

Informal Housing in East Africa: Lessons Learned From Cross Country Borders (Part II)

Diane A DUMASHIE, United Kingdom

Key words:

SUMMARY

The Olympic spirit suggests bringing nations and their ideas together in an endeavour to foster communication and collaboration. Extending this theme this paper draws from a project based in East Africa that promotes the exchange of ideas across four neighbouring countries. The project outcome may make a significant contribution, preventing the emergence of large scale informal settlements in Mozambique by seeking solutions in the delivery of building materials used in low cost housing.

In Africa, many parts of the Middle East, Latin America and Asia migrants are leaving farm land which is unable to support them and arriving in cities which are unprepared to deal with them. These people often end up in informal settlements and at worst, slums. A new report (1) says that in 2001 just under a billion people were living in slums – about a third of the world city dwellers, and present trends suggest that 2 billion people could be living in slums by 2030.

In Mozambique this challenge is being fuelled by returning populations. It is becoming recognised that improving slums rather than relocating their residents is a much better approach but notably in developing countries resources to build new houses rarely exist. Instead government aided self-help is more realistic for the people.

This paper is drawn from a pragmatic project funded by COMSEC (The Commonwealth Secretariat). In collaboration with the Mozambique, Ministry for Housing and Public Works (MHPW) a three stage project to look at the supply chain of building materials for the delivery of low cost housing was devised and is now being implemented. Stage one involved data collection to provide baseline data from within Mozambique, phase two a familiarisation study tour to provide a snapshot of neighbouring country's building materials processes. The information gleaned will be disseminated at a workshop attended by private and public sector stakeholders. It is envisaged that the workshop findings will not only inform the third stage, but also contribute to a governance plan of action. The third stage will be a practical demonstration of the use of alternative technology as means of affordable construction.

Mozambique policy makers seek to draw lessons from their regional neighbours; all of whom have cultural, climatic and geographic synergies, but all are at different economic life cycles. The visited countries were Tanzania, Kenya and Republic of South Africa. The line of enquiry here specifically concentrates on alternative building materials used to deliver low

cost housing with the aim to observe lessons from these countries with similar problems, albeit that they are at different economic lifecycles.

This paper will present part II of the observations made by the Surveyor facilitator in the neighbouring countries during the familiarisation tour relating specifically to alternative technologies used in the construction of low cost housing projects. First the economic context of Mozambique is set, next the project approach is described before explaining the observations made and the lessons learnt, concluding with the arising next steps.

Please note that the information contained are the views of the author and in no way are representative of either COMSEC or Mozambique MHPW.

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Diane A DUMASHIW, United Kingdom

1. BACKGROUND

Mozambique is a country in transition whose economic and social structures and value systems have undergone not only vast governance changes in the last decade, but also experiencing the destruction of economic activity markets and commercial infrastructure during the civil war.

Mozambique's economy is currently picking up momentum largely fuelled from within by the forces of reconstruction and the need to make up loss ground. The economic reforms begun by the government are however not progressing rapidly due to lack of resources, know-how, institutional facilities and access to the means of putting these to use. Despite clear leaps in development, large parts of the rural population are still barred from access to markets. The majority of the population live in poverty, up to three quarters of them are to be found in rural areas. There is a need for housing and allied social provision for the returned and returning refugees, particularly as migrants are leaving farm land which is unable to support them and arriving in cities which are unprepared to deal with them.

A consequential problem of this situation may be the emergence of large informal settlements. This combined with other contributory impediments such as infrastructure destroyed in the civil war (thoroughfares and roads, electrification, public markets etc), and that free enterprise has little tradition will threaten future economic development.

Nevertheless, the country has been engaged upon the process of renewal for some years, a major part of which involves replacing many damaged and destroyed built structures including hospitals, clinics, schools and houses. To support this major building programme the country requires a viable building materials and supplies industry and particularly one that utilises the naturally occurring resources to provide inexpensive house building solutions.

Poor families in developing countries are forced to improvise with their housing, either because building materials are too costly or land on which to build is too expensive. They thus often have to live in temporary structures which they construct themselves with rudimentary materials in areas vulnerable to natural hazards. With suitable affordable land becoming scarcer, especially in urban areas, poor people find it increasingly difficult to find the resources to build houses of their own (2).

