

Agriculture and Social Protection in Ghana

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Poverty, Livelihoods and Vulnerability in Northern Ghana

Ghana was one of the first countries in Africa to embark on structural adjustment reforms. 25 years on, its continuing commitment to reform for national economic development has yielded impressive gains in growth and poverty reduction. Poverty in the country is measured through periodic Ghana Living Standards Surveys (GLSS). In 1991/92 GLSS3 found that 51.7% of the population were living below the national poverty line. By 1998/99 (GLSS4) this had fallen to 39.5% and by 2005/06 (GLSS5) it had fallen to 28.5% (Ghana Statistical Service 2007). In absolute terms the number of poor people in Ghana has fallen from 7.9 million in 1991/92 to 6.2 million in 2005/06. At current growth rates, Ghana should achieve MDG1 before 2010.

However, the fall in poverty has not been experienced equally around the country. GLSS5 figures show poverty headcount rates in the five southern regions of the country of between 12% (Greater Accra) and 20% (Ashanti, Central, Eastern, Western). These regions have all seen dramatic falls in poverty since 1991/92 due to urban growth, minerals extraction and, in the recent survey period, a boom in the cocoa sector in response to higher world prices and domestic market reforms and production support. The "transitional" regions, Brong Ahafo and Volta, have also witnessed impressive falls in poverty to around 30% in 2005/06. However, poverty in the three northern regions - Northern, Upper East and Upper West - remains stubbornly high at 52-88%. In 2005/06 the three northern regions accounted for just under 22% of the population, but 45% of the headcount poor, 57% of the headcount extreme poor and 80% of extreme poverty severity¹ in the country (Ghana Statistical Service 2007).

The livelihood classification used by GLSS shows poverty to be concentrated amongst "food crop farmers", who are encountered disproportionately (but not exclusively) within the three northern regions. This group accounted for 43% of the population in 2005/06, but 69% of the headcount poor. Whilst the poverty rate amongst "food crop farmers" (68%) and "export crop farmers" (64%) was similar in 1991/92, by 2005/06 it had fallen to just 24% amongst the latter group, but was still 46% amongst the former. Poverty in Ghana is thus increasingly concentrated in the three northern regions, remote from Accra and international markets (although well placed for cross-border trade with Sahelian countries), and relatedly amongst households for whom production of low value food crops is a major livelihood activity.

Shepherd et.al. (2005) use GLSS4 data to show the dependence of households in the three northern regions on semi-subsistence agriculture. In 1998/99 70-80% of households in the three northern regions stated that agriculture was their main source of livelihood, compared with around 45% for the country as a whole. The share of household incomes in the north deriving from wages and non-farm activities was significantly lower than Ghana's average, with less than 20% of households having any income from non-farm self employment and

less than 5% having any wage income. Nearly half of northern households did receive some income from remittances (the most common income source outside of agriculture), but the incomes received from remittances are low and are rarely sufficient to enable accumulation².

A 2007 study by Ministry of Food and Agriculture (MoFA) disaggregates households in 16 predominantly northern districts of the country according to their livelihood strategies³. These strategies are summarised in Table 1 below.

Qualitative information collected during the survey indicated that the so-called "vulnerable" group typically start with few inherited assets and/or have to cope with disability, then may be hit by further shocks, such as drought, bush fire, malaria, an accident, widowing or the loss of animals through theft. Many no longer engage in agriculture at all. They struggle to obtain enough food every March-July and depend on family or community assistance. This is weaker for those who have migrated to town. In general, these people are not (now) mobile due to lack of resources; hence youth economic migrants in this group are those who migrated and got stuck in poverty at their destination - not those who might try migrating in the immediate future.

The "poor" group are more dependent on agriculture than the so-called "vulnerable", but are constrained by lack of labour (sometimes land) and hence are unable to accumulate capital. MoFA (2007) see them as pursuing a "survival strategy", rather than a "development strategy". By contrast, the "medium" group can pursue a "development strategy" based on saving through livestock (with resources acquired from crop sales or livestock husbandry), leading to both farm and non-farm investment. Most households within this "medium" group have adequate labour capacity, so are responsive to commercial farming opportunities. Others may have one good non-farm income, but their ability to save and invest is constrained by a high dependency ratio.

Those households relying heavily on agriculture for their livelihoods are vulnerable in particular to climatic shocks, such as bushfires, droughts and floods, sometimes with more than one of these calamities falling in one year⁶. Other risks arise from market volatility, the rising price of agricultural inputs, and human risks such as susceptibility to disease and malnutrition (NDPC, 2004). Where they are able, households take measures to reduce their exposure to risk (for example, diversifying their income sources through migration and remittances, planting improved seed varieties or multi-cropping). Coping strategies obviously depend on the shock in question, but include: sale of assets, including livestock; reduction in food intake; engaging in petty trade; migration; children dropping out of school to enter the informal labour market; self-medication or use of unorthodox medicine, and reliance on families, CBOs or NGOs for assistance.

The MoFA (2007) study team asked respondents what they would do if they received a windfall lump sum payment⁷. The majority of respondents from "vulnerable" households indicated that they would buy food for their families or engage in petty trading. Some indicated that they would invest in an agricultural production activity

Table 1. Livelihood Strategies of Households in Northern Ghana Group Characteristics Assets **Activities** Vulnerable high proportion of orphans, 0-0.5 acres of land per active sale of firewood, making baskets school drop-outs, youth member; no livestock except or ropes, collecting wild products, (5%)0-5 poultry; basic house + economic migrants, widows sheanut gathering, buy/sell with children, elderly, handicooking equipment and foodstuffs capped, sick clothes only Poor (35%) high proportion of widows with 0.3-2.5 acres per active food crops and livestock farming, children, youth semi-permanent member; 0-5 sheep/goats, 0-3 petty trading, collection/ migrants, migrants creating cattle (per household). Bicycle, processing/sale of NR products, farms outside their tribal areas, roofing sheets. seasonal and semi-permanent small-scale farmers with weak migration labour capacities Medium large family and high labour farm and non-farm activities 1.5-4 acres per active member; (51%) capacity (i.e. low dependency 10-40 sheep/goats, 3-30 cattle; (semi-)permanent house; ratio). modest education and assets (e.g. sewing machine, shop, Well-off large family and high labour 1-25 acres per active member; Agricultural: perennial (cocoa, (9%) capacity, higher proportion of 0-120 sheep/goats, 0-1000 rubber, mango), non-traditional skilled labour cattle; larger, permanent or food crops (all on commercial house with water, electricity, scale); livestock (incl. commercial kitchen, toilet, fridge; tractor, poultry). Non-agric: tractor or car/truck. May have two transport services, medium-large houses - one in town, more scale trading, shop/house rental, modest on farm salaried positions

