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Targeting of and Outreach to the Poor by Rural Development Nonprofit Organizations in Cameroon

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Discussion papers in this series are intended to stimulate discussion among researchers, practitioners and policy makers. The papers mostly reflect work in progress. This paper has been reviewed by Prof. Dr. Manfred Zeller (University of Hohenheim) and Dr. Innocent Ndoh Mbue (China University of Geosciences) whom we thank for their valuable and pertinent comments.

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List of Abbreviations

NGO	Non-governmental organization
PCA	Principal Component Analysis
PROGRESA	Programa de Educación, Salud y Alimentación
PRTC	Presbyterian Rural Training Center, Fonta
RDNGO	Rural development non-governmental organization

Abstract

The importance of nonprofit organizations such as rural development organizations, farmers associations and common initiative groups as drivers of change in rural areas has been generally recognized in the economics of nonprofit organizations. While the economic theories attempt to explain the formation and functioning of nonprofit organizations, the targeting and outreach performance of these organizations has received little attention and at best is empirically divergent. Using the example of a nonprofit rural development organization in North West Cameroon, this paper analyzes the relative poverty of beneficiaries and non beneficiaries of its small scale fish farming program as a proxy for targeting efficiency. Poverty is measured through multiple indicators as well as household incomes. The results show that the nonprofit organization did a commendable job in serving poor communities, although its self targeting approach led to a disproportionately higher share of beneficiaries from the moderately poor and better-off terciles than from the poorest. Beneficiaries also had higher asset values and incomes than nonbeneficiaries, although the contribution of the fish farming activity to these was insignificant. This means that these households were already better-off prior to the program and not necessarily as a consequence of service delivery. The paper concludes with the need for relative poverty assessments prior to service delivery for improved targeting and outreach performance, while considering the additional costs involved.

Key words: Nonprofit organizations, targeting, poverty, Cameroon

Targeting of an Outreach to the Poor by Rural Development Nonprofit Organizations in Cameroon

Azibo Roland BALGAH and Gertrud BUCHENRIEDER¹

1 Introduction

The importance of nonprofit organizations such as non-governmental organizations (NGOs), farmers associations and common initiative groups as drivers of change in rural areas has been generally recognized in the economics of nonprofit organizations. Yet, the nonprofit sector is very complex and thus can not be explained in a comprehensive manner by any single theory. However, the different theories seem to position the nonprofit sector as an important actor in reaching the poor who are often heavily affected by government or market failures, and who often express their self-interested motive of moving out of poverty by forming member-based organizations like cooperatives and microfinance institutions. Rural development non-governmental organizations (RDNGOs) are specific forms of nonprofits, which are active in the rural sector in many developing and developed countries. *Ceteris paribus*, such nonprofits exist to cover to a large extent, the unmet demands of the poor who are affected by market or government failures, or both. Most often RDNGOs are altruistic in nature, thus targeting services to the poor segments of society.

This paper examines this issue by empirically analyzing the targeting efficiency of a specific RDNGO, the Presbyterian Rural Training Center (PRTC) Fonta in Cameroon. The next section summarizes the economic theory of nonprofit organizations. Thereafter, the economics of targeting will be briefly reviewed. The background of the PRTC will then be described. This is followed by an explanation of the methodology used in the empirical case study. The key results related to the targeting performance of the RDNGO are presented before the conclusion.

2 Economics of nonprofit organizations

Traditionally, two types of theories have been used to explain why nonprofit organizations exist. One type, traditionally designated as government or market failure (or demand side) theories regards nonprofit organization as a particular solution to government and market failures. The concept of government failure as the motive for the creation of nonprofits is presented in the theory developed by Weisbrod (1977, 1988). It is also known as the ‘public goods’ theory. The general argument is that government is

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providing public goods to meet the needs of the median voter. If a fragment of population happens to have a greater need for a certain good than is the case with the median voter, then a nonprofit organisation represents a mechanism to satisfy this residual demand by means of private production of public goods by those who need these goods in the greater amount.

The market failure component of the demand theory was first proposed by Hansmann (1980) under the banner of 'contract failure'. Contract failure is defined by Hansmann as the inability of consumers 'to police producers by ordinary contractual devices' and represents a particular kind of market failure (Hansmann 1980: 845). Specifically, contract failure occurs when consumers cannot determine the quantity and/or quality of goods and services that are provided to them. In this situation, for-profit firms would have an incentive to downgrade quality/quantity characteristics of the products they offer at each given price, and appropriate the resulting profits. The advantage of nonprofit firms in dealing with such products lies in the fact that no profits can be appropriated by members or patrons, which explains why nonprofit firms should not have any similar incentives to cheat consumers. In this sense, nonprofit firms are more trustworthy than for-profit ones. The implicit assumption of the demand theories is that nonprofit organizations emerge to meet the needs of the less than median voter. As such their services should benefit a greater proportion of the poorer segments of society. Put differently, the nonprofit organizations will be seen by demand theorists as existing to meet the demands of the poor. Most rural development nonprofit organizations would partly or completely be described under this theory.

The second type: supply-side theory, views nonprofit organization as an outlet for altruism, ideological entrepreneurship, and practicing of social values (Buchenrieder et al., 2001; Jegers, 2008; Steinberg, 2006). Social values are understood here as enduring beliefs that a specific end-state of existence is socially preferable to an opposite or converse end-state (Rokeach, 1973). Since people have these beliefs, they are motivated to practically realize them, that is, to change the existing social reality in the direction of its better conformance with what is seen as more preferable. This can be done by supporting or creating a nonprofit organisation, which has a mission to promote such ideological, altruistic and self-interested values usually for nonpecuniary reasons. In this sense nonprofits would seem to exist to meet altruistic motives aimed at meeting social objectives. This description seems to fit member-based nonprofits like clubs, common initiative groups or farmers associations who exist to service the interest of its members.