1.1 Emergence of Familiarisation Visit

This paper arises as a sub activity to a project devised and implemented in 2003, initiated by COMSEC in association with the Mozambican government (3). The project, the Development of resource Based building Materials for Construction, seeks to provide technical assistance

to overcoming the inadequate access by the local population to affordable building materials, to provide the houses that they want and can afford.

It was during the inception meetings that the concept of a familiarisation trip emerged. There was a concern that as a result of the devastation following the long period of conflict within the country there was scant knowledge among those most involved of how a viable building industries supply industry was operated. It was felt that this should be addressed if possible as part of the overall project.

Consequently, it was agreed that a small group of ministry officials and private sector counterparts could go to neighbouring countries and study the operation of a successful building suppliers industry so that they could have in mind a viable model when it came to planning and implementing the industry in their country.

This paper describes the observations from the surveyor facilitator. The ideas presented are not representative of the Ministry (MHPW) or COMSEC, but personal observations only.

2. METHODOLOGY

The objective for the team attending the visit was to see in some depth the workings of the building supply industry, be able to question senior managers, and establish the areas of relevance to the future operation of the industry in Mozambique.

The Group consisted of nine people, three from the privates sector and six from the government, headed by the Head of Building materials (MPWH). During the visit, a Surveyor led the group, was responsible for facilitating discussion in the interviews held on a daily basis, and co-ordinating group discussion at the evening meetings.

The methodological approach to the familiarisation tour comprised of the following steps:

- Selection of countries from within East Africa recognising that regional and environmental similarities exist, but that economic development is at different stages, both conceptionally as a linear process but also as a pragmatic one. Inevitably some things will occur rapidly as technological advances shorten the implementation time (by way of illustration, mobile telephony leap- frogs the need for a static pylon line infrastructure thereby providing greater accessibility to all).
- Consequently, the visit was planed for three countries representing three stages in building supply industry development. The first was Dar-es-Salaam, in Tanzania where the industry and construction generally is some few years ahead of Mozambique (near term). The second in Kenya where a viable industry had been flourishing for twenty years (short term) and finally the Republic of South Africa whose building materials production infrastructure is up to European and North American standards in many areas (long term).
- Interviews and site visits were conducted in each country, arranged and hosted by incountry representatives. This exposed the Team to the logistics of distribution of manufactured building components by meeting with existing suppliers in the countries visited who were chosen for their successful existing operations

- Discussions by the team, led by the travelling consultant, were held which was aimed at allowing feedback from the team from the day's activities. There would also be a focus at these meetings on those items of particular relevance to Mozambique.

From this approach, information generated from the country visits can be assessed using the following broad key criteria.

- *Technology*- Exposure to alternative technologies.
- *Material*- Creating opportunities for SME's.
- *Training*- Insight into Policy and techniques.
- *Applicability*- Translating lessons into Mozambican social, cultural, economic and environmental situation.

This paper outlines Part II (*footnote) observations made. These selected observations are analysed next and will inform the next steps and will be followed by the conclusion that looks at the limitations and outcomes as well as determining if such an approach proved worthwhile to the project objectives.

3. OBSERVATIONS

The line of enquiry here specifically concentrates on insights to the wider view of housing projects that delivers adequate low cost housing and policy techniques associated with informal settlements. The aim is to observe lessons from these countries with similar problems. The striking issues that emerged from the familiarisation visit are selected and discussed in country order.

3.1 Dar-es-Salaam

The first country visit, has within the last five years emerged from a position very similar to that presently experienced in Mozambique, thus reaching a similar position in the building supply industry is achievable in the near term. In the context of this analysis, the key observations made relate to Project development techniques.

This arose from a comprehensive day meeting with the JWTZ/ Tanzanian National Services, a quasi public/ military organisation. Funded by the military, its role is to seek contractor opportunities along the total building supply chain, from quarrying, block manufacture to Construction. As an organisation its aim is to become independent of the public sector.

To explain, the level of experimentation, forward vision and adaptability to housing utilising low technological products, was impressive. At the quarry, model house units had been built using SSB's. Example one was a 105m² house taking only five days to build with blocks made in the quarry. Example, two was the construction of the gate house, using Interlocking SSB's initially using blocks made with a mix of quarry dust.

