AN INVESTIGATION INTO THE NON-ADOPTION OF SOIL-CEMENT BRICKS BY THE COMMUNITIES OF THE KEI DISTRICT

by

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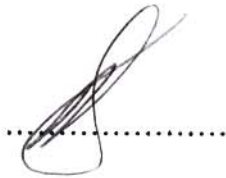University of the North
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DECLARATION

I declare that

AN INVESTIGATION INTO THE NON-ADOPTION OF SOIL-CEMENT BRICKS BY THE COMMUNITIES OF THE KEI DISTRICT

has not previously been submitted by me for a degree at this or at any other university, that the work contained in this dissertation is my own original work and that all sources and material used or quoted have been indicated, recognized and acknowledged.

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Nomsa Williams

UMTATA

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ABSTRACT

The purpose of this study was to determine reasons for the non-adoption of the soil-cement brick technology at Sidwadweni in the Kei District.

The Eastern Cape Appropriate Technology Unit (ECATU) which introduced the technology assumed that soil-cement bricks, an improvement of traditional mud brick would be welcomed by all rural communities as a means of upgrading their housing and as an income generating project. Contrary to expectations the community of Sidwadweni did not seize this opportunity.

A sample of 40 out of 200 households of Sidwadweni was randomly drawn and attempts were made to ensure representation of unemployed and employed, female- and male headed households. Those in authority (the transitional Rural Committee, the headman, the School Governing Body and the Local Development Committee) were also interviewed. The ECATU employees responsible for training communities in soil-cement brick making were also interviewed. To contextualise this study ECATU records and particularly those pertaining to finances were studied.

The study revealed that 5% of respondents saw soil-cement bricks as bad technology (this was a result of bad bricks made by one who claimed to know the technology). 7.5% could not access brick making machines and others found the labour for soil-cement brick making too costly. 7.5% percent observed that soil-cement bricks were not good for big structures. 17.5% admitted that they were uncertain of the soil-cement ratio mixture whilst 60% were not familiar with the technology. Those who felt the technology were good constituted 2.5%. Only 3 households had soil-cement structures.

The ECATU documents showed inconsistencies in budget allocation and reliance on government funding which seemed not to make ECATU programmes a priority.

It appeared that the ECATU training was limited only to those whose task was to produce bricks for projects and the brick site was at the headquarters from whence bricks were carted to projects.

The conclusion drawn from this study is that technology diffusion to communities is not given enough attention. Training and marketing are the missing links. The findings support the hypothesis that the technology methodology was flawed.

It is therefore recommended that the Eastern Cape government be fully committed to appropriate technology development and to supporting development agencies in rural areas.

It is further recommended that the ECATU should give technical support to those who want to manufacture soil-cement bricks, whether for income generation or physical structures, and should lobby government to use soil-cement bricks for public structures.

Finally it is recommended that the organisation should also develop and strengthen its strategy for technology transfer.

CHAPTER 1

1. ORIENTATION /

Soil-cement brick making is one of the technologies introduced to the rural communities of the Kei district by the Eastern Cape Appropriate Technology Unit (ECATU) to improve rural housing standards and generate income. The apparent disregard for this technology by a large percentage of the target communities is a problem none can understand and has become a cause of concern.

This technology is an upgrading of traditional mud bricks, and therefore more durable than pure mud bricks, cost effective and very popular with users. The upgrading of traditional techniques, by combining them with modern techniques, according to Salomon and Lebeau (1993) is the most effective way of technology transfer.

The above authors state that there are certain principles to be observed in introducing technologies for adoption, one (and perhaps the most important) is the involvement of beneficiaries in project implementation. As will be demonstrated later on in this study, community involvement is the cornerstone of the ECATU strategy. According to the ECATU Building and Design programme manager, Mr Amegbley, Soil-cement bricks, like various

other technologies, have been tested and approved of by many, including the South African Bureau of Standards.

Expectations have been that, because of the above-mentioned qualities, the rural poor would welcome this improvement on the mud brick, but this has not been the case.

This study therefore researches the reasons for non-adoption of soil-cement bricks by some communities while others have readily adopted them. It was based on the hypothesis that the dissemination methodology ignored the inseparability of technical and non-technical issues, and transferred technology without preparing the communities for it. Consequently the juxtapositioning of old and new ideas impeded the adoption of the technology and resulted in a negligible impact on rural development.

