



Income diversification through agricultural development ¹

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Chapter 9 Income diversification through agricultural development

Agriculture as a driver of employment and income diversification

There is a wealth of localized success stories of the role of agriculture as a driver of employment and income diversification in poor rural communities, and also of local initiatives of dialogue and public-private partnership.ⁱ Nonetheless, they have remained as micro-local experiences without a road map on how, and under what conditions “collective action through rural institutions can improve access to services and competitiveness in order to make a difference in aggregate poverty figures.”ⁱⁱ

There are some examples of policy-driven initiatives at a higher scale where agriculture-based processes led to employment and income diversification with significant impacts on poverty reduction, which can offer some lessons on the way to resolve the upscaling problem of micro-local initiatives.

Petrolina-Juazeiro, an area of 53,000 square kilometers and 510,000 inhabitants in the states of Bahia and Pernambuco in Brazil, was no different than most of the rural areas in northeast Brazil, one of the main areas of concentrated poverty in Latin America. Its economy was based on a stagnant agriculture dominated by the production of cotton, livestock and subsistence crops. From the mid-nineties to 2006, a public corporation implemented six projects with close to 46,000 hectares of irrigated lands. This led to the emergence of more than 200 agricultural firms, about 2,200 small farmers, and more than 100,000 wage workers (60 percent as permanent laborers, 40 percent of whom were women), with incomes and wages way above the regional average, producing high value export crops.ⁱⁱⁱ

The Salinas district (in the Bolivar Department of Ecuador, where the majority of the population is made up of Quechua Indians), is today recognized throughout the country for the high quality of its cheese production. It has 22 small and medium-sized cheese factories linked to 28 savings and loan cooperatives that cover the whole territory. Marketing is carried out through their own outlets, or through supermarkets and pizza parlors (under their “El Salinerito” trade mark), and exports are channeled through Camari, a development NGO. A series of other local manufacturing activities have branched from this development: hams and cold meats, buttons made from native woods, toys, etc^{iv}

Yunnan is one of the poorest provinces in China. The “Household Responsibility System” introduced in 1978, and the liberalization of agricultural prices and marketing between 1978 and 1984, triggered substantial changes in agricultural practices in the 1990s. As a result of the transformation of collective production into family farming, there was a considerable increase in the production of high-value crops, leading to a decline in rural poverty from 41 percent in 1985 to 23 percent in 1997. Agricultural diversification has been the main exit strategy from poverty adopted by rural households. Better roads have played a key role in the decisions taken by specific companies, which decided to promote the cultivation of tobacco, tea and sugarcane among small farmers under contractual arrangements^v

The Sleman District (Yogyakarta, Indonesia) has adopted a new approach to rural development by empowering local communities to identify and develop the potential opportunities of local resources. Various networks, which are being used to build basic infrastructure, have encouraged

dynamic linkages between the three main areas of the region's economy: trade and tourism (21.5 percent of the district's production) manufacturing, including specialized food industries (20 percent) and agriculture (16 percent). This has allowed a stable rate of growth above the national average and the significant reduction of families on welfare.^{vi}

In Sub-Saharan Africa, confusion between a welfare or entrepreneurial approach was identified as one of the major weaknesses of LED initiatives. An example can be found in the Mahala Development Centre: in an area where unemployment was high and income levels very low, value-adding activities were shifted from urban centers to rural-sector households, with poor results in terms of both poverty and efficiency.^{vii}

From this examples it is possible to identify some relevant lessons for strengthening agriculture as a driver of rural employment and income diversification: (i) In all successful cases there was some kind of innovation in products, services, organization of processes and management; (ii) innovations allowed products or services to reach more dynamic markets, and; (iii) agricultural dynamism required strong linkages with manufacturers and services

Dynamic agricultural systems are dependent on strong interrelations with services and industry

One of the main lessons learned from successful agricultural development experiences is the systemic nature of agriculture's capacity to access and compete in more dynamic markets. This means that, independent from the degree of capital intensity and technological sophistication of agricultural activities, dynamic agricultural systems are increasingly characterized by strong linkages with services and industry, leading to income and employment diversification (at territorial and household level).

