



SUSTAINABLE LIVELIHOODS FROM SMALL-SCALE BRICK PRODUCTION

BUILDING IN PARTNERSHIP: THE STORY OF SHAMBOB

Introduction

This is the story of brick producers and their families in Eastern Sudan. The local brick production sector is traditionally in the hands of middle-class businessmen, who reap the main profits and pay little to the workers. Practical Action worked with a group of people from the peri-urban village of Shambob to establish and manage their own brick enterprise. Technological capacity-building aimed to improve brick quality, increase energy efficiency, and establish production in order to meet the demand of urban markets. The establishment of a formal co-operative assisted in small enterprise development. The significant rise in the incomes earned resulted from an enhanced asset base, improved linkages with local markets and public sector bodies and has enabled the members of Shambob community to establish a primary school and improve health services. As relationships and development interventions have broadened, women in the village have become co-operative members, acquired donkey carts and are now making an income from transporting and selling water. The single sector intervention initially focused on brick production, and has led to a broad range of initiatives affecting positive change in local livelihoods.



Figure 1: Small-scale brick producers.
Photo: Practical Action / Lucky Lowe

Shifting scenes – an increasingly vulnerable environment

Shambob is a village at the foot of the mountains which lie on the outskirts of Kassala town, in Eastern Sudan. Today's inhabitants know their grandfathers used to be nomads in the far north of Kassala State where they sought water and grazing for their livestock: cows, sheep and goats. Their people settled in the area 100 years ago, before living memory, but believe their grandfathers chose this place for many reasons:

"In the dry season I'd take my herd to an island in the middle of the dried-up riverbed for grazing, and then in the rainy season when the river swelled I'd bring them back here. When this area started to be cultivated, the land was fenced, I couldn't bring them any more "Movement was restricted to the seasonal grazing grounds in order to avoid conflict with the agriculturists. When cattle ate crops the owners would have to pay compensation. Some people felt they had benefited from the irrigated farms in two ways: they could harvest the weeds for animal fodder and those farms also became the source of free water for domestic and livestock consumption."

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- sorghum could be grown;
- grazing and the soil is good for settlement i.e. not clay which is detrimental to their livestock;
- during the summer season nearby sites, such as an island in the middle of the river Gash, some two or three kilometres away, also offered grazing and water.

Declining natural assets

A declining natural asset base and new agricultural practices have been forcing changes in livelihood strategies. Deforestation and desertification has resulted from increasing occurrence of drought. Droughts are recorded as having happened in 1948, 1973, 1984–5, 1989, 1990, 1992, 1994, 1997 and 2000. The residents of Shambob can remember the times when lush greenery covered the dusty tracks that now traverse the sandy scenery.

The semi-nomadic life continued until 1960 when small-scale irrigation was introduced to the area, the sawagi began, using the traditional water wheel for lifting water from shallow hand dug wells. A significant change in access to the natural resource base was brought about by sedentary agriculture, as land started to be enclosed.

Livestock, a declining livelihood

Madani Mohamed Ahmed was born in 1962 and, like many of his neighbours he did not receive any education, a main factor in determining his choice of occupation. Madani's sole occupation when he was growing up was tending livestock, but in 1972 he combined this work with labouring in brick production.

Of 13 men from Shambob who participated in a focus discussion group, only one now owns livestock comprising ten cows. He sells milk which only provides a good return in the rainy season; in the dry season the income generated is spent on fodder to keep the cattle alive. Other members of his family, his brothers, support him during the dry season.

By 1966 the island grazing site was completely out of reach. New locations for grazing were used. Forests on the river edges were not ideal due to the presence of harmful insects. Grazing was then confined to the village surrounds in the rainy season and the nearby mountain ranges which now form the border with Eritrea. The increasing pressure on land in turn took its toll and a new threat was introduced. The mesquit tree, said to have been introduced in an attempt to combat desertification, began to prove problematic. Now considered a widespread menace in eastern Sudan, these thorny trees cause health problems for livestock and have reduced the availability of grazing. As land becomes inaccessible to those people who previously exercised their customary rights of use, livestock declines. Sporadically in the years of drought entire livestock herds are wiped out and people are unable to replace this productive capital base. Livelihoods in Shambob became more vulnerable.