Source: MoFA (2007)

(livestock rearing or crops), but the modest numbers reflect their lack of complementary assets (labour, land) and/or their limited ability to bear the risk involved in agricultural production. By contrast, the majority of responses from "poor" households involved some form of agricultural investment: expand their food crop farm, rear/buy small ruminants, rear/buy poultry, buy agricultural inputs or hire farm labour. The top non-agricultural suggestions amongst "poor" households were engaging in petty trading, buying food for their families or paying for school fees. A larger majority of responses from the "medium" group also involved agricultural investment (with similar priorities), with expanding trade or business being the top non-agricultural suggestion. Amongst the "well-off" group, agricultural and non-agricultural investments were indicated about equally.

These responses illustrate that, whilst food crop agriculture is associated with poverty nationally, many households in northern Ghana still see agriculture as offering them their best opportunity for economic advancement. This is especially true for those with limited capital to invest and/or with limited education. The converse of this is that there is a lack of non-agricultural opportunities for such households. Indeed, Shepherd et.al. (2005)'s review of growth opportunities in northern Ghana highlighted agriculture as the main source of available opportunities (despite the challenges that agriculture faces). Other opportunities may be found in minerals or tourism, but these are unlikely to employ many people.

This snapshot of northern Ghanaian livelihoods shows that many households are heavily dependent on

agriculture and see limited opportunities outside of the agricultural sector. However, they are unable to climb out of poverty due to low asset levels (including labour and land) that reduce the possibilities for saving and investment in a highly risky environment where shocks regularly force them to liquidate their assets or divert them away from agriculture simply in order to survive. Meanwhile, a smaller proportion of households do not have the assets to engage in crop agriculture at all.

Agriculture in Northern Ghana: Why Does Semi-Subsistence Food Production Predominate?

In the 1970s northern Ghana was seen as having the potential to supply the whole country with agricultural produce. The state, therefore, invested in a number of agro-processing ventures in the north, as well as supporting agriculture (especially grains production) through subsidised tractor services and fertilisers and through providing a degree of market support through the purchasing activities of the Ghana Food Distribution Corporation (GFDC). Many of these interventions were judged ineffective in stimulating agricultural development and, as they were also costly, were terminated during the structural adjustment reforms of the 1980s and early 1990s.

With the withdrawal of these supports, however, there has effectively been no strategy for agricultural (or wider?) development in the three northern regions

Except of course the targeted smallholder development projects funded by IFAD and GoG. As already noted, agricultural production in these regions remains dominated by semi-subsistence production of staple food crops. The large commercial rice farms of the 1970s in particular have collapsed following the withdrawal of subsidies and liberalisation of output markets that has seen surges in imports of commodities such as rice and meat products. According to MoFA data, in 2003 the share of staple crops (maize, rice, sorghum, millet, cassava, and yam) in total arable crop area was 54% in Upper East, 61% in Northern Region and 63% in Upper West Region. However, although much land is devoted to staple crop production, most of what is produced is consumed at home. According to GLSS4 (1998/9), 92% of rural households in Northern Region produced maize, but only 27% sold any. In Upper West and Upper East, over 90% of all households produced sorghum or millet, but only 8%

A critical development question for northern Ghana, therefore, is why households devote so many resources to semi-subsistence production of staple foods, rather than producing higher value crops for market8. Table 2 presents indicative crop budgets for a maize-sorghum intercrop and for groundnuts in Northern Region. These show that the returns to labour from producing groundnuts comfortably exceed those from the maize-sorghum intercrop in a "normal" season, even when the purchase price is used to value grain (i.e. assuming that the household is food deficit). This suggests that production of staple foods is not a profit maximising strategy. However, MoFA data show that production of groundnuts has been increasing rapidly in Northern Region in recent years (mainly based on area expansion), whilst production of maize and sorghum has declined (due to yield falls as well as small contraction in area)9. This suggests that relative returns may nevertheless play some part in farmers' cropping choices.

In a poorer year, the returns to the maize-sorghum intercrop and to groundnuts are comparable. Given the uncertainties around the data, it may be that some households continue to grow grains for fear that prices will be unaffordable during a poor year. In other words, they may feel that they are better off growing their own staples than specialising in the production of other crops for

sale and relying on market purchases to supply their food needs. The evidence for this here is admittedly weak¹¹. However, insofar as it does happen, there would be positive externalities from raising food production and stabilising prices (at lower real levels than are currently observed) within the three northern regions.

Another possible explanation for the prominence given to staple food crops is that they respond differently to the main cash crops under particular rainfall conditions (most obviously drought). Simple correlations using MoFA annual data for 1995-2004 show that groundnut yields are negatively and significantly correlated with maize in Northern Region, which provides tentative support to this hypothesis. Meanwhile, perhaps surprisingly, maize yields are positively and significantly correlated with both millet and sorghum yields. A similar test for Upper West finds groundnut yields to be positively and significantly correlated with yam yields, but not with any of the main cereals, whilst millet and sorghum yields are negatively and significantly correlated with maize and rice. These relationships again provide some (limited) evidence for the risk-spreading hypothesis. In Upper East groundnut yields are positively and significantly correlated with rice, whilst maize and sorghum yields are also positively and significantly correlated.

A third explanation for the prominence given to semisubsistence production of food staples relates to social organisation. In all three northern regions, "households" are complex extended family units. Physically they are focused on a "compound" where the head (usually male) lives with his wife/wives, their sons, daughters-in-law and grandchildren (assuming that married sons have not physically moved out of the parental compound) and unmarried daughters. Within the so-called "compound" system found in these regions, the compound head has authority to demand labour from all other household members on the main compound food plot, so as to ensure a basic level of staple food supplies for the whole household. These reciprocal obligations continue even if a married son physically moves out of the parental compound¹². When the head dies or becomes too infirm to carry out his food producing responsibility, this responsibility - plus the authority to call on labour - passes onto the eldest son.

