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Securing Household Income among Small-scale Farmers in Kakamega District: Possibilities and Limitations of Diversification

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**Securing Household Income among
Small-scale Farmers in Kakamega District:
Possibilities and Limitations of Diversification**

Henriette Dose

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Securing Household Income among Small-scale Farmers in Kakamega District: Possibilities and Limitations of Diversification

Abstract

In the debate of sustainable rural livelihoods, diversification is seen as a way to secure incomes and to increase food security. On the basis of a data set on income security, this paper analyses to what extent this applies to small-scale farmers in Kakamega District, Kenya. Using the sustainable rural livelihoods approach, this paper draws the conclusion, that (1) diversification in agricultural production is not sufficient for securing rural livelihoods in Kakamega District; (2) a sufficient income diversification depends heavily on requirements like access to education, infrastructure, as well as investment capital; and (3) small-scale farmers in Kakamega District in most cases lack these requirements, therefore not being able to achieve secure household incomes or increased food security.

Key words: agriculture, income security, small-scale farmers, Kenya, sustainable rural livelihoods (SRL), diversification

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Zusammenfassung

Sicherung kleinbäuerlicher Haushaltseinkommen im Distrikt Kakamega: Möglichkeiten und Grenzen der Diversifizierung

In der Diskussion um nachhaltige ländliche Existenzgrundlagen wird Diversifizierung als ein Weg zur Erreichung von Einkommens- und Nahrungssicherheit angesehen. Auf der Grundlage eines Fragebogens zu Einkommenssicherheit analysiert dieser Beitrag, in welchem Umfang dies auf Kleinbauern im Distrikt Kakamega, Kenia zutrifft. Anhand des *sustainable rural livelihood approach* kommt der Beitrag zu folgenden Ergebnissen: 1) Die Diversifizierung der landwirtschaftlichen Produktion im Distrikt Kakamega reicht nicht aus, um sichere ländliche Existenzgrundlagen zu erhalten. 2) Erfolgreiche Einkommensdiversifizierung hängt sehr stark vom Zugang der Haushalte zu Bildung, Infrastruktur und Investitionskapital ab. 3) Kleinbauern im Untersuchungsgebiet stehen diese Grundlagen sehr selten zur Verfügung. Daher sind Einkommenssicherheit und ausreichende Nahrungssicherheit oft nicht gegeben.

Securing Household Income among Small-scale Farmers in Kakamega District: Possibilities and Limitations of Diversification

Henriette Dose

Article Outline

1. Introduction: Improving Livelihoods of the Rural Poor
2. Sustainable Rural Livelihoods as Theoretic Concept
3. Kakamega District: Household Structures and Social Environments
4. Testing the Hypotheses
5. Conclusion: Secure Incomes Yet to Achieve

1. Introduction: Improving Livelihoods of the Rural Poor

The World Development Report 2008 is dedicated to 'Agriculture for Development' and states, that more than half of the population in developing countries live in rural areas, where poverty is most extreme.¹ On this background, it is highly important to improve the livelihoods of the rural poor. Achieving secure household incomes is generally assumed to be a fundamental step out of poverty and food insecurity. With a poverty rate of 52% and the majority of its inhabitants being employed within the agricultural sector, the situation in Kakamega District, Kenya, reflects the importance to improve the living conditions for the rural poor. High population density and extreme demographic pressure further aggravate the problem because agricultural extension in the district is nearly impossible. It therefore seems necessary to look for ways other than agricultural extension to improve the livelihoods of small-scale farmers in Kakamega District.

¹ See World Bank (forthc.).

For analysing the situation in this district, this paper follows the approach on sustainable rural livelihoods (SRL), which has been invented in the late 1990s by the DFID in Great Britain. This approach lays an emphasis on livelihood diversification, which is understood to minimize the vulnerability of small-scale farmers' households against risks and shocks. Thus, theoretical findings lead to the assumption, that diversification of income sources and livelihoods results in more secure income situations at the household level.² Two hypotheses underlie this paper and will be outlined further in part 2: (1) that all households are, in general, able to diversify their incomes although they need a particular basic capital to do so successfully; and (2) that investment is not the only basis for successful diversification. Proving them will be done by examining (1) whether diversification in non-farm activities is essential for small-scale farmers in Kakamega District to secure household incomes; (2) whether non-farm diversification is taking place at all; and (3) which preconditions need to be met in order to allow diversification in non-farm activities. The latter takes into consideration investments in human capital as well as social networks.

Part 2 gives the theoretical background of the SRL. It points out different assets which are seen to be necessary for sustainable rural livelihoods, and highlightens the relation between diversification and risk minimisation. The data set is analysed in part 3. Examined here are household characteristics, land use and land ownership, the possibilities and limitations of non-farm activities, income and expenditure patterns of the households surveyed, their embeddedness in social networks as well as the households vulnerability to shocks and risks. Part 4 discusses whether households in Kakamega District do diversify successful and whether they have secure incomes. It also lines out, whether certain preconditions have to be met for successful diversification. The last part of the paper concludes the findings and gives implications for fostering income security in Kakamega District.

2. Sustainable Rural Livelihoods as Theoretic Concept

In the late 1990s the *Department for International Development* (DFID), Great Britain, initiated a discussion on *sustainable rural livelihoods* (SRL) to serve as a basis for poverty reduction and secure livelihoods with a focus on rural areas. This discussion was based on the *five capital*

² This paper deals only marginally with agricultural diversification, because most of the households in Kakamega District already do have a highly diversified agriculture. However, due to their small landholdings and their bad financial situation, they cannot increase agricultural outputs further.

approach which takes different kinds of assets³ into account in order to evaluate the actual status of household livelihoods during any analysis.⁴

When putting the assets in relation to each other, as shown in Carney's Diamond, the *five capital approach* serves as a tool for assessing the capital basis of a household (or region). It therefore gains importance through dynamic studies.

The *sustainable rural livelihoods approach* focusses on the dynamic analysis of these assets and aims to discover ways to support sustainability. It also includes capabilities and activities of households within the DFID's working definition:

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base. (Chambers/Conway 1991: 6)

The strength of such a holistic and dynamic approach lies in capturing the complexity of rural life while also taking into consideration the influence of national and international partners.⁵ It therefore takes the political, institutional and historical context as basis for development. Build on these, there exists an individually particular combination of the before mentioned five assets. These, though, interact with activities the households carry out, leading to individually special outcomes describing the 'manoeuvring space households have in making a living' (Foeken 1997: 119). Meanwhile, assets, activities, and outcomes are influenced by a vulnerability context in form of shocks, seasonality, and trends. Thus, in using the SRL, scientists seek for ways to structure these framework conditions in a way that will finally lead to secure and sustainable rural livelihoods. Scoones (1998) and Swift/Hamilton (2001) see workable strategies in agricultural intensification and extensification, in livelihood diversification and in migration. Finally, the realisation of strategies leading to poverty reduction and risk minimalization for single households as well as regions shall take place (Scoones 1998: 10). Points to put this theories into practice are seen in areas like biodiversity, fair trade, land tenure and land rights, cattle breeding and access to water. Key elements to implement the SRL strategy of the DFID therefore lie in promoting decentralisation, diversification, and rural-urban linkages.⁶

To achieve a secure income, diversification of livelihoods, as well as diversification of income sources, is considered most important. Since assets of small-scale farmers such as land,

³ These assets are natural capital, human capital, financial capital, social capital and physical capital.

⁴ See Carney (1998:6f); Scoones (1998: 7); Johnson (1997:4f).

⁵ Carney (1998, 1999).

⁶ See Carney (ed.) 1998.

cattle, and tools are, in itself, considered unproductive⁷, it is assumed that poor small-scale farmers do profit from diversification into non-farm activities.⁸ This includes all incomes which are generated independently of the farm as rural wage labour, income from self-employment, pensions and remittances. On the other hand, farm income includes income generated through labour on the farm in terms of output in kind and income from trade with farm products.⁹ Diversification is widely understood as a form of self-insurance against risks and shocks (see Barrett et al. 2001b; Bryceson 1999; Scoones 1998; Ellis 1998a, 1998b). While Scoones describes diversification as one possible alternative for risk management, Ellis asks for the preconditions under which households are able to diversify. His conclusion is that every single household should be able to do so, but the results are dependent on their starting position: While poor households diversify for survival, with 'reasons for diversification born of desperation', better off households are able to 'diversify as a matter of choice and opportunity'¹⁰ and therefore accumulate capital. Bryceson, although not fully rejecting Ellis' thoughts, does not speak of two different approaches to diversification:

Rather than being qualitatively different approaches to risk, they can form a sequential trial-and-error learning curve in which rural farmers are thrown into 'coping' in the first year or two of a 'disaster', after which they 'manage the risk' and in so doing, they eventually 'adapt'. (Bryceson 1999: 11)

However, studies about East Africa in particular, seem to prove Ellis' thoughts.¹¹ In these studies, it has been found out that households need to generate a particular income before being able to diversify successfully. Therefore, with increasing income their activities generate a higher revenue from non-farm work, while households having less than this also diversify, but in activities with low productivity and low incomes. This theorem, due to its graphic expression, is called U-Theorem (see Teklu 1997). Going beyond this theorem shows that households gaining high incomes do not necessarily need to diversify further. Instead, such households often concentrate their activities on one or just a few successful activities (Barrett et al. 2001b).