Research was undertaken in January of the year 2000 by the author, assisted by trained community members of Sidwadweni, the case study area. A sample of 40 people was randomly selected from the 200 household units. Interviews, questionnaires and observations were used to collect data.
Analysis of the impact of soil-cement technology on development was put in the context of prevailing problems. Several organisations in the state and civil society find themselves coping with numerous problems that threaten their very survival.

Realist philosophy and methodology is based on such contextual analysis. Realism is a philosophy of science, which is based on the use of abstraction to identify the hidden mechanisms behind surface appearances (Bhasker 1975; Sayer 1992).

Realists criticize positivist research for its concern with surface appearances and argue that meaningful research has to identify three levels of social reality: the real, the actual and empirical in their historical and temporal contexts. The advantage of such a comprehensive approach is that it enables one to see reality in its various dimensions. Social reality is complex and one therefore needs to use multivariate research frameworks like realism to unearth the detailed elements of social life. It is within such context that this research on soil-cement brick making is set.

The theme in this research is therefore as follows: in order to understand the impact of soil-cement brick technology, one needs to understand the problems of the communities as well as those of the organisation that introduced it. Understanding the problems of ECATU clientele implies understanding the opposing forces, which have been working against the goals of the organisation.

Also, it should be noted that development is a gradual process of transformations in non-technical factors such as the environmental,

economic, political, cultural, social and institutional factors (Salomon & Lebeau 1993).

This study focuses on the non-adoption of soil-cement bricks by rural communities in the years 1989 to 1999. Though reliable, research results are valid only for Sidwadweni (see map), the study area and cannot be generalized.

FIGURE 1:   MAP OF SIDWADWENI
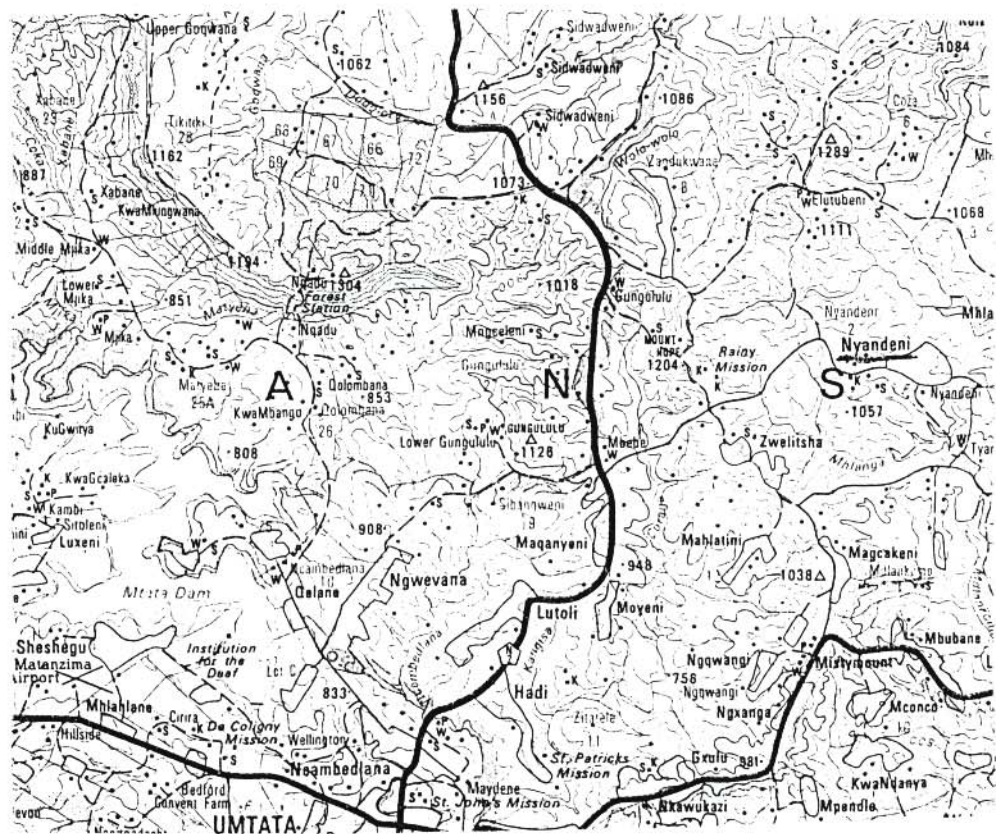
It is expected that this research will unearth some of the pertinent issues linked to technology transfer and articulate meaningful strategies for successful technology transfer.