Table 2. Indicative Budgets for Maize-Sorghum Intercrop and Groundnuts in Northern Region

	Normal Year Scenario			Bad Year Scenario		
	Maize	Sorghum	Groundnuts	Maize	Sorghum	Groundnuts
Yield (kg/ha)	820	710	880	600	550	610
Price (US\$/ton)	200	200	500	300	300	660
Gross Rev. (US\$/ha)	306		440	345		403
Cash Costs	77.8		96	77.8		96
Net Rev. (US\$/ha)	228.2		344	267.2		307
Labour (days/ha)	95		103	95		103
Returns to labour	2.4		3.4	2.8		3.0

Notes: yield figures are 2000-2004 averages and minima respectively in Northern Region (source: MoFA); maize-sorghum intercrop assumes full yields are achieved for each crop; cash costs and labour input estimates are based on MoFA indicative budgets; maize prices are indicative purchase prices for a deficit household¹⁰.

Binswanger and McIntire (1987) suggest that social institutions are a response to a combination of a) risk and b) failure in the markets (especially insurance, savings and credit) that could otherwise protect people against this risk. Pooling social institutions, such as the compound system, are particularly well suited to absorbing idiosyncratic risk, for example embedded labour risk in areas historically prone to disease. However, in addition, whilst they can only offer imperfect protection against covariate risks, they may still be the best available protection against these. Unless anthropologists whom we are unaware of have researched this, the specific reasons for the rise of the compound system in the Guinea savannah and Sahel zones of West Africa are matter of conjecture. Our observation is that idiosyncratic risk is less of a characteristic of these zones than covariate rainfall risks (too little rain or a very short rainy season). In the case of a very short rainy season, the compound system has the advantage of rapid mobilisation of labour on the household food plot. Historically, strength in numbers may also have been an advantage in a dangerous and sparsely populated region.

The compound system can thus be thought of as an informal social protection system. However, as with all such systems, it comes at a cost: it imposes constraints on agricultural diversification by compound members. On the one hand, there is a cultural expectation that a good head will provide his household with grain from own production; on the other, junior household members can only grow other crops (which they control and can either eat or sell) in times when their labour is not demanded on the household food plot. The resulting low and/or untimely labour input can reduce yields on other (higher value) crops. However, Labour gangs in communities (usually formed by junior household members) have evolved to enable them cope with this labour constraint.

North (1990) observes that informal institutions (of which the compound system is again a good example) $tend \, to \, evolve \, slowly. \, Thus, they \, may \, evolve \, in \, response$ to a particular problem of market failure (e.g. thin and unreliable food markets in northern Ghana, combined with absent markets for insurance and credit), but may then be slow to change even if the efficiency of food markets improves. Thus, even if households would be better off producing groundnuts for market and using the proceeds to buy maize and if food markets now operated well enough for that to be a safe strategy, the compound system could continue to encourage maize production. Some evidence in support of a gradual institutional change hypothesis is that the compound system is evolving. One generation ago, the responsibility of the household head was to provide staple food for all household members for two meals per day; now the responsibility only covers supper¹³. This gives households greater flexibility in sourcing more food from the market. Sub-units now have responsibility for two meals per day and labour obligations to the wider household are only to grow enough food for one.

Observers of agriculture in northern Ghana highlight the following key constraints to increasing production of staple food crops:

· Limited irrigation development;

- Limited adoption of improved seed varieties;
- Limited use of fertiliser. MoFA data show high maize prices in Ghana (see Table 2)¹⁴. However, as local fertiliser prices are close to US\$500/ton, if we assume a conservative response ratio of 5kg maize per kg fertiliser¹⁵, then the VCR for fertiliser application is still only two, which makes fertiliser application a marginal proposition. Even where fertiliser application is clearly profitable (most likely in areas close to major centres), the lack of seasonal credit limits the number of households that can afford it;
- Limited use of animal traction, which is in turn a function of the unequal ownership of oxen15 (see Table 1 above). Where a household has to rely on hand hoeing to prepare land, they can rarely cultivate more than two acres per active member, given the short time window available for land preparation following the onset of the rains. Otherwise, land is still fairly plentiful in much of Northern and Upper West regions.

These observations suggest asset thresholds that households need to cross (associated in particular with animal traction ownership) if they are to enjoy high cereal yields on a regular basis and hence invest significantly in production of higher value crops for market.

This discussion has not provided conclusive evidence on the central question as to why households in northern Ghana devote so many resources to semi-subsistence production of staple foods. However, it has suggested that:

- production of staple foods is not a profit maximising strategy;
- some households may continue to grow grains for fear that prices will be unaffordable during a poor year. Insofar as this is true, there could be positive externalities from raising food production and stabilising prices within the three northern regions;
- crop diversification (not devoting the entire cropped area to a single, high-return crop such as groundnuts) helps protect against rainfall risk;
- the compound system is a social (non-market) institution that encourages maize production and thereby imposes constraints on agricultural diversification by compound members, albeit to a lesser extent than a generation ago;
- there are asset thresholds that households need to cross if they are to enjoy high cereal yields on a regular basis and hence invest significantly in production of higher value crops for market.

Below we consider whether social protection interventions could assist households to devote more resources to production of higher value crops in the light of the reasons for semi-subsistence staple food production just discussed.

We also note that, having focused until recently on promoting agricultural growth (implying the targeting of resources to high potential agricultural areas, albeit ones that have perhaps suffered from relative underinvestment in the past), the national Food and Agriculture Sector Development Policy, FASDEP, is currently being revised to give additional weight to the objective of poverty reduction among smallholders. In the 2008 budget Statement, Government has introduced a northern development fund with seed money of 25 Mill

Gh Cedis, (about US\$25 mill). This is a clear response to growing debate about increasing poverty in the three northern regions and the growing disparity in development between north and south of the country. It remains to be seen the how this fund will be used.

Brief History of Social Protection Policy in Ghana

The history of social protection policies and programmes in Ghana is not a systematic one that shows an evolution of policies and programmes over time. Rather programmes have been implemented from various angles by different stakeholders and interests. National development policies in the 1990s have identified the need for the protection of vulnerable groups, implementation has not been realised.