⁷ See Bryceson (2004).

⁸ And therefore also are able to invest into their land, as, e.g., through buying fertilizer or quality seeds. Up to now, in Kakamega, the only method used for maximising agricultural output is through intercropping, which in most cases does not lead to sufficient outputs.

⁹ See Barrett et al. (2001b); Bryceson (1999); Woldenhanna/ Oskam (2001); and Ellis (1998a, 1998b). This paper differentiates between farm and non-farm income as before mentioned.

¹⁰ Both citations from: Ellis 1998a: 7.

¹¹ See Teklu (1997); Barrett et al. (2001a); Freeman et al. (2004); Lanjouw, P. et al. (2001); Smith et al. (2001); and Block/ Webb (2001).

As a result of the literature review and through the following analysis and discussion, two hypotheses shall be considered:

- 1) All households are, in general, able to diversify their incomes although they need a particular basic capital (or stable income) to do so successfully, as mentioned by Ellis and the U-Theorem.
- 2) Investment is not the only basis for successful diversification and income security. Besides it, there are the other elements of Carney's Diamond playing important roles. This paper, therefore, places emphasis on human capital and access to infrastructure as essential for successful rural development.

3. Kakamega District: Household Structures and Social Environments

3.1. Determining the Data Set

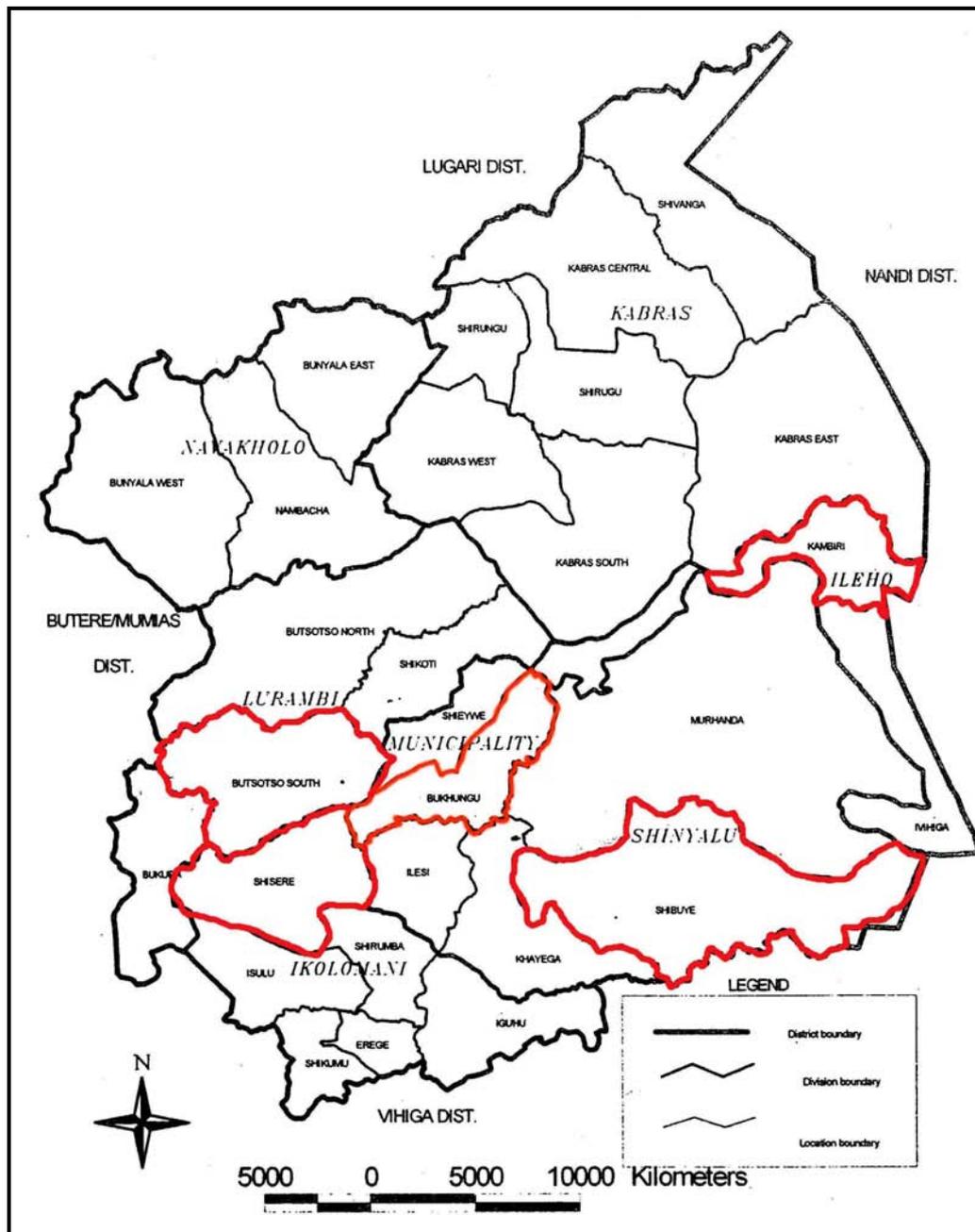
Kakamega District, situated in the Western Province (Kenya), employs the majority of its inhabitants within the agricultural sector (GoK 2002), with most of them being small-scale farmers. In fact, 80% of the population live in rural areas, and 62% of all households generate their income from agriculture. At the same time the district suffers from extreme demographic pressure with an annual population growth rate of 2.12%. Therefore, with 76% of the district's area being under agricultural cultivation and an additional 11% being covered with (gazetted) forest, an extension of cultivated areas seems impossible. This fact, combined with the district's poverty rate of 52%, shows the importance of exploring ways to facilitate secure incomes for households living on small-scale farming.

The findings of this paper are based on a data set collected in March 2005 from five administrative divisions of Kakamega District, namely Shinyalu, Ileho, Ikolomani, Lurambi and Municipality. The first four of the listed divisions have been chosen to enable a follow up to the land use typology pre-test done by the BIOTA E14 group of the University of Bonn, which selected study sites along a land use gradient centering on Kakamega Forest. To implement an intermediary as well as to get representative households of an urban category we also included the Municipality division, namely regions surrounding Kakamega town in the survey. The sample size was based on time and resources available for the study.

The data set was collected using probability sampling methods and the study area was determined according to the following parameters which specify locations and sub-locations from each of the five administrative divisions: proximity to Kakamega Forest, population density, the rural-urban continuum and the cropping zones of cash crops like tea/coffee and

sugar cane. 15 households were randomly selected from each sub-location, resulting in a sample containing 75 households.

Map 1: Selected divisions and locations in Kakamega District



Note: After printing this map, the locations of the Lurambi Division have been renamed as follows: Shikoti = Butsotso East, Butsotso South = Butsotso Central, Bukura = Butsotso South.

Source: GoK (2002: 5), red outlines by the author.

Although 33.3% of the surveyed households have been classified as 'urban', they often depend as much on agriculture as the 66.7% regarded as 'rural'. This stems from the fact that

'urban' in this survey represents the distance of the households towards trading centres which is seen as an advantage concerning access to infrastructure and services.

The primary data was collected using a standard questionnaire which assessed aspects of rural livelihoods such as demographic details of a household; details concerning land use, land ownership and acreage, physical quantities of crop outputs as well as household patterns concerning their use as food or income source, income and expenditure patterns, ownership of various assets, responses to shocks, the embeddedness of households in social networks and institutions, future prospects and plans. The aim of the questionnaire was to obtain information about the income of small-scale farmers in the study site, mainly concerning the composition of their household incomes and the distribution of their income between farm and non-farm activities. Due to the fact that small-scale farmers tend not to have regular incomes, the questionnaire was designed to assess the different income components. As such, income from trade or sale of crops was taken into account as well as income from non-farm work; income generated by different household members (including remittances) was added up. All details were used to calculate an estimated annual household income which was compared to a calculated annual household expenditure. However, in doing so, large differences were obtained which are assumed to be the result of varying agricultural prices during the year, unequal seasonal agricultural outputs and differing statements from the interviewees concerning agricultural outputs.

In addition to the primary data, secondary data was used, collected mainly from relevant Government Departments in Nairobi and Kakamega, as well as information from local non-governmental organisations (NGOs). Some of the collected data include details concerning agricultural development, price trends of agricultural inputs and outputs, information about the local business sector and micro credit schemes.