1.1 HISTORICAL BACKGROUND TO THE STUDY

The Kei district is part of what was formerly the Transkei homeland, which under the democratically elected government on 27 April 1994, was incorporated in the Eastern Cape province.

Though now under the Eastern Cape government, the legacy of apartheid still remains and poverty is glaring. If the present government is to even out the disparities of the past, in accordance with its vision of a country in which health, education and other services are accessible to all (Department of Finance1999: 1), a lot of resources will have to be mobilized and committed to this province and this region in particular.

The Eastern Cape is the second poorest province in South Africa, the Kei district being the hardest hit and still reeling from the effects of poverty. According to Bembridge (1996:1) the province has a predominantly rural population, 55% of which are women and 44% youth, younger than 15 years. Health facilities are lacking amongst the poorest. The province has the lowest life expectancy (59.6 years) and the highest mortality rate (58.2 per 1000). About 44% of the adults are illiterate, and the former Transkei

homeland, where the Kei district lies, had in 1995 a ratio of one clinic to18 000 people. Massive unemployment, poor infrastructure and lack of facilities in rural areas are the major cause of mass exodus to urban centres, which do not have the capacity to accommodate the influx, says Bembridge (op cit).

It is against this background that the Eastern Cape Appropriate Technology Unit was birthed, to improve the standard of living of the rural communities of the Eastern Cape through the introduction of appropriate technologies.

1.2   SUMMARY

The first chapter has served to outline and clarify the need for the research by stating the central problem and how the researcher plans to solve it. This chapter provided a background setting of the present scenario regarding appropriate technology as well as the severe constraints that exist in terms of human and financial resources.

In the next chapter the Eastern Cape Appropriate Technology Unit and the programmes that it presents will be discussed. Modernisation will be briefly discussed to create an enabling environment for this study.

CHAPTER 2

2.   REVIEW OF RELEVANT LITERATURE

In the previous chapter a historical background to the study was given.

This chapter will give an insight in the ECATU, so that the reader will understand the role and manner of its involvement in rural development as well as the causes and effects of its operations.

2.1   THE EASTERN CAPE APPROPRIATE TECHNOLOGY UNIT

The Eastern Cape Appropriate Technology Unit (ECATU), formerly the TATU (Transkei Appropriate Technology Unit) was established in 1983 by the then Transkei Department of Commerce, Industry and Tourism, to improve the standard of living of communities in the former Transkei, now Wild Coast, Kei and certain areas of Amatola, Drakensberg and Stormberg districts.

In response to the mandate given to it by the government of the day, the ECATU made great strides in developing the region. As the region was parched by severe drought during the period of the ECATU's establishment, the latter had to start off by installing potable water systems (Zipete 1994:5). Overall, the ECATU's efforts were and still are directed at

eradicating poverty through a basic needs approach (op cit).

2.2 ECATU'S PROGRAMMES

In order to contend with the problems confronting rural communities, the ECATU set up the following programmes:

2.2.1 THE BUILDING AND DESIGN PROGRAMME

This programme is concerned with the construction of public facilities and infrastructure, i.e. classrooms, pre-schools and day care centres, to increase educational opportunities for the youth and release young mothers from child minding duties to develop their potential.

Other important performance areas are the building of health clinics, access roads, domestic and agricultural water supply and sanitation geared at improving the general state of health as well as the environment.

In response to community needs, the ECATU had, in addition to the above, to include in its building programme erection of facilities such as exhibition halls and craft centres, that enable communities to exchange goods for income generation.

2.2.2 THE SOCIAL FACILITATION PROGRAMME

Institutional capacity building is the key performance area of this programme. Communities are trained in Leadership, Conflict Resolution, Development Awareness, Project Planning and Maintenance. Training workshops are conducted prior to and after project implementation to empower communities to plan, develop and manage their projects in a sustainable way.

2.2.3 APPLIED RESEARCH, DEVELOPMENT AND TRAINING

This is the ECATU's core business. The programme tests, adapts and transfers proven technologies to its clientele. Appropriate technologies are preferred due to their compatibility with the environment and people's cultures, their labour- rather than capital intensity as well as their affordability (ECATU 1998:8).

Entrepreneurship and skills development courses in carpentry, welding, sewing and brick making are the ECATU's pathway to self-employment for communities. A great number of former trainees are now running their own small businesses (ECATU 1998:8).