Seeking new sources of income

Having lost their cattle, many of the Beja people of Shambob turned to working as piecemeal labourers for local brick companies, serving the growing demand from the nearby town of Kassala. Men began to work in brick production after 1966, especially when the size of families grew and resulted in surplus male labour who could work for merchants. After 1980 sedentarisation was complete, even the few families who used to roam, settled, with this the livestock number began to decrease. Nonetheless the drought of 1984 had a significant impact upon the population of Shambob, reducing grazing and tree cover in the area to the extent of desertification.

An occupation which provides the men of Shambob with some income is mediation in the livestock market, assisting buyers to locate sellers with the appropriate stock. Kassala market is where the men buy goods to meet their consumption needs, but otherwise people feel they

get little from Kassala town. Some suggested that this is due to their lack of education, an education they felt might have enabled them to be of benefit to their fathers and sons. Diversification in livelihood strategies is one way people adapt to guard against shocks and negative trends. Brick making in the face of loss of agricultural earnings is one such option. Practical Action's (then ITDG) Project Manager, Jeremiah Bairiak explained: "In the beginning it was not that much easy because we needed to look deeper into the problems. So I think it is very important to begin with what people know."

Getting to know people

When they were asked how they first came to know Practical Action, project partners said the first contact was through a relative who was involved in early experimental work. Practical Action staff was seeking to employ workers, to support their efforts to learn about existing technologies and to trial and test new options.

"Ten men worked with this man from Khartoum – a 'doctor' [this consultant undertook early feasibility studies with Practical Action staff]. One of the elders working as a labourer was telling the ITDG man technical things about the kiln. For example, he said that bricks on one side would be first class, on the other of second rate and in the middle you would lose the bricks as they would be welded together." When the kiln was unloaded, this was found to be true.

Practical Action staff became interested to know more about these people and their existing knowledge in brick production. A relationship was established with brick workers from Shambob, and a baseline survey undertaken. Practical Action held several meetings to explore the technologies, products and processes, and the organisations involved in production and marketing. While working on the experimental production activities, Practical Action began to tell people they would help them to establish themselves and access land; many were sceptical and did not believe anyone would help them.

Building on existing skills and strategies

Practical Action started working in Eastern Sudan on small enterprise development well before this project started. An initial survey identified brick making as a significant sector, offering good opportunities for improved livelihoods whilst tackling energy and environmental constraints. Brick making is an important economic activity in Sudan. Around Kassala, it involves approximately 5000 workers. Production is mostly in the hands of businessmen, who own or rent the land and reap the main benefits. In 1995, Practical Action began investigating brick production technologies and experimenting with alternative production processes, kilns, and fuels, employing local people to work on monitored firings.

Shambob – studying local realities

A baseline survey in mid 1997 established that Shambob was a poor village with 526 inhabitants; two-thirds of the men were brick workers. Their jobs were unstable and seasonal. The various skills required for traditional brick production were present, but few management skills were. The priorities of the present project were established with local participation as:

- management of brick enterprises by workers
- cost savings through energy efficiency
- higher prices from better bricks.

Practical Action's aim was not to impose ideas but engage with people, initially covering the risk by offering wages at the same rate of pay as merchants, learning about local ways of working and then facilitating changes. This process enabled people to see the benefits and challenges for themselves, to learn from experience how new technologies could be adopted and developed.

Participatory technology development

The key players in determining project objectives and strategies were the workers from Shambob and project staff from Practical Action Sudan. Essentially, the project aimed to enable workers in the brick production sub-sector to benefit more from their hard labour. Being organised, and managing their own production and marketing processes, people realised that additional profits could be made from savings on energy and from making higher quality bricks. This required technical research in parallel with enterprise development activities.

A programme of action research was initiated to improve the energy efficiency of kilns, try out alternative fuels including residues, and better methods of moulding. This research and capacity building required external funding which was raised by Practical Action from several sources. The European Commission, GTZ (a German NGO) and a wide range of small donors gave their support to technology research and development activities.

Bagasse – a new fuel source

Much of the action research with producers focused on increasing fuel efficiency and replacing wood fuel. A first attempt, to replace the traditional clamp kilns by a vaulted oil fired kiln did not produce satisfactory results. Changes to the fuels used in clamps were more successful; the use of cow dung, traditionally mixed into brick clays (and not used elsewhere) was further investigated and optimised.

