

# **2110 EXTENSION OUTREACH AND TECHNOLOGY TRANSFER IN DEVELOPING COUNTRIES: IMPACTS OF STRUCTURAL AND CULTURAL REALITIES<sup>1</sup>**

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## **Introduction**

The informal learning and non-formal education of farmers and producers of the developing countries in improving their farming practices goes back centuries but formal agricultural extension was introduced only about 50 years ago. Although efforts were made in support of extension by USA-trained nationals and visiting professors from USA under USAID agreements yet the extension outreach and technology transfer institutions in most developing countries today look very different from those in USA and other developed countries of Western Europe. The organizational structure and field operations of these institutions have been largely shaped by the very way the developing countries are structured. Their climates, colonial past, population, national culture and values, education levels, natural resources, gross national product, exports and imports, general health care conditions, traditions, rural conditions, infrastructure, political systems, farming population's characteristics, the type of agricultural operations, and possibly other factors . It is a broad subject which this paper tries to cover briefly, fully recognizing the differences among different countries. Only those aspects have been identified which are more or less common to the developing countries. The paper also highlights the latest trends and issues in reforming the traditional extension systems.

## **A Glimpse of Developing Countries**

Before going into details of the farming population of the developing countries, which is the main concern of extension outreach and technology transfer institutions, it will be useful to mention some of the main features which differentiate the developing world from the developed countries. This will help in

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understanding the broad context within which the farming population and technology transfer organizations exist.

Most of the developing countries have a history of being colonized for long periods. They have large population and population growth rates are higher than those in the Western countries. Some countries have considerable natural resources while most do not. General literacy and education levels are low and most people live in rural areas. Pollution levels are high in large cities. Health facilities and hygiene conditions are unsatisfactory. Agriculture although not well developed is dominant in country's economy. The industrial sector with the exception of few countries is not that developed. The same is true for the private sector. In many low-income countries, poverty levels are serious and food deficits are common. Many countries remain under perpetual foreign debt. Infrastructure is normally poor especially outside urban areas and communication facilities are not that reliable.

Most services are public, rendered by the government. Political institutions are not always well established and democratic. The decision-making practices are normally top-down and armed forces play active role in politics. Freedom of press is rather limited. Gross national product is generally low as imports are higher than exports. Most countries still practice rigid control over foreign currency transactions. At places, huge bureaucracies exist.

There is less respect for time. People mind others' business as much as their own. The religion is important in life and people have fatalistic attitude. People are traditional, proud of their national culture and values, and are in general friendly and hospitable although strangers initially are seen with suspicion. Women are struggling to get more rights as most countries are male-dominated. Men and women do not mix up as freely as in the Western societies. Social pressures are enormous in setting people's behavior in public and an individual is not as independent and isolated as in developed countries. People help one another. Although extended families are gradually breaking up for employment reasons yet the elders are respected especially in old age and as such there are no Western style nursing homes. People enjoy colorful festivals, rites and national costumes. Most countries are rich in art, literature and history as some of the oldest civilizations flourished there. Nationalism is strong and is especially expressed in sports.

As the subject concerns extension outreach and technology transfer institutions, which are mostly public, a brief introduction to the public organizations in the developing countries is in order.

### **Public Organizations: Structural and Operational Aspects**

All public organizations are different within a developing country and more so when compared between developing countries. There are, however, several commonalities between them which give a reasonably good idea of how they are structured and operate as organizations. Some of the commonalities are as follows.

Being public, the funding source is government treasury. In some cases, financial partnerships are forged with the private sector for specific programs and projects. Public treasuries normally derive their funds from the government's earnings coming from exports, taxation, donor assistance, etc.

In some big departments, there is so much manpower that the staff seems to be underemployed. The number of people in the hierarchy is not necessarily determined by the real need for services but many times by the desire to build "organizational empire", and by political motives. Most public departments complain about the shortage of funds as they have to compete for allocation from limited resources. This shortage does not affect salaries as much but the number and magnitude of development programs are certainly affected. In other words, most money is spent on salaries and other costs but much less on programs.