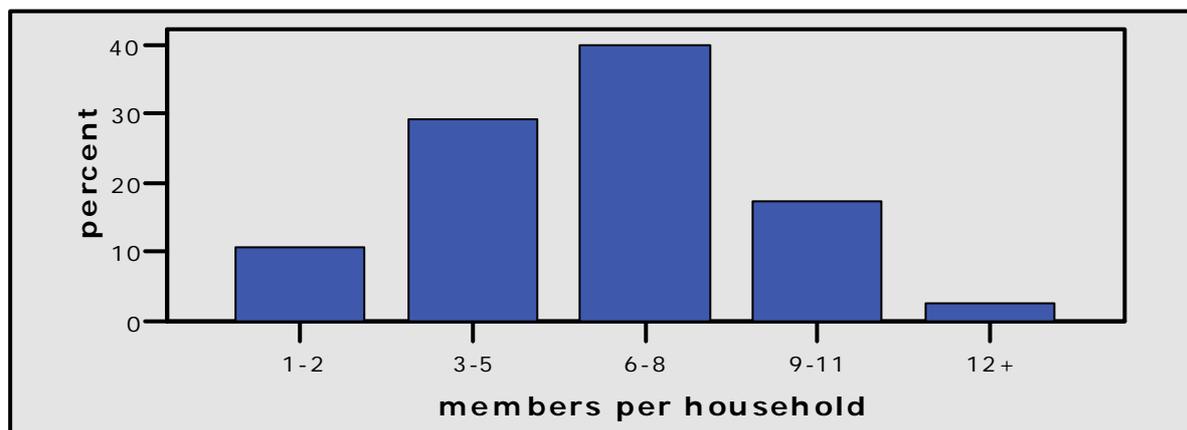
3.2. Household Characteristics

Throughout this paper, a household refers to a group of people, either related or unrelated, who are answerable to one person, often regarded as the household head. Household members share a dwelling unit or structure and have the same housekeeping arrangements. Hence a distinction between a family unit and a household has to be made and, as such, family members who are permanently away from the household either through working migration or boarding school are excluded, although they often contribute to the households wellbeing through remittances.¹²

¹² In this study, this is true for 48% of the households.

As shown in figure 1, the average household size measured in this survey is 6.28 members. This differs to the figure stated in the current Kakamega District Development Plan which puts the average at 4.8 members (GoK 2002). However, this divergence could be accounted for by the sample size.

Figure 1: Household size



Source: Data set of the household survey, March 2005; own calculations.

In most households, members tend to be the immediate family and/or close relatives, sometimes with up to three generations living together which results in households with a greater than average number of members. In this case, land has often not been divided between grown-up children, thus giving a connection between household size and farm size (figure 2).

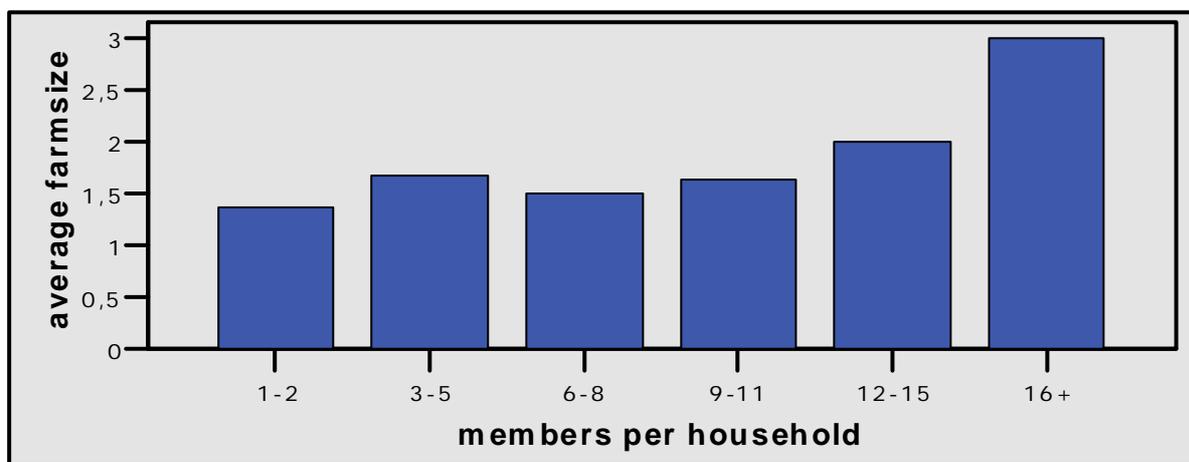
However, it has to be mentioned, that, throughout all household size groups, 56% of the sample households have to live from farm sizes smaller than 1 ha.

A survey of income security also requires an analysis of dependencies. According to Kakamega District Development Report 2002-2008, dependents are all people not belonging to the labour force, which accounts for those between the ages of 15 and 64. This leads to a dependency ratio of 64.5/100 concerning the data sample, with 12% of the households having less than two members in the labour pool. Although this figure is clearly less than for the district as a whole (99/100), it increases if it is taken into account that many young people aged between 15 and 18 go to school and, therefore, do not contribute to the household income. Under this consideration, the dependency ratio increases up 94.6:100.

The study also examined the issue of infrastructure as an important aspect for the developing potential. More than 80% of all surveyed households have no access to clean water but must fetch it from rivers or streams. This doubles the district's average which is 40%. Only 8% of the households have access to electricity which represents the district's provision. In

2001 only 13 trading centres and five villages were supplied with electricity. Therefore, the most important energy resources are fuelwood (81.3%) and kerosin (72%). The average distance from the household to the next tarmac road is 5.7 km, or 40 minutes by foot. This is due to the fact that, except for a few main roads, there are hardly any well maintained roads, which also leads to minimal public transport service in remote areas. Health care centres and primary schools seem to be represented quite well in the study area. The median distance to both facilities lies around 1 to 1.5 km.¹³ However, the district lacks institutions for higher education.

Figure 2: Average farm size in hectar in relation to household size



Note: Although the data set does not explain the non-linearity of the graph, it can be assumed that there is a connection between household size and the geographical distribution of the households. While the smallest farms can be found close to the forest, it is my impression that greater family sizes can be found there as well.

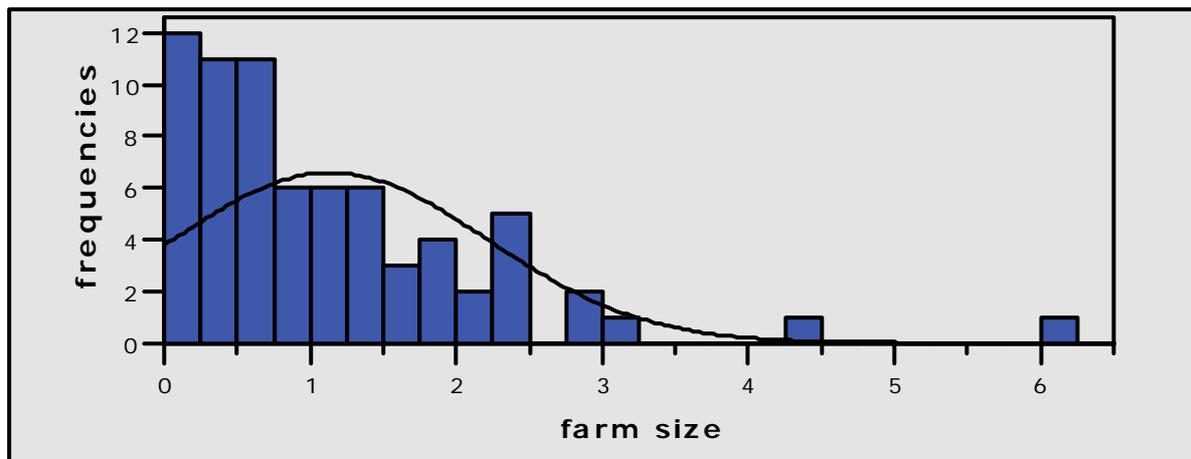
Source: Data set of the household survey, March 2005; own calculations.

3.3. Land Use and Agricultural Production

Land Ownership and Land Use

Although the mean farm size measures 1.14 ha and therefore more than the district's overall average (0.7 ha, GoK 2002), figure 3 clearly indicates that this is due to two farms falling out of the frame. It should be noted that the farm size represents the whole property including land being used as building land, occasional wood plantations, hedges and areas for fruit trees, as well as small parts for pasture. Therefore, the land used for agricultural cultivation, represents on average 0.4 ha.

¹³ The survey here is not conform with the current District Development Plan (2002) which ascertains both being underrepresented. This could be explained first through the sample size, and second through a possible increase in facilities since 2002.