Another residue was explored, this was bagasse, available as a waste material from the sugar industry in the region. There are enormous dumps of bagasse in Eastern Sudan, some of which ignite spontaneously. Some bagasse is made into briquettes in simple block presses, generating economic activity near sugar plants. The loose form was mixed with clay and used internally during firing; the block form was used in the kiln tunnels as an alternative to external fuel: both gave good results. Project partners and staff were encouraged and were ultimately able to substitute up to 80% of wood with bagasse. A small permanent Scotch kiln has recently been built to achieve further fuel efficiency.



Figure 2: This picture, taken in 1996, shows the significant amounts of fuelwood required to fire a traditional clamp kiln. Transportation costs are also high and have a significant impact on the environment. Photo: Practical Action / Mohammed Majzoub.

Improved standards

The quality of the bricks produced was also improved by better moulding and more controlled drying. Producing bricks with a more regular size and shape got project staff involved in the elaboration of new national standards for bricks in Sudan. At the local level, a few demonstration structures have been built with the improved bricks which, for example, highlighted the savings in mortar and construction time that could be achieved by using more regularly shaped bricks. Although the bricks themselves may cost somewhat more, this still makes for cheaper walls. Important



Figure 3: Practical Action staff worked with the men of Shambob to improve the brick production processes and equipment. Photo: Practical Action / Mohammed Majzoub

consumers in the region (including several government departments and Plan International) have now accepted the brick standard set by the project. So far, demand outstrips production capacity.

Increased productivity – reduced drudgery

Incremental improvements in technologies have led to increases in productivity; new methods are also less exhausting. For example, the introduction of hand carts, produced in partnership with local manufacturers, was an important factor in increasing productivity and decreasing effort, as was the new moulding ‘table’. The new kiln, including a permanent structure, reduced the labour involved in loading the bricks and reduced the amount of firewood required.

Bridging divides: building confidence and organisational capacity

Co-operative formation and training

After the 1997 baseline survey, Practical Action suggested options about the form of the community-based institution which could be created by the residents of Shambob. The idea of a co-operative appealed to people as they thought working together for themselves, in competition with others, would be beneficial. Following the survey, they established Shambob Brick Producers’ Co-operative (SBPC) and managed to get it registered the next year; members each contributed around \$20.

The initial capital generated by local contributions was supplemented by project resources enabling SBPC to acquire a piece of land for brick production. Brick production, a seasonal activity, requires working capital at the start of the season; a bank loan contributed to this. The community contributed 25% of the costs of establishing production, whilst Practical Action secured 75% in the form of a loan to be repaid from the profits of the commercial activities. Building a collective base gradually enabled people to challenge, and negotiate with others, who had previously benefited from their labours. Market information and connections take a long time to establish, but the seeds were sown.

The creation of a co-operative enabled people to aggregate their resources, both financial and human, and to create the capital necessary to establish productive activities. The Co-operative also enables members to undertake marketing and to manage the productive process. The Co-operative Department helped them with registration, management training and supervision.

Formalisation

Formalisation is a process from which poor people are often excluded, due to lack of a voice and lack of information, knowledge resources, management and entrepreneurial skills. In order to support people in building their asset base, Practical Action engaged in a range of local and national partnerships. Particular elements of the project required external support in the form of human and financial resources. These



Figure 4: Small improvements in the production hardware, such as this wheelbarrow, make a significant difference to productivity. Photo: Practical Action / Mohammed Majzoub

“After some time of collaboration people felt that working together in one place was a good thing, rather than at various merchants’ sites, and gradually came to think that forming a co-operative would be a good thing. Trying to work together was perceived as a good idea by some; though Practical Action paid the same rates of pay as the merchants, we felt that there were benefits from working together and productivity increased.”

Adam Yusuf

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enabled the training and capacity building of the Shambob Brick Producers Co-operative (SBPC) members to acquire the skills to produce better bricks, to market their product, to manage the co-operative, and to negotiate with local authorities, the bank and other funders. People had to learn about co-operative law, costing, bookkeeping and marketing. This support was provided by staff members from Practical Action Sudan, Kassala Rural Council and the Department of Co-operatives.

