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CHAPTER FOUR

Experiences In The Field

LOW-INCOME BUILDING IN KENYA

Muka Mukuu Farmers' Co-operative Society's low-cost building project

Muka Mukuu is a huge coffee and sisal estate, near Thika. It spreads all round the lower slopes of Ol Donyo Sabuk mountain just a few miles from Fourteen Falls on the Athi river. In the days of the White Highlands, the whole estate was held by Lord Northrup McMillan. McMillan's widow sold the estate in the late 1950s. In 1962, just before Kenya's independence, the estate became the property of the co-operative society, representing hundreds of small farmers. It functions now as a representative body, but, in reality, Muka Mukuu is a patchwork of small, individually held farms. Over the years, the small farmers, many of whom were originally classed legally as squatters, have chiefly been interested in obtaining security of tenure of their own *shamba* from the estate. In most cases, this was finally achieved in the early 1980s after a Ministry of Agriculture/GTZ (German Technical Co-operation Agency) joint project to register land rights, revitalize the sisal factory and coffee-processing plant on the estate and improve infrastructure, for example roads, schools, water supply, and dips.

It is an undertaking, therefore, which combines features of individual land-holding with a large, complex co-operative superstructure. The size of the estate can be gauged by the fact that in 1991, it contained 10 primary schools (see Figure 29).

VSO has had a long involvement with Muka Mukuu, dating back to 1983. The involvement with the current low-cost building project, however, dated from 1987, with the arrival of Anne Martin and Andy Bennett. (See also *Using Technical Skills in Community Development*, Dawson 1990, which features a short case-study on the Muka Mukuu low-cost building project.) 1987 was designated by the United Nations as International Year of Shelter for the Homeless (IYSH). In direct response to the IYSH message, the Muka Mukuu Society appealed for assistance to build 10 demonstration houses, one at each of the primary-school sites on the estate. The idea of this was twofold. First, to train local people, especially school-leavers, in income-generating construction skills. And second to help attract teachers to the schools by providing good accommodation for them.

A spin-off might be the uptake of improved, low-cost construction methods, which householders on the estate, most of whom were accustomed