In spite of the substantial advances in nonprofit economics, it is still marked by a logical separation between the demand-side and supply-side arguments for the existence of nonprofit firms. As noted by Hansmann (1987), this separation means that the reasons why customers or citizens need the outputs of nonprofit firms have little to do with the

reasons why these firms are created by nonprofit entrepreneurs. The problem of separation between the demand-side and supply-side arguments have been widely recognized in the literature (e.g. Hansmann, 1987; Steinberg, 1993; Rose-Ackermann, 1996). As such, economists have recognized the need for substantial progress in integrating the demand-side and supply-side rationales for the nonprofit sector.

More recently, attempts have been made at reconciling and integrating the demand-side and supply-side theories of nonprofit organizations (e.g. Steinberg, 2004; 2006; Valentinov 2006; 2008; 2009). Integration theorists propose to view nonprofit organization as an institutional response to limitations on the social division of labour. According to this approach, limitations on the social division of labour give rise to the replacement of market exchange with self-sufficiency that may be embodied in nonprofit organization. As such, nonprofit firms are self-sufficient with respect to their missions, but not necessarily with respect to any other activities that they might undertake. This implies that the desire to consume outputs of a nonprofit firm is automatically translated into the desire to create that firm. As an example, member-based organizations may exist as a result of market failure and with a self sufficiency objective.

While the argument of integrative theorists seem plausible, it is difficult to accept that integration is reduced to quasi-automatic union between the demand-side and supply-side theories of nonprofit firms. Even though the supply-side motivation of nonprofit entrepreneurs may be related to the demand-side motivation of consuming the mission-related outputs, the former motivation may include additional considerations that potentially preclude the full satisfaction of consumption preferences for the mission-related outputs in question. Member-based nonprofits may exist as a result of market failure, but also to meet altruistic, ideological, nonpecuniary and even pecuniary objectives.

3 The economics of targeting: A brief review

Directly targeted poverty alleviation schemes are widely used, especially in developing countries. Targeting is vital when poverty alleviation is pursued as an own objective by governments or NGOs, explicitly or implicitly as a contribution to the Millennium Development Goals². The outreach performance is then assessed as a representation of the initially targeted group in the actual targeted population reached. Thus while targeting describes the practice of limiting access to an intervention to a selected group, in the case of poverty alleviation to the poor (Hoddinot, 2001), outreach is more concerned for

² A summary of the Millennium Development Goals can be found at <http://www.undp.org/mdg/basics.shtml>.

example with how deep in the pool of the poor the programme has been able to reach (Navajas et al., 2000). As Sen (1995: 1-2) puts it, “the more accurate a subsidy in fact is in reaching the poor, the less the wastage, and the less it costs to achieve the desired objective. It is a matter of cost-effectiveness in securing a particular benefit. To see it another way, it is one of maximizing the poverty-removal benefits accruing from a given burden of cost. If antipoverty policy is to alleviate poverty most effectively, then – on this argument – it is reasonable to make sure that the subsidies reach the poor and *only* the poor”.

Many approaches have been used in the literature to explain, assess or achieve targeting. Broadly speaking, these approaches can be grouped into two categories: self targeting and administrative targeting. Self targeting refers to the situation where an intervention is available to all. People select themselves as beneficiaries to the intervention, even if it is fashioned in such a way that it is less attractive to specific groups (for example the well-off). Administrative targeting implores methods of targeting that stimulate the effective participation of the targeted group(s) while excluding the others (Irungu and Zeller, 2001).

What matters for anti-poverty targeting is the ability to identify the poor and predict their living standards as a prerequisite for increased outreach performance (Muller and Bibi, 2007). Consequently various methods of administrative targeting are used in anti-poverty programs. In most developing countries, regional disparities in living standards are identified. For example in Cameroon, poverty is principally a rural phenomenon (Amin, 2001; Baye, 2004; Epo and Baye, 2007) although intra-regional and inter/intra-household disparities exist. Regional (or geographic) targeting is an important instrument for governments and NGOs in developing countries. However this approach does not usually capture within-region differences in poverty, thus leading to program capture by the better-off. As such other approaches such as living standard measurement surveys based on household consumption or income are increasingly applied (Ravallion, 1992; Skoufias et al, 1999; Holzmann et al., 2003). Difficulties with obtaining data on household consumption or income have led to the development of “indicator targeting” methods, whereby transfers are contingent on some correlates of poverty such as land holding, level of education, quality of housing and food security (Ravallion 1992; Henry et al., 2000 & 2003).

Different approaches have been used by government and RDNGOs to target and improve the outreach of programs to the poor. Dufhues and Buchenrieder (2005) for instance, assess the performance of targeted-based microfinance schemes by the government of Vietnam. They conclude that the poverty outreach through formal channels is satisfactory, with about 50% of predominantly poor households having access to formal credits. However, much in line with the predictions of some other research findings (e.g.