The organizational structures are generally top-down. The decision-making authority in key areas such as planning and budget allocation usually rests with the central government. This is true even in some of those countries which have gone through decentralization and devolution. The lower administrative units are responsible for implementing the development plans which are prepared at higher levels. There is little meaningful involvement of lower cadre in decision-making. Systematic monitoring and evaluation of programs is rare.

The recruitment, promotions and disciplinary actions are not always based on objective assessment but on subjective grounds. Few incentives exist for enhancing motivation and morale.

Ownership or access to transportation facilities remains strong temptation. It is common for politicians and high officials to take temporary possession of vehicles made available to lower level technical staff especially under donor-funded projects.

The opportunities for the development of skills and knowledge through in-service training are not that many. Overseas study-tours are preferred over relatively long and structured training programs.

There is lack of coordination among various organizations. This does not allow joint planning and optimum utilization of scarce human and financial resources. Some departments such as planning and finance are traditionally strong while some like extension and community development are historically poor in the matters of resource allocation. Ironically, in times of austerity, these are latter departments which become favorite targets of manpower and budget cuts.

Red tape and less efficiency are norms rather than exception. The process of decision-making is usually slow sometimes for even minor matters, filled with bureaucratic hiccups. Corruption, bribery and nepotism cases have also been reported.

Working hours in offices normally do not go beyond 3 PM as people like to spend time with their families. Some countries have one-day weekends while some have two-day. The number of public holidays is usually high.

In spite of so many organizational weaknesses, the life goes on in the developing countries although at slow pace, unfortunately sometimes too slow. Valuable natural resources do exist in many developing countries, and there is no lack of talented people but somehow the prevailing system does not allow them to fully exploit their potential.

### **Extension Target Population**

The existing extension outreach and technology transfer services in most developing countries are public. They were created to serve farmers and producers free of cost. As such, it is more realistic to use the term target population rather than clientele; the latter will be more suitable in case of privatized extension. The

following provides a glimpse of the characteristics of the farming communities which the extension workers are supposed to serve.

### **Life in rural areas**

Around 60 to 80 percent of the population of developing countries lives in rural areas and is engaged in farming. Village life is simple, with no city like conventional entertainment places. Except those villages which are located in the vicinity of large cities, most rural areas do not have electricity, fixed telephones or clean potable water. Modest houses and huts made of mud bricks and straw are most common. There is no such thing as sewage systems or bath showers. No medical facilities such as qualified doctors, nurses and hospitals are available with the exception of rudimentary health clinics in some lucky areas. Only lucky villages have some sort of rudimentary clinic. Traditional healers and sometimes witch doctors, in case of Africa, are considered as final say on health matters. Traditional midwives take care of baby deliveries. Serious lack of hygiene, mosquito breeding in ponds and flies on dirt heaps, contaminated water, certain weird rituals involving serious health risks, and use of the same razor on different patients by healers cause spread of diseases like HIV/AIDS, malaria and diarrhea resulting in unnecessary deaths. Such facts plus the declining incomes from farming are encouraging rural-urban migration and movement of young men to overseas in search of better future, leaving farming to an aging population. Quite a number of young men opt for the armed forces.

People are hard-working, resilient and superstitious. They live in extended families, the eldest being the family leader. Elders enjoy respect and special status in the society and children are supposed to obey their parents. Women perform many agricultural operations but the rural societies remain male-dominated and major decisions are made by male members. There is widespread illiteracy although governments have been opening elementary schools in villages. Sometimes, there are more schools but fewer teachers and small number of students. The education of girls is given low preference and they are generally married in young age. Marriages are parent-arranged. Population growth rates are usually high especially in Asian and Middle Eastern villages. Male children are preferred over females. In Muslim countries, basic religious education in childhood is a must. Tribal chiefs, religious preachers, and school teachers are considered

informal leaders. Any field-level government staff based in rural areas enjoy due respect.