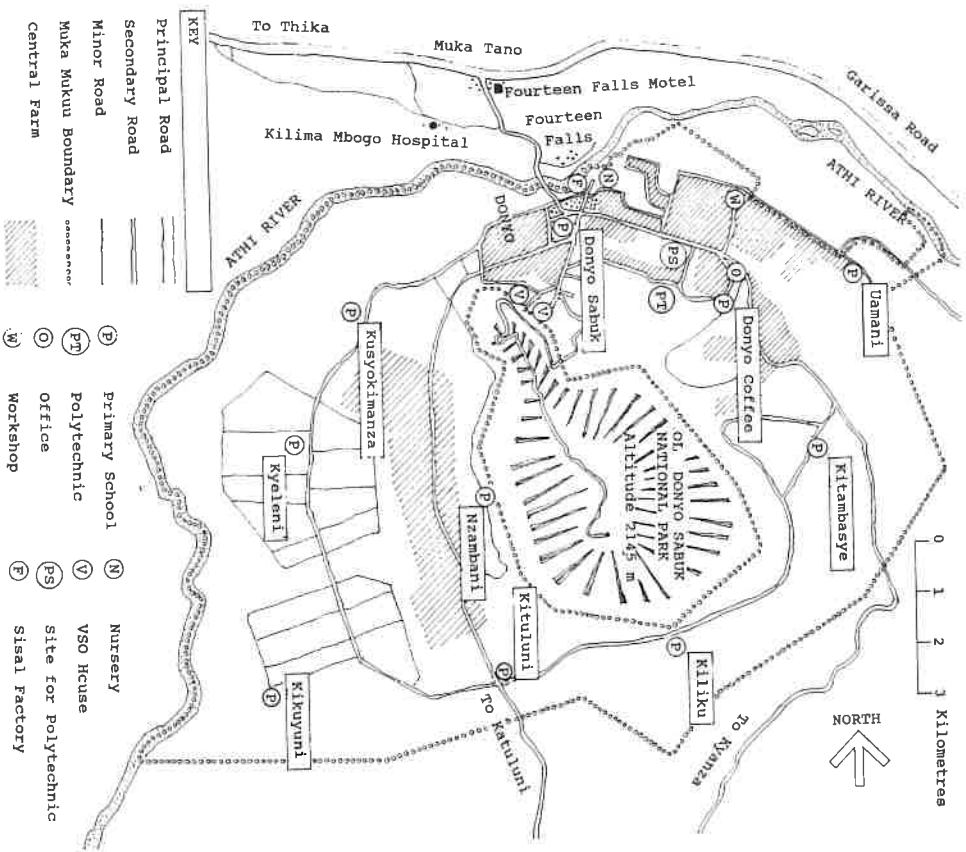


Figure 29. Map of Muka Mukuu, Kenya.

to regularly building and rebuilding their own *nyumba*, could use in their own house-construction work in the future. A sum of £19,500 was guaranteed by IVSH/UK for the basic implementation of the building programme, with a further sum set aside for the cost and maintenance of a four-wheel-drive vehicle for the project.

Between 1987 and 1991, there were four development workers who worked on this project in a variety of roles: Anne Martin (1987 to 1988), a social survey and communications specialist; Andy Bennett (1987 to 1991), team co-ordinator; Chris Grainger (1988 to 1990), project builder; and Bob Jeffreys, who had already worked for two years as a woodwork teacher at Marsabit in Kenya, and who took over the project co-ordinating role in May

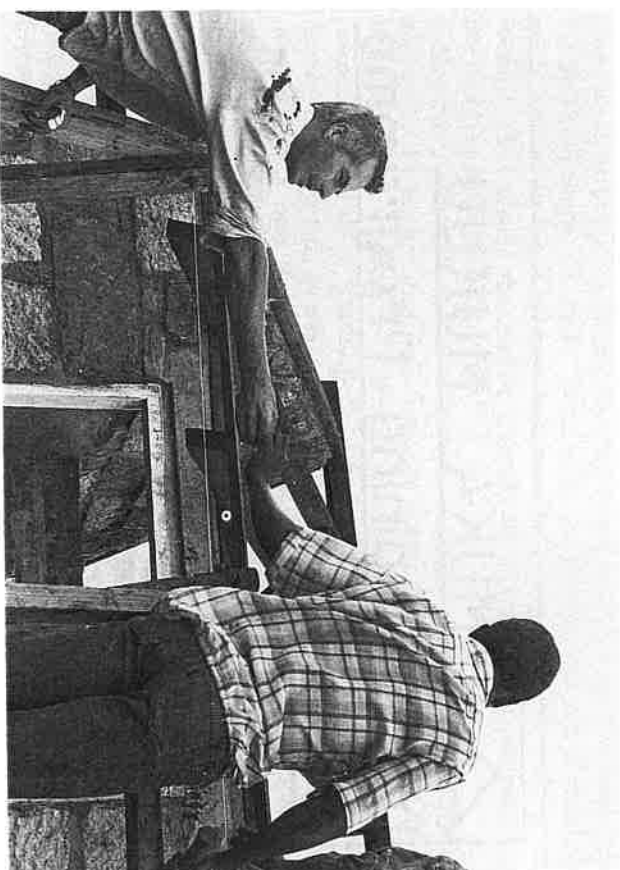


Figure 30. Andy Bennett and James Kitonyi building teachers' accommodation at Muka Mukuu Farmers' Co-operative in Thika, Kenya. The exterior walls are local stone and the internal partition walls are stabilized earth blocks.