Hulme and Mosley, 1996), the poorest households were not clients of formal lenders. Skoufias et al. (1999) analyze the Mexican government's PROGRESA³ programme aimed at targeting the poor through a combination of geographic targeting (based on the selection of poor localities), and intra-regional targeting (achieved by identifying poor households as beneficiaries within the selected regions through household surveys). Although they acknowledge the costs involved in the selection process, they conclude that the scheme did a good job to target the poor, although leakages of about 16% led to missing a few of the extreme poor households and incorrectly incorporating some well off households. Castro-Leal et al. (2000) examine public spending on health care for six African countries and find that this spending favors the better-off rather than the poor. They conclude that the subsidy problem cannot be solved by adjusting subsidies, but essentially through the implementation of approaches that can be effective in reaching the poor. Irungu and Zeller (2002) assess among others the targeting and outreach performance of two child-safety net programs operated by two NGOs in rural Kenya. They reveal that service delivery reached mainly households from the middle relative poverty group, than the poorest. Social capital was found to play a negative role, as households with fewer ties were excluded in favor of those with more ties. Given that the targeting was based on community knowledge, their results question the common sense of community participation as an important lever for improved performance and better targeting⁴. Nevertheless, by assessing the incidence and severity of poverty in the programme regions in relation to national poverty lines, the organizations were reported to have done a commendable job of geographic targeting. The above examples show divergent results, although targeting efficiency and depth of outreach to the poor seem to be contingent on the targeting approaches used. Combinations of methods yield better results than single approaches, with indicator methods proving to capture relative poverty better and easily than other methods. In our case study, we apply indicator-based methodologies to assess the relative poverty of beneficiaries to nonbeneficiaries as a proxy for targeting and depth of outreach.

³ For more on PROGRESA (Programa de Educación, Salud y Alimentación), see for example <http://www.ifpri.org/pubs/ib/ib6.pdf>.

⁴ For a review of community based targeting mechanism and outreach, see for example Conning and Kevane (2002).

4 Research Background: Case study organization and analyzed programme sector

This section briefly describes the Presbyterian Rural Training Center (PRTC)⁵ Fonta in Cameroon as a case study of a RDNGO. As small-scale fish farming is propagated by the PRTC to alleviate regional rural poverty, the fish farming sector in Cameroon is also presented.

4.1 PRTC Fonta: Rural development nonprofit organization in Cameroon

In Cameroon, nonprofit organizations are the most important actors in the small holder agricultural development sector. The PRTC is one of those rural service-providing non-governmental organizations in Cameroon with the longest history. It was created in 1968 by the Presbyterian Church to provide rural extension services to the poor. PRTC has limited its program intervention to the North West Region of Cameroon since its foundation, one of two anglophone provinces (the other eight provinces being francophone orientated). As the English-speaking Cameroonian population is in the minority, the central, predominantly francophone government may have underserved them. The perceived severe failure of the government and partly the market in the area of rural extension services prompted the Presbyterian Church to step in.

PRTC's overall mission is to alleviate the agro-rural poverty through gender-sensitive training, adaptive research and extension services in sustainable agriculture. It is utilizing participatory methods and has established a body of about 20 highly skilled and motivated staff members. Its clients are rural poor farmers who are bypassed by state extension services⁶ and unable to pay for private commercial extension services⁷. PRTC aims at reaching about 600 households annually.

⁵ More information on the non-profit firm in question can be assessed at www.prtcfonta.org.

⁶ Each government extension worker is usually responsible for a zone made up of a number of villages (between 1-3 villages per zone). Most agro-rural holdings do not know the zonal extension workers, because most of them are based in the urban areas. The North West Region counts not more than 250 government extension workers of the over 1,500 employed nationally. Theoretically, one worker is responsible for over 1,000 farming households, considering the over 300,000 small-scale farming households in the region. Not surprising that some scholars (e.g. Fonjong, 2004; Goufo, 2008) describe the government service as a constraint to agricultural development in Cameroon.

⁷ The training of privately sponsored graduates in the National Colleges of Agriculture and Animal Sciences in Cameroon has initiated a small market for agricultural extension services. However, mostly the large farms employ such services.

4.2 Integrated small-scale fish farming as a service to the agro-rural poor

Integrated small-scale fish farming is one of the training and extension programs of PRTC. A key reason for choosing this program for empirical analysis was the fact that the reports of PRTC frequently mention it as highly successful with regard to its mission to alleviate rural poverty. The (unwritten) objective of this program is to improve the diets and income of the poorest of the poor. The integrated small-scale fish farming approach fits within the mixed farming system widely practiced in the intervention areas, and enhances optimal nutrient use, promotes bi-product recycling and sustainable natural resource management. The caption “integrated small-scale fish farming” signals a form of self targeting, which is by its very nature less appealing to big farmers. This expectation is confirmed by the program objective.

Technical assistance consists mainly of knowledge on pond construction and management offered through center and village based trainings, and during extension field visits, while the material support usually includes a PVC drainage pipe and seed fish. Beneficiaries however have to show proof of own contribution (such as own land, labor availability and local building materials for pond construction) as a precondition for participation and a means of enhancing long term sustainability.

A second motivation for analyzing this program comes from the importance of fish farming for small poor farmers in particular and especially for the Cameroon economy. Cameroon is a net importer of fish. An analysis of the demand and supply trends of fish products in the Cameroon economy reveals that, while for example the import of fresh water fish products have remained more or less stable between 1998 and 2001 (around USD 3,000,000 per annum), the value of exports rapidly dropped from USD 2,604,000 in 1998, to a meagre USD 365,000 in 2001 (FAO, 2003). Also it has been understood for some time now that animal protein is the most deficient nutrient in human diets especially in developing countries (Missikire, 2001). Using econometric modelling, the Food and Agricultural Organization (FAO, 2002) for example, estimates that the annual consumption of fish per person will increase over time, from about 16 kg today to 19-21 kg in 2030 world wide. At the same time, an FAO report states that, half of the world’s marine stocks have been exploited. Global fish production therefore, remains pushed by aquaculture, with more than one billion people relying on fish as a source of protein (FAO, 2002). Integrated small-scale fish farming therefore represents a sustainable option especially for small households in developing countries where the market for fish is either underdeveloped or missing. Relating to the theory of nonprofit firms, it is a justifiable area of intervention.