Figure 3: Farm size in hectar

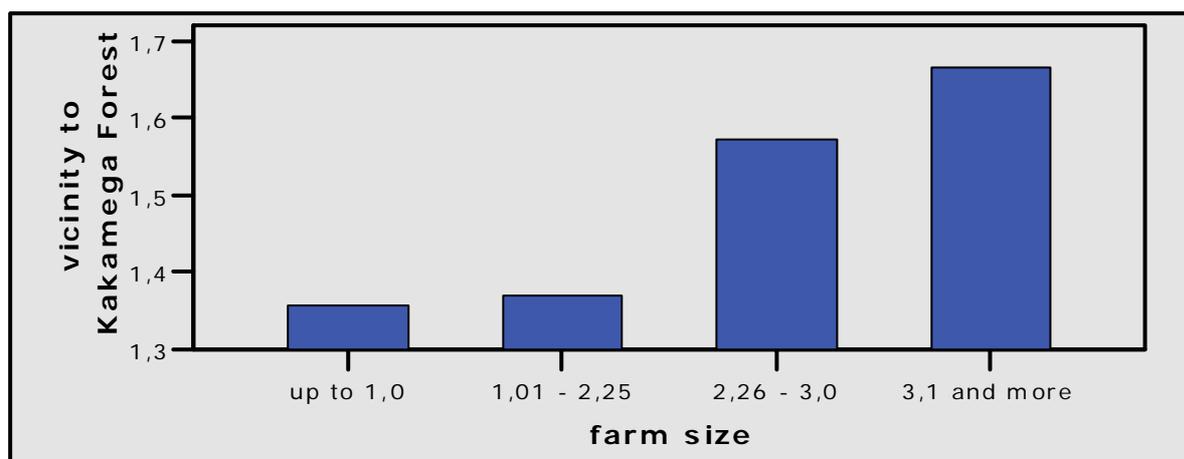
Source: Data set of the household survey, March 2005; own calculations.

Land is owned by individuals (72%) or families (25.3%) and, as the sample indicates, it is not common to rent land or to hold land rights as a community. In more than 80% of the cases men own the title deed, and Mackenzie (1993) illustrated that the land will generally be inherited by sons. Moreover, Sobania (2003) reports that in Kenya, a title deed often still belongs to a person who has already divided the land among his (or her) children. This becomes important with regard to access to credit, for without the land title as security, formal credits are seldom provided, thus complicating diversification in non-farm as well as in farm activities.

Land is mostly used for the production of food such as maize (by 97,3% of the farmers), beans and greens (96% each). Not to mention sweet potatoes (72%), cassava (61.3%), bananas (90.7%) and occasionally ground nuts, irish potatoes, soybeans, arrow roots, tomatoes, and pineapple. The farmers use inter-cropping as a method to maximize and diversify the output (see Njeru 1996).

Only slightly more than one third of all surveyed households cultivate cash crops, with nearly all of them being sugar cane farmers (33.3%) as opposed to 6.7% tea farmers. For tea cultivation is possible in areas close to the forest, this focusses the problem of farm sizes compared to the distance of the forest (figure 4).

In these areas, farms are too small to produce cash crops as well as food. However, figure 4 also represents the spreading of poverty: Ikolomani and Shinyalu are the poorest divisions in the whole district (GoK 2002).

Figure 4: Distance to Kakamega Forest (in km) compared to farm size (in hectar)

Source: Data set of the household survey, March 2005; own calculations.

Agricultural Production and Marketing

With plots being slightly smaller than 0.4 ha, it appears difficult for small-scale farmers to produce enough food to achieve food security, let alone a revenue from marketing. Combining the amount of food harvested¹⁴ with the monthly expenditure on food shows that the surveyed households can cover only 55% of their food needs through their own production (table 1). This has to be considered given the facts of decreasing agricultural productivity (GoK 2002) and increasing food¹⁵ and input prices.

Table 1: Average value of food per month (in Ksh)

Staple food from own production	Staple food bought	Vegetables/greens from own production	Vegetables/greens bought
2,039.18 (55.5%)	1,638.41 (44.5%)	411.53 (57.9%)	299.79 (42.1%)

Source: Data set of the household survey, March 2005; own calculations.

Promoting agricultural productivity is the responsibility of the *Agricultural Extension Service*.¹⁶ However, the marketing of agricultural products (excluding cash crops) does not take place, except that '[m]ost rural households will sell what they need [as cash] [...] only to buy

¹⁴ Valued in Ksh per month (exchange rate at the date of survey: 1 Euro = 98,69 Ksh [Kenya Shilling]).

¹⁵ Prices for food crops as maize, beans, cabbage, tomatoes, sweet potatoes, and irish potatoes nearly doubled since 2001. This increase cannot be accounted for by inflation, for prices of other products like eggs, meat, groundnuts, and different kinds of seeds or fertilizer have stayed constant.

¹⁶ From own experience and conversations with AES members it became clear that their work is being hindered by missing equipment like, e.g. cars or motorbikes to reach small-scale farmers in remote areas.

it back later, indicating their great need for cash'.¹⁷ They therefore become trapped in a vicious circle, selling food when seasonal prices are low, and having to buy it back later at higher prices to cover their food needs. These seasonal differences can be extreme, as shown in a price list of Shinyalu, 2003: the range of the prices for one unit (90kg bag) of maize or beans, the staple food, was 800 Ksh during the year. For crops that are harvested throughout the year such as bananas, sweet potatoes and greens, there are no such price differences reported.¹⁸ Bananas (18,4%) and greens (43,9%) belong to the products that are sold most often, although households cannot gain high revenues from such trade with a bundle of greens ranging from 1-5 Ksh and a bunch of bananas from 80-100 Ksh.

Cash crops, on the other hand, do incorporate revenue. Although the interviewed farmers did report that productivity is declining (sugar cane: 50%, tea: 33%), tea farmers earned an average of 144,575 Ksh a year, with a price per kg of 7-8 Ksh. Sugar cane, which can be sold to private owned jaggeries or to sugar companies like *Mumias Sugar Company* (MSC), earns a slightly lower revenue: with an average harvest of 2 tons and an average price of 1,670 Ksh per ton, the revenue per harvest is 100,200 Ksh. Prices, however, have declined during the last few years with the downward trend likely to continue.¹⁹

Compared to crops, cattle does not seem to contribute to the household wellbeing. Although 92% of households own either cattle or poultry, this does not lead to a significant difference in monthly expenditure patterns concerning milk and eggs. As indicated in the literature²⁰, however, it can be assumed that ownership of poultry, but to a larger extent of cattle, is, by the interviewees themselves, seen as a form of insurance against shocks, as well as a long-term capital investment. However, due to their overall bad income situation, the small-scale farmers lack the opportunity to gain a revenue from cattle breeding or from their poultry, which is proofed further by the missing determinants for successful cattle breeding²¹, namely access to agricultural cooperations as well as the amount of space needed.

3.4. Possibilities and Limitations of Non-farm Activities

Possibilities and Limitations of Non-farm Activities in Kakamega District

The industry of Kakamega District is characterised by its links to the agricultural sector with even the few large companies (Kabras Millers, West Kenya Sugar Company, and Sembi Saw Millers) depending on it. As such, with most of the inhabitants living on agriculture in one

¹⁷ Karanja (1996: 134).

¹⁸ Divisional Agricultural Office (2004).

¹⁹ GOK (2004).

²⁰ See for example Freeman et al. (2001), Imai (2003) for Kenya.

²¹ See Imai (2003).

way or another, formal employment is rare. The District Office (DO) in 2004 counted only 12 formal industries, with employment possibilities being extended through public services as well as through the government. Therefore, many people, especially the young, make their living through informal jobs in the *jua kali* sector, such as carpenters, hawkers, in boda boda-transport and welders. The most important occupational status is that of the casual worker. For the informal employment status, there are no official figures stating the income or employment structure of these enterprises.

The biggest employer is the sugar industry providing, 6,500 direct and 15,000 indirect jobs. Another 4,500 jobs are available through other manufacturing industries. However, this clearly shows that Kakamega District lacks formal employment possibilities. With more than 6,000 people reporting themselves unemployed or job seeking every year, most of them between the ages of 15 and 25, the official number of unemployed people for 2002 was 10,559²². However, estimates lead to the suggestion, that this figure accounts for only 15% of the unemployed.

Possibilities and Limitations of Non-farm Activities According to This Survey

The results of this survey suggest that the poverty of Kakamega District acts as a limitation to diversification. Therefore, each person within a household generates just 16% of the GNP per capita according to the national level. This fact is explained by the high number (80%) of interviewees who depend on agriculture as their main source of income. This is followed by trade (5.35%), construction (4%) and education, health, political/social/religious activities (4%). This pattern has remained fairly constant over the last five years, with only 18.7% of all households reporting changes to it, often due to retirement.

Although generating income is concentrated in agriculture, most households include members who deal with non-farm activities as described in table 2.

Table 2 clearly shows a concentration in trade, including trade in agricultural products, thus indicating an income possibility for women (see Karanja 1996). As assumed for the whole district, the sample emphasizes employment in health, education, and political/social/religious activities as another important non-farm activity, which is also responsible for relatively high incomes (see figure 5).

Ileho, Ikolomani, and Shinyalu are the poorest divisions in the district. Besides this, figure 5 also indicates that even the outer circles of the Municipality division, which is reported to be the richest of the whole district, cannot benefit from the profits generated in Kakamega town. The average income of the sample from this division (people living exclusively in the

²² The district's overall population for the same year has been reported to be 643,457 inhabitants.