In a nutshell, the ECATU's efforts are directed at eradicating poverty through community mobilisation and institution building, skills transfer and provision of infrastructure.

2.2.4 THE COMMUNICATION PROGRAMME

Under this programme are the Public Relations Office and the ECATU's information services, officially named Media and Information Branch. Information gathering and dissemination is facilitated by the resource centre and library, which houses hundreds of books and magazines on rural development and appropriate technologies. This programme supports and reinforces the operations of the corporation (op cit).

2.3 THE RURAL DEVELOPMENT PROCESS

Development has, for many years, been the subject of debate amongst scholars, each defining the concept in accordance with their values and convictions. Even in this present day there is still no consensus on what development is and what it is not.

To some, amongst whom is Rostow, development is synonymous with modernisation, to others it is simply economic growth, and to a third group it only concerns human development, etc. (Harrison 1990:22).

2.3.1 MODERNISATION

Modernisation theorists regard westernisation as the way to modernity and as ideal and crucial for all nations regardless of environmental, cultural and other important factors. Rostow asserts that all nations have to go through five stages to development, i.e.

(i)   The traditional society, a stage of limited growth, constrained by traditional values and practices and lack of external influence.

(ii)   "Preconditions for take-off" entail diffusion of new ideas, acquisition of skills, education, capital, establishment of infrastructure and other prerequisites for industrialization.

(iii)   "Take-off " made possible by employment of new technologies and the rise of a new breed of political leaders who are prepared to drive the process.

(iv)   Drive to maturity. A stage of making investments and paving the way to the international order.

(v)   The high consumption stage is characterised by intensive manufacture of goods and services and satisfaction of basic needs (Harrison 1988:26).

Rostow based this model on his experiences with Western economic development but his expectation that all developing countries will take the same route is far fetched. Further, such development was for Britain endogenous and therefore able to unleash a spirit of entrepreneurship and ingenuity in the nation.

This model not only impoverishes developing nations but also brings about economic dependence on foreigners. This is contrary to the spirit and letter of development, which, according to Harrison (1988:155), is the provision

of basic needs and an equitable share (for the poor) in the wealth of the country. Others add that development should have as its focal point "the realisation of the potential of human personality" through poverty-, unemployment- and inequity reduction (Seers 1969:2).

Another stream of thought believes that economic growth is an engine for development. This notion is so widely accepted that the economic growth index has come to be used to measure the well being of nations. The need for economic growth has put pressure on developing countries to pursue and focus all their economic endeavors on economic growth (Ligthelm & Coetzee 1983:14).

The above scholars report (1984:6) that economic growth rates have been relatively high in developing countries amidst indescribable levels of poverty caused by, according to Schumacher (1973:140), poor education, organisation and discipline of people as well as lack of natural resources.

The economic growth index is both misleading and inaccurate in measuring the well-being of nations and does not give a complete picture of development due to the following:

- It does not consider income distribution, nor does it pay attention to existing inequalities amongst population groups and the standard of living of the poor.

- It measures only those things that have cash components. Home chores, domestic duties and others, are not given value (Van Brakel 1978:61).

It is clear from the above that Western or conventional development approaches (whose focus is on economic growth) are not appropriate for developing nations. Todaro (1983:11) raises a strong criticism of the economic growth model's expectations that development should eventuate in the developing countries as it did in the developed, regardless of the different conditions and periods in which the two started the process of economic growth.

Modernisation enslaves the underdeveloped to Western technologies and so plunges them deeper into poverty. Genuine attempts to liberate the poor and develop rural areas must lead to the propagation of alternative development paths that seek to give priority to the needs of the people and to develop technologies from available resources.

In South Africa the modernisation model has had disastrous effects particularly on Black people in the former homelands. Under apartheid rule the Transkei was an independent state within and economically dependent on South Africa. With neither infrastructure, resources, nor entrepreneurs,

the former homeland was never able to progress independently. Experts, technology and financial assistance came from South Africa, which was following a Western pattern of growth and importing technology from the "G7" countries. There was very little economic activity, so little that only one quarter of the national income was generated through local production. The largest portion of the income came from migrant labour, as the region was a labour reservoir for white South Africa, which developed at the expense of this region (Engelbrecht 1985: 3).

Racist segregation and creation of homelands were a ploy to oppress the Blacks. Unemployment increased, and the standard of education dropped. Misery and hopelessness became the order of the day in the homelands and other Black areas. Only a few benefited from this system.