The time in rural areas is not measured in minutes and hours but usually in term of cropping seasons. Extending unconditional help to others in the time of need and hospitality for guests are traditional values. In general, rural people are more religious as compared to their urban counterparts. As dependant on nature for their livelihoods, the farmers are God-fearing people observing spiritual values far more than materialistic ambitions. Personal and family honor, especially involving land and women, is considered as a very sensitive matter and a single event of women dishonor or land dispute could lead to killings among rival factions for generations especially in tribal villages, which are fiercely independent. Quite often, small village disputes are settled by the village council or tribal leaders rather than taken to courts. Caste and tribal differences in the rural society are observed strictly, far more than in the cities.

Many big landlords who own and cultivate huge pieces of land on commercial lines constitute a part of rural society. Many of these landlords have at least some education. They enjoy special status in the village, influence grassroots village organizations like cooperatives, schools, worship places and are usually active in politics. Many hold elected offices in local government. The rich landlords maintain contacts with high government officials who consider them as political assets in the days of elections. Field-level government workers remain eager to serve them. Unlike small farmers, they hardly have any problem in getting inputs for their farms or in marketing their produce. Their farms are relatively mechanized. Feudal landlords enjoy the unquestionable loyalty of dozens of male and female servants whose ancestors have faithfully served them through generations.

The income earned by farmers is not necessarily spent on improving farms or other productive purposes. The hard-earned money could go into wedding and other customs and rites which are considered necessary to earn respect of the society. Such actions place some poor farmers for generations under the burden of loans provided by private money-lenders at high interest rates. Some could lose their land, cattle or even home if kept as collateral for getting loans. Government-run

rural credit facilities are quite weak and their procedures are generally long and complicated for small farmers.

The belief among many Western development agencies that the farmers in developing countries are change-resistant because they do not adopt a new technology is no more than a stereotype truism. In fact, if the adoption rate of a recommended technology is low, farmers are rarely to blame because either something is wrong with the technology or extension agents have not introduced it properly. The technology could have been too complicated, risky, expensive, asking for mandatory ingredients which are not readily available, or sensitive for some reason. As the experience has shown that farmers no matter from which part of the world, will adopt any technology as long as they see it as simple, financially affordable with availability of required ingredients, relatively risk-free, and not in clash with religious beliefs.

### **Farming realities**

Farming is a way of life in rural areas. Majority of the farmers possess small-sized holdings, less than one hectare, and practice subsistence farming, i.e. producing for their family consumption and selling surplus produce if it has been a good season. Thus a very large part of population feeds a much smaller number of people who live in cities. Mixed farming is common and cash crops are the main source of income, depending on the prevailing prices.

In some countries, especially in the Middle-East and Asia, the already small land holdings keep being further divided and getting smaller due to inheritance laws. In many African countries, the land is owned by communities, which is passed on to families for cultivation but it cannot be sold. Tenancy and leasing are quite common, and tenants keep cultivating someone else land for years without becoming owners. Absentee land owners are also a fact of life. In some Asian countries, fruit growers contract out their fruit gardens to others for a number of fruit seasons. Farmers' unions or associations also exist in many countries.

A lot of manual labor is involved in running farms and entire families including men, women and children have to take part. When farmers can afford, they hire labor which is paid mostly in kind in the form of crop share or grains. The farm labor is usually provided by poor segment of the village, or by persons of lower

castes. In case of communes, the member families help each other during peak farming operations. It is common for farmers to irrigate their fields in pre-dawn hours no matter how low temperatures, or harvest their crops no matter how scorching the sun. In South Asian countries, farmers normally take heavy breakfast and women deliver their lunch in the field. Rural families like to keep animals such as cattle, goats, sheep, pigs and poultry to earn extra income during slack season. Aquaculture is also getting popular. In mountainous villages, during winter months, men travel to cities in the plains to seek manual labor job. Another source of income is remittance from the family members who have gone overseas.