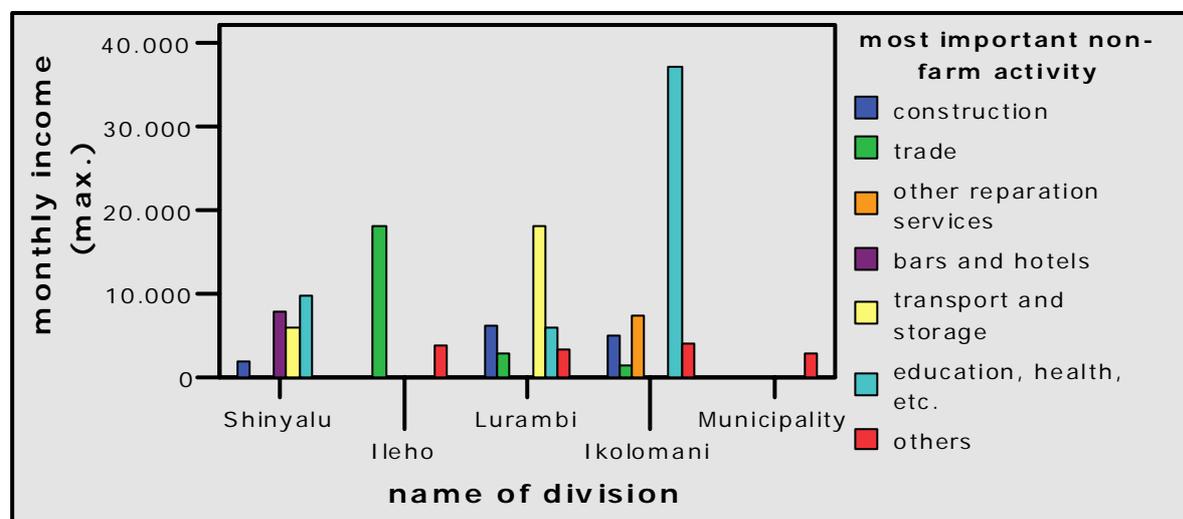
poor outer circles) is 5,700 Ksh and shows a significant difference to the average income of the whole sample, 50,476 Ksh. Teamed with the fact that this households hardly ever participate in income generating (non-farm) activities, it appears that poor households do not have the opportunities to diversify their income sources for securing household incomes (see Ellis 1998, Swift/Hamilton 2001).

Table 2: Forms of diversification: non-farm activities done by the households

Activity	First activity (percent)	Second activity (percent)	Third activity (percent)
Manufacturing	6.7	-	-
Construction	5.3	2.7	-
Trade	14.7	4.0	-
Sale, maintenance, and repair of mechanical and electrical devices	1.3	1.3	-
Other repair services	4.0	-	-
Hotels, bars, restaurants	2.7	-	-
Transport and storage	5.3	-	-
Communication, finance, real estate, law, etc.	1.3	-	-
Defence and related services	2.7	-	-
Education, health, political/social/religious activities	9.3	-	1.3
Casual labour	6.7	-	-
Painting services	2.7	-	-
Remittances	9.3	-	-
No answer given	28.0	92.0	98.7
Total	100.0	100.0	100.0

Source: Data set of the household survey, March 2005; own calculations.

Figure 5: Maximum income from the most important non-farm activity per division



Source: Data set of the household survey, March 2005; own calculations.

The high significance of agriculture is also reflected in the relative decrease of non-farm income which goes hand in hand with an increase in subsistence farming. More than 40% of all households stated that the importance of a non-farm income for their household has decreased in the last five years, while more than 25% reported having no non-farm income. However, nearly 95% of the households would like to have more non-farm activities. This difference is reported as being due to financial constraints (80%) and lack of knowledge (6.7%), e.g. concerning credits mostly.

3.5. Income and Expenditure Patterns

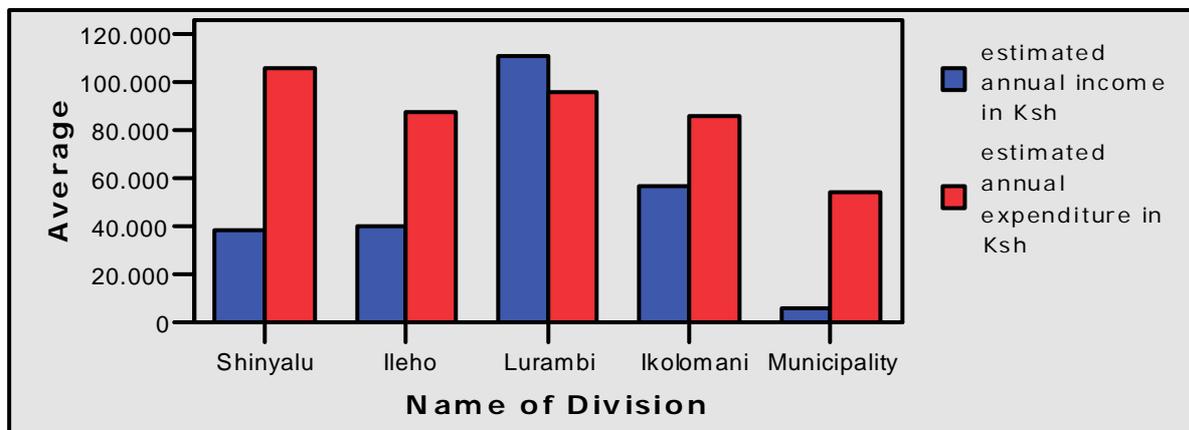
Although agriculture is the most important activity in the surveyed area, the cultivation of food is not a sufficient income source. As such, 72% of all households have broadened their activities. In this sense, households can be grouped into three categories: (1) small-scale farmers with cash crops (mostly sugar cane), (2) small-scale farmers without cash crops, (3) small-scale farmers with non-farm income, e.g. remittances, wages or income from self employment. Altogether, the average household income²³ is 50,458 Ksh. The highest incomes are generated through the cultivation and marketing of cash crops and while the average in this group lies annually at 75,755 Ksh, the maximum income is 287,310 Ksh. For the second group, who rely only on the cultivation of food, the average income is 200 Ksh. However, there are only a few households belonging to this category. Most households carry out diversified activities, therefore belonging to the third group. The average income here is 66,112 Ksh and the highest income of 448,000 Ksh noted in this survey belongs to this group. This summary clearly indicates that diversification in the cultivation of cash crops, as well as in non-farm activities, helps households to generate financial incomes.

The fact that even subsistence farmers need cash is demonstrated by Bryceson who, on the one hand, speaks of '[...] the relatively high costs of purchased food, drastic cutbacks in government social service provisioning and the declining value of ex-migrant workers' pensions [...]' and on the other hand, mentions '[...] costs, depending on local circumstances, included: equipment associated with more capital-intensive farming, community-centred gift-giving, and food purchases'. Such expenditures can also be found in the surveyed area. Households must spend an average of 2,871 Ksh per month on (staple) food like maize (flour), beans, vegetables, bread, meat, eggs, milk, sugar and fruits. Furthermore, there are

²³ Financial income has been calculated and summarised to annual incomes from following details: wage, revenue from self-employment, revenue from trade with agricultural products and remittances. For answers given have often not been sufficiently detailed and prices for agricultural products do not stay constant during the year, the ascertained numbers are estimates. For 34.7% of the households no financial income could be determined, although this does not exclude the fact that they have financial incomes.

additional costs for the purchase of kerosine, fuel wood and charcoal as well as commodities such as soap or washing liquid. These account for an additional 1,000 Ksh per month. Besides these regular costs there are occasional costs such as medicine and health care fees, enrollment fees (for secondary school onwards), transport, clothing (including school uniforms), communication technology and, finally, market taxes when selling farm products on local markets. This expenditure amounts to an annual average of 85,927 Ksh and exceeds the average income by far (figure 6).

Figure 6: Estimated annual income and expenditure per division in comparison



Source: Data set of the household survey, March 2005; own calculations.

This is primarily due to difficulties in obtaining information about the income of small-scale farmers. For instance, it should be noted that farm products are often sold in small quantities (piece meal). As a result, to obtain financial information we relied on the memories of the farmers in question with regard to quantities and prices. Secondly, many farmers seem to underestimate occasional non-farm activities such as (seasonal) casual or wage labour, therefore having 'hidden' income sources.²⁴ Only in connection with income from sugar cane, as in Lurambi, do expenditures not outrange the incomes. With this in mind, the discrepancies between expenditures and incomes must be taken into consideration.

3.6. Social Networks and Institutions

Belonging to a social network or being a member of a social institution gives security and support in everyday life as well as in times of crisis. Of the households questioned, over 60% confirmed that they hold a membership to a self-help group, with women groups and

²⁴ Such difficulties often occur in household surveys and repeated themselves in the household survey following this pre-test. Again, the data set showed a discrepancy in incomes and expenditures, but, due to the larger number of interviewees, the gap is not as big as in this data set.

church groups being the most attractive (each 20%). There they seek mutual help (30.7%) and social support (13.3%). A few households decided against membership to such a group, but, more often than not, they told us that this kind of social support does not exist near their home (12%). Those who decided against joining stated reasons such as bad experiences (8%) and no interest (6.7%). Compared to self-help groups, agricultural or business associations play an unimportant role. Only 26.7% of the farmers belong to any form of agricultural cooperative or association, mostly as outgrowers of sugar companies.