The most obvious social protection interventions are those implemented through food aid and food for work programmes largely initiated by the donor community such as the USAID's PL480 Title II programmes, under which grants are made in agricultural commodities to meet relief requirements and for activities to alleviate the causes of hunger, disease, and death. The US food aid programme is implemented by the Catholic Relief Service, Adventist Development and Relief Agency and Technoserve. The CRS, whose mission was established in 1956, distributes food aid through direct feeding projects, including maternal and child health activities, institutional feeding such as school lunch and take-home rations for girls. Other projects include farmer training and general relief for disaster victims, and vulnerable groups such as the elderly.

The Adventist Development and Relief Agency got involved in the Title II programme during the 1983-84 food crises in Ghana. In 1985, ADRA expanded its relief programme to include development oriented activities. It has provided food through agro-forestry (tree seedling and food crop planting), school, latrine, and well construction, and general relief to disaster victims, elderly, and other vulnerable or needy groups. Since 1988, ADRA has provided food-for-work as part of an agro-forestry project in which selected rural communities plant tree seedlings for later harvest and sale as firewood.

Technoserve has monetized food aid to support agricultural income generating activities intended to enhance food security through agricultural income-generating activities. Technoserve has used monetization funds to assist rural businesses in palm-oil processing and marketing, cereals marketing, and non-traditional export development. Technoserve delivers its assistance through various agro-based cooperatives. The cooperatives provide rural employment and income for farmers, processors, transporters, and numerous others.

While CRS and ADRA programmes may target the poor and vulnerable, the same cannot be said of Technoserve's projects, as the NGO has the principle of promoting the 'entrepreneurial poor'. Certainly this group must have some assets to be already engaged in some form of economic activity, which Technoserve can then support.

All three NGOs do collaborate with public sector, especially the Ministry of Food and Agriculture (in the case

of ADRA and Technoserve) and Ghana Education Service in the case of CRS; but the collaboration is only at the local level. In Bongo in the Upper East region, CRS collaborates with the District Assembly through joint programming. ADRA also relies on field staff of the District Directorates of Agriculture to deliver its agriculture related services. To date, the NGOs have not influenced policy of Ministry of Food and Agriculture towards social protection.

A study of distribution of the US food aid in Ghana revealed that, (1) direct feeding projects were mismanaged and did not contribute to development and (2) that the Ministry of Agriculture's plans for achieving food security did not include long-term continuation of direct feeding programmes for vulnerable groups such as disabled persons, refugees, pregnant women, and children. Instead, the Ministry's focus was on increasing food production and raising the income of Ghanaians.

The World Food Programme also has emergency and non-emergency feeding programmes. The World Food Program activities include food-for-work projects for railway, port, highway, and feeder road construction; supplementary feeding and nutritional education projects; and emergency food distribution for refugees. WFP's goal is to phase out of external food aid by 2010 and ensure that successful food aid programmes are sustained through local production¹⁷. This strategy will complement very well Government's own school feeding programme which has the principle of local sourcing of food to boost agricultural production.

The most well known government initiated social protection programme in the 1980s is the Programme of Action to Mitigate the Social Cost of Adjustment (PAMSCAD). The programme was conceived in 1987-88 as a safety net for those adversely affected by structural adjustment reforms following criticisms that the poor, and particularly non-export crop farmers were adversely affected by the structural adjustment programme. The programme included 23 projects grouped into five categories - employment generation; community initiative projects; help to the redeployed; basic needs for vulnerable groups, and education (World Bank, 1992). According to this World Bank Evaluation report, PAMSCAD was a serious attempt to provide help to vulnerable groups. However, the programme's effectiveness was limited by design weakness some which were that, (i) it contained too many projects relative to the capacity of donors and the Government to implement; (ii) the programme did not target the poorest groups; (iii) there were too many donors for some projects; and (iv) the long term elements of PAMSCAD should have been implemented as part of the Government's regular public investment program (World Bank, 1992, p23).

Other commentaries suggest that PAMSCAD was used to alleviate the then government's political problems by providing disgruntled Ghanaians (e.g. dismissed/retrenched civil servants) with compensation payments. As a result, the resources were spread very thinly and it failed to make an impact (World Bank 1992, Herbst 1993). PAMSCAD was also bedevilled by administrative problems arising from lack of capacity in the rural areas, which were supposed to be the focus of the programme. However, PAMSCAD funds have continued to support

initiatives for the small enterprises ¹⁸. Our own observation is that if projects were to provide safety nets to those affected by structural adjustment, then PAMSCAD could not be classified as a social protection programme which involves more than the provision of safety nets.

Under Vision 2020 (1996-2020), government was to 'develop a comprehensive, sustainable and cost-effective social support system, especially for the disadvantaged and vulnerable¹⁹. However, poor coordination between the lead institutions, combined with budgetary allocations below what was required to achieve programme objectives, meant that the vision was not implemented successfully. No social support system was developed within the plan period.

Rural agricultural producers and their children were one of thirteen groups of vulnerable and excluded persons identified in the Ghana Poverty Reduction Strategy (GPRS), which replaced Vision 2020. The problem analysis of the strategy highlighted the extremely low and fluctuating incomes of the average farmer and lack of viable alternative economic activities, whilst the northern savannah was singled out as the most vulnerable. However the state interventions were expansion of social security schemes, upgrading of slums, disaster management and coordination of service delivery, thereby excluding those with agriculture-based livelihoods from the reach of state interventions.

GPRS II (2006-09) specifies a social policy framework for mainstreaming the vulnerable and excluded in human resource development. The policy areas are integrated child development including early childhood development policy and child protection; strengthening the family (e.g. family life education); HIV/AIDS; capacity development in social work and volunteerism; and strengthening institutions and improving their coordination.

Social Protection through Agriculture

Agriculture projects with a social protection flavour are those implemented under IFAD's Ghana Strategy. IFAD has since 1981, financed loans and grants worth USD 155 million in 13 projects, out of which five were implemented in three northern regions. IFAD's country programme aims to achieve improved, diversified and sustainable livelihoods for the rural poor, particularly for those people dependent on marginal lands, for rural women and for vulnerable groups. Through these projects, IFAD has facilitated protection of livelihoods of these vulnerable groups. Projects in the north have focused on micro-credit for women, small dams for dry season farming, and land conservation, all of which aim to enhance resource base for the livelihood of the poor. Development of participatory institutions such as Water Users' Associations on small dams, or women's groups for credit, have been successful in including the poor in decision making in the development process (IFAD, 2006a; 2006b).