Thirdly, fish farming is the main aqua-cultural activity practiced in Cameroon. It has been promoted by international development organizations, the government and NGOs

alike. Fish farming is most probably integrated into the farming systems of some poor households to reduce future vulnerability to food consumption risks.

Fourthly, while there are quite a few studies on poverty levels in rural and urban communities in North-West Cameroon, there are fewer empirical studies on fish farming households and on nonprofit firms in general. If they exist, they concentrate almost exclusively on productivity and income aspects, rather than on a broader concept of poverty and as a means of measuring targeting and outreach to poor households in rural communities. Up to now, the targeting performance of the integrated fish farming activities promoted by PRTC, has never been assessed.

5 Research methodology and sampling procedures

Although some other program areas operated by the RDNGO in question contained baseline surveys⁸, the integrated small-scale fish farming project did not maintain such information about beneficiaries. In the absence of panel data, only cross sectional data collection ex-post was possible. However, to assess the impact of the fish farming activity on the livelihoods of beneficiaries as well as to measure the efficiency of service delivery and outreach to the poor in the benefitting communities, a comparative analysis of beneficiary and matching non-beneficiary households was necessary. A standardized questionnaire was used to collect quantitative data on the socioeconomic characteristics and resource use patterns of the two categories of households. A second structured questionnaire was employed to collect data on the income structures, to assess differences in income structures. The data on the beneficiary and matching households was analyzed in order to derive a conclusion on whether the contribution of the fish farming activity was significantly reducing poverty of those benefiting and whether income diversification is an important risk management strategy⁹.

The sampling unit for this survey was the household. After referring to standard household definitions¹⁰, an adjusted definition appropriate for the Cameroonian

⁸ The general block course on sustainable agriculture offered by PRTC Fona and some short village-based and center-based courses collected baseline information about beneficiaries, which were used during extension/follow up visits to assess changes in living conditions. For some reason, this was not done for the fish farmers who benefitted from service delivery. Only a list of farmers and their addresses was available.

⁹ Only the contribution of the fish farm activity to the household income will be emphasized here. The ramifications and relations between farm and non-farm income for all the households will form the basis of another discussion.

¹⁰De Haen and Runge-Metzger (1991: 5) define the household as the smallest social group (institution) in which human beings (generally linked to one another through a common housing and/or a common cooking unit) live in a particularly close social, cultural, and economic relations to satisfy the material and non-material needs. Ellis (1993) describes a household as a social unit

households surveyed was established, which accounted for the intra household mobility (particularly for holidays, death celebrations, educational reasons, etc).

The household was defined to include ALL persons who lived together under the same roof and ate from the same pot for at least nine months within a period of one year. The household head and school children were members of the household whether they lived with the others under the same roof or not at the time of the survey, as long as they met the above mentioned condition and contributed to household welfare.

The population was drawn from fish farming and matching non-fish farming households in the research villages. A stratified random sample of ten villages was carried out. Villages with fairly good access to the market, as well as villages which are virtually inaccessible in some periods of the year were included in the sample. The selection also captured differences in altitude, by including villages located in the mid altitudes (1200-1500 masl) and lower altitudes (800-1200 masl). It should be mentioned that the research region (i.e. North West Region of Cameroon) displays a high variation in altitude and market access from one village to another. Because these factors affect the performance of fish farms, both factors were used in combination to stratify the population from which sampled villages were drawn. This was aimed at reducing sampling bias and improving regional representativeness of the fish farming population in the sample. A total of ten villages that benefited from the service delivery were retained for the survey. Socioeconomic data was collected from a random sample of 152 households (60 fish farming¹¹ and 92 non-fish farming) for comparative assessment of relative poverty and

defined by the sharing of the same abode or hearth. As such it is usually the sub set of a family even though the manner in which households are divided into distinct families varies within and between societies. Deaton (1999) warns that there is hardly any conformity in definitions of *the household* across different surveys. Definitions therefore need to be specified if survey results are not to be interpreted differently. He further explains however, that most definitions are concerned with *people living together and eating together, and sometimes with the pooling of funds*. We use this argument to establish a new definition of the household for our case study. For some scholars (e.g. Ellis 1993), the decision making process seems important in defining the household. However some household decisions may be jointly made by all members, while in others, there may be division of responsibility. Subsistence crops, for example may be produced by women and cash crops by men. Nevertheless, economists find the household a useful unit of analysis given the assumptions that within the household resources are pooled, income is shared, and decisions are made jointly by adult household members. It is also convenient and not that far off mark in most cases to associate to the household, rather than a larger family within the farm as a production enterprise.

¹¹ Bissig (1998) reports that a total of 126 fish ponds had been constructed by 1998. With an average of 10-12 ponds constructed annually, the total estimated ponds constructed as at December 2003 when this research was carried out was 200. Understanding that some farmers

resource management patterns. A list provided by the PRTC allowed for random sampling of fish farmers. The matching nonclients were randomly drawn too. Non clients were rural farming households resident in the same villages as the fish farming households, but not adopting fish farming technologies. A list was established with the help of local authorities (quarterheads, chiefs) for each village, from which the matching households were randomly selected.