Due to lack of interest in the well being of the poor, South Africa made no attempts to create an enabling environment. Many of the homelands' skilled labour force acquired their training overseas and in South Africa's advanced provinces but such knowledge was irrelevant and inappropriate back home (Cook 1984:3). This heavy reliance on Western/developed countries undermined local efforts and created a mindset that Western is better than local and is the only way to economic progress.

It later dawned that a paradigm shift was necessary and that it was crucial for the Eastern Cape to have alternative and sustainable ways of meeting

human needs without replicating the technologies of and striving to catch up with the highly advanced nations. Cook (1984:3) cautions development practitioners regarding appropriation of design systems and technologies and approaches, which might not be compatible with the local environment even if tried and tested in other provinces and among other communities.

Boateng (1995:7) suggests that practical strategies for poverty eradication should include establishment of technology training centres to diffuse new and affordable technologies that can be applied in the rural areas to tackle concrete development needs, problems and challenges.

An appropriate development strategy would be one that gives people wider choices and improves their skills. Thus policies for distribution of wealth as well as for building the capacity of the disadvantaged have to be developed (ACFOA 1992:2). Central to such policies should be community development that enables communities to initiate and drive activities that will enhance their standard of living.

It is active community participation that gives the affected people an opportunity to take decisions and formulate strategies to address their needs and thus build and create self-reliance.

The basic needs approach was adopted as a result of failure of economic growth to trickle down to the poor. Its focus is on improvement of housing,

nutrition, health, education, water and sanitation (Sen & Grown 1987:38). As such it includes poverty eradication, community participation and human rights and involves the soul and spirit, the culture and environment, all of which form the fabric of society (ACFOA 1992:2).

2.3.2 APPROPRIATE TECHNOLOGY

The 1980s were a period of reawakening to the realities of abject poverty in the developing world (Korten 1990:1). Having lived in and struggled to get out of poverty for decades, the developing countries awoke to the fact that their people were trapped in poverty.

Although endowed with natural resources, developing countries were not progressing, and the aspirations of catching up with developed countries were becoming a distant dream. Technology import camouflaged as aid for development was promoting dependency and exacerbating the conditions of the poor. The minimal successes of conventional development approaches amongst the poor prompted a rethinking of strategies and practices. The benefit of hindsight gave developing countries opportunities to assess the economic and technology policies of the developed, whilst simultaneously analysing their experiences and searching for alternative paths to development.

The Newly Industrialised Countries, who rose from the ranks of the less developed to be counted with the industrialised, were an example and an

inspiration to others. Appropriate Technology was perceived to be a solution to Third World problems and required the following:

- Technologies to be custom-designed to meet community needs and fit the uniqueness of communities.

- The development process to be linked to community based economies and managed by the communities themselves (Cook 1984:9).

Technology choice is regarded as particularly important in the formulation of economic strategies. Labour-intensive technology is preferred to capital-intensive as it enables the poor to utilise their abundant labour and capture important market niches.

In the Kei district cost effectiveness is very crucial otherwise the scanty resources can never stretch enough to meet the huge backlog (Cook 1994: 3).

The table below demonstrates how the ECATU appropriate technologies (abbreviated hereafter as A.T.) enable more to be accomplished with fewer resources.

TABLE 1:   ECATU'S COST REDUCTION THROUGH A.T.

	A.T.	CONVENTIONAL
Village water schemes (per user)	0.25	0.75
Middle income housing (per sq. metre)	0.2	0.8
Capital investment (per employment opportunity)	1.5	20
Small scale irrigation schemes (per hectare)	4	40
Labour based village access roads (per km)	10	100
School classrooms (per classroom)	12	45

Cost comparisons: Appropriate technologies applied at ECATU versus conventional technologies

Source: *Transkei Appropriate Technology Unit, 1994: 20*

According to Cook (1994:2) many of the Kei rural health clinics were constructed for less than R15 000 by local communities, whereas conventional technology would cost about R80 000 for one clinic. Because of escalating costs, continues cook (op cit), the government could only build six of the R80 000 rural health clinics between 1976 and 1993.

It appears that if the government wants these expensive structures, rural communities will have to contribute up to R40 per household, something

they have been unable to do, and the end result would be that the need for health facilities would not be met, comments Cook (1994:2).