Small farms depend on draft animal power, mostly bullocks and buffaloes, and indigenous farming implements and tools, sometimes quite primitive. Mechanization is rarely an option. It is not only unfeasible for small parcels of land, which in some cases are owned by the same farmer yet scattered at various locations, but also unaffordable financially. The methods of cultivation remain traditional. There is no concept of sustainable development and little is known about proper management of natural resources. Inappropriate irrigation practices and poor drainage lead to water logging and salinity. The soils are mostly poor in nutrients and the application of fertilizers and pesticides is not well planned, sometimes too little and sometimes excessive. In many African countries, common grazing, shifting cultivation, and slash-and-burn practices are quite common. Well structured surface irrigation facilities are luxury as are tube wells otherwise there is huge dependence on rain. No surprise, the yields are low. Whatever little is produced its significant portion is lost due to almost negligible storage and processing facilities. In case of scant rains or drought, famines are quite common, killing thousands of people and their cattle as has happened in Ethiopia and some other countries. Powerful cyclones, heavy rains and extreme weather conditions also destroy the rural livelihoods. Poverty indeed prevails in rural areas of the developing countries and is unfortunately passed unabated from generation to generation. Farmers in some countries like Afghanistan and Colombia have resorted to illegal cultivation of narcotic crops which have high demand in the international market and bring huge cash profits.

Small farmers do not get as much income as they can due to unsatisfactory marketing facilities. The infrastructure and transportation means are poor and most muddy roads between villages and urban markets become impassable during rainy



season. In such situation and also in the absence of transportation, storage and processing facilities, the producers are openly exploited by the middlemen who pay much lower rates for their produce than they deserve and have the produce picked up from the farm.

### **Impacts on Shape and Operations of Extension Organizations**

Like other public organizations, agricultural extension, extension outreach and technology transfer institutions also suffer from usual bureaucratic problems, such as mentioned in the preceding section. On top of that, they are supposed to serve a mostly illiterate farming population which resides in remote rural areas. As such, the socio-economic and cultural traits of their target population and the features of their own organization, lead to the following status of extension institutions in most developing countries.

#### **Free extension advice**

Traditionally, farmers of the developing countries have always received free of charge extension advice. Privatization is not favored by the governments due to the fact that the majority of farmers are at subsistence level and also because privatization of rural services has political implications. That is why the public extension service run by the government remains the dominant pattern. Only in some cases like Uganda, partially or fully privatized advisory services are being established under donor-financed projects. The size of public extension organizations varies; some countries like Egypt have thousands of extension workers while those like Jamaica have only a few hundred. Lebanon may be considered as a special case where the extension staff is only one woman at national level and about a dozen or so in the field, and the rest is left to so many national and international NGOs each of which has its own development agenda without any coordination and policy advice from the government.

#### **Weak pre-service education**

The preparation of extension career starts in agricultural colleges and universities. Extension is fitted as a minor subject into general agriculture program and is given low priority as compared to other agricultural disciplines. The pre-service education especially at undergraduate level, therefore, is minimal, theoretical, and

not much to do with the real-life situation. Curricula, materials and pedagogical methodologies are of low quality and little attention is given to practical aspects. Because of this and due to the fact that the extension profession is tough and working conditions are not favorable, very few young men and women are attracted to this discipline in academic institutions.

### **Poor in-service training**

Logically, if the pre-service academic preparation is not satisfactory, extension organizations should develop the knowledge and skills of their staff through in-service training. But such is not the case. In-service training is infrequent and stereotype. Training institutes do exist but their infrastructure and quality of operations leaves much to be desired. Unlike agricultural research, overseas training opportunities in extension are next to nil except during 1970's when some nationals were sent overseas for degree programs under the World Bank or USAID funded projects. The in-service training is limited to routine courses in purely technical subject-matter and important subjects like leadership, group dynamics, rural youth, and communication are ignored. Field-level extension agents suffer from excessive training because every donor-funded project on rural or agricultural development asks for their training within the context of its specific objectives, almost like a ritual. The motivation to attend such mandatory training is less professional and more financial.

### **Lack of extension policy**

Most developing countries do not have an extension policy. With the efforts of FAO and some multi-lateral donors, only some countries like Philippines, Nepal and Bangladesh have been able to formulate extension policies. The absence of policy fails to get political commitment which leads to insufficient budget allocation to extension.