A self- selected sub sample of 60 households (30 households from each of the two household types) provided information on household income and expenditures for a period of one year in 2003. Selection by the researcher was based on the household's ability and willingness to engage in a recall process. This selection took place during the first survey round. The second round was devoted to a comparative analysis of household incomes and expenditures, only with the selected 60 households. Both the household head and his or her spouse were present and participated actively in the recall process. The non-selected households were not involved in the second survey round, but participated in the summative presentations done by the researcher at the end of the research period. Primary data was collected in North west Cameroon between October 1, 2003 and February 28, 2004. The poverty assessment tool (Henry et al., 2000 & 2003) provided the base on which poverty related indicators were selected to assess relative poverty of fish and non fish farming households. Gross margin analysis provided information on the income and expenditure structures of the sampled households. The SPSS software was used to analyze the data. Both descriptive statistics and econometric analysis were performed. The demand and supply theories of nonprofit firms were applied to relate results to the economic theory of nonprofits.

6 Results

In this section the research results are presented. First, descriptive statistics is presented in a comparative manner, before presenting key results of the regression analysis.

6.1 Socio-economic picture of the PRTC fish farmers

Human capital was assessed based on household head's literacy and the household labor force. Although the *literacy rate* (assessed as a cumulative percentage of those who completed primary school and above), was generally lower than the national average of 94% for 2002 (World Resource Institute, 2006), a significantly higher proportion of client household heads (72%) could read, in comparison to non-client household heads (53%).

have more than one fish pond therefore places a sampling size of 60 households well above 25% of the total beneficiaries of the RDNGO.

Considering literacy as an indicator of human capital shows that the sampled households are better-off than the average household in the region. Fish farming households are slightly larger in size (which could indicate either higher vulnerability or more labour force to account for additional income creating activities), with a mean of 5.3 persons per household compared to 4.6 for non fish farming households and 4.9 for all sampled households. As fish farming is labour intensive, it seems to suggest that larger families can more easily incorporate and maintain fish activities within their existing farming system. This difference is statistically significant.

On *annual food security*, less than 20% of households (18.6% of fish farmers and 18.7% on non fish farmers) acknowledged having access to food at all times within the year. Nevertheless, with a mean of 5.4 meals per two days or close to three meals a day, the issue of food security as a serious problem in the research villages could be traced to the *hunger periods*, between the months of March and May. The consumption of luxury foods (this term is attributed in the region to meat, Fish, eggs and tea) was also found to be quite high, with a mean of three times per week for fish farmers and two for non fish farmers (with a range from zero to six). The difference is statistically significant at 1%-level. However, because none of the beneficiary households consumed its own fish within the research period as a luxury meal, the consumption of luxury meals by beneficiaries is difficultly attributable to the impact of the service delivery. The number of inferior meals per week was found to be the same: two per week for both household types.

Regarding dwelling, 90% of all households own the houses in which they live. House ownership was found to be very important in the research region. In general, most households have permanent dwellings with walls constructed out of sun-dried bricks and roofed with Zinc. The generally good quality housing and household ownership of permanent dwellings indicates the high utility that households derive from housing in a region where a man's worth is depicted in the village through ownership of a house¹².

An assessment of *household assets* indicated significant differences between the values of assets for the two household types (Table 1). Fish farming households generally hold more valued assets than the rest of the population. Taking the value of livestock as an example, the total value for fish farming households (about USD 200) is almost double that of non-beneficiaries.

Also worth mentioning is the difference in the *expenses on clothing and foot wear*, a key indicator used in the poverty assessment tool as a proxy for household poverty level. It is

¹² Interestingly, the interviews with villagers revealed that owning a house, irrespective of the quality is an important social indicator of wellbeing, with the quality of housing differentiating the better-off from the poor and the less poor.

the bench mark indicator used in calculating the poverty index. Past studies (for example Minten and Zeller, 2000) have shown that the proportion of clothing expenditure in household budgets remains stable, around five to ten percent of the total expenses, and increases proportionately with household expenditures. Also clothing, unlike food commodities usually requires the purchase of a finished garment or the materials to make the garment and can easily be recalled by households, compared to other goods.

Fish keeping households were found to have significantly higher per capita clothing and foot wear expenditures than non beneficiary households. Because household expenditures on clothing tend to increase with household incomes, this difference suggests that, for fish households to spend more on clothing and foot wear per capita, they are most likely to have higher incomes than non fish farming households. The standard deviations signal wide differences between households of the same type, even if the mean expenditures are higher. This means that there can be fish farming households who spend less on clothing and foot wear per capita, compared to non fish farming households.

Table 1. Comparative analysis of values of some selected household assets

	Household Type	N	Mean	Std. D.	P-value
Value of livestock assets in FCFA	Fish farming households	59	92,758	102,827	0.009
	Non fish farming households	92	50,887	89,512	
Land size (ha)	Fish farming households	54	5.991	4.7	0.011
	Non fish farming households	84	4.093	3.8	
Value of selected household equipment in FCFA	Fish farming households	59	35,212	70,905	0.031
	Non fish farming households	92	15,125	42,259	
Family size	Fish farming households	60	5.3	3.0	0.077
	Non fish farming households	92	4.6	2.2	
Value of transport facilities in FCFA	Fish farming households	59	14,390	48,737	0.516
	Non fish farming households	92	20,592	6,196	
Per capita expenditure on clothing and footwear in FCFA	Fish farming households	60	24,881	11,240	0.001
	Non fish farming households	92	19,115	10,167	

Source: Own survey data analysis

Note: Average annual exchange rate: 1 USD = 608 FCFA (2003).