Backward and forward production linkages to suppliers of inputs and equipment and to processors and traders, tends to increase in importance and complexity as agriculture develops. Of particular relevance is the accelerated transformation of agrifood systems in developing countries, where supermarkets and other large national and FDI-based industries are becoming the main destiny of agricultural products. The impact of these trends on local incomes and employment will depend on the degree of openness and competitive capacity of the economy, and on the relative weight of modern retail systems

Production and consumption linkages to agriculture can also originate in other sectors of the economy, as for instance when an agro-industrial investor creates new raw material procurement options (such as contract agriculture), or when non-farm but rural-based activities (e.g., tourism) generate or increase the demand for locally-produced food. Labor market linkages derived from the seasonal nature of agricultural employment can stimulate rural non-farm activities during slack periods. Depending on the conditions of the area, they can be of the refuge (low productivity) type, or in more dynamic and flexible manufacturing activities. Incomes can replace the lack of credit for improved inputs or diversification of agricultural production, and agricultural surpluses can be invested in RNF initiatives.^{viii}

Rural-urban linkages are a consequence of the mostly urban location of industrial processing and related services, and the nature and intensity of the links between the agricultural hinterland and this nucleus are critical to the development of a dynamic agro-rural system. Cities have been an

important source of generation and dissemination of agricultural technology (Jacobs 1970). Since capital, inputs, labor and product markets tend to be less imperfect in the urban-industrial environment, spillover effects to neighboring agricultural areas can lead to a greater mechanization, less surplus labor, better prices for their products and, ultimately, to higher wages in their agricultural labor markets.^{ix}

According to Southwaite and Tacoli “...small and intermediate urban centers’ role in the distribution of goods and services to their rural region is only significant where there is broad-based demand. Prosperous agriculture can underpin rapid local urban development, but only if land-owning structures are not too inequitable and a broad range of small and medium-size farmers get good returns from crop production.”^x

In Peru, mechanization and the use of fertilizers increased with the degree of urbanization of rural municipalities,^{xi} and the same happened in the agricultural hinterlands of intermediate cities in Sao Paulo (Brazil), where there were higher levels in the number of tractors, pickup trucks, fertilizers and pesticides per hectare than in more remote areas.^{xii} In 1986, Kenya launched a Rural Trade and Production Centers Program that, according to Evans,^{xiii} provided the driving force for the emergence of virtuous circles of rural-urban linkages, which operated through the effective external demand and broad-based spillovers of export earnings to the region.

The relevance of rural-urban links goes beyond the development of competitive agro-rural spaces, since it also has a critical incidence in the livelihood of poor rural families, both as places where they satisfy a high proportion of their basic consumption needs, and where they look for a range of employment alternatives. Therefore, to improve the positive effect of urban-rural linkages on the livelihoods of poor rural people, it is important to reduce transaction costs and other impediments to the movement of people, goods, services and information between the rural hinterland and small towns and intermediate cities.

Himo is a thriving small market town in Northern Tanzania, close to the border with Kenya. It is a collection and distribution point for smaller markets in the Kilimanjaro region, and a large proportion of the produce is sold either directly by producers or by small traders to larger operators, who take it to Dar es Salaam and other cities in the country or across the border to Kenya. Himo also receives produce from other Tanzanian regions and manufactured goods from Kenya. On market days, the town is hectic, with produce arriving from near and far, and traders, middlemen, porters and food vendors all trying to cash in on the trade.^{xiv}

In Nhat village (Ha Nam Province Vietnam), farming is still the primary activity for over half the population. However, most households are increasingly diversifying their agricultural activities, rearing pigs and poultry with the intensive use of industrial animal feed. Improved access to markets — either domestic urban markets within the province and in Hanoi, or international markets through contract farming — has also played a major role in transforming farming practices, particularly in the direction of the production of higher-value produce.^{xv}

In central Mali, horticultural producers depend on credit from wholesale traders who quite often, due to covariate risks, are unable to perform this function. This leads to sharp declines in horticultural production, despite strong urban demand and increasing producer prices.^{xvi} In Peru, the peasants of the Sierra migrated to coastal cities instead of cities in their own region. Thus, the

modernizing effect of urbanization on the social relations of production was monopolized by coastal agriculture bypassing the Andean areas.^{xvii} These cases highlight situations in which the weakness of rural urban linkages act as barriers to agro-based local development.

A new concept of the rural space as integrated by small towns and intermediate cities and their agricultural hinterland is needed to interpret the successful and unsuccessful experiences mentioned above, they all have a “spatial dimension given that they are a function of geography, historical and policy settings, and of the institutional/organizational landscape.”^{xviii} Therefore, strategies and policies aimed at enhancing the role of agriculture for development can be framed under the concept of rural territories^{xix} where the “rural” is a different entity than that defined by official censuses.