Some of the key lessons from IFAD's programme that are of relevance for an agriculture leveraged social protection programme are:

- Geographic targeting for poverty reduction is appropriate in the Ghanaian context because of substantial uniformity of poverty within rural communities, particularly in the north.
- Private goods are not easily accessible to the very poor.
 In order to reach this subgroup and to respond to the need for financing for investments in agricultural production, marketing and processing, grants may be a more effective instrument.
- Building strong pro-poor institutions, whether traditional or modern, formal or informal, is the most sustainable way to combat poverty with respect to all areas of action, including rural finance, microenterprise development, agricultural production, marketing and processing, and community-based organizations (IFAD, 2006c, p.7).

The Sasakawa Global 2000 programme is often thought as a social protection intervention in the countries in which they were implemented. However in Ghana, unlike the IFAD projects, the Sasakawa Global 2000 project was designed to increase agricultural production in the country, focusing on dissemination of packages of maize and sorghum production technologies. The first project of SG 2000 began in 1986 in Ghana. The programme was implemented with Ghana's Ministry of Food and Agriculture, through the Agricultural Extension Services Department. Maize was promoted in the south and central parts of the country while sorghum was promoted in the drier north. An important observation as far as social protection is concerned is that there was no targeting, though it is reported that agro-ecologies best suited for agricultural intensification were given priority²⁰. Indeed because the programme was based on credit, and managed by extension officers, the poor and vulnerable farmers were not likely to have been selected to participate in the programme.

The programme strategy was to organize, field demonstrations of improved crop technologies in collaboration with the Ministry of Agriculture. The production unit was the production test plot (PTP) of 0.5ha or 1.2 acres. Farmers were provided a recommended package of fertilizer, improved seed, and in some cases, pesticides for post-harvest grain storage) on credit provided by SG 2000. The programme's initial success in terms of numbers of farmers participating, area planted to improved seed, and crop yield was marred by inadequate institutions to support its rapid expansion. Starting with 40 production test plots in 1986 the programme quickly expanded to 15,000 in 1988 and by 1989, there were 76,000 plots or farmers. The national extension service that managed the distribution of inputs and was responsible for loan recovery, was overwhelmed by the rapid increase in numbers. Loan recovery dropped from over 90% in 1986 and 1987 to 44% in 1989.

The programme was re-designed in 1990/1991 with a scale down to 5000 plots, and crops diversified to include rice, cassava and cowpea. The programme re-design also re-oriented efforts towards engaging the private sector (e.g. Agriculture development Bank for credit instead of public funds; and input dealers for distribution of inputs instead of extension staff). Unfortunately the programme's crises occurred during a period when major policy shifts in input distribution and pricing, and

financial market liberalisation were taking place, and there were no programmes to ease the transition from public to private input marketing.

These experiences underscore the importance of well-functioning market institutions, and a conducive economic environment to programmes focused on agricultural production. Poor access to markets in the face increased production can lead to collapse in prices and subsequent default by farmers participating in credit programmes.

Existing Social Protection Programmes

Besides traditional social protection arrangements of different cultures across the country, public social protection policies and programmes have included social transfer programmes, labour market interventions (such as minimum wage, employment creation for youth and regulations to protect interest of workers) social insurance programmes and schemes targeting women and children.

Existing social protection interventions are listed below²¹.

- Supplementary Feeding
- Preventive Health Care Programmes (Malaria Control, Immunisation and Micro-nutrients supplementation)
- National Health Insurance (this was introduced in 2003)
- Micro-Finance
- Disaster Management
- Social Security Pension Schemes for Formal Sector.
- Emergency Relief
- Social Assistance e.g. health exemptions, Support to children in need of special care and protection, Capitation Grants to basic schools, School Feeding
- Skills Training and Employment Placement (STEP) and Other Vocational Skills Interventions
- National Labour Standards
- Agriculture Extension Services

As is the case with the USTitle II programme discussed above, some of these interventions (e.g. micro-finance, supplementary feeding and irrigation) are also initiated and implemented by NGOs.

Gaps identified in current social protection interventions include:

- Limited Coverage of some Interventions
- Limited support to informal sector
- Weak targeting mechanisms in some interventions
- Inadequate inter-sectoral linkages and co-ordination
- Weak institutional capacity
- Low cost efficiency and effectiveness
- Limited recognition of gender considerations
- Over concentration on protection.

Recognising this, the Government of Ghana has produced a Social Protection Strategy that aims:

"to provide a coherent National Social Protection Framework to help lift the socially excluded and vulnerable from situations of extreme poverty and to build their capacity to claim their rights and entitlements in order to manage their livelihoods, to make their contributions and meet responsibilities towards national development." (info.worldbank.org/etools/docs/library/152905/GhanaSPStrategy.pdf).

National Social Protection Strategy

The National Social Protection Strategy (NSPS) was produced by the Ministry of Manpower, Youth and Employment in March 2007. Noting that "uncoordinated delivery and poor targeting of most of the existing interventions have resulted in limited coverage and impact" (p10), it aims to target systematically the "extreme poor" in Ghana, estimated at 14.728.6% of the population (based on GLSSIV3)²². The main instrument for achieving this is a Livelihoods Empowerment Against Poverty (LEAP) social grants programme, which has been under development during 2007.

Drawing on a previous Poverty and Social Inclusion Assessment (PSIA), NSPS is based on the premise that "the roots of poverty are found in the multiple social risks faced by the poor, and in their vulnerability to the impact of these risks" (p11). Thus, the LEAP social grants will assist the poor "to reduce, ameliorate, or cope with social risk and vulnerability".

NSPS envisages LEAP cash transfers as being unconditional to "individuals with no productive capacity e.g. the elderly poor, persons with severe disabilities etc.", but in other cases being conditional on:

- enrolling and retaining all school going age children in the household in public basic schools. This will enable the children to benefit from an ongoing School Feeding; Program. Their costs of attendance will be met out of an Education Capitation Grant system, which started as a pilot in 2004 and is now nationwide. The grant is made to schools to cover the costs of teaching pupils from poor households;
- all members of the household being registered within the National Health Insurance Scheme (NHIS).
 Recipients of LEAP grants will be expected to pay their NHIS contributions out of their grant receipts;
- new born babies (0-18 months) within the household being registered with the Birth and Deaths Registry, attending required post natal clinics and completing an Expanded Programme on Immunisation;
- no child in the household being trafficked or engaged in any activities constituting the Worst Forms of Child Labour.