Although JWTZ quarry and block manufacturing is demonstrable of production efficiency it is the example of their approach to delivering a low cost housing project, with definite

military undertones that provides the key lessons, albeit that this project used cement blocks rather than SSB's,

A site tour of a 150 low cost house project built by JTWZ, on a greenfield site, is of particular interest because it demonstrated a range of best practice in business and project management. The Project created advantages included Social (community participation), Cultural, Economic (multiplier effect) and environmental (landscaping and trees).

Overall, the impression was the degree of Management both in product and business construction project management techniques, using military precision with line of balance method of Project Management to control resources. This enabled 150 houses to be delivered in three months, to a high standard with interior decorations. This prompts two questions. How was this achieved? And is it the norm for this industry in Tanzania?

To deal with the first. Logistics born from military precision was seen in Just- in- Time (JIT) procurement techniques, and pay roll control. Labour relations were impressive with the use of locally recruited labourer's who were trained in order to meet the housing delivery requirements, this also included the promotion of health and safety on site.

Notably from the private sector perspective was the financial elements. Supplier and client Credit are a problem in Mozambique, clearly business is not able to thrive if it is not being paid on time. JTWZ achieved staged client payment by gaining client sign up to the programme of works and payment dates prior to the contract start. Thus at the outset negating the possibility of delays which in turn forces the contractor to overrun, and in the worst cases triggering contractor default clauses! Active promotion of not only the scheme but also of the sub contractors resulted in the suppliers competing to discount their products in order to win the sub- contracts.

Given the central importance of finance, the need to manage all aspects in SME development was recognised as being achievable with sound management techniques as key. The JTWZ experience also identified how to work with labour needs, in this case the payment of wages quickly and on a daily basis; but this will need an efficient and organised system headed in this case by a pay clerk.

Turning to the second question, is this normal for Tanzanian organisations? It is recognised that it is the Military ethos that underpins the JTWZ approach, it is also doubtful that the techniques used are regularly occurring in Tanzania. Noting that it is very difficult to get 'start up' money for fledgling operations especially for local Tanzanians.

So in spite of Tanzania's position on the development cycle the training element associated with the project is impressive. But clearly the military origins of this organisation provides greater opportunity for local skills development as well as promoting bldg design, which is comparable to the example seen later in Johannesburg (below).

Nevertheless this observation is demonstrative that Business management is paramount for success, and that Mozambican business will be helped if assistance was available for training companies, investment in machinery and access to aid cash flow for expansion.

3.2 Nairobi

The second country visit is representative of the level of achievement in the short term, particularly since Nairobi has one of the largest % of its city dwellers in informal settlements. The key issues observed here were the deliverability of housing projects but also the holistic approach to housing policy. Both are issues that Mozambique policy makers are grappling with.

First, housing projects are being successfully delivered by an NGO, Intermediate Technology Development Group (ITDG). It aims to demonstrate and advocate the sustainable use of technology to reduce poverty in developing countries, and is committed to poverty reduction, environmental conservation and technology choice (4).

ITDG's approach is for communities to make best use of their own labour and to use readily available, locally produced building materials and construction techniques that they can afford and manage themselves. This was observed by a visit to an ongoing low cost housing project at Nakuru, north of Nairobi, that has provided 100 homes since 1990.

The residential settlement is a low income area, originally quasi planned with grid pattern roads. Local occupiers/ developers have since extended units creating a rather more haphazard look to the area. The team was invited to tour an example of a local occupier/ developer project, providing 55 units on a one - half acre plot, within a compound with a separate 5 toilet/ 5 shower block. The new units were all built of SSB; the soil supplied from within the compound. Finance was provided to the developer by the housing corporation on a low credit schemes, the norm is a four years pay back term.

School classroom construction is also a problem in Mozambique with a pressing need to reduce the costs of Classrooms construction by 50% on current prices in order to achieve a high rate of reprovision in Mozambique. A spontaneous visit to a school on the outskirts of Nakuru provided an excellent example of comparative alternative technology. Fortunately the head school teacher was in residence at the time, generously giving her time to show the team two methods used on classroom construction. First, quarry block was used costing 9,000/m², compared to the use of SSB costing 6,000/m². Interestingly, a comparable adobe construction was estimated at a cost of 3,000/m² but notably this was built using local/ parent labour which is not accounted for in the cost.