Table 2 presents the financial analysis of targeted and non-targeted households. Again, this table maintains the consistent trend of higher figures for fish farming households compared to the general population.

Table 2. Comparative analysis of income structures of household types

... in FCFA	Household type	N	Mean	Std. D.	P- value
Net farm cash income	fish farming household	30	205,217	146,995	0.135
	non fish farming household	30	159,233	77,482	
Total non cash income	fish farming household	30	174,695	89,761	0.850
	non fish farming household	30	170,419	84,627	
Total non farm income	fish farming household	30	119,197	122,843	0.780
	non fish farming household	30	110,340	121,317	
Gross revenues	fish farming household	30	499,108	231,187	0.306
	non fish farming household	30	439,992	211,364	
Gross margin	fish farming household	30	445,254	199,330	0.300
	non fish farming household	30	392,923	187,902	

Source: Own data analysis

Note: Average annual exchange rate: 1 USD = 608 FCFA (2003).

The gross margin is defined as gross household revenues minus total variable costs

The descriptive statistics presented generally shows higher values for income indicators for fish farming households compared to non fish farming households, although the patterns are generally lower compared to national standards. For example the gross revenues per capita for fish farmers and non fish farmers (94,171 FCFA or USD 154, and 95,650 FCFA or USD 157 respectively) cannot compare with the national PPP of 1,209,920 FCFA or USD 1,990 in 2003 (Globalis- Cameroon, 2009). This suggests that the project is doing a good job in targeting the poorest parts of the country. This conjecture is supported by the fact that the economy of the research region (i.e. the North west region) is highly rooted in subsistence agriculture with over 80% of the rural population depending solely on agriculture. In addition, the population growth rate in the

region (4.5%) is higher than the national average of 3.3% (World Bank, 2009), and its HIV/AIDS prevalence rate of 8.7% is significantly higher than the national average of 5.1% (UNAIDS, 2004).

To further confirm the above mentioned conclusions, we perform statistical analysis. Some of the results are presented in Section 6.2.

6.2 Service targeting of poor farmers of rural nonprofit organizations

As already mentioned, the descriptive statistics generally indicate that fish farmers are better-off compared to non fish farmers. Yet it is not clear whether this is due to the small-scale fish farming intervention, or to the fact that they have been better-off from the beginning. Methodologically, it is challenging to establish causal links between the targeting of and outreach to the poor and the nonprofit mission of PRTC. This needs further analysis. One way to proceed will be to concentrate on the poverty component. A factual measure of poverty requires first identifying the strongest individual indicators that distinguish relative poverty and then pulling their explanatory power into a single household index (Henry et al., 2000 & 2003). These indices could then be used to create poverty groupings that better capture and differentiate relative poverty and allow comparing the two household types. This section focuses on statistical analysis, culminating in the computation of the household poverty index used in estimating relative poverty differences in the population, as a necessary condition for confirming or refuting the results of the descriptive statistics.

Computation of household poverty index

Linear correlation was used to filter poverty related indicators that appeared strongest in capturing differences in relative poverty. The procedure included a run of all ordinal and scaled variables with the bench mark indicator ‘per capita expenditures on clothing and foot wear’ and ascertaining the level and direction of the correlation. The linear correlation is preferred because it “does not require that the units used in the variables are the same. The values range from -1.00 to 1.00, and their sign and magnitude indicates how the two variables relate to each other: a coefficient value at or near -1 indicates inverse relationship; a value at or near 1 suggests a strong positive relationship and coefficient values at or near 0 suggests no relationship between the variables” (Henry et al., 2000: 98-99).

All variables correlating with the benchmark indicator (significance less than 10%-level) were selected to be used later in computing a poverty index through the application of the Principal Component Analysis (PCA). The PCA effectively combines information from

various indicators to measure a household’s relative poverty status. The end result is the creation of a single index of relative poverty that assigns to each sampled household a specific value, called a score, representing the household’s poverty status in relationship to all households in the sample. The principle objective of using PCA is to extract the “poverty component” that can be used to compute a specific household index of relative poverty (Henry et al., 2000; 2003; Zeller et al., 2003; 2004a; 2004b; Sricharoen, 2006)

Table 3 displays the Eigen Values calculated for each component. The size of the Eigen value indicates the amount of variance explained by each component in the PCA model. As a rule, an Eigen value of at least one is considered as a minimum value to regard the component as representing a common underlying dimension (Henry et al., 2000; 2003). Table 3 presents the first two components with total Eigen values above one. The first component (the poverty component) explains 35.3% of the total variance within the sample, while the second component explains over 18.5%. Together, they explain almost 54% of the total variance. As such the results of the model are acceptable.

Table 3. Explained common variance by PCA

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% variance	% cumulative	Total	% variance	% cumulative
1	2.120	35.341	35.341	2.120	35.341	35.341
2	1.115	18.588	53.929	1.115	18.588	53.929
3	.923	15.379	69.309			
4	.813	13.555	82.863			
5	.652	10.872	93.735			
6	.376	6.265	100.000			

Source: Own data analysis

Notes: Component 1 is the poverty index explaining 35.3% of the total variance and component is the specific household demographic characteristics not extracted in component one

Figure 1 presents the histogram of the poverty index for the entire sample.. It shows that the distribution of poverty in the sample is skewed, with most of the households having negative indices (an indication of relative poverty), nevertheless with some outlying households possessing extremely high poverty indices. This figure raises at least two pertinent questions:

1. Using the poverty indices how is the distribution of targeted households mirrored in the entire sample?
2. How attributable are any differences in distribution to the impact of project intervention?