Underlying the conditionalities is the desire for LEAP to ensure that beneficiaries increase their access to education and healthcare, so as to break inter-generational poverty cycles: "household poverty undermines children's nutrition and educational attainment, limiting their future prospects" (p12). However, as the detailed report of the LEAP design mission has yet to be released²³, it remains to be seen whether these conditionalities will be implemented in practice. Experience in other countries suggests that a high level of administrative capacity (involving coordination across health, education and MMYE) is required to monitor compliance with such conditions.

More immediately, the cash grants aim to provide beneficiaries with basic livelihood security, thereby increasing their ability to plan for the future and freeing them "to engage in productive activities to support themselves and ultimately contribute to national development" (p12), including adopting more risk-taking livelihood strategies. Ultimately, it is hoped that LEAP beneficiaries could become micro-credit clients, so as to further develop their livelihood strategies. The PSIA identified small-scale farmers as a leading vulnerable group in the country, due to the multiple risks they face. It also highlighted a link between gender and poverty, with women farmers being noted as being among the poorest in society. As a result, "Subsistence Farmers and Fisher folk" are the first of five target groups for LEAP and are estimated to account for close on half of the eventual beneficiary population (360,000²⁴ out of just over 800,000). The other beneficiary groups are the extremely poor above 65 years, care givers (those looking after Children Affected Bby AidsAIDS, children with severe disabilities and other incapacitated or extremely poor people living with HIV/AIDS) and Pregnant Women or Lactating Mothers with HIV/AIDS.

It has recently been announced that the basic grant will be c80,000 (US\$8) per household per month. Based on similar figures, NSPS estimated the total cost of the LEAP scheme at US\$23-27M p.a. (c.0.21% GDP), of which 80-90% would be the grants themselves (this proportion rising once sensitisation, institutional strengthening and monitoring systems have been put in place). NSPS envisages that payment to beneficiaries will be made through the Association of Rural Banks, which has membership institutions in every district in Ghana. Beneficiaries (or their representatives?) will be expected to collect their money from the relevant local institution.

Potential Complementarities Between LEAP and Agricultural Development in Northern Ghana²⁵

One omission from the NSPS is details of how beneficiaries will be identified. It is stated that a "quasi-exhaustive survey approach" will be used to establish who qualifies, but the "pre-established eligibility criteria" are not specified (p45). This is something on which the design team report is expected to present recommendations, although it is also potentially politically sensitive.

Eligibility criteria are critical to the impact of LEAP on both poverty and agriculture in the three northern regions. Given the concentration of poverty in these regions, uniform national targeting criteria will lead to a large share of available social grants being disbursed in these regions. This, however, requires strong political will., especially from a government whose parliamentary majority is firmly rooted in the south. The experience of PAMSCAD related above does not bode well for unambiguous targeting of LEAP grants to the poorest households within the country; nor do initial wrangles between donors and government over how many districts the scheme should be piloted in (with donors receiving advice that ten would be sensible and government

arguing for fifty and eventually settling for twenty-one). A national targeting policy, of course, requires both clear and simple targeting criteria that are applicable country-wide²⁶ and the capacity to administer these. In the absence of one or other, a fallback solution could be to use participatory, local identification of beneficiaries, as in Zambia (Schüring 2007). However, in Zambia these lead to a set proportion of households in each area receiving support. This can be reasonably consistent with national poverty targeting as long as the scheme is only operated in selected areas, but not if it is ultimately intended to be rolled out country-wide.

A related issue of particular relevance to the northern regions is the question of targeting within complex households (compounds). There are two dimensions to this. Firstly, LEAP grants will be distributed on a per household basis, so whether a sub-unit within a compound qualifies as a household or not matters. Secondly, we observe that the processes of decision making and bargaining within complex households - for example, following a weather shock - are little understood. However, there are grounds for believing that later wives and their offspring might be the most vulnerable to food insecurity during these times, either because they have least opportunity to build up their own "private" assets or (possibly relatedly) because their bargaining position within the compound is least well established. The question then arises: can the most vulnerable sub-units be reached directly by social transfers or will such transfers have to go through the household head and be subject to the same intra-household bargaining processes that contribute to the vulnerability of the disadvantaged sub-units?

If LEAP grants are allocated according to local, rather than national, targeting criteria, then fewer resources will reach the three northern regions and the likelihood that the grants will benefit semi-subsistence farming households is reduced²⁷. However, in what follows we assume that suitable national targeting criteria are developed and used. Under such circumstances, if the scheme aims to reach 1518% of the population considered extremely poor and 57% of the extreme poor are found in the three northern regions (see above), then around 38% of the population of the three northern regions should receive grants²⁸. Referring back to Table 1, this encompasses most of the so-called "poor" group, as well as the so-called "vulnerable" group.

As noted earlier, the so-called "vulnerable" group – many of whom fall into one of the LEAP target groups other than small-scale farmers - have only a modest engagement with agriculture. These households lack the labour and sometimes also the land – not just the ability to bear risk – to undertake crop production. As in Zambia, they might use a proportion of their grant funds to acquire poultry, goats or seeds. These are desirable outcomes in themselves, but are unlikely to take them over any critical asset thresholds to embark on sustainable, expanded agricultural production. For most households in this group, social grants are likely to fulfil primarily a welfare function.

By contrast, the "poor" group in Table 1 are engaged in semi-subsistence agriculture as a major livelihood activity and, moreover, see investment opportunities in

agricultural expansion (if only because there are relative few other opportunities open to them). It is indeed possible that access to social grants will enable them to expand their agricultural production activities. Having guaranteed access to some food during the "lean" preharvest season could enhance their health and/or strength, making their labour more productive. It may also remove the need for mid-season diversion of labour away from cultivation so as to meet immediate food requirements. However, because of the way the compound system functions, this is less of an issue in northern Ghana than in, say, Malawi. Dynamically, access to grants may reduce the need for disinvestments in response to shocks, hence enabling households to retain and possibly build up their productive assets over time. On the other hand, it seems unlikely that the size of grants will permit poor households to hire much additional land or labour – the two main constraints to expanded production by this group noted by MoFA (2007). Thus, the increase in agricultural production in northern Ghana as a result of LEAP could be modest.

