural Extension and Advisory Services: New Directions. Rural Development Strategy Backgroup Paper No. 9. Washington, DC., Agriculture and Rural Development Department, World Bank, August.
- Anderson, J.R., and G. Feder.** 2003. Rural Extension Services. World Bank Policy Research Working Paper 2976. Washington, D.C., February.
- Anyonge, T.M., C. Holding, K.K. Kareko and J.W. Kimani.** 2001. Scaling up participatory agroforestry extension in Kenya: from pilot projects to extension policy; *Development in Practice*, 11:4, 449–459.
- Dinar, A., and G. Keynan.** 2001. Economics of Paid Extension: Lessons from Experience in Nicaragua. *American Journal of Agricultural Economics* 83:769–776.
- Dorman, E., K. Amezah and J. Hesse.** 2003. Contracting out Extension in Ghana: The First Steps. 25th International Conference of Agricultural Economists, Durban, South Africa, August 19.
- FAO/World Bank.** 2000. *Agricultural knowledge and information systems for rural development (AKIS/RD): Strategic vision and guiding principles.* Rome.
- FAO.** 2002. *Methodological Guide for Designing and Implementing a Multimedia Communication Strategy.* Communication for Development manual 2. Rome.
- FAO.** 2005. *Agricultural extension and training needs of farmers in the small island countries: a case study from Samoa,* by M.K. Qamar and S.S. Lameta. Rome.
- FAO.** 2003. *Addressing extension and training needs of farmers with physical disabilities: A case study of the Islamic Republic of Iran,* by M.K. Qamar and I. Shahbazi. Rome.
- FAO.** 2003. *A new extension vision for food security: Challenge to change,* by W.M. Rivera and M.K. Qamar. Rome.
- FAO.** 2003. *Extension through women's community development groups: a case study of female extension assistants in Azad Jammu & Kashmir,* by K. Qamar and K. Ijaz. Rome.
- FAO.** 2003. *Nepal: A study on issues and problems arising from decentralization of agricultural extension services,* unpublished report of a study conducted by M.K. Qamar and K.N. Pyakuryal. Rome.
- Farrington, I.C., A.D. Kidd and M. Beckman.** 2002. Extension, poverty and vulnerability: The scope for policy reforms (Final report of a study for the Neuchatel Initiative); Working paper No. 155. London, UK: Overseas Development Institute; March.
- Gallagher, K.D.** 2000. *Community study programmes for integrated production and pest management: Farmer Field Schools.* Human Resources in Agricultural and Rural Development. Rome: FAO.
- Gemo, H., C.K. Eicher and S. Teclerariam.** 2005. *Mozambique's experience in building a national extension system.* East Lansing: Michigan State University Press.

- Jones, G. and C. Garforth.** 1997. The History, Development, and Future of Agricultural Extension; In: B. Swanson, R. Bentz and A. Sofranko (eds.), *Improving Agricultural Extension: A Reference Manual*. FAO. Rome.
- Marsh, S.P. and D.J. Pannell.** 2002. Agricultural extension policy in Australia: the good, the bad, and the misguided. *Australian Journal of Agricultural and Resource Economics* 44: 605–727.
- Mubangizi, N., M.N. Mangheni and C.J. Garforth.** 2004. Information sources and constraints under national agricultural advisory services programme, of service providers in Uganda. *Uganda Journal of Agricultural Sciences* 9: 257–264.
- Neuchatel Initiative Group.** 1999. *Common Framework on Agricultural Extension*. Paris: Ministère des Affaires étrangères, Bureau des politiques agricoles et de la sécurité alimentaire.
- Neuchatel Initiative Group.** 2002. *A Common Framework for Financing Agricultural and Rural Extension*. Neuchatel Initiative. Uppsala, Sweden.
- Ojha, G.P. and S.R. Morin.** 2001. Partnership in agricultural extension: Lessons from Chitwan (Nepal). Agricultural Research and Extension Network. Network Paper No. 114, July 2001. Overseas Development Institute. London.