### **Low budgets and salaries**

The dearth of funding for extension is a chronic problem. If there are salaries for staff there is very low budget for programming. In some countries like Tanzania, even stationery materials were being purchased with donor-funded project funds. Salaries are usually low as compared to other agricultural disciplines. For example,

about three years ago, a national-level extension administrator in Iran was paid about one third of the salary received by his national-level counterpart in research. Some countries like Pakistan and India have taken measures to bring the salary at the same level for researchers and extension staff. Financial incentives are almost non-existent.

### **Non-extension responsibilities**

In several countries, extension staff is loaded with responsibilities some of which have nothing to do with extension or agriculture. Such responsibilities include enforcement of government regulations, tax collection, data collection for projects and population census, election preparation, etc. This leaves less time and energy for extension work. Well written terms of reference for extension agents are rare.

### **Lack of gender sensitivity**

Extension services in many developing countries do not have female extension workers and wherever they have they are in considerably low number. One consequence is that female producers do not have access to extension advice. Cultural and religious factors do not encourage male extension workers to deliver extension advice to the female farmers. The same is true for female extension agents for contacting male farmers.

### **Extension with little transportation**

Extension field workers usually do not have transportation facilities except where they have been given motorcycles on lease under some major donor-funded projects. In other countries bicycles or public transport is used if available. Each extension agent is required to cover a large number of farmers, usually running in thousands, scattered over a very vast area. For example, extension worker to farmer ratio in Kano State of Nigeria is about 1:3,300. The rural roads are either non-existent or muddy and dusty at best. Weather conditions are not always friendly and, in fact, very harsh during parts of the year, Communication infrastructure is scant. The lack of transportation is one of the major reasons why extension agents are not able to visit each farmer as often as they should. This leads to frequent complaints by farmers.

## **Top-down planning and methods**

Extension plans are normally drawn at higher administrative levels based on the budget available rather than determined by farmers' needs for extension support. There is hardly any meaningful involvement of farmers in extension program planning. Extension agents have little concept of participatory extension methodologies and normally top-down approaches are followed.

## **Technology-driven**

Extension approach is technology-driven rather than demand-driven. The main source of technologies is public research institutes but the operational linkages between research and extension remain notoriously weak. As research agenda preparation is normally driven by the motive of publishing in professional journals rather than by the sincere desire to address producers' problems, extension does not often get the needed solutions.

## **Dependence on “universal” extension methodologies**

There is little desire to develop any original extension methodologies that suit the local conditions. Dependence on using the donor-driven the so-called universal methodologies is heavy irrespective of their suitability, cost and sustainability. In the past, it was Training & Visit system and these days it is Farmer Field Schools. Such “universal” methodologies are promoted by certain donors while logically there is no single extension methodology which could fit universally for all situations as they are different from one another.

## **Temptation to serve big farmers**

Extension agents, who are low paid, have temptation to serve big farmers. This tendency brings to them various kinds of favors in return which is not possible if only small farmers are contacted by the agents.

## **Lack of concern for environment**

The main objective of recommended agricultural technologies is to increase crop yield without any concern for environment or sustainable development. Like most researchers, the extension agents also have little knowledge of natural resources management let alone advising the farmers on such matters.

### **Farm-to-market chain with missing links**

Various vital links in the farm-to-market chain are either non-existent or very weak. Extension agents are not equipped with the latest information on various aspects of marketing and are unable to give any advice to producers.

### **Helpless extension institutions**

Problems emanating from academic research agenda, elementary infrastructure, lack of proper communication channels, erratic farm inputs supply, inadequate credit and marketing mechanism and absence of storage and processing facilities, all affect extension performance negatively. Extension institutions, however, have no control over these factors.

### **Trends in Reforming Extension Organizations**

During the past many years, the public extension organizations have been criticized heavily. They have been called inefficient, ineffective and a burden on public funds, without any consideration given to the context and the very difficult conditions the extension agents work in. This criticism has forced the national governments to take certain measures either on their own or under pressure of donors. A strong trend towards reforming the public extension systems has also emerged in the past decade.

Public extension organizations have been subjected to substantial downsizing in terms of budget and manpower. In some cases, they have been abolished altogether. This has happened especially during structural adjustment programs.

Alternate service providers have been sought. They include private companies, NGOs, farmers' associations, universities, research institutes, private consultants and advisors. Public-private partnerships for performing the extension function have been tried, such as in the Philippines and Zimbabwe, in view of dwindling budgets of government extension institutions.