1991. So what work did this changing team tackle over a five-year period, and what are the results so far?

It is clear (see Jonathan Dawson, *Using Technical Skills in Community Development*) that the foundations for the work on the low-cost building project at Muka Mukuu were laid by the painstaking approach adopted by the first two volunteers. Martin was concentrating on the social survey, and paying particular attention to the views of women living and working on the estate. Meanwhile Bennett made a valuable study of local building methods, materials, costs and possible ways of upgrading the durability of buildings constructed from locally-available materials.

This participative approach, motivated by a desire to observe and learn, takes time. Martin, in particular, patiently invested a lot of time and effort in establishing building committees at each of the 10 primary-school sites, and in explaining the basis on which it was proposed that the work should proceed. Although this preparatory work may conflict with a desire for instant results, it is an essential part of any community builder's work. At Muka Mukuu, a simple formula was agreed upon and very clearly explained to all the local volunteers who stepped forward to help build the new teachers' houses. Local volunteers would give about six weeks' full-time



UKA MUKUU

Training Programme

INTERNATIONAL YEAR OF SHELTER FOR THE HOMELESS

Certificate of Participation

Homeless International is supporting 52 projects worldwide.

Muka Mukuu Training Programme is one of these projects.

In the true spirit of Harambee _____ has participated
in this programme, learning new skills at _____.

Homeless International, Voluntary Services Overseas and the members
of Muka Mukuu Farmers Co-Operative Society, extend their thanks and
congratulations to the participant. We hope that these new skills
will benefit the trainee and the community at large.

The Chairman: Muka Mukuu
Farmers Co-Operative Society. _____
The Chief: Kyanzavi Location. _____
The Director: VSO Kenya. _____
VSO Builder: Muka Mukuu. _____
VSO Co-Ordinator: Muka Mukuu. _____

Date. _____

effort on their local site. In return, they would receive a midday meal, paid for by IYSH funds, six weeks' training in the making and use of stabilized earth blocks, in block-laying, basic masonry, carpentry, tile-making and roofing. They would also receive a certificate of training on completion of the building work (see Figure 31).

However, although the development workers adopted a participatory approach, the project itself had from the outset defined the purpose of the buildings to be constructed. Martin comments that she wishes that the project had left more flexibility in defining the purpose of the buildings, instead of decreeing, in advance, that they would be for teachers' accommodation. She says that the community clearly had other priorities and, indeed, some of the later buildings reflected these or involved a dual use to meet community-determined priorities more fully.

In spite of this, the participatory approach had helped to motivate the community and the work proceeded well. Over a three-year period, more than 50 local people participated in the building work and received basic training in the building skills listed above. By October 1988, one small group who had been trained on the project, had set off on their own to establish a private sisal-cement tile-making unit.

In April 1991, one of the authors of the present study made a second visit to Muka Mukuu specifically to try to learn what spin-off, if any, had taken place. It was found that several of the community volunteers had set up independent production units in the local housing market, using their new skills and often adapting those skills or introducing innovations more suited to local housing needs.

1 Pius Mutisya and Joseph Kilonzo

We visited Pius Mutisya and Joseph Kilonzo at the production unit which they were running in space which was rented in an old sisal factory owned by two local businessmen. At the time, the rent and certain other overheads were still being covered by the project, but they were due to go independent, only relying on Bob Jeffreys for occasional technical support, from June to July 1991. They were making sisal-cement tiles, interlocking concrete blocks (which link to make circular rainwater-catchment tanks), and segmented ferro-cement tank covers.

Mutisya was one of the first local volunteers to step forward to build the house at Kusyokimanza school in early 1988. After that, he made stabilized earth blocks and used them to build a hen-house on his own *shamba*, as well as conducting building jobs for friends and neighbours. His *shamba* work continued to take up much of his time at various times of year, but he was always keen to continue his involvement with the project, giving a lot of his time freely. By 1991 he was clearly very keen to develop the production unit into a viable business.

Figure 31. Muka Mukuu building training certificate.