Linking with institutions

In discussions with SBPC members, the institutional connections which they highlighted as important included Practical Action, their own co-operative and the government department which supports co-operatives. The next in importance were identified as the financial institutions, investment bank and ACORD, and some felt that the Planning and Development Department were equally important. Other institutions mentioned were Oxfam and Plan International, as consumers of their products. The Planning Department participated in early project studies. The benefits accruing from these partnerships are assistance in supervision, marketing, co-ordination and communication, technical training, and access to finances. Scarce natural assets: land and water Problems arose over access to land; it became apparent that the plot initially rented was only licensed for agricultural use, so production had to be interrupted and a new plot acquired.

The lack of local access to water, for domestic and productive consumption, was a considerable constraint on local livelihoods. Several attempts to sink boreholes were unsuccessful and Practical Action turned its attention to improving transportation methods and thereby reducing the 'cost' of water carried from traditional, more distant, sources. Creating institutional linkages and access to urban markets
Supporting social networks and building political power

To assist in building people's ability to work their way out of poverty you need to be able to link what happens at the local level with the broader environment. The social and political context is critical in creating or constraining livelihood options. Linkages with other institutions such as Plan International have provided market opportunities, giving co-operative members experience in negotiating supply contracts and fulfilling them.

Accessing financial resources and influencing lenders

In financial terms, the investment in research and capacity building is currently considered as a cost which cannot be recovered. The project is making a case to banks that it is possible to provide loans to producer co-operatives and achieve full and timely repayment. Gaining access to credit required substantial lobbying with the support of Practical Action staff, plus an institutional guarantee. The loan repayment period imposed by the bank was too short in comparison to the brick-making season. Still, the SBPC managed to repay in time, and is now eligible for further credit. In due course, it is hoped that the banks' interest in micro-credit will increase and that subsequently they will not require an NGO to guarantee the loans. In the meantime, an international NGO called ACORD, has changed its practices based on its experience of working with the SBPC and provides loans to collectives rather than just to individuals.

The need for research will diminish over time. The need for capacity building will remain as long as workers' co-operatives keep emerging; there already is some support given by the local authorities. The project will need to consider how other elements of support can be provided in the long run, for example by peer group exchange.

Social strength

Locally, creating collective working arrangements has developed social capital. These exploratory arrangements have grown into multi-faceted partnerships that link individuals, communities and institutions through various formal and informal processes. 'Bridging capital' has also been created through new connections with local blacksmiths and

manufacturers in order to access the tools required for production, and to address other community needs such as donkey drawn carts for water transportation. An increase in confidence and trust has enabled Practical Action staff to work with the women of Shambob to increase their skill base, for example, by offering training in food processing.

A cash based economy and urban markets

Engaging in the cash based economy Shambob's leaders gather market intelligence. They collect information from the merchants but also ask consumers, because they believe the merchants may mis-inform them. They enquire about costs, selling prices, make comparisons between the quality of the bricks and fix their price accordingly. Practical Action staff facilitated the SBPC's initial marketing efforts by supporting such activities as the production of promotional pamphlets explaining the benefits of improved bricks. SBPC feel their best customers are the NGOs. Recently relationships have been established with government departments, who are useful in marketing their products. SBPC members feel that they have increased their power base, they are now able to negotiate with public sector officials for the necessary licences and to meet with senior officials. The co-operative not only provides for greater communal wealth, it gives the community a bigger voice in local affairs.

Setting new standards

The project has been influential at the national level in the development of a new standard for bricks, which was promulgated in 1998. The traditional brick size is very small; Shambob bricks came into the market and managed to set the required standard, by the Sudanese Standards Administration. Kassala town is now implementing the brick standards, with resulting benefits. For instance, it is quicker to build with bigger bricks, using less mortar to produce better quality walls.

Whose assets increase?

Communal assets

There are communal assets now in Shambob which result directly from the investment of project resources. One example is the community building, which served as a demonstration of new building materials using new technologies. This building nevertheless reintroduced traditional architectural forms suited to the local climate. The building serves the community as school, adult training and health centre, social gathering place, as well as a forum for local governance meetings.

Education

An increase of SBPC members' incomes has allowed some members to send their children to school for the first time. They point to the increased attendance at kindergarten by girls and the new adult education activities held at the community centre. In a participatory asset mapping exercise, people used stones to represent the types of resources available to them. When asked about changes in education, people placed one stone in the 'before segment' and seven stones in the 'after segment', saying they now send more children to school, spend more on books and uniforms.

