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A COMPARISON AND ANALYSIS OF RURAL POVERTY BETWEEN THE WESTERN AND CENTRAL KENYAN HIGHLANDS

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Poverty Disparities

Kenya has experienced increasing absolute poverty over the last decade, reaching 56% of the total population by 1999, with most of the poor residing in rural areas. A low average GDP per capita level (around \$360) is compounded by a very unequal distribution of income whereby the top 10% of households control 43% of income (SID 2004). Poverty and inequality are present throughout Kenya, in every village. However, there are significant differences across regions in the proportions of households that are poor. For example, Kenya's 1997 Wealth Monitoring Survey estimated that 31% of households in Central Province fell below the poverty line, versus 59% of their counterparts in Western Province (IEA 2002). The mortality rate of children under five is 0.034 in Central Province but a whopping 0.123 in Western Province. Finally, the life expectancy of a newborn in Central Province is ten full years longer than that of her counterpart in Western Province.

These large regional disparities strongly suggest the existence of regional-scale factors that have significant effects on household economic and social well-being. The purpose of this brief is to better understand the livelihoods of households in the two highland regions of Central and Western Province and the household, community, and government investments that have led to fundamentally different poverty outcomes.

Agricultural Potential

This study draws upon analyses of the highland areas of central (primarily Embu and Kirinyaga Districts) and western Kenya (primarily Vihiga and Siaya Districts). Both areas lie above an altitude of

1,200 meters and comprise some of the best potential farm land in the country. A large proportion of the land in both areas is classified as high potential (SID 2004). Average rainfall is similar in each location (1,500 mm and above), with slightly higher mean and lower variability in western Kenya over the past decade. The highlands in both regions receive two rainy seasons, with one slightly shorter and drier than the other. Soils are deep and mainly clay loams in both locations, although central Kenya has some parent volcanic material of slightly higher fertility. In western Kenya, soils are depleted in terms of nutrients, especially phosphorus. Population densities are high in both places, although western Kenya has a higher incidence of more extreme cases (e.g. in Vihiga District with an average of 886 people/ km² (IEA 2002)). Thus, farm sizes are slightly smaller in western Kenya on average (village averages can be well below 1 hectare) than in central Kenya (1 hectare or slightly more for the average farm). In both places, however, land is held mainly in one contiguous piece with some additional exploitation of rented plots. Land is fully registered, individually owned, and titled in all highland areas, though in central Kenya farmers are much more likely to have updated titles following land transactions or subdivided inheritance.

Patterns of Agricultural Production and Investment

The western Kenya highlands cropping systems are dominated by food crops, most specifically maize and beans. Owuor (1999) found that a staggering 66% of cultivated land in the western highlands was planted to maize. A study of 17 villages in the Vihiga and Siaya highlands found only 14% of farmers using

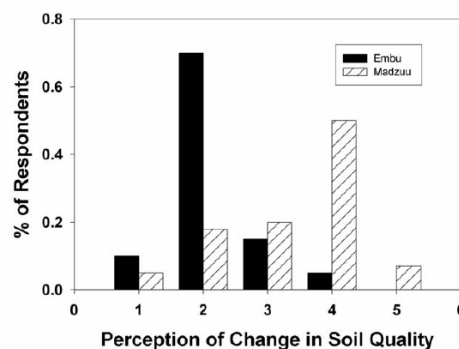
hybrid maize (Wangila *et al.* 1999). The same study also showed that high value crops like tea, coffee, and french beans were grown by fewer than 5% of farmers and tomatoes by just 12%. The major cash crop in the area was sugarcane. Just over half the households had cattle, three-quarters raised poultry, and few had sheep, goats, or pigs. Only 4% of households had improved cattle breeds. Woodlots, mainly of eucalyptus, were common, found on about 80% of farms. This description paints a picture of a traditional agricultural system that has not changed much over the years.

Western Kenyan farmers invest very little capital in relatively undiversified agriculture. Only about 20 percent use fertilizer on a regular basis (Place *et al.*, 2002a) and fertilizer use among those who apply it is far below recommended application rates (Owuor 1999). In monetary terms, expenditures on farm inputs for crops and livestock are low, one study finding the average per household in a year to be just \$19 (Rommelse 2001). This low investment appears to handicap new generations with poorer soils and meager productive assets. A study in Vihiga District found that almost 90% of farmers perceived that their soil quality worsened since the time they acquired their land (Migot-Adholla *et al.* 1990) and among the 167 plots surveyed by the BASIS/CRSP project in Vihiga District in 2002, 57 percent suffered soil quality degradation over the past dozen years.