Labour and training issues became a reoccurring theme. Two examples discussed in Kenya concerned first, a collaborative approach between the Ministry of Works and housing and Prison dept commissioned to improve low cost houses for wardens. The inmates were trained in the production and use of SSB's. The second, was a Youth training initiative promoted by policies to disseminate training knowledge. On the a two months scheme they learn to understand material tests, make SSB's and tiles, and build a house (5).

Housing Policy in Kenya provided a useful comparator for the team, discussed next. Because Nairobi's historical experience with the explosive emergence of slums and subsequent generation of families now living in these informal settlements, a wealth of experience has been built up, both in lessons learnt but also now seeking solutions to resolve the inadequacies of such settlements with HABITAT.

Accordingly, the local government is currently preparing its housing policy paper in tandem with HABITAT. Foremost to note it seeks to:

- Encourage innovative ways to build cheaper, and disseminate good practice across the Country.
- Use the substantial research available from Universities and NGO's (like ITDG) and consider procedures to implement.
- Supply adequate land through pro active policy that is fully serviced (roads, elec, water) for Private sector development.
- Address slums by initiating programmes to improve; existing slum infrastructure and security of tenure issues, as well as demolish slum houses and substitute construction of new buildings using better sustainable material.

Critically, Mozambique is on the brink of such settlements arising and are keen to identify solutions to avoid large scale informal settlements. The ministry (MHPW) is spearheading similar HABITAT alliances and is drafting a Housing Policy, noting that the City alliance has a programme in Maputo.

Linked to Policy theme is the issue of tenure. The priority issue in Nairobi is the dissolution of slum building but also linking policy to this security of tenure. The question is raised that should Mozambique also consider tenure issues, bearing in mind the basis of land ownership rest with the state and not the private sector as in Kenya? With similar partnership lines of communication with HABITAT in both countries this may be a possibility?

Kenya is placed on the short term horizon primarily due to the issue of informal settlements. This is a pressing problem in Mozambique, fuelled initially by the returning refugees. Mozambique cannot afford to learn the same lessons in the same timescale as its regional neighbours and recognises the need to attend to the issue now.

3.3 Johannesburg

The third and final county visit represents the economic long term given that the building materials manufacturing sector is up to European and North American standards, notwithstanding political changes in the last decade.

Indicative of a country with high standards of manufacture, two comparative methods to deliver low cost housing are selected here, as well as an exempla approach to project management by the Jehovah Witnesses.

First two distinct manufacturing are compared. The one using steel the other SSB's. It is relevant to consider steel because Mozambique initially had a steel manufacturing plant, which has since closed.

Clotan provides a portal steel system used over Africa. It comprises of a steel frame with roof structure providing a single room with possibility to extend. Quality control in the construction process is ensured by the provision of sealed packs of iron ware such as bolts etc. This system provides longevity in building life, importantly a sound roof that will protect the walls from the detrimental weather elements. Further, the team held positive views because based on their own comparative analysis of a school classroom built in Chowa, Mozambique using a steel portal frame, but the Clotan system was perceived as being better and more robust.

In comparison the Hydraform system is based on low cost alternative technology, making and building with SSB's. Again this product is known and has been available in Mozambique for some years, but this method is now only beginning to be utilised as the benefits to alternative technology are more widely understood. training and quality control procedures are pragmatic and importantly the Cost of capital outlay on a machine payback can be as low as Rand 500 per House. The consequential benefits of the system are skills transfer, employment generation in parallel to training unskilled communities thus promoting ownership.

Second, a striking observation was the Jehovah's Witness approach to constructing Halls for worship and associated housing units. Because of the average size of these halls, the project management and technological approach is comparable to the needs of Mozambique.