Population density has been considered as a criteria for redefining rurality. For instance, the OECD Territorial Secretariat estimated that 30% of its population was “predominantly rural” (density below 150 inhabitants per square kilometer); using this criteria, Osses estimated the rural population for a region in Chile at 50 percent against the official figure of 33 percent; da Veiga for Brazil (with a lower threshold of 80) puts it at 30 percent instead of the 19 percent in the official census. Chomitz^{xx} combining density and “remoteness,” established gradients for several LAC countries estimating that 46 percent live at population densities below 150, and about a third of them are more than four hours away from a city of 100.000 inhabitants. There is no a priory criterion for establishing a threshold for a rural territory where the rural/urban dichotomy is challenged and the concept of a rural urban continuum arises.^{xxi}

Rural Territorial disparities

“The persistence of regional disparities within countries is a major policy concern facing many governments in rich and poor countries alike. Clarity on the causal factors of weak regional performance and careful consideration of potential tradeoffs are needed to guide policy choice over regional interventions.”^{xxii}

It is a well-known fact that globalization, innovations in technology, supply chains and institutions have had very asymmetric impacts on rural areas, and in each country there are regions which are taking advantage of new conditions while others stagnate, or even decline, as a result of the dynamics at household, firm and product level, where “winners” and “losers” are not randomly distributed in the rural sector. Even the more optimistic results of studies on convergence seem to agree that at the current rate, it would take several decades for straggler regions to catch up.^{xxiii}

In those regions where agriculture was able to grow in the new context, it was the result of a productive transformation in their preexisting patterns, and when this growth created options for poor rural households to escape poverty, it was because of an inclusive institutional environment.

A typology of territorial configurations within each country can be constructed taking into account the degree of productive transformation of the region and its institutional capacity to include poor rural households in the benefits of this transformation.

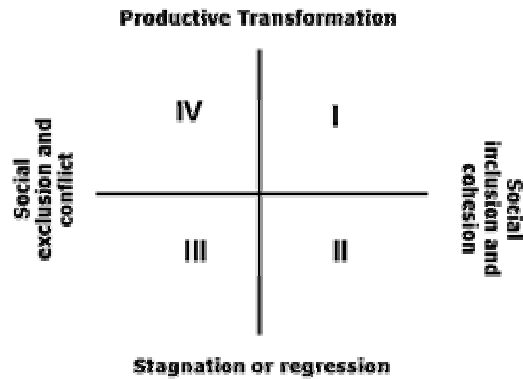


Figure 1. Typology of rural territories

Type I territories correspond to dynamic agricultural systems that were able to adapt to new market requirements in terms of grades and standards and to compete with other regions or countries. Their competitive capacity is part of a system of strong upward and forward linkages with industry and services in the urban nucleus. High direct and indirect effects on employment generate better quality of non-farm rural alternatives, particularly for women. An inclusive institutional environment for poor rural households opens up options for poverty exit strategies both in agriculture and non-agricultural activities.^{xxvii} The Petrolina Juaceiro and the Sleman District cases are illustrative of this type of territories

Type II territories are characterized by the existence of strong local formal and informal institutions that in many cases are rooted in cultural or ethnic traits or in historical idiosyncrasies that give these areas a shared identity. They may well have land but lack other productive assets and other conditions to be able to face the challenges imposed by the new economic rules of the game, in order to achieve a self-sustained road out of poverty. It is in these types of territories where the options to escape poverty are more limited, due to the fact that rural non-farm employment is usually of the “refuge” type, and pressures to migrate are stronger. Nevertheless, in some cases, based on their strong identity and organization, better local options can be developed: such is the case of the indigenous governments of the Cotopaxi Province and the Cotacachi municipality in rural Ecuador.^{xxv}

Type III territories correspond to areas that have experienced a regression in their productive potential and where conflicts, war, illegal crops and other disrupting processes are taking place. Moreover, the rule of law is either nonexistent or extremely weak, implying that, until this last condition is reinstated, no territorial development can be considered. When some degree of order is reestablished, the first priority is the implementation of transitional programs to reestablish a basic institutional framework.