Agricultural impact could perhaps be increased if the grants were concentrated during the production season, with a lump sum payment prior to planting being a possible way of enabling beneficiaries to afford either ploughing services (to expand cultivated area) or improved seeds or fertiliser (for higher yield). Further payments during the production season could perhaps then facilitate the hiring of labour or simply ensure that household members ate well enough to stay healthy and make the most of their own labour potential²⁹. Drawing inspiration from the Employment Guarantee Scheme in India, NSPS notes that, "In Ghana, linkages will be established between LEAP and The Labour Intensive Public Works Programme, The Youth Employment Programme and The Cocoa Mass Spraying Programme to support the labour market."30 The nature of these linkages is not specified. However, concentrating as many of these schemes as possible in the agricultural off-season would make it feasible to focus the grant money on the critical agricultural production season. In a northern Ghana context, public works schemes could usefully be used to maintain rural roads and construct or maintain small dams.

Given the uncertainties surrounding the possible production response by the "poor" group to social grants, it is also not possible to predict the impact on regional food markets of the LEAP programme. Indeed, food prices could go either up or down. With staple food production in Northern Region, in particular, broadly in line with current consumption (see earlier discussion), the critical question is whether additional production as a result of social grants will be greater or less than the additional demand stimulated by receipt of these grants. Of course, if additional production exceeds additional consumption, the resulting lower real food prices will generate significant additional benefits for poor households. However, if prices rise, this will erode the real value of the grants to beneficiaries and disadvantage many non-beneficiaries.

Finally, we observe that, in the predominantly agricultural north of Ghana, social grants will only be one step to lifting extreme poor households out of poverty.

As MoFA (2007) showed, poor households in receipt of additional capital may well invest much of it in agriculture. However, as the GLSS surveys show, under current circumstances semi-subsistence agriculture is not a reliable way to exit poverty. For agriculture in northern Ghana to realise its poverty-reducing potential, an improved agricultural policy is also required. More investment is required in irrigation, rural roads, extension and veterinary services. A complementary policy to agriculturally-targeted social grants for the "poor" group would be the provision of animal traction hire services to LEAP beneficiaries³¹, something that could perhaps be piloted by an agricultural NGO. In the longer term, assistance towards the acquisition of cattle, training of oxen, subsidies or loans for ploughs would also be useful.

Ultimately, NSPS hopes that LEAP beneficiaries can become micro-credit clients. However, very little progress has been made in developing micro-credit schemes to support smallholder agriculture (especially semi-subsistence food production) anywhere in Africa, including in Ghana³². Our observation is that, even when micro-credit schemes to support smallholder agriculture do begin to expand, they will target the top smallholders first. We are a long way off developing schemes to reach the poorest 15% of farmers. NSPS recognises that "access to micro-finance schemes for the extreme poor remains a major challenge" (p57).

Overall, however, there could be useful synergies between LEAP and enhanced agricultural policy, with the former equipping poorer households to benefit from the latter. The returns to the two interventions together could, therefore, be greater than the sum of the two if implemented separately.

End Notes

- ¹The P2 poverty measure using the lower (extreme poverty) line. Agriculture and Social Protection in Ghana
- ²According to Shepherd et.al. (2005), migrants to the main southern centres from the north on average earn less than counterparts originating from the forest zone (i.e. other southern regions) due to lower education levels and to strong ethnic networks controlling access to more remunerative jobs.
- ³ The findings reported here are from a draft version of the report, which was based on analysis of data from districts in the three northern regions (12), Brong Ahafo (3) and Ashanti Region (1). The basis on which districts were sampled was not stated, nor the precise methodology for data collection, although this was based on participatory exercises with communities in the chosen districts.
- ⁴ This group might more typically be thought of as chronically poor.
- ⁵ Such assets may also have been poor quality. Thus, for example, if land was inherited, it may have suffered from poor soil fertility.
- ⁶ For example, the early part of the 2007 farming season (mid-May June) in northern Ghana was characterised by a drought after some early rains in April and early May. When the rains resumed, many farmers replanted only for the crops to be washed away by foods. Many of these farmers are unlikely to recover without external assistance.
- ⁷ The size of the hypothetical lump sum varied by group: 100,000-1 million cedis (US\$11-110) for the "vulnerable" and "poor" groups; 1-10 million cedis (US\$110-1100) for the "medium" group, and 10-50 million cedis (US\$1100-5500) for the "well-off" group. ⁸ Of course, the same labour and capital resources could also be devoted to non-farm activities. However, as noted in the previous section, these are perceived by many households to offer only limited opportunities at present, given their asset endowment.
- ¹¹ The evidence may be weak but in a culture where 'being responsible' is measured by ability to produce your staple food requirements, the argument is justifed. ¹² This assumes that the son still farms nearby. The relationship changes if a son moves to a town (increasingly common) or to farm in a different area (e.g. some of the "frontier" land still available in northern Ghana). At this point, emphasis is mainly on the son sending something (cash or in kind) back to the parental compound. Note also that, in Upper East, the land rarely exists for married sons to move out. Thus, very large numbers of people (40+) can reside in single compound. Such concentrations are not often observed in Northern Region or Upper West, but the reciprocal relationships described above can still bind the same large numbers of people.
- ¹³This could be a response to a) increasingly effcient food markets, or b) increasing non-farm income sources, or both.
- ¹⁴ MoFA data also show rising real food prices during the 1997-2004 period in constant 1997 cedi terms, but not in US\$ terms. Rising real food prices suggests that food production has increased more slowly than demand (the growth of which has been driven by both rising population and rising incomes in the south of the country).