Foremost, the driving force to their success in building efficiently, simply and robustly is the organisation which is inextricably linked to the motivation of their religious community. The thinking and development behind their approach was explained. Initially the halls were built using timber but now a steel portal frame system with brick/ block infill is used. The process of construction has been honed over a period of years to achieve a four day build period, with say 600 volunteers, including interior fittings and decoration. The system utilises an interlocking horizontal steel roof system, which takes in the order of 2 hours to erect. To achieve this, the trusses and beams are assembled on the ground with the sheets bolted on prior to hoisting the structure to create a portal frame with roof. In terms of the wall system, a dry stacked SSB may be used, which is stabilised by steel rod topped by wall plate and then screwed down. Applying plaster to the inside and if necessary the outside walls completes it.

Not surprisingly the long terms building supply industry with associated quality standards and specification in not immediately achievable. But there are two things that may disprove this. First the rate of technological change and second South Africa is a major importer to Southern Mozambique, hence the products on offer is in some case known. Change may not be on the far - horizon after all.

4. NEXT STEPS

The next step in the overall project (6) is a workshop to be held in Maputo, Mozambique in March 2004. The aim of the workshop will be to enable the public and private sector to collaborate and devise an action plan to progress and build the buildings supply industry to deliver low cost housing.

Thus, the steps outlined here are suggestion as to lessons that can be shared and reviewed at the forthcoming workshop in the context of informal settlements and project house delivery.

Foremost, there must be a link between Policy and Practice because the problem is the production of sufficient housing for the population. Working with the private and public sector must happen. This is likely to need approaches that are low cost, enable quick but robust but maintain quality and aesthetics and cultural standards. While reliance will be on the Private sector to practically address the quality, manufacture and cost of materials, the public sector also has a role to play to facilitate this sector.

In brief the observations selected above may to inform the wider debate:

- Business management skills –improve the management involving finance, organisation skills and adoption of project management techniques.
- Funding – Accessible credit lines, as well as technical help.
- Entrepreneurial partnerships - The prevailing business attitude is very short term in part speculative, which is also a reason why investments are made in trade than in productive sectors. This could be changed both by education but also by facilitation.
- Infrastructure – Highway improvement across the country is required to deliver building materials across the country. This will require major capital expenditure and long term planning. Although it is noted that an arterial highway is planned to start in year 2004.
- Site Infrastructure – All countries visited recognised the importance that the government either provides or facilitates fully serviced land (i.e. level and peg site, placing water, electricity boxes and roads routes in).
- Training Management/ Policy-Focus on training local workers, consider establishing worker's charters, but crucially training senior management in all aspect of business management.
- Policy - Integration needs to work holistically between all departments and include the social / political housing policy issues. Importantly and use planning departments need to ensure that New Townships have appropriate standards of build and services (i.e. schools, halls etc).
- Cultural - Attitudes toward ethics, politics, religion and family these are of paramount importance to delivering housing that people will occupy. Nairobi adopts a holistic approach by including a sociologist on the policy team. Indeed resettlement initiatives have neither worked in Kenya or Nampula, Mozambique.

6. CONCLUSIONS

These concluding remarks centre upon determining if the familiarisation trip proved worthwhile to the project objectives. In this consideration the limitations are also acknowledged. The concluding project outcomes will be update and described in May 2004.

From the comments received from the team combined with the internal evaluation procedure it is clear that a great deal was gained by those members who are from the private sector, who were able to see at first hand the business opportunities. The government team members also showed a positive response but their areas will be more difficult to comprehend and form plans to implement. Thus in the round the familiarisation visit was worthwhile.

Clearly limitations exist. The most salient was that one or two participants incurred language as a barrier at the interviews, thus reducing the their level of involvement. The real benchmark of success will be at the workshop, the outcomes of which will be presented in May 2004.

*Footnote: Paper II is an extract of a longer paper that discusses the observations arising under the four broad criteria. The full paper is divided into two parts. Part I considers building materials supplied to self builders thus has greater focus on criteria 2. Part II considers the wider view of housing projects and informal settlements, thus has greater focus on criteria 1 and 3. Both Parts consider the next steps and applicability to the Mozambique context.

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CONTACTS

Diane A. Dumashie
1 Worgret Hill
Wareham
Dorset
BH20 6AD
UNITED KINGDOM
Tel + 44 929 555 392
Email: ddd@dumashie.co.uk