On the other hand, labour intensive methods, involvement of beneficiaries in projects, a simplified design and utilization of local resources bring down costs to about R20 000 for a rural clinic. "This is the only way basic needs can be met," says Cook, former ECATU Managing Director. The Eastern Cape policy on technology transfer "should be biased towards the lowest possible unit costs, towards 90% solutions rather than 10% solutions, so that the largest possible percentage of the outstanding need can be met in the shortest period of time, with the smallest possible investment of scarce economic factors"(1994:3).

Appropriate technology development techniques promote the involvement of women and the youth in decision-making. If development is to culminate in eradication of poverty and reduction of inequalities, then, say Sen and Crown (1987:23), development must of necessity start with women. The South African government's policy of affirmative action is aimed at redressing such imbalances, and if seriously applied could reverse the position of women and bring in more wealth to the country.

Women are drivers of community development, and according to ACFOA (1992:12), wealth and benefits accrued by women are inherited by the following generations. ACFOA also reveals that women perform half of the

world's work but receive only one tenth of the world's income (1992:2), and because of their social status, a huge percentage of them are illiterate and consequently discriminated against and rendered vulnerable to unemployment. They are often victims of violence and robbery, yet according to the country's constitution and human rights declaration, women and men should have equal opportunities (1996:7).

Because appropriate technology impacts on employment and self-reliance, it is an important poverty reduction strategy, and success stories abound in many a village in which the ECATU has intervened. Communities have learnt to mobilize resources and to address their needs. A number of skills have been transferred to the poor; health has improved through installation of potable water systems and food production. Education levels are going up and delinquencies decrease as a result of the ECATU's classroom construction projects (ECATU 1990:14).

2.5   SUMMARY

In this chapter the ECATU and its programmes were discussed, and modernisation and appropriate technology were explained.

In the next chapter the integration of theory and practice in technology transfer will be discussed.

CHAPTER 3

3. INTEGRATION OF THEORY AND PRACTICE IN TECHNOLOGY TRANSFER

Several scholars have written about the role of technology in development of societies and procedures to be followed for technology to impact on communities. However, one has to bear in mind that technology evolves and such evolvement is a historical process that is intertwined to a variety of other processes and circumstances peculiar to each environment.

This chapter delves deeper into scholastic and research work done by others, in order to determine requisites for successful technological transfer and adoption as well as to link up with former research work on the subject. For easy comprehension the subject matter is discussed under various sub-headings such as organisational structure, resource accessibility, social interaction, culture and societal values, coordination and cooperation.

3.1 ORGANISATIONAL STRUCTURE

One of the most valuable studies that have greatly enriched this research is that of Hanratty, who was commissioned by the ECATU to evaluate the corporation four years after its establishment. He and his assistants spent some months at the ECATU headquarters studying processes and interviewing officers, both senior and junior as well as management. They

also conducted surveys in most of the communities where the ECATU had projects at the time. Hanratty (1988:7) noted that the goals of the training programme were not clear and that there was no well-defined programme.

Hanratty further noted shortcomings in management, programme coordination, work discipline and team work. He observed that the ECATU structure was not suitable for its brief. It is very heavy at the top with very few fieldworkers, he wrote. This remark was reiterated by the Eastern Cape Socio-Economic Consultative Council (ECSECC) in 1996, when they advised the ECATU to reduce their administrative staff (ECSECC 1996:5).

3.2   RESOURCE ACCESSIBILITY

Hanratty's findings on programmes revealed that soil-cement bricks were highly esteemed by the communities, even though there were complaints about the following:

- bricks are not weather resistant

- soil sieving makes brick-making labour intensive

- brick-making machines are not available, and cement is not affordable.

Villagers claimed that they have neither the technical know-how to manufacture inputs, nor the finances to purchase them. Hanratty's conclusion was that if adoption of soil-cement is to eventuate, the ECATU would have to introduce an "effective support system" that provides loans for purchase of equipment and access to cement and brick making

machines. In addition, monitoring of villagers' brick projects would be essential, he suggested (1988:23).

This opinion is supported by Thomas et al (1991:94) who strongly believe that technology adoption is made possible by the existence of a support network consisting, among others, of credit facilities, transport for procurement of raw materials, distribution of finished goods and incentives for good inventions. Jecquier, in Thomas et al (op cit) also confirms the vital role played by a good support network in determining the reliability of technology.

Another recommendation made by Hanratty is the need to change villagers' perceptions through education, so that they will not consider soil-cement brick making as unnecessarily arduous (1989:20).