Type IV territories are characteristic of areas where large and technologically advanced competitive enterprises work like spatial enclaves, with little or no spillover effects on the local economy. When these enclaves are surrounded by a significant number of poor farmers, or landless rural households excluded from the benefits of the dynamic activity, recurrent social tensions or open conflicts can eventually affect investment and growth. The options to escape poverty in these territories can be even more limited than in Type II, unless the collective

demands of the marginalized families are able to induce new rules of behavior in the large enterprises and public sector. The conflicts between peasants or settlers against two large mining companies in Cajamarca (Peru) and Cotacachi (Ecuador), highlight possible outcomes in these kinds of territories.^{xxvi}

Economic development of rural territories

Dynamic rural territories can emerge around agricultural systems through a simultaneous process of institutional development and productive transformation, to perform as clusters of economic activity, so providing rural households with opportunities for income diversification. The productive transformation of a rural territory implies the introduction of innovations in products, processes and management to achieve environmental sustainability and growth. The institutional change implies both: a “business environment” (transparency, contract enforcement, reduced transaction costs), and an inclusive environment where poor people can seize the opportunities created to gain a pathway out of poverty.^{xxvii}

A concerted vision of potentialities and development alternatives of the local economy among the main stakeholders, greatly enhances the possibilities of stimulating a process of productive transformation and of building a local identity. Decentralization and the development of an organizational/managerial capacity to conflict resolution; public-private partnerships, and; empowered multi-stakeholder platforms, are among the policy instruments necessary to achieve a dynamic and inclusive agricultural-based rural territory. This is an option for Type I territories when there is a significant proportion of small farmers, and in Type II territories in favorable agricultural regions, and even in Type II territories with less favorable conditions where the provision of environmental services can be adopted.³

Decentralization

Political and administrative decentralization is normally considered as a first step in the necessary institutional changes for local economic development, since there is a need to strengthen the administrative and fiscal capacity of the local authorities in order to further a policy of greater participation. It is assumed that at this level there is a better perception of the special nature of developmental needs, constraints and potentialities; that the possibilities of turning organized participation into a “resource” or “social capital” requires smaller territorial areas, and extremely close institutional counterparts. Coordination of the many sectors involved in rural development are almost impossible to achieve given the heterogeneity of the rural space.” (Binswanger 2006)

Nevertheless, there are important risks, including: the possibility of local elite capture; an increase in territorial disparities; a split between national and sub-national objectives (Bolivia); financial mismanagement (Argentina and Brazil); the fragmentation of potential economies of scale, etc. Furthermore, even the assumption of accountability is not sustainable when “staff perceive that their career paths are upwards (i.e., within the administrative or professional

³ Upstream watershed management, carbon sequestration landscape management for agro-tourism. See Tubiana 2006 on policy options and implications.

hierarchy), but not towards local government.^{xxviii} Furthermore, an OECD study of 19 countries⁴ of the impact on poverty of decentralization, found that in only six countries was it possible to record positive outcomes, and in some of the poorest, profit seeking and corruption led to negative impacts.

Results from different decentralization experiences show that, when successful, local governments were able to increase the effectiveness and efficiency of the provision of some social services, such as basic health and education, cultural and recreational activities, refuse collection, small-scale infrastructure, etc. However, there are very few examples where a rural local government has been able to play a significant role in the development of its local economy. More often than not, the local authorities of rural municipalities tend to use the few investment resources at their disposal for urban facilities, and not for their agricultural hinterland.

Paradoxical though this may seem, central government plays a key role in decentralization, not only because it must delegate some of its authority to sub-national bodies and grassroots organizations, but also because it must, in addition, avoid the misuse of funds that have been captured by a handful of powerful local interests, and the squandering of funds on pointless initiatives by inexperienced or corrupt local officials. Sometimes, central government must pressure local levels of government through its sub-national bodies, in order to set in motion processes of real participative decentralization, and avoid clientelistic practices.^{xxix} However, the debate between top-down and bottom up processes is redundant, as large scale programs have to consist of concurrent actions from above and below.^{xxx}

Participation

In most countries, a great variety of forms and mechanisms of civil society attempts at participation at local level, have accompanied the decentralization process: councils, committees, local action groups, *mesas de concertación*,⁵ that emerge and disappear, very often in frustration, are nevertheless expressions of grassroots initiatives to have some say in the fate of their communities. The root cause of their irrelevance is the absence of power to decide on the allocation of available funds and other resources, or the absence of managerial skills to assign such resources when this power exists in some form.