Several institutional reform thrusts have been observed. For example, pluralistic models have been introduced which involve several public and non-public service providers. Major donors like the World Bank have provided financing and technical assistance for the privatization of extension services, for example in

Uganda. Bottom-up, demand-driven, participatory extension approaches have been developed and introduced such as in northern Pakistan. Attempts have been made, albeit with limited success, to bring AKIS (agricultural knowledge and information systems) actors closer to one another for better coordination such as in Tunisia. Decentralization or devolution of extension services has taken place in countries like Indonesia, Philippines, Nepal, Pakistan, Nigeria, Ghana, Tanzania and many Latin American countries. The technical mandate of extension has been broadened such as in Egypt, Malawi and Zambia so that it could cover not only agricultural production but also relevant subjects like environment, management of natural resources, population education, HIV/AIDS mitigation, and nutrition.

### **Reform issues**

Although intentions of the governments of the developing countries and the donors have been good in attending the problems of public extension organizations, the ongoing reform measures have had varying degree of success. In some countries like Mauretania, public extension organizations have been very badly affected, while in some almost disappeared as a result of decentralization and privatization, two major reforms, without leaving a viable alternative thus depriving the producers from whatever little extension advice they used to receive. The process of institutional reform and organizational re-structuring is a daunting and complicated task. The following issues highlight the challenge:

1. The developing countries show a general tendency of resistance towards extension reforms. This is due to a lack of political will, expertise and financial resources needed over relatively a long period of time.
2. National authorities have been reluctant to delegate technical and especially financial decision-making to lower administrative levels such as seen in those countries which have or are going through decentralization and devolution.
3. Both political and bureaucratic hurdles have surfaced in establishing bottom-up and demand-based extension planning mechanisms.

4. Usually low priority is given to the extension profession in terms of allocation of resources, provision of career development opportunities and improvement of service conditions in general.
5. Frequent interference of elected politicians in local government positions (such as diversion of extension funds to non-extension activities, impounding of vehicles meant for extension staff, filling of extension vacancies with non-agricultural graduates, and low priority to extension while allocating resources as compared to livestock and cash crops (for quick generation of revenues) has marginalized extension in many countries where decentralization or devolution have taken place.
6. Efforts have been made to replace extension agents with information technology means rather than using the latter as tools in support of extension work.
7. The potential of extension staff to play a broader technical role is hindered not only by low-quality pre-service education but also by narrow focus limited to agricultural technology transfer.
8. Operational linkages among AKIS actors and especially between agricultural research and extension remain persistently weak.
9. There is general lack of interest of the private sector in engaging in private extension work. Extension by its very nature is missionary work in many ways while the main motive of the private sector is to make quick cash profit.
10. Civil society institutions like NGOs have low capacity and capability of delivering extension services, but most governments are reluctant to invest scarce resources in their capacity-building.
11. Farmers' associations in general lack the capacity of realistically demanding extension services especially in the situations where extension has been privatized. Massive efforts are needed to build their capacity.

12. Strong push by certain donors to follow one or two extension methodologies does not leave the room and motivation for developing original location-specific methodologies.

### **Conclusion**

Strong, lasting and visible impacts of the structural and cultural realities of the developing countries have generated the present structure and practices of national extension outreach and technology transfer institutions. Forces like globalization and privatization are picking up momentum. Small farmers are gearing themselves to compete with their meager products in the sometimes heavily politicized international markets. Removal of farm subsidies under donors' pressure has drastically reduced their little comparative advantage they once had. They need sound advice on coping with this situation. That is why most governments in the developing countries and donors alike are expressing a renewed zeal for strengthening the existing public extension services. However, the realities and the resulting organizational culture of these countries have posed serious challenges in reforming the traditional extension systems. Obviously, it is next to impossible to change these systems into Western style farmer advisory services any time soon. Reform measures could have reasonable chance of success if they are built upon thorough analysis and comprehension of structural and cultural realities. Otherwise, they will remain no more than costly experiments conducted on unscientific lines.



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