Social institutions and self-help groups also function as credit groups. For instance, the Savings and Credit Cooperative (SACCO) was named by 12% of the households. However, more attractive and accessible are Rotating Savings and Credit Associations (ROSCA), which can have either a formal or an informal character. Most often in the study area this is a form of women's group called merry-go-round, which not only functions as a credit group, but also as a social institution. Altogether, with only 20% of the households being members of credit groups, the area seems to lack access to such groups. This was reported by 40% of the households, and 16% giving bad experience as reason for not being a member. Therefore, nearly 50% stated that they do not know anyone to ask for cash in times of need, while communal groups account for the most frequented source (12%).

3.7. Responses to Shocks

To maintain successful risk management, a secure income is seen as a precondition. This survey therefore asked for shocks experienced in the last five years and the implications of these shocks on the household as well as coping strategies. Shocks have been defined as serious illness of one month or longer (experienced by 32%), separation (experienced by 1.3%), unemployment (experienced by 5.3%), loss of productive capital (experienced by 12%), death of household members (experienced by 12%), and theft (experienced by 1.3%). Interestingly, problems concerning agriculture like crop or animal diseases or weather disturbances were not mentioned. With 64% of households being affected by these shocks, illness, death and loss of productive assets account for the most common reasons. However, Malaria is not included in the numbers given, for it is not covered in the given definition of serious illness. Still, being the dominant illness in the region, it regularly leads to loss of working hours throughout the year, and therefore to loss in needed agricultural output, if agricultural production is hindered by illness throughout the year.

Death mostly seems to occur in children, therefore not only confirming the district's statistic which dates child mortality at 62.5/1000, but also indicating a connection between child mortality and poverty/undernutrition as well as a lack of medical care. This survey comes to the

conclusion that most households lacking a regular income do not have the capital to spend a given amount on medicines or health care.

Trauma, loss of agricultural products and hunger are the results of these shocks most often named. This is often due to missing the right time to sow through loss of working hours. Coping strategies include selling food as well as cattle to get cash for medical care or funerals. In more than half of all cases, the affected households had to cope alone with the situation. When there was help available, this was generally given by relatives.

Since all recorded shocks lead to a higher need for cash, it seems clear that securing a household income is important for attaining risk management.

4. Testing the Hypotheses

4.1. Diversification and Income Security in Kakamega District

In relation to my first hypothesis, I found out that 72% of all households participating in this survey diversify their activities into the non-farm sector. This figure does not, however, explain whether this diversification is successful. It is therefore unclear whether these households secure their incomes by accumulating capital or whether these households are in need of as many income sources as possible just to survive.

Types of Diversification

The questioned households can be grouped into eight categories according to their diversification level, as shown in table 3, with the cultivation of food being the common feature. The ownership of cattle has been left out due to my definition of diversification.

Table 3: Types of diversification

Type of diversification	Households belonging to the category (percent)
Food production only	12.0
Food production and non-farm activities	26.7
Food production and remittances	9.3
Food production, non-farm activities and remittances	14.7
Food production and cash crops	6.7
Food production, cash crops and non-farm activities	14.7
Food production, cash crops and remittances	9.3
Food production, cash crops, non-farm activities and remittances	6.7

Source: Data set of the household survey, March 2005; own calculations.

The largest share of households (26.7%) can be found in agricultural food production combined with non-farm activities, followed by households who further diversify in either cultivating cash crops (14.7%) or getting remittances (14.7%). Remittances play a particularly important role in this survey and although Mathse/Young (2004) found out that obtaining remittances leads to a decrease in the interest of a household to diversify its income sources, this is not true for the households questioned. Food production aside, only 9.3% of households are relying on remittances alone. This is even more significant when compared to the number of households not diversifying at all (12%).

Upon considering only households who diversify in non-farm activities, it is clear that the cultivation of cash crops somehow reduces the investment in non-farm activities. Therefore, the basis of different activities in the non-farm sector is wider when no cash crops are cultivated. However, the spreading of activities does not represent the success of securing the generated incomes.

Successful Diversification and Income Security between Theory and Reality

A stable income throughout the year is not guaranteed for the agricultural sector. This is due especially to varying prices according to harvesting times. Describing this phenomenon, Ellis uses the term 'seasonality' and broadens the term, not only covering agriculture, but also non-farm activities which are highly related to agriculture such as trade with farm inputs and outputs as well as repair of agricultural devices. He therefore defines seasonality as follows:

In economic terms, seasonality means that returns to labour in both on-farm activities and off-farm labour markets vary during the year, causing seasonal changes in occupation as labour time is switched from lower to higher return activities. (Ellis 1998a: 11)

Thus, all forms of income generation which are independent of such seasonal variations in income and, as a result, smooth the cash flow during the year, are regarded as probably secure. Seasonality, therefore, is used as an indicator to define income security.²⁵ This is also proved by Iliya/Swindel (1997) who have, in their article about Nigeria, found out that poor households tend to drift towards non-farm activities which are either seasonally offered or casual labour. Marenja et al (2003), on the other hand, showed in their study of Western

²⁵ Other possible indicators should be coming from national laws (e.g. concerning protection against dismissal), from the moral of payment for received services, etc. For in this survey there is a focus on agriculture, I take seasonality as an indicator, but will further consider the amount of income as well as its regularity towards the future.

Kenya that working in education and public services are the most promising jobs. However, they also found out that in these sectors many jobs get cancelled, which leads to the opinion that the better educated leave the region and migrate due to bad working conditions.

Table 4 illustrates that 69.3% of all households belong to Ellis' category of insecure incomes, for these vary seasonally. It is also clear from this table that incomes within this group are low, with nearly 50% having incomes under 10,000 Ksh per year. Exceptionally high incomes are generated through the cultivation of cash crops, particularly sugar cane. Having said this, income from sugar cane production also varies between seasons since it is harvested every 1½ to 2 years and jaggeries, as well as the sugar companies, pay only after the cane is delivered.

Table 4: Annual household income referring to three types of household activity

Activity	Annual income in Ksh						Total
	Up to 5,000	5,001-10,000	10,001-50,000	50,001-100,000	100,001-200,000	More than 200,000	
Agriculture (including cash crops, trade with farm products, and casual labour)	28 37.3%	4 5.3%	8 10.7%	7 9.3%	3 4%	3 4%	52 69.3%
Agricultural and non-farm work	2 2.7%	2 2.7%	5 6.7%	4 5.3%	3 4%	1 1.3%	15 24%
Non-farm work			1 1.3%	2 2.7%	1 1.3%	1 1.3%	5 6.75%
Total	30 40%	6 8%	14 18.7%	13 17.3%	7 9.3%	5 6.7%	75 100%

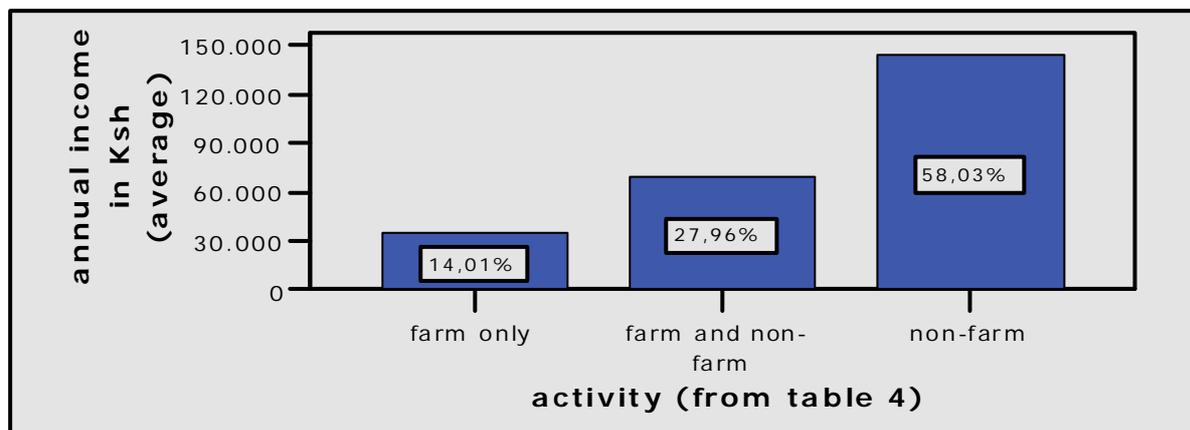
Source: Data set of the household survey, March 2005; own calculations.

This survey shows that trade revolves mainly around agricultural products such as the sale of agricultural products at local weekly open-air markets. It therefore belongs to the category of insecure activities, which also contains casual labour which is either processed in the agricultural sector or whenever the farmers have working time to spare, in other words not working on their own land.