Public-Private platforms empowered with resources and managerial capacity can have a critical role in the construction of a concerted vision for territorial development. These platforms or local action groups (i.e. such as the case of LEADER in Europe), can outlast local elected authorities or the developmental project technicians, and sustain the long-run measures needed for the achievement of economic self sustainability, in as far as they are not pushed to show short term results for purely electoral purposes, or for the duration of the project. Strong producer associations, trade union representatives, women's civil organizations, ethnic groups and the

⁴ (4 in Latin America, 8 in Sub Saharan Africa, 6 in Asia, 1 in North Africa)

⁵ A forum where various groups try to come to agreement on problems and priorities and coordinate their plans and activities so that, where possible, they can meet common needs through concerted actions.

younger generation are needed on these platforms as a precondition for an intensive project that takes into account the demands expressed in “Voices of the Poor.”⁶

Spatial dispersion, seasonality and covariant risk, act as obstacles for poor people to form strong organizations in order to have an equivalent voice to other stakeholders.^{xxxii} Moreover, when they are able to organize and be part of a social movement that forms part of local action groups, their actions are very often related to demanding or resisting, rather than concerting with other stakeholders for development options.^{xxxii}

Participatory budgets at regional and municipal level can be an important instrument for transparency and citizens’ involvement in local development, and there is an increasing pressure from citizens’ organizations and advocacy groups for a more open discussion on the use of public funds.⁷ Among the most quoted initiatives in this area are the Porto Alegre participatory budget (1990) in Brazil, and the “People’s Campaign for Decentralized Planning” in Kerala, India (1996); both cases have been a major instrument in the democratization of municipal budgets, which are formulated with the direct participation of the public in setting priorities for public investment in the local area, with vast numbers of people involved in the process: 100,000 in the case of Brazil, and in Kerala 25 percent of households belong to village assemblies with discretionary power over 40 percent of the budgets. In both cases there has been a positive impact on expenditure in poor areas.^{xxxiii}

The Business environment of the productive transformation of the local economy

In the eighties, talking about a business environment in relation to rural development was felt to be an oxymoron, and some prejudices still persist today. Nevertheless, it is the private sector that increasingly defines the key issues on the rural development agenda.^{xxxiv} Therefore, together with the role of public-private platforms, it is necessary to consider issues of coordination between different private agents within and beyond the territory, linking agriculture with the agro-industry, commerce and services for the productive transformation of rural territories.

Contract farming, outgrower schemes, long term spot purchasing arrangements, marketing contacts, etc., are alternative forms of coordination to spot market transactions. Small producers in Type I territories can be price competitive in scale-neutral products with high labor and high supervision intensity, if the transaction costs involved in dealing with them are compensated. Nevertheless, global food system trends towards increasing concentrations indicate that: contract farming with agro-industries and supermarkets is an option for a very small percentage of small producers, even in favorable agricultural regions^{xxxv}. Subsidies to processors or supermarkets to qualify small farmers as input providers (a public good) is one possible way of increasing their

⁶The answer given in “Voices for the Poor” to the question of “what might make the greatest difference in their lives was: (a) organizations of their own so they can negotiate with government, traders, and NGOs; (b) direct assistance through community-driven programs in order to shape their own destinies; and (c) local ownership of funds, so they can end corruption. They want NGOs and governments to be accountable to them (Naryan ,B. Pretesh, P. 2000)

⁷ *Indonesian Forum for Budget Transparency*, the Centre pour la Gouvernance Démocratique (CGD) in Burkina Faso; L’Observatoire de la Gestion des Ressources Pétrolières in Chad; the Centro Internacional para Investigaciones en Derechos Humanos in Guatemala; etc.

numbers.⁸ For instance, in the Philippines the innovative clustering strategy of NorminVeggies enabled small farmers to be active players in the supply chain and succeed in meeting the quality standards of the modern retail outlets with a price premium of 10 percent to 20 percent, compared to the spot market in traditional chains.^{xxxvi}

Efficiency and effectiveness of contractual arrangements depend on the confidence between parties and not on their formal (legal) or informal character, since opportunistic behavior by both parties occurs under both forms; the absence of institutionalized forms of arbitration is a stumbling block for their diffusion; the relative absence of intermediate firms and funds (public good subsidies) for organizers of links between input suppliers and demand (supplier training) limits the potential development of this form of coordination

Supply chains of non traditional exports or niche products under the new conditions in the global food system are rife with obstacles for the participation of small farmers, as illustrated by the Kenyan experience, where almost 40 thousand small farmers, engaged in the production of horticultural products for export, saw a decline in the country's annual growth rate for exports from 17 percent in the decade following 1974 to 4 percent in the nineties.^{xxxvii} Competition and the cost of complying with higher standards and certification requirements are increasing barriers to smallholder participation, together with the fact that firm concentration and spatial agglomeration are reducing the number of key players in those product areas.^{xxxviii} It is in their impact on wage employment generation that supply chains can play an important role in poverty reduction, since most non-traditional agricultural products are labor intensive.