Technical development and adoption depends to a great extent on policy environment, posit Thomas, Uribe-Echevarria and Romijn (1991:97). Government and parastatals have a tendency of ignoring small-scale producers, giving preference and major support to large-scale producers. Cited examples thereof are policies regarding subsidies, loans, taxation and budget allocation.

Regarding quality, Mitchell and Bevan (1992:28) warn that it is very difficult to control the quality of small brick making projects. "Site production of strong weather resistant bricks is a hit and miss affair".

3.3   SOCIAL INTERACTION

On the impact of the ECATU on rural development, Yirenki-Boateng (1995) gives the following important information:

- The ECATU's methodology for technological transfer is largely dependent on and is affected by the inconsistency of government funding. According to him power was devolved to communities because of reductions in funding.

- Information flows only in one direction: from the ECATU officers to the communities

- As far as training is concerned, communities are trained where they live or taken to the ECATU for training

- Monitoring of operations is poor. There are no arrangements for "identifying the changing perceptions of the participants in the programme"

In his study Boateng used a structuration approach, thus examining and linking processes and ECATU staff attitudes to outcomes and relating these to time and space. Boateng took into account the problems the ECATU was confronted with at the time of his study. He not only relied on interviews and surveys with all concerned but also studied relevant documents.

A lecturer at the nearby University of the Transkei, Boateng's greatest advantage was that he is a trusted ally of the ECATU, working as a consultant on business-related matters. Such involvement afforded him opportunities to participate in the life of the ECATU, whilst also making observations. Although confined to perceptions of ECATU field workers and programme structures, this study provides important insights into the organisation.

A lot of criticism has been leveled against development practitioners for the manner in which they tackle community problems. Development workers should not harbour preconceived ideas about problems and solutions, say Mitchell and Bevan. Communication skills and a "slow listening-and-learning approach" should be used to involve communities in their projects (1992:67). Mitchell and Bevan reveal that fieldworkers are often controlled by deadlines and time frames, which force them to hurriedly wrap up their work regardless of progress and desired outcomes. Tight schedules and fixed time spans have a bearing on success and failure of development projects, they conclude.

3.4   CULTURE AND SOCIETAL VALUES

Appropriate Technology scholars Salomon and Lebeau (1993: 24) posit the notion that technology comprises the physical, visible component referred to as the "hard stuff" and the invisible "soft stuff", i.e. the culture,

knowledge and history of societies. Technology is a product of both engineers and society at large and therefore its transfer is a social interaction, which involves first and foremost a transfer of culture. The above scholars suggest that beneficiaries should understand the new system of machines in order to master production. Further, they suggest that traditional techniques should be upgraded by combining them with modern techniques.

Thomas et al (1991:102) suggest that societal norms, values, culture, etc. can negatively or positively influence technology adoption. They make a strong point of Western technology which one would expect to be popular only in Western countries, due to inappropriateness elsewhere, but interestingly is preferred by developing countries in Africa, Asia and Latin America, despite the fact that it is for them uneconomical, unsustainable, environmentally and often culturally incompatible. Scholars attribute this strange phenomenon to a number of factors. Stewart, quoted by Thomas et al (1991:104), believes that decisions for technology choice are influenced by the availability of capital. Modern technology (more often Western and scientifically superior to others as well as technically efficient) is given preference regardless of appropriateness.

3.5 COORDINATION AND COOPERATION

Like many other organisations, the ECATU's administration desperately needs coordination and unified action. Division of labour and allocation of responsibilities, although auguring well for staff development, does not always, without monitoring and evaluation, lead to project success (Tapscott 1981:54). Tapscott notes that coordination of lower level activities with those of senior staff is problematic, but equally difficult or worse is horizontal coordination. In the case of the ECATU this would imply the ECATU management on the one hand, and fieldworkers, local and district councils on the other. The above author attributes this problem to poor dissemination of information regarding development needs, achievements and plans to remote rural areas (op cit).

3.6 SUMMARY

In this chapter the integration of theory and practice in technology transfer was discussed. Organisational structure, resource accessibility, culture and societal values as well as coordination and cooperation were highlighted.

In the next chapter the research methodology used will be discussed.

CHAPTER 4

4.   RESEARCH METHODOLOGY

The purpose of this chapter is to explain the research methodology used.