- Peeters, A.** (ed.). 2000. *Methods and Tools of Extension for Mountain Farms*. FAO.
- Qamar, M.K.** 2000. *Agricultural extension at the turn of the millennium: trends and challenges*, Human Resources in Agricultural and Rural Development. Rome: FAO, pp. 158–170.
- Qamar, M.K.** 2001. The HIV/AIDS epidemic: An unusual challenge to agricultural extension services in sub-Saharan Africa. *The Journal of Agricultural Education and Extension*, Vol. 8, No. 1; 1–11.
- Qamar, M.K.** 2002. Global trends in agricultural extension: Challenges facing Asia and the Pacific Region. Keynote paper presented at the FAO Regional Expert Consultation on Agricultural Extension, Research-Extension-farmer Interface and Technology Transfer, held in Bangkok, 16–19 July.
- Qamar, M.K.** 2003. Agricultural extension in Asia and the Pacific: Time to revisit and reform. Resource paper presented at the International Seminar on Enhancement of Extension Systems in Agriculture, organized by the Asian Productivity Organization, Tokyo, at Faisalabad, Pakistan; 15-20 December.
- Qamar, M.K.** 2003. *Facing the challenge of an HIV/AIDS epidemic: agricultural extension services in sub-Saharan Africa*. Rome: FAO.
- Quizon, J., Feder, G. and R. Murgai.** 2000. A note on the sustainability of the Farmer Field School approach to agricultural extension. Washington, DC: The World Bank.
- Rivera, W.M. and W. Zijp.** 2001. *Contracting for Agricultural Extension: Case Studies and Emerging Practices*. London: CABI International.
- Rivera, W.M., M.K. Qamar and L.V. Crowder.** 2001. *Agricultural and Rural Extension Worldwide: Options for Institutional Reform in the Developing Countries*. Rome, FAO.
- Rivera, W.M.** 2001. The Invisible Frontier: the Current Limits of Decentralization and Privatization in the Developing Countries. In F. Brewer (ed.), *Agricultural Extension: An International Perspective (2001)*; Erudition Press.
- Rivera, W.M. and G. Alex** (eds.). 2002. *Extension Reform for Rural Development: Case Studies of International Initiatives*. The World Bank, Rural Development Family, SASKI. October 15.

- Rivera, W.M. and G. Alex.** 2003. Pluralism, Emergent Priorities and the Central Role of Government in Extension Reform; in: *Extension and Rural Development: International Case Studies and Emerging Trends*. World Bank. Washington, DC.
- Rivera, W.M. and M.K. Qamar.** 2003. *Agricultural Extension, Rural Development and Food Security Challenge*. Rome: FAO.
- Rivera, W.M., M.K. Qamar, and H.K. Mwandemere.** 2005. *Enhancing Coordination among AKIS/RD Actors: An analytical and comparative review of country studies on agricultural knowledge and information systems for rural development (AKIS/RD)*. Rome: FAO.
- Sanchez, P., et. al.** 2004. *Halving Hunger: It can be done*. Report of the Millennium Task Force on Hunger. www.unmillenniumproject.org/who/task02.htm.
- Swanson, B.E., A.J. Sofranko, and M.M. Samy.** 2004. *Impact of Trade Liberalization on Agriculture: Illinois' Value-Added Experience and Possible Implications for Extension in Mexico*. Urbana-Champaign, IL: University of Illinois.
- Tripp, R., M. Wijeratne and V. Hiroshini.** *What should we expect from farmer field school? A Sri Lanka case study*. World Development, Volume 33, Issue 10, October 2005, pp 1705-1720.
- Van den Ban, A.W.** 2000. Different Ways of Financing Agricultural Extension. ODI AgREN Network Paper 106b. London.
- World Bank.** 2002. *Summary report of the World Bank/USAID/Neuchatel International Workshop on "Extension and Rural Development" held at IFPRI*. Washington, DC.
- World Bank/USAID.** 2002. *Extension and Rural Development: a Convergence of Views on Institutional Approaches?* International Workshop, Nov. 12–14. The World Bank. Washington, DC.