Small farmer associations and farmer cooperatives are another form of coordination among small producers that could be an option for Type II territories in favorable agricultural areas. The development of these kinds of arrangements is usually linked to some external catalyst: an NGO, a church, a private extension firm or some social leaders, where being part of a community usually facilitates the contextual conditions for their emergence. Their aim is to be able to access higher value markets than those of undifferentiated commodities in spot markets, for this they have to overcome market failures in information, finance, technology and market barriers imposed by grades and standards. Their beginnings are usually subsidized and the difficulties of achieving self-sustainability give way to the perpetuation of those subsidies, camouflaged as recurring loan renegotiations or in open default. In Chile it has been estimated that no more than 15 percent of these associations could survive without such subsidies.^{xxxix}

Private investment is very difficult to attract to territories like Type II that can not exhibit the kind of competitive advantages derived from agglomeration and other externalities. Therefore, explicit public incentives are needed to overcome these initial limitations. Public investments in strategic hard and soft infrastructure are critical. Business services, tax incentives or developmental subsidies (like the forest and soil fertility subsidies in Chile) might be the kind of measures to create an enabling environment for inducing private entrepreneurs to invest in new ventures. A careful evaluation of what are the critical kinds of investments has to be made, avoiding the kind of supply-side initiatives that led to major infrastructure projects with no

⁸ Interviews of agro industrialists in El Salvador by one of the authors, indicated that they were willing to pay 40 percent of the cost of qualifying small farmers as high value input providers but they could not find a positive answer from the government.

demand for their services. In some cases, low-quality roads can be significantly more cost efficient than high-quality ones in terms of their impact on GDP, the generation of non-farm rural employment and poverty reduction.^{xi} It is worth mentioning that urban food consumption in many low-income countries is delivered by a host of small, informal street producers and vendors, who can reach significant numbers of people. This is the case of Garoua in Northern Cameroon (230,000 inhabitants) where there is “one agri-food income generating activity for every 23 urban households.”^{xli}

Innovation systems are a necessary condition for the process of the productive transformation of rural economies and a major increase in competitive funds, subsidies to private sector R&D, university-private firm linkages; specialized R&D institutes with clear regional focus, etc., will all be needed since the challenges faced by the different types of territories are of a relatively different nature. In Type I territories, innovation for increasing or even maintaining their competitive capacities and market competition will be the driving force for taking advantage of their access to information on technology and markets. Pro-poor innovations will have to make do with improving the conditions of wage workers (training, labor rights, sanitary and physical conditions, especially for women); access to technical assistance and financial services to small enterprises.

In Type II and IV territories, innovations are needed to change the kind of products or services, delivered or the processes employed, or the organization and management of their current activities in order to create better paying employment opportunities that enable poor households to escape poverty. As previously indicated, investments in strategic infrastructure in these territories is a precondition for such changes to take place. Here, innovation is above all an unlearning process of entrenched past practices, and a learning process to combine addressing urgent present needs with the necessary changes for improving livelihoods. It is a process of enhancing the abilities of people to manage risks and grasp opportunities.^{xlii} In many cases, social catalysts have proven to be the initiators of these learning processes, as illustrated by the cases of returning migrants, non-farm rural entrepreneurs,^{xliii} school teachers, priests,^{xliiv} and private foundations. A creative use of ICT can help this learning processes, as illustrated by the case of the e-Choupal (a gathering place in Hindi) impact on 11,000 villages and its effect on marketing; the D2Bpricenow.com in Bangladesh, with its impact on access to inputs, and the Horizon Community in Mahavilachchiya, Sri Lanka, with its impact on community building and service provision.^{xliv}

ⁱ Zezza and others 2006

ⁱⁱ World Bank, 2006

ⁱⁱⁱ (Damiani 2006)

^{iv} Manuel Chiriboga, 2005

^v Damiani 2006

^{vi} Roberts 2005

^{vii} Quan, Julian and others 2006

^{viii} Haggblade 2005

^{ix} Schultz 1953, Katzman 1974

^x Satterthwaite, and Tacoli: 2003

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