Interestingly, Mutisya and Kilonzo have introduced a number of innovations at the production unit, particularly in tile-making.

Flat-tiles — they have found that flat tiles were a more attractive proposition than the standard pantile, which is made using a curved plastic mould (designed and patented by J. Parry Limited in England and made under licence in Nairobi). Obviously, the moulds cost money to buy and production of each batch of tiles was restricted by the number of moulds bought. On the other hand, the number of flat tiles (which Mutisya and Kilonzo call slates) which could be made in each batch was only limited by the flat, covered floor area (for stacking) available for the tiles to set on. When fixing the flat tiles, they found that a steeper pitch of roof and a larger degree of overlap between tiles was necessary than was the case with the pantiles, so stronger roof timberwork (more rafters and purlins) was required. They still found the slates more economic and virtually as strong as the pantiles. They cited the fact, also, that the slates were easier to stack, load and transport, with a lower percentage of breakages in transit.

Mabaiti tile moulds — Mutisya has achieved good results in sisal-cement tile-making using corrugated sheeting (*mabaiti*) in place of the standard curved mould, again at much lower cost, producing a corrugated-tile effect.

Tile colour — they found it necessary to add small amounts of red oxide dye to the sand/cement/sisal-fibre mix to produce a tile which was pale pink rather than cement-grey. This was found to be more acceptable to customers.

2 Peter Ndiwo — blockmaking

Peter Ndiwo is another of the community volunteers who started work on the first project house, built at Kusyokimanza in 1988. In 1990, fully two years after he had left the project, he bought his own block-making press for 4000 Kenya shillings.

He used it to build a new house for himself and also to carry out part-time paid work for various neighbours who were keen to emulate his own improved house. When asked how he transported the heavy steel block press to the various sites where he carried out this work, he replied, 'Oh, that's easy, I take the big plank out and then tie the machine on to my bicycle. Then, with some help from the children, I can wheel it anywhere.' Clearly, there's a case here for a wheeled block press.

Ndiwo's response to the question 'why do you like this house better than your old one?' was to treat it, frankly, as an incomprehensibly stupid question. He simply regarded it as self-evident that his new house, with its hard, block walls, its windows, its rectangular floor-plan and its thatched verandah was 'better' — and all his neighbours thought so too.

3 Simon Muinde — compressed earth block construction

Simon Muinde also worked on the IYSH project. When he built a new house on his *shamba*, he decided that he could build a better, more durable house



Figure 32. A blockmaking project in Suhum District, Ghana.

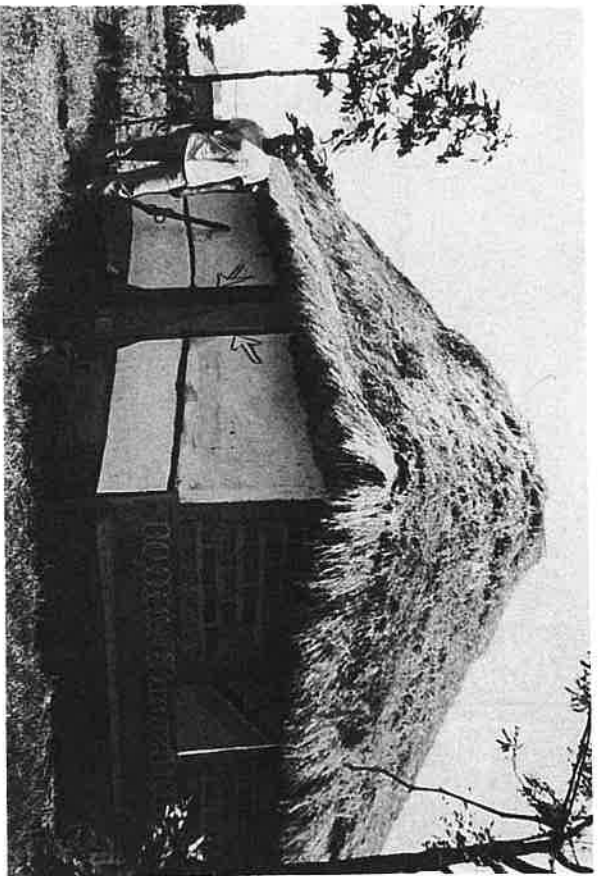


Figure 33. *Simon Muinde and his house.*

if he used some of the new techniques he had learnt while he was working with Andy Bennett and Chris Grainger.