The contrast with the central Kenya highlands is striking. Farmers in central Kenya also grow multiple crops, but they are much more commercially oriented, raising tea, coffee, french beans, potatoes, passion fruit, macadamia nuts, and a number of vegetables and herbs. Agricultural area devoted to tea and coffee accounts for 27% of cultivated land, while horticulture accounts for an additional 19 percent (Owuor 1999). As in western Kenya, cattle herds are small in central Kenya due to small farm sizes. But the vast majority of cattle are improved breeds managed in zero grazing or semi-zero grazing systems (Murithi 1998). Milk production is a major income generating activity and dairy goats are becoming common in some areas. Farmers raise fruit trees (e.g. avocado, macadamia, passion) for cash income, but other trees for timber and firewood are usually confined to farm boundaries due to the high opportunity costs of land.

These commercially oriented enterprises are supported by significant agricultural investment. More than 10 of the fruits and crops cultivated have entered the cropping systems within the past 20 years (Njuki and Verdeaux 2001). Similarly, the transformation to improved cattle has occurred within recent decades and has been accompanied by

significant investments in livestock housing, health, and feed. Cash crops and food crops alike receive fertilizer and manure inputs. Murithi (1998) found fertilizer use by at least 90% of farmers and Owuor (1999) found average fertilizer application of 265kg/ha, the highest of any region in Kenya. Most of the fertilizer goes to the high value crops, as does both male and female labor. In stark contrast to the situation in Vihiga, over 80% of farmers in Nyeri, Central Province, feel that their soil fertility has improved since the time of land acquisition (Migot-Adholla *et al.*, 1990) and 60 percent of the farmers in our recent surveys in Embu District report improved soil quality. As the accompanying graphic shows, upper Embu farmers' perceptions of soil quality change over the past decade are almost the mirror image of those in our Madzuu (Vihiga) survey sites.



Farmer perceptions of whether soils had improved or deteriorated over the past 10 years. Responses were on a 1 (marked improvement) to 5 (significant deterioration) scale. Data are presented as percentage of respondents within village.

Welfare and Livelihoods

The income levels enjoyed by central Kenya farmers dwarf those of western Kenya farmers. Argwings-Kodhek *et al.* (1999) estimate that total annual household incomes in central Kenya are \$2,819 compared to \$1,014 for western Kenya. Crop income alone in central Kenya exceeds total household income in western Kenya because of a more favorable crop mix, increased investment in inputs that enhance and sustain productivity, and more widespread adoption of improved livestock breeds. Success in central Kenya comes not from specialization, but rather from investment in a variety of commercial enterprises, including non-farm activities.

The proportion of household income from non-farm sources is very similar in central and western Kenya, at 37% and 39% respectively (Argwings-

Kodhek *et al.* 1999). However, the absolute level of earnings is much greater in central Kenya due to higher quality of jobs and higher salaries. Average earnings for nearly all non-farm occupations are higher in the central highlands, including farm labor earnings that are nearly twice as high as in western Kenya. In total therefore, central Kenyan households earn about \$1043 per year, on average, from non-farm sources while western Kenyan households earn only \$395. Agricultural and non-agricultural incomes are therefore strongly, positively correlated.

Investments and Interventions for Households, Communities, and the Government

National studies found that post-primary education is one of the most important correlates with income (SID 2004). One of the reasons for this is that education empowers people to obtain higher paying jobs. Evidence from our western Kenya highland site shows that 61% of households where the head has attained secondary school education had a significant non-farm source of income, as opposed to only 34% for those whose head has not. Some households are able to pay for secondary school for their children, but most households struggle to do this. As a result, enrollment rates are only 22% nationwide (SID 2004). There is a pressing need for household, community, and government investments to come together to raise overall agricultural productivity in a region, to reinvest in productive sectors and education, and to spur value adding businesses in the non-farm sector. Such actions appear to be taking place in central Kenya where private agricultural investment and income is high, where non-farm wages are high, where secondary school enrollment is 1.5 times that in western Kenya, and where child vaccination rates are 1.6 times those in western Kenya.

Factors that have Contributed to the Regional Disparities

What are the factors and investments that have created these regional disparities? First, not every region can achieve the income levels of regions blessed by geography. In the central Kenyan case, proximity to the capital city, Nairobi, and to other urban centers is a major factor that has accelerated growth in the agricultural and, especially, the non-farm sectors. The returns to some farm and non-farm livelihoods depend heavily on locational advantages. But while distance cannot be changed, travel time can be. Hence the

importance of developing and maintaining high quality, all-season road networks.