To answer the first question, the creation of *relative poverty groupings* based on the household poverty indices are necessary.

Household poverty indices provide a basis for household ranking on the basis of relative poverty. The lower the score, the poorer the household relative to others with higher scores (Henry et al, 2000; 2003; Zeller et al., 2004a; 2004b; Sricharoen, 2006). Using the poverty index, non fish farming households were first ranked and grouped into three terciles, that is, the lowest 33% of households were categorized as the “poorest”(with poverty indices less than -0.59); the middle “less poor” (indices between -0.59 and -0.09) and the highest as the “better off”(greater than -0.09). The middle tercile for non fish farmers provided the cut- off points for the three groups. Based on these cut-off points, fish farming households were grouped accordingly. The use of the poverty groupings of non beneficiary households insures that they are equally represented in all groups, while beneficiaries would vary according to the level of poverty relative to that of the population (Irungu, 2002).Figure 2 presents the results of poverty groupings.

Figure 2 clearly demonstrates that about 60% of all fish farming households fall within the relatively rich tercile; almost 22% are less poor and about 18% fall within the poorest tercile, relative to the poverty groupings existing in the entire population. Clearly, there is a higher percentage of relatively rich households among fish farmers compared to non fish farmers. This is significantly different from the equal distribution in the different tercile created among the non fish farmers.

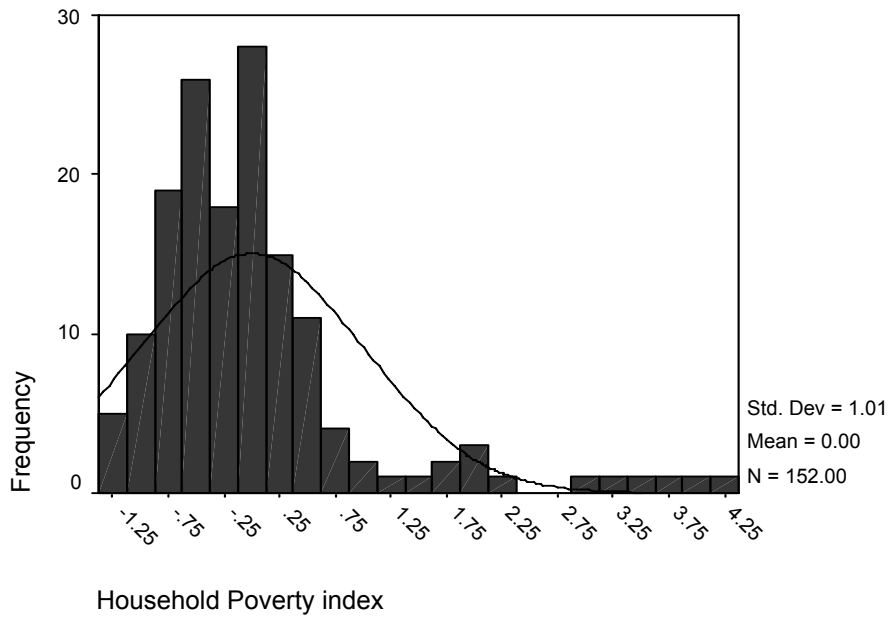


Figure 1. Histogram of household poverty index

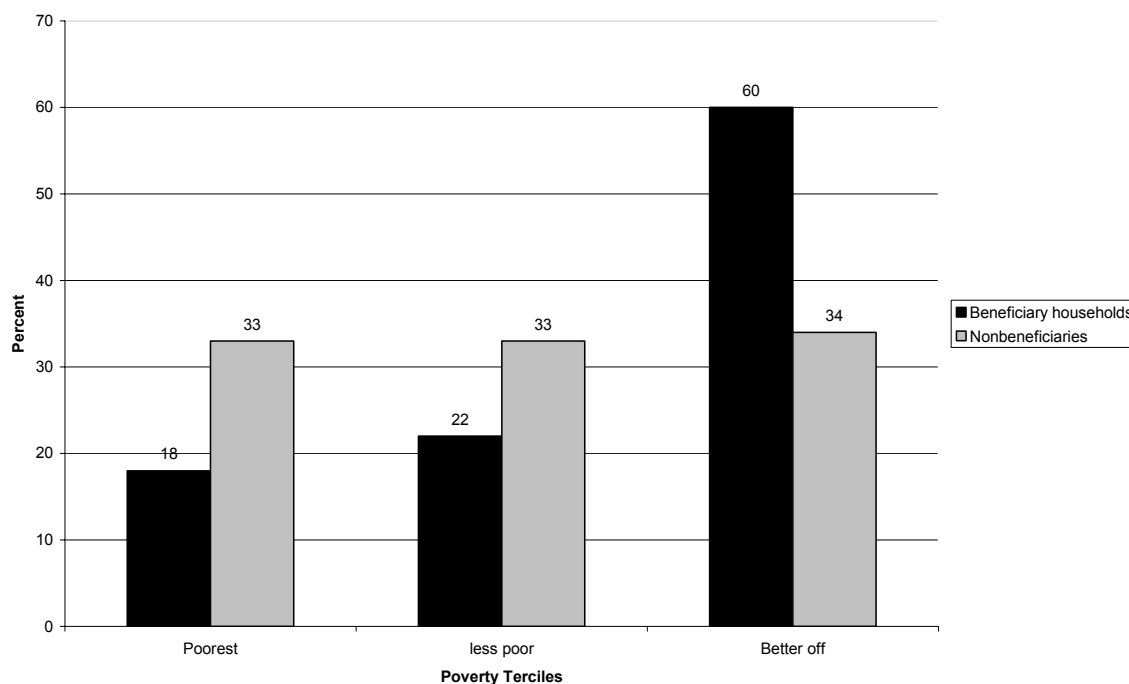


Figure 2. Comparative presentation of poverty terciles for Beneficiary and non-Beneficiary households of nongovernmental organization’s service delivery