He couldn't afford to buy cement for use as a stabilizer, so he decided to hire Peter Ndivo's block press and build his new house out of compressed earth blocks. By careful selection of soil and particle sizes and, we suspect, adding a small quantity of a local soil that has many of the properties of a natural plaster, he produced a sturdy, well finished and durable dwelling (see Figure 33). The natural plaster is used on the front wall of his house.

Muinde was clear about the advantages of his new house. The walls and floors were smooth and easy to keep clean. He liked the thatched roof which kept his house cool during the heat of the day and wouldn't consider using *mabati*. When he could afford it, he planned to buy some FCR tiles in Ol Donyo and re-roof the house — maybe in the mid-1990s.

He showed us the houses of some of his very near neighbours. One group of houses was of the completely traditional Kanba type, with sisal-pole frame, wattle-and-daub walls, thatched grass roof and no windows. This type of house had a doorway, of course, but no door. Muinde reckoned that they would need major repairs after each rainy season and would probably need complete rebuilding after two years, three at most.

Nearer his own house, his next-door neighbour had built a house from sun-dried clay bricks. This house had a rectangular floor-plan, small windows and a fitted, hinged door.

Elsewhere on the estate, wealthier members of the community — traders, shop-owners, bar-owners and people who owned a larger *shamba* — had employed builders to construct larger bungalow-type houses with concrete blocks, *mabati* roofs, catchment tanks and internal bathrooms, or at least an outside latrine.

One of the most interesting things about housing at Muka Mukuu was that there was a wide range of existing, possible housing types, all within close proximity. Nobody could possibly afford to move straight from a completely traditional *nyumba* to a bungalow but, with plenty of intermediate types and combinations of improvements in terms of durability and status along the way, people could set themselves realizable targets for housing improvement, if they wanted to.

Embu Municipal Council — a women's self-help low-cost housing project

Philip Dorian was posted to Embu in 1989, originally as a roads engineer. However, the council changed its priorities and, in a move which entirely suited Dorian's outlook too, decided that he should pursue an ambitious, urban low-cost building project. The project has attracted a good deal of financial support from Plan International and Action-Aid Kenya.

It was clearly a managed project. The aim was to build a large estate of standard-design dwellings (designed by Dorian and meeting all the building-regulation requirements of the municipality) in two or three phases of 40 to 50 units each. It was envisaged as running over 10 years, from 1990 to 2000 or so.

The workforce consists of local women who become scheme members and are then employed by the project, receiving an unskilled labourer's wage. They receive training in blockmaking and tilemaking. They work at the project's unit, which is located in the compound of the Municipal Council Offices and, in April 1991, had recently begun work on the first experimental house at the main project site in Embu.

It was envisaged that work on the main project site would commence sometime in 1992, working in teams supervised by recognized craftsmen who would be responsible for quality control. Completed houses would become project property and would be allocated to scheme members according to need. The details of the plan had yet to be finalized in mid-1991, but Dorian's view was that women scheme members would need to sign up for a number of years and work through that period before they would have entitlement to taking on a rented house under the scheme.

This project aimed at providing 100 or so new, rented housing units for Embu in the following 10 years, equipping a significant number of women with income-generating skills in the process. Clearly, those were aims which were well worth supporting. Even so, a number of aspects of the scheme appear highly controversial. It looks very top-down. It is not clear how a workforce composed of women, who were all in their 20s and 30s, could