This paper therefore accords with Ellis (1998a), but also with Barrett et al. (2001b) and Block/Webb (2001), saying, that not until households combine farm with non-farm activities the first step to reaching a secure income is done. This is true for 26.7% of the households, but has to be moderated further: Non-farm activities do not appear to automatically lead to long-term and secure employment. On the contrary, 18.7% of all households questioned mentioned that their most important activity has changed during the last five years. Amongst them, around 1/3 belongs to the category combining farm with non-farm activities, therefore, theoretically at least, generating secure incomes. However, this is questionable when considered against the facts of reliability and regularity concerning the future.

This is again shown in figure 7, which displays the average annual income according to the three income categories and the share of these household groups in the total income of the sample.

Figure 7: Activity to annual income



Source: Data set of the household survey, March 2005; own calculations.

Returning to my first hypothesis, it can be stated from the facts shown here that most households are living below the poverty line of one dollar per person per day. With an average household size of 6.28 persons, the critical household income in question is slightly more than 170,000 Ksh. Compared with table 4, this income is reached or exceeded by roughly 10% of all households, with again 2% of these having incomes defined as insecure due to seasonality. Therefore, only 8% of all households in this survey have the possibility to diversify for accumulation, while 92% of the households can only diversify for survival.

The U-Theorem states that poor households do diversify their livelihoods, but are not able to do so successfully. They need a certain income to diversify broader and to achieve secure livelihoods and secure incomes. The households in this survey do appear to conform to the U-theorem. If households with high enough incomes on the other side diversify lesser, cannot be proved with the data sample used.

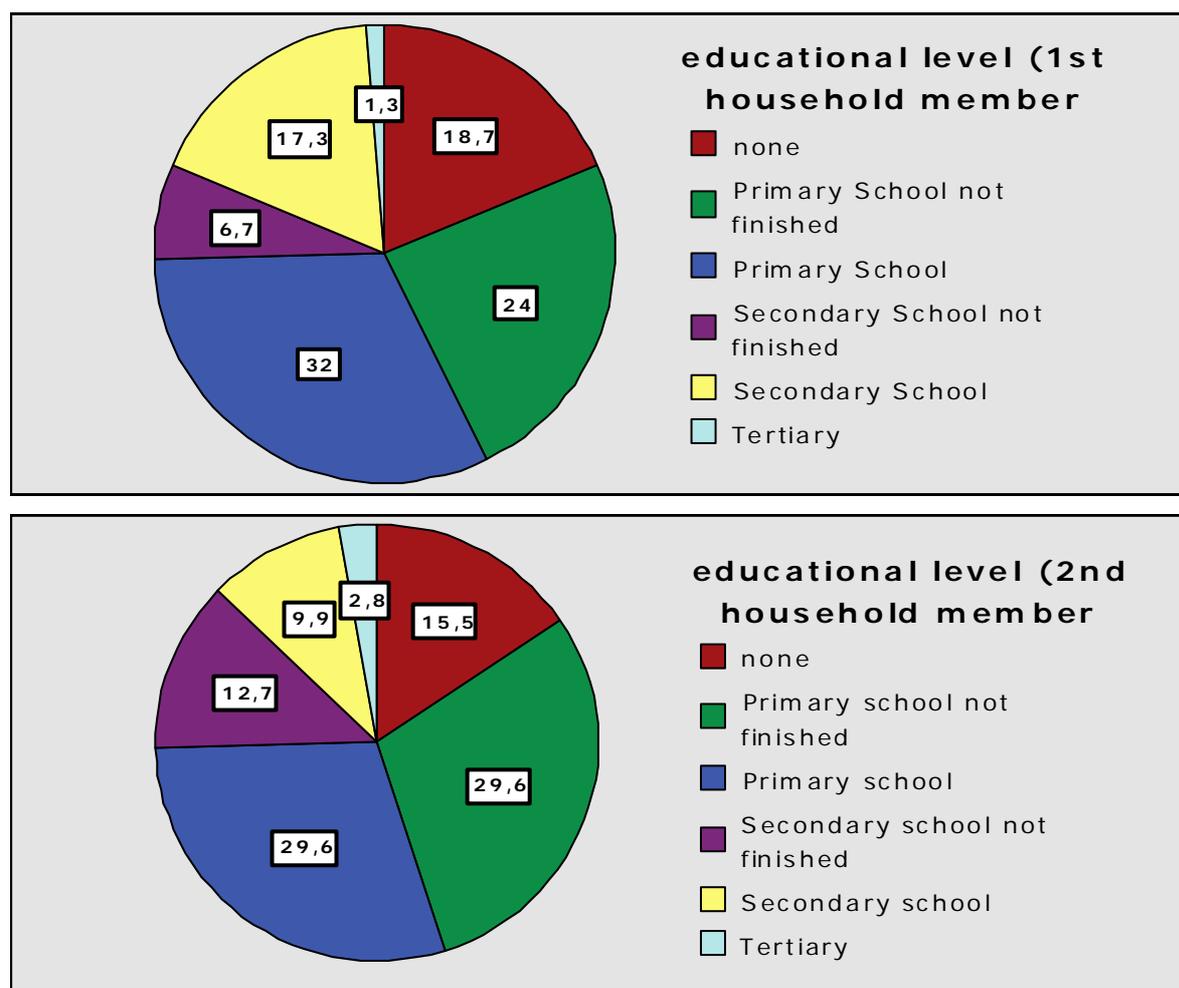
4.2. Preconditions to Diversification: Searching for the SRL's Most Important Assets

The theoretical thoughts of the SRL, the assets of the five capital approach, play an important role in securing rural livelihoods. I therefore founded my second hypothesis on these assets, stating, that they are equally important for successful diversification. My focus, therefore, is on human capital, social capital, infrastructure (belonging to physical capital) and partly on financial capital, neglecting natural capital.

Human Capital

As a basis for SRL, human capital means the ability to adopt strategies for securing a livelihood. I have therefore focussed on the educational level of the people questioned. In 74.7% of cases, this does not exceed primary school level, with 18.7% claiming to have never been to school at all (see figure 8).²⁶

Figure 8: Educational level of the first and second household members



Source: Data set of the household survey, March 2005; own calculations.

However, the level of education does not seem to influence the choice of the most important activity for the household. Within all the groups this is agriculture, which accounts for more than 70%. Further, table 5 shows that the most important non-farm activity is trade, which is explained by the fact that many households sell farm products, often in smallest quantities

²⁶ I concentrated on the first and second household member, for these are, in most cases, the household head and his or her partner. They have to be agreed on being the ones responsible for diversification, as well as for the education of their children.

(piece meal), throughout the year. Income from trade is therefore of high importance, but the revenue still is in most cases negligible.

Table 5: Most important activity and most important non-farm income source as well as annual income of the households compared to educational level first household member

Educational level (1 st household member)	Most important activity of the household	Percent	Most important non-farm income source of the household	Percent	Annual income of the group in average (maximum in brackets)
No education	Agriculture	85.7	Manufacturing	14.3	16,557.14 (122,700)
	Manufacturing	7.1	Trade	35.7	
	Trade	7.1	Defence and related services	7.1	
			Education, health, political/ social/religious activities	7.1	
			No answer	35.7	
Primary school not finished	Agriculture	72.2	Manufacturing	5.6	26,975 (193,200)
	Construction	5.6	Trade	72.2	
	Trade	11.1	Sale, maintenance, and repair of mechanical and technical devices	5.6	
	Sale, maintenance, and repair of mechanical and technical devices	5.6	Education, health, political/ social/religious activities	5.6	
	Defence and related services	5.6	No answer	11.2	
Primary school	Agriculture	87.5	Manufacturing	12.5	55,555.04 (287,310)
	Trade	4.2	Trade	62.5	
	Education, health, political/ social/religious activities	4.2	Sale, maintenance, and repair of mechanical and technical devices	4.2	
	Casual labour	4.2	Transport and storage	8.3	
			Education, health, political/ social/religious activities	4.2	
Secondary school not finished	Agriculture	80	Trade	40	23,200 (90,000)
	Other repairs	20	Education, health, political/ social/religious activities	40	
			Hotels, restaurants, bars	20	
Secondary school	Agriculture	69.2	Manufacturing	7.7	104,050 (448,000)
	Construction	15.4	Construction	7.7	
	Education, health, political/ social/religious activities	15.4	Trade	46.2	
			Education, health, political/ social/religious activities	15.4	
			Communication, finance, real estate, law, etc.	7.7	
Others	Agriculture	100	Manufacturing	100	265,010 (265,010)

Source: Data set of the household survey, March 2005; own calculations.

Table 5 ascertains that the higher the level of education, the higher the income. This is true for all groups except 'secondary school not finished'. Thus, diversification becomes more successful in partnership with education. Therefore my hypothesis in this part is confirmed, which also goes hand in hand with findings from Marennya et al. (2003) for the Vihiga District, Western Kenya, as well as from Bryceson (1999) for other countries.