- ¹⁵ This may be too conservative for improved maize varieties. However, if farmers are to use both improved seeds and fertiliser, they require reasonable savings as well as the willingness to bear risk.
- ¹⁶ Obviously the very poor household do not own cattle and therefore are not likely to have oxen for ploughing. These fgures are consistent with an earlier MOFA Needs assessment study of private livestock holders (MOFA, 2004), which shows that multiple roles livestock keepers, who are the very poor, do not own oxen.
- ¹⁷ Source: World Food Programme Country brief. (www. wfp.org/country_brief/indexcountry. asp?country=288)
 ¹⁸ For example credit programmes implemented by the National Board for Small Scale Industries even as recently as 2005, were fnanced with residual funds from PAMSCAD. Personal communication NBSSI Offcer in Bolga, Upper East Region
- ¹⁹ Republic of Ghana (1997). Ghana-Vision 2020. The frst Medium Term Development Plan (1997-2000),. National development Planning Commission, Accra. P.78, para. 269.
- http://www.worldbank.org/html/extdr/fertilizeruse/documentspdf/GhanaSGDemoProgram.pdf
 info.worldbank.org/etools/docs/library/152905/
- info.worldbank.org/etools/docs/library/152905/
 GhanaSPStrategy.pdf
 The poverty statistics quoted in the NSPS are
- based on the 4th Round of the Ghana Living Standards Survey conducted in 1998/99 and reported in 2000 by the Ghana Statistical Service (GSS). The fgure of 14.8% is not based on the GLSS data. In fact the 5th round of the GLSS, conducted in 2005, estimates the proportion of extreme poor at 18.2%.
- ²³ The frst draft of the design team was submitted at the beginning of September and it was hoped that more precise details of how LEAP might work would be known in time for the drafting of this report, but as yet Government of Ghana has not approved the report of the design mission for general release.
- ²⁴ This fgure quoted in the public announcement on 29 November 2007, is 2000 households in 21 districts.
 ²⁵ We focus on this because of the particular interests of our paper. Note, however, that enabling poor farming households to engage in more productive activity is just one stated objective of the LEAP scheme, albeit an important one.
- ²⁶ We are not in a position to say what these should be, but suggest that housing (quality and foor area) are indicators that are worthy of further consideration.

 ²⁷ A similar reduction in impact will be observed if there
- 27 A similar reduction in impact will be observed if there is maladministration of the scheme.
- 28 57% of 15% = 8.5% (of the national population); the three northern regions between them account for 22% of the national population.
- ²⁹ Taking the US\$8 * 12 = US\$96 currently available for each household in the scheme, this could instead be disbursed as one payment of US\$41, followed by fve payments of US\$11 each at monthly intervals.
- ³⁰The National Youth Employment Programme was established 2006 (p54) but progress to date is not clear from NSPS. A similar comment applies to the public works scheme. The national Mass Cocoa Spraying Programme was instituted by the Government in 2001. In 2004, the programme generated about 60,000 jobs for unemployed youth in cocoa growing communities (p54).
- ³¹ In a unimodal rainfall system, where speed of

response to rainfall is critical to achieving good yields, households with their own animal traction capability prepare their own felds frst before considering hiring their oxen out to others. Such services are, therefore, only available sub-optimally late through household-household transactions.

³² According to NSPS, "The agricultural input support programme is a MOFA pilot programme that provides loans and agricultural inputs to poor small-holder farmers. ... The programme supports a broad range of activities such as the provision of seeds, fertiliser, improved planting materials, irrigation facilities, breeding stock, beekeeping, poultry and snail rearing, processing, storage, marketing, and training. ... Eligibility for assistance is based on the recommendations of the PSIA regarding the characteristics of the poorest people, and the applied criteria include availability of labour, ownership of land and lack of capital." (p55). However, no fgures are provided as to the coverage of this programme. Our enquiries suggest that twenty district across the country, based on two poorest district in each of the ten regions, were selected for the piloting of the pro-poor interventions.... (Personal communication with Dr Lawson Alorvor, PPMED, MOFA). So far, monitoring of the projects show mixed results and that the principle of the pro-poor interventions has not been understood in some districts.

References

Binswanger, H. and J. McIntire (1987) "Behavioural and Material Determinants of Production Relations in Land-Abundant Tropical Agriculture", Economic Development and Cultural Change 36:75-99

Ghana Statistical Service (2007) "Pattern and Trends of Poverty in Ghana 1991-2006", Ghana Statistical Service, Accra.

Herbst, J. (1993) "The Politics of Reform in Ghana, 1982-1991", University of California Press, Berkeley. http://ark.cdlib.org/ark:/13030/ft2199n7n7/

International Fund for Agricultural Development (2006a). Republic of Ghana Upper East Region Land Conservation and Smallholder Rehabilitation Project – Phase II. Interim Evaluation. Office of Evaluation, IFAD, Rome.

International Fund for Agricultural Development (2006b). Republic of Ghana Upper West Agricultural Development Project. Interim Evaluation. Office of Evaluation, IFAD, Rome.

International Fund for Agricultural Development (2006c). Republic of Ghana, Country Strategic Opportunities Paper. Executive Board – Eighty-seventh Session

Rome, 19-20 April 2006

Ministry of Food and Agriculture (2007) "Rural Livelihoods in Ghana", Policy Planning, Monitoring and Evaluation Directorate, Ministry of Food and Agriculture, Accra

National Development Planning Commission (2004). Poverty and Social Impact Assessment Study. Tracking Vulnerability and Exclusion in Ghana. Prepared by Sync Consult, Accra

North, D (1990) "Institutions, Institutional Change and Economic Performance", Cambridge University Press, Cambridge

Schüring, E. (2007) "Social Cash Transfers in Zambia: Design, Lessons Learned and Challenges", presentation made at DFID office, Accra, 31/08/2007

Shepherd, A., C. Jebuni, R. Al-Hassan, A. McKay, C. Poulton, A. Whitehead and J. Kydd (2005) "Economic Growth in Northern Ghana", Report prepared for DFID Ghana, Overseas Development Institute and Centre for Policy Analysis, London/Accra, October 2005.

World Bank (1992) "Ghana 2000 and Beyond", Washington DC.

World Bank (1992). Program Performance Audit Report Ghana. First and Second Structural Adjustment Credits (Credits 1777, A-025, A-025-1-Gh and 2005, 2005-1, 2005-2-Gh.) May 29, 1992 Report No. 10686-Gh Type: (PPR). Wise, G / X31679 / T9003 / OEDD2 Operations Evaluation Department

World Food Programme Country brief. (www.wfp.org/country_brief/indexcountry.asp?country=288)



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