"Coming from a marginalised group myself, I know how important it is for someone to have the capacity and the knowledge and the skills required for interaction with the larger community. They are turning away very slowly from an agricultural community to a business world, they are also absorbing what is required to survive in a town. If given more support I think the co-operative will go into new areas, like production of new building materials, like lime, they will try to develop trade, in animals making use of their previous skills."

Jeremiah Bairiak, Project Manager and Materials Engineer

"Before this co-operation project, the benefits were going to others, but now with all of us working, our money is bigger and bigger... For instance we had only two thousand Sudanese pounds. Now we get more than six thousand per day, and this is very useful for us. Economically we've grown, we've become better than the others. Also this is affecting the village - even the people who'd left, before this project, are beginning to come back."

Adam Yusuf

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Health and hygiene

The same exercise demonstrated an increase in awareness of good personal hygiene practices due to knowledge exchanged during the co-operative meetings. Health expenditure was seen to have increased as people are able to supplement traditional medicines with modern treatment - some use their increased wealth to pay for healthcare.

Food and water provision

Expenditure on food has increased; the amount of sorghum purchased and the number of meals people eat has risen, some mentioned that they now occasionally eat meat. Water consumption has increased as the donkey carts have increased availability; previously a person could carry two jerry cans on the donkey's back and the journey to collect water could take 4 hours.

Housing quality

At an individual and household level, participatory assessment exercises showed how the quality of housing has increased from one hut to two huts or to one hut and a shed. Members of a discussion groups said that the type of housing had improved; previously walling and roofing was thatch material, but now some people build using mud walling, and occasionally fired bricks are used. One participant highlighted the fact that they now have windows where previously they only had a door.

"I left [the village for university] when the educational term started, and when the term ended, I returned home. Learning is the main branch of development for society. This project stopped emigration [from the village] because now there's more than enough work available here. The people stay here and work - there's no need to emigrate. Now you can go to work close by, and return home at night. This is my family, and my land. I never want to leave it, so I returned to help." **Gaafar Maatouq**

Clothing

The quality and quantity of clothing has improved, most people from the sample discussion group said they used to have only one jelabia whilst most now have two or three.

Knowledge and information

Knowledge and information sharing is helping to create sustainable livelihoods and increase people's options, even among those of the women who have been kept away from any economic activity. In the Islamic society of Eastern Sudan it is not accepted for men and women to work together.

It is generally perceived as a major change to have both men and women involved as members of the co-operative. Whilst women do not work in brick-production activities, they do hold shares in the co-operative. This has allowed the women to become more engaged in local economic activity.

"Access to more water was a big change. It saved the time of women, which they consumed in bringing water from Wadi Sharife, about three or four kilometres from Shambob, and the effect is very pronounced in the village now. People are more clean, children are more clean, women have more time to look after their children and their families."

Jeremiah Bairiak

Challenging gender roles

The new community centre has provided a focus for the women in the community, and the increased local wealth has given them the time to explore their own business opportunities. Practical Action works with thousands of women in Kassala State to develop their skills through workshops in small business techniques. Recently Practical Action's Agro-processing Programme staff has been providing vocational training to the women of Shambob. They

"The Beja community, from which Shambob burghers come, is a closed community in terms of division of roles between men and women. Women had no voice in affairs of the community and they did not own assets of any kind."

Jeremiah Bairiak

produce their own products for selling in the local market, and in a reversal of past roles, they now have the status to own their own water carriers, which they employ men from the village to operate, and to sell the water on their behalf. Both activities are contributing to female empowerment.

Conclusions

Building on skills

Technology-focused project interventions have built on existing skills and livelihood strategies, deploying staff and financial resources to develop new technological and commercial capacity. Staff and partners in the community, the public and NGO sectors, have facilitated a process of sharing information, developing knowledge, improving products, and creating organisations and linkages. Skilled workers can become the managers of their own enterprise, and see their income grow substantially, provided:

- business development services are made available;
- there are no major changes in product or production processes;
- the market climate remains positive.

Having the right support is important, and in this particular case Practical Action's previous local experience of providing support to other economic sectors, including food processing and transport was significant.

Income generation through co-operation

Single focus interventions have been intertwined with the range of technology expertise held by the Practical Action Sudan Kassala office. Bridging with local manufacturer and market institutions, the brick makers of Shambob have developed the necessary capacity to assess and meet market demand in order to generate incomes.