However, there is a difference between the most important non-farm income source and the most important non-farm activity. Looking at the last named, it shows that households on primary school level, whether school has been finished or not, have diversified the most. But this does not indicate higher or secure incomes. This is also shown when comparing the educational level with the categories of activities (table 5 above): Many households with a low level of education belong to the group relying on agricultural incomes alone, while in relation there is a high number of better educated household heads involved in non-farm activities. The point is confirmed further when looking at the changes in non-farm activities during the last five years. More than half of the 18.7% of households which experienced such changes have not finished primary education. A higher level of education therefore not only stabilises employment, but these household heads also invest more in the education of their children²⁷, thus improving future prospects.

Social Capital

The importance of social capital, and of trust, has often been emphasised in the literature (see Alila (1990); Fukuyama (2002); Barr (2002); Scoones (1998)). The data from this survey also leads to the conclusion that most households do belong to social groups such as self-help groups. These memberships are independent of their diversificational status or income. This, on the other hand, is not true for agricultural orientated groups or associations where the members mainly stem from households who generate their income from agriculture alone. This can be explained by the fact that many sugar cane farmers are outgrowers of sugar companies. Proved by the Kenyan Central Bureau of Statistics (CBS) and also found in this survey, it seems to be common that belonging to a business association is correlated with the educational level of the entrepreneur. Thus, holding a university degree supports such membership, while lesser educated entrepreneurs tend to remain either in self-help groups or in no social group at all.

As for subsistence farmers, it is assumed that they are embedded in reciprocal networks, either on family or on village level, which, according to Omosa (n.d.), they cannot afford to leave behind without having secured their economical situation in different ways. Interestingly, in this survey more than 50% of the households admitted to not asking anyone for help in times of financial stress and with problems concerning agriculture, transport needs and so on. This leads to the conclusion that reciprocity is not important in Kakamega District. However, looking at financial and transport problems, it is clear that neighbours, as well as family members themselves, are not in a position to offer help, for they neither own

²⁷ 70.51% of the expenditures on education are spent by households living mostly from non-farm income (third income group in figure 7).

enough cash nor the means of transport except some bicycles. This part is therefore not covered by neighbours or family, but by self-help groups, the most important group being the merry-go-rounds.

With most households, irrespective of their form of income generation, having members which belong to self-help groups, it appears that there is no connection between membership to a social group and diversification as well as secure incomes.

Financial Capital

Financial capital, meaning remittances, pensions, savings and access to credits, is a prerequisite for securing household income. For this survey, savings and pensions can be neglected, for they do not belong to the most important income sources of the households, although some of the older household members do get pensions. On the contrary, remittances play an enormous role, with one third of the households questioned receiving them and 9.3% stating them as their most important non-farm income source. On average, households receive 1,400 Ksh per month, which accounts for more than 50% of their monthly generated income of 2,200 Ksh.

Compared to the extent of diversification (see table 3) it can be seen that 37.9% of all households receiving remittances belong to the group combining food cultivation with non-farm activities while remittances are least important for households having cash crops as well (13.8%). Given the fact that these households firstly get higher incomes and therefore do not depend on remittances as much as other households and secondly receive higher sums, this fact can be explained.

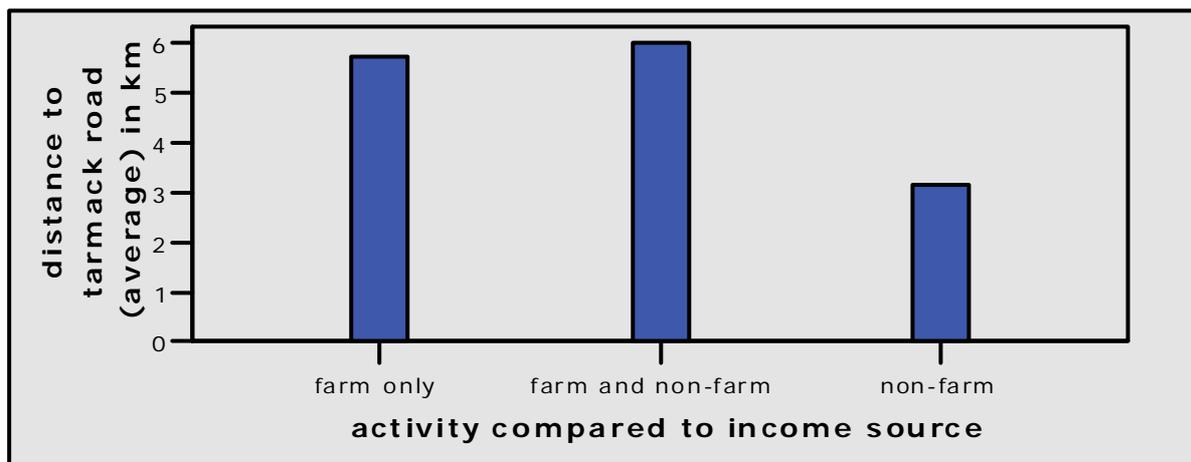
Although 80% of all households questioned do not belong to credit groups, the few that do so, show a correlation between the type of diversification and membership to credit groups. Nearly all of the 20% of households, with an exception of 2.3%, do diversify in non-farm activities. This is also underlined when viewed from a different angle. Only in the group where non-farm activities are the most important source of income and activity (i.e. having a comparatively high income with low seasonal fluctuations, therefore being classified as 'secure'), the majority of the households is belonging to a credit group. It is therefore clear to see that credit groups have a positive impact on income security, with reasons for their underrepresentation in the area being given above.

Physical Capital (Infrastructure)

With access to safe water, electricity and transport being dependent on the distance to trading centres, the housing area plays an important role in diversifying and securing income

sources and activities, as shown in figure 9. This figure shows the importance of improving not only the road system, but also the means of transport, e.g the *matatu*-service. This would not only give farmers the opportunity to trade fresh agricultural products beyond the local market and, therefore, generate a greater revenue, it would also enable household members to enter employment in the cities. Hence, to work against the impassibility of roads is a point in the actual District Development Plan.

Figure 9: Average distance to the next tarmack road for the three income groups



Source: Data set of the household survey, March 2005; own calculations.

With regard to access to safe water and electricity, the initial position for nearly every single household questioned is the same. Thus, it is not possible to prove a connection between access to these amenities and the economic status of the households.

Access to communication technology, in particular to mobile phones, depends highly on the income status of the households. As such, 70.5% of all households belonging to the insecure income group do not have any mobile phones, while households categorised as having relatively secure incomes own up to four.

Access to infrastructure does, in theory, not only help in securing household incomes but also in influencing successful diversification. However, this survey does not lead to the conclusion that changes in household activities are due to improvements in infrastructure. This is supported further by the fact, that the DO as well as the Government of Kenya has not yet invested enough in infrastructure improvements.²⁸

²⁸ 'In Kenya, provision of infrastructure is constrained by a public sector that is unable to provide steady and reliable services' (Central Bureau of Statistics, Kenya 1999:56).

5. Conclusion: Secure Incomes Yet to Achieve

The results from this survey lead to the conclusion that the goals of the SRL concept concerning secure livelihoods and development of rural areas have not yet been achieved. In light of the narrow definition of income security used in this paper, only 8% of all households account for secure incomes. This is particularly due to seasonality and household income below the poverty line. Both these facts are also responsible for the constraints to achieve successful diversification and are most difficult to overcome. Beyond this, the overall poor economic state of the district complicates the situation further. My first hypothesis therefore turns out to be true: Households do diversify their income sources but in most cases they are not in a position to accumulate capital and therefore get stuck trying to achieve food security.

As for the second hypothesis, human capital plays an important role with regard to diversification and securing income. This is true not only for the present, but for the future through the education of young people. Better access to education for young people therefore seems to be a direct way to reduce poverty and stabilise income. The number of secondary schools should therefore increase proportionately with the number of sponsorships for poor pupils. Besides human capital, access to roads and means of transport also play a crucial role for rural development in Kakamega District. This is especially true for the tea zone, where many areas cannot be reached by cars during the main harvest time due to bad road conditions in the rainy season, thus hindering economic development.

All in all, Carney's diamond and the goals of the SRL still remain theoretical concepts. However, I take the SRL as an approach which gives interesting links to support rural development for it takes the prevailing situation into account. For the study area, first steps have to be made in securing household incomes which, in the long term, means avoiding seasonality through promotion of non-farm enterprises. An immediate measure concerning short term success has to be the extension of agricultural productivity. Since land is scarce, this means promoting the use of fertilizer and quality seeds firstly. Additionally, marketing of food products has to be fostered and infrastructure has to be improved.

Therefore, tasks for the development of Kakamega District regarding income security through successful diversification lie in the following: (1) promoting agricultural productivity, for the main labour force is working in and living from the agricultural sector, (2) promoting non-farm enterprises to reduce seasonality and to secure incomes into the future, (3) promoting investments in human capital as well as in infrastructure as most important investments.

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