Second, public investment in commercial enterprises through organized marketing of farm produce and inputs can play an important role in catalyzing private investment. There is little doubt that investment in the tea and coffee sectors played a big role in stimulating commercialized agriculture in central Kenya. These initial enterprises formed a base around which farmers diversified into other profit-generating activities such as dairy, vegetables, and fruits/nuts. The cooperatives also improved farmers' access to key farm inputs such as fertilizers, animal feed, seeds, artificial insemination, veterinary services, and farm implements. There was much less government promotion and investment in cooperatives and cash crops in western Kenya. Sugar was the major enterprise being promoted but its rocky history of mismanagement has prevented this intervention from transforming agriculture in the region. The private sector can also play a catalytic role, as witnessed by the highly recognized success of Kenya's dairy industry. But private sector growth also depends on supportive public investments and without commitment in western Kenya and other regions similar to what the national government has made in central Kenya, rural development nationwide will be seriously impeded.

Third, central Kenya farmers have managed to largely overcome food insecurity by diversifying into non-food agricultural production. Continued promotion of relatively low value cereal production among smallholders should be reconsidered. Researchers, extensionists, and land use planners should in no way attempt to promote the growing of a limited number of agricultural enterprises. In a market economy, farmers want and need access to a variety of options.

Fourth, communities have invested more in various forms of collective action in central Kenya than in other regions. Coming together for a common goal such as joint marketing of farm produce seems to have had high payoffs among households in central Kenya. The various social groupings in different regions should therefore be encouraged and supported to venture into income generating activities for improved welfare.

What about investment by households themselves? Should they put their money into agriculture, non-farm investment, or education for their children? It seems that each may be the most important first step in certain cases. Evidence from both central and western Kenya suggests that agricultural and non-agricultural income are positively reinforcing, just as investment in food crops and cash

crops can generate within-farm spillover benefits. While there is no doubt that non-farm income has been channeled into agriculture, the opposite also has occurred. The fact that wages and salaries are much higher in central Kenya than in western Kenya suggests that the superior agricultural value added from the region fuels demand for non-farm goods and services. Education has been the most important investment for central Kenya households. The links between education, non-farm income and higher value agriculture are also apparent in western Kenya. Wealthier households often have options to enhance welfare through a range of investment opportunities and are also able to provide their children with better quality education. Poor households, on the other hand, have fewer assets with which to build from and have very few occasions to generate resources for investment and to provide quality education to their children. When these chances arise, they must identify those investment opportunities that offer the greatest chance of success. Researchers ought to place high priority on identifying the circumstances under which farm, non-farm, and longer-term educational investments should take precedence, at both household and policymaker levels.

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FURTHER READINGS

Argwings-Kodhek, G., Jayne, T., Nyambane, G., Awuor, T., and T. Yamano. 1999. How Can Micro-Level Household Information Make a Difference for Agricultural Policy Making? Tegemeo Institute of Agricultural Policy and Development, Kenya Agricultural Research Institute, and Michigan State University (mimeo).

Institute of Economic Affairs (IEA)2002. The Little Fact Book: The Socio-Economic and Political Profiles of Kenya's Districts.

Migot-Adholla, S., Place, F., and W. Oluoch-Kosura. 1990. Tenure Security and Land Productivity in Kenya, Washington: Agriculture and Rural Development Department, World Bank (mimeo).

Murithi, F.M. 1998. Economic Evaluation of the role of Livestock in Mixed Smallholder Farms of the Central Highlands of Kenya, PhD Thesis.

Njuki, J. and F. Verdeaux. 2001. Changes in land use and land management in the Eastern Highlands of Kenya: Before land demarcation to the present. ICRAF (mimeo).

Owuor, J. 1999. Determinants of Agricultural Productivity in Kenya. Tegemeo Institute of Agricultural Policy and Development, Kenya Agricultural Research Institute (mimeo).

Place, F., Murithi, F., Njuki, J., and F. Mugo. 2002a. Agricultural Land Management by Households in the Highlands of Kenya, ICRAF (mimeo).

Place, F., Kristjanson, P., Staal, S., Kruska, R., de Wolff, T., Zomer, R., and E. Njuguna. 2002b. Development Pathways in Medium – High Potential Kenya: A Meso Level Analysis of Agricultural Patterns and Determinants, ICRAF (mimeo).

Rommelse, R. 2001. The impact of improved fallows and biomass transfer on household poverty indicators in western Kenya. Natural Resources Problems, Priorities and Policies Programme Working Paper 2001-3, ICRAF (mimeo).

Society for International Development (SID). 2004. Pulling Apart: Facts and Figures on Inequality in Kenya. Society for International Development, Eastern Africa Regional Office, Nairobi.

Wangila, J., de Wolf, J., and R. Rommelse. 1999. Characterization of Households in the pilot project area of western Kenya, International Centre for Research in Agroforestry, Nairobi (mimeo).

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