Increased personal and community assets

Individual households and Shambob village have witnessed an increase in their asset base and created linkages that are valuable tools in their armoury against the environmental threats and persistent pressure of widespread poverty.

Involving producers

It is important for producers to be involved in research that aims to improve their production methods. Local skills and resources are important assets that need to be nurtured and built upon rather than displaced in favour of technologies from elsewhere. That is not to say that there is no scope to consider additional options in the context of participatory technology development, but they need to be inserted in, and adapted to, the local context. Previous experience by Practical Action shows that it is much more difficult to launch new enterprises with innovative materials or to introduce new enterprises where the production technology has to be changed drastically.



Figure 5: Bricks being used in the construction. Photo: Practical Action / Mohammed Majzoub

Cause for celebration

The action research and development efforts of the people of Shambob, local partners and Practical Action Sudan were given significant recognition by the United Nations Commission on Human Settlements. A Best Practice award gave the people of Shambob a reason to celebrate and the opportunity to share their experience with others through the UNCHS Best Practice website <http://www.bestpractices.org/>

Reducing environmental pressures

There is a huge potential for the use of residues as fuel in brick production, and this can substantially reduce the pressure on wood fuel resources. Residues tend to be a much cheaper fuel than wood and this, added to increases in energy efficiency, help to improve the commercial viability of the enterprises.

Scaling up and informing practice world-wide

Practical Action is replicating the approach taken in Shambob: getting to know people and their existing livelihood strategies; working in partnership to identify new options and test their viability; building co-operative working practices; developing wider linkages to gain political backing and the necessary resources to support the creation of sustainable livelihoods. Practical Action is now working with displaced and refugee populations who have been driven from rural homelands to reside in the informal settlements of Kassala's suburbs. At Kadugli, on the outskirts of Kassala, a workers' co-operative has now been established, and at Waggar, 106 kilometres to the north, brick production is a new economic activity run by an existing co-operative; both have begun well.

Around 250 brick workers are now involved in self-managed brick production in three locations; this represents approximately 5% of the work force in the sector. More than 100 others, in three different locations have already approached Practical Action Sudan for support in establishing a producers' co-operative. Practical Action Sudan has begun to work with the women of Kadugli to develop their productive capacity to self-manage an enterprise providing aggregate to the local construction sector. There is clearly scope for more, not only within the region, but elsewhere in Sudan as well.

"Before joining Kadugli Bricks Producing Society I worked in the construction market in Kassala. I live in the unplanned Wau Nur residential area of Kassala town. Before joining the society I earned SD 400 per day but the jobs I did were irregular and my social connections were very limited. I am now the president of the society and also work as kiln loader, earning SD 750 daily. I underwent technical training in brick production and book-keeping by Practical Action. In my new position I enjoy cordial relations with all the other members of the society and other NGOs. My living conditions have improved due to my new employment."
Nasir Abuzeid Tiya

References and further reading

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Technical Brief Brick Clamps
Technical Brief Selected Bibliography on Brickmaking in Developing Countries
Technical Brief The Vertical Shaft Brick Kiln
Technical Brief Ten Rules for Energy Efficient, cost effective Brick Firing
Technical Brief Assessing the Technical Problems of Brick Production
Technical Brief How to measure the Energy Used to Fire Clay Bricks

Learning lessons and sharing good practice

Construction activities use up the earth's resources and contribute to its pollution. This is an increasing concern and Practical Action's International Shelter Programme's strategic focus on this sector aims to mitigate the harmful impacts locally and internationally.

One possible strategy towards more sustainable construction is to promote the use of alternative, low-energy or renewable materials, such as earth or bamboo. The production of simple earth blocks only requires around a thousandth of the energy needed to fire bricks, where possible, Practical Action does take this strategy on board in its housing projects. But there are limits to it. A combination of factors, including urbanisation, attitudes and inappropriate building standards, are generating a raise in demand for conventional materials such as steel, bricks and cement. This trend is hard to reverse and, in Practical Action's opinion, it is necessary to adopt a second strategy, aimed at mitigating negative impacts. The biggest impact is usually caused by its energy use, and this is where Practical Action concentrates most of its efforts.

Practical Action has worked on the issue of building materials production for over 35 years. Building on experiences in Southern Africa, Latin America and South Asia, Practical Action produces information resources to assist others tackling similar issues and makes those available to individuals and small scale producers world-wide:

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