To tackle the second question we compare the net contribution of the fish farming enterprise (cash plus noncash income) to the average gross revenues of fish farming households. If this contribution is substantial, then we can attribute such a distribution in Figure 2 to the impact of project intervention. The contrary will be assumed to indicate a deficiency in initial targeting of the poorest by the nonprofit organization. This analysis shows that the mean total annual income from fish farming of 3520 FCFA (USD 5.8) contributed less than 1% to the total household annual gross revenue of 499108 FCFA (USD 820). Put differently, although the income values of fish farming households are generally higher than for non fish farmers, this has not been influenced in any significant way by the income from the fish enterprise. Thus fish farming households were already better-off than the average households in the targeted communities before project intervention. This indicates a pitfall in targeting the poorest within the intervention regions. This conclusion is supported by the fact that enormous beneficiary contribution to the project in terms of labour, suitable land and local building materials (such as sand and cement) vital for pond construction was a necessary condition for participation. Only households who met such conditions were selected. As such the poorest households who generally lag behind in assets were left out.

In terms of targeting of the poor, one result is that the nonprofit organization (with consideration of the fish farming program) reaches households from all poverty groups within the target area. Although beneficiary contribution is an essential aspect of program sustainability, relative poverty assessments prior to program intervention could greatly improve the participation of the "less rich". The present outcome is a consequence of improper technology dissemination as a result of strongly influential donor policies (see also Brummett et al., 2008)¹³. As such a change in approach will have to consider donor policies on which the case study RDNGO depends for continual funding, even for its own sustainability.. As recommended by Van de Walle (1998) the costs and benefits should be properly assessed prior to policy change. This change is urgently needed to enhance the incomes and food security of 1,365 fish farmers (90% subsistence farmers) and their households, who own over 1,709 ponds covering a surface area of 350,481 m² in the region who directly benefit from fish farming (Provincial Service of Fisheries NW, 2003). Increased fish production in ponds will not only reduce short and long term income and consumption risks for farmers, but will also promote sustainable natural resource management, combat technology abandonment, increase fish availability for inhabitants of the North West Region (who presently depend on imported fish to meet their dietary needs), and create employment opportunities in the fish farming sector.

7 Discussion and conclusions

This paper presents an analysis of the targeting and outreach performance of an RDNGO in Cameroon. The economic theory of nonprofit organizations implicitly recognizes the role of nonprofits as service providers to the poor (often referred to as the less than median voters), although they do not explicitly explain how the nonprofits insure that their services actually reach their targets. In poverty alleviation programs, targeting of and outreach to the poor is important in reducing poverty. As such most organizations use either administrative targeting, directing services to geographic areas considered (or identified) as poor; or self targeting methods in which services are available to all, even if they are designed to be less attractive to specific groups and attractive enough for the targeted beneficiaries. A combination of both methods is also common. The analyzed case organisation applies both approaches in targeting of and reaching out to the poor in rural Cameroon. Using its small-scale fish farming program as an example, we observe

¹³ At the time of this research, the main funder for the organization (Bread for The World-Germany) was satisfied with output indicators such as the number of ponds constructed, assuming that all people in the intervention communities are poor. Although relative poverty assessments prior to program implementation could have improved targeting and outreach performance, this will be contingent on the willingness of the funders to increase funding. As such, any change in the present mode of targeting and service delivery will need the consent of the funder.

an acceptable geographic targeting of rural areas and a satisfactory depth of outreach to the poor, although the poorest and the near poor constitute less than 50% of the entire beneficiaries. Nevertheless, the disseminated fish farming technology had insignificant impacts on risk reduction for beneficiary households, as illustrated for example by its very low contribution to household revenues. Relative poverty assessments prior to program implementation could greatly improve targeting efficiency and outreach to the poor. Also, an assessment of technology impacts is necessary for re-shaping outreach packages. These would entail additional costs. The results however demonstrate that RDNGOs can be very efficient in targeting and reaching out to the poor, especially in developing countries where state and market failures in the rural and agricultural development sectors are common. Nevertheless, targeting and outreach must be combined with target group needs and actual impact assessments to enhance long term improvements. Fish farming has proven to be an important technology for the reduction of income and food security risks for poor farmers in some developing countries. Its potential for African countries has been stressed by some scholars (e.g. Brummett and Williams, 2000; Brummett et al. 2008) and proven in some African regions such as in rural Malawi (Jamu et al 2002) and eastern Tanzania (Wetengere 2009). The less than optimal results reported here indicate differential impacts of technology adoption in different regions, even in the same continent. Thus future research should focus on understanding why such technologies are successful in some regions and not in others (for example in North west Cameroon), or under what conditions fish farming could be helpful in reducing food insecurity and increasing incomes for small farmers. A starting point for the research region would be to test different adaptive productivity options for fish farmers in North west Cameroon as a first move in a series of measures aimed at providing right assistance to fish farmers in the region. An analysis of fish farmers in different regions in Cameroon could identify not only transferrable technologies, but broaden the understanding of the fish farming sector in the country, and allow for conclusions on a broader national basis, which are not possible with this case study. These and other measures are necessary to reverse the paradigm pond abandonment already visible amongst fish farmers in North west Cameroon

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