Questionnaires were compiled and used for the following people:

- Sidwadweni Residents

- The Building and Design Programme manager

- The brick-making instructor

- The Community Development Officer (CDO)

4.1 RESEARCH PREPARATION AND DESIGN

Monitoring and evaluation are essential tools for measuring the progress and success/failure of development strategies. It is therefore vital for all development planners to be aware of challenges in the playing field, and to be able to deal with people's attitudes and prejudices.

Although rural areas are put under one umbrella, no one area is the same as another. Each has its own peculiarities. Studies on various aspects of the environment have been done in a few villages where the ECATU is or has been operating. Sidwadweni is not one of those. This is one of the reasons this village has been selected for this research project. The main reason, of course, is that a school was built with ECATU's assistance, using local labour and soil-cement bricks.

There was no available statistical information on Sidwadweni, so the first task was to establish a socio-economic profile of the community. Geographically, Sidwadweni is a vast area with four villages, two of which were chosen for the research, i.e. Nkanini and Thembamqala.

The support of local authorities is crucial when dealing with rural communities, so the headman as well as the Transitional Rural Council and the Development Committee, were consulted right from the beginning. The objectives of and the methodology to be used in the study were outlined. The intention to share the results with them and the community was expressed. Because of this transparency their confidence was won. Some of them even facilitated the orientation meetings.

In consultation with the village headman, four community members were chosen, orientated and trained to assist the researcher with the survey. Interview techniques, the soil-cement brick technology, the basics of technology dissemination as well as interpretation of results were learnt. Participatory research was preferred, because, according to Chambers (1993:78) research subjects learn certain basic skills through their involvement in research planning. Further, Chambers indicates, researchers are learners, and the communities become teachers (op cit).

The researcher and an assistant (from another area) spent three days familiarising themselves with the Sidwadweni community and the area, observing all that was going on.

Out of the 200 Nkanini-Thembamqala households at Sidwadweni, a sample of 40 units was randomly selected for the local survey. Attempts were made to ensure representation of female- and male-headed households as well as employed and unemployed. In addition to the sample, the Transitional Rural Council, the headman, the School Governing Board and the Local Development Committee were interviewed on their opinion of the cement brick technology. The technology implementers, the ECATU management and fieldworkers were also interviewed about their technology dissemination methodology in particular. The researcher was also given access to documentation: budget statements, programme plans, project applications from the communities as well as project reports. On the interview list were also general members of the public whose views of the technology were to be sought. Interviewees were put at ease by briefly explaining the objectives and the benefits of the study. Tape recorders were used to supplement note taking and to ensure accuracy.

Field observations of general living conditions and lifestyles of Sidwadweni communities were made and noted. Photographs of building technologies were taken. Research assistants were invited to scrutinize and improve the

questionnaire, and the researcher drew up an interview guide. Interview questions were explained to them, as they had to understand the reasons for questions as well as the need to follow-up and probe, particularly with open-ended questions.

The interview guide was based on analyses of observations made during fieldwork and also on the study of ECATU documents. Topics and sub-topics were formulated from observations and documents for investigation. Data on demographics, housing patterns, problems relating to soil-cement technology adoption, the effectiveness of the ECATU was gathered. Further, interviewees were encouraged to air their views and feelings and to speak freely on any burning issues regarding the ECATU and its operations. Questions were posed and the conversation with communities was in vernacular. Questions were open-ended and loosely worded to give the interviewees enough freedom to communicate their feelings. To enable both parties to talk freely rapport was established with interviewees from the onset.

The role of triangulation of data in information gathering was explained to researchers. An advantage with triangulation, according to Yin, is that the potential problems of construct validity are addressed (1994:92).

Preparations for data collection included drawing of tables for logging different categories of information. Provisions for numbering and quantification were also made.

4.2   PILOT STUDY

To test the efficiency of our information gathering exercise, a pilot study, using the questionnaire and interview guide was carried out on six community members outside the sample. For research assistants, this was also on-the-job training and an opportunity to test their performance and their skills. Selection of pilot cases was influenced by availability of subjects and geographic convenience.

4.3   SUMMARY

In this chapter the research methodology was explained.

In the next chapter, Chapter 5, the analysis of the results will be presented.

CHAPTER 5

5.   PRESENTATION OF EMPIRICAL DATA

In the previous chapter the research methodology was discussed. In this chapter the empirical data will be presented.

5.1 ANALYSIS OF DATA

Research results were obtained from an analysis of information received from the following:

1. A study of relevant ECATU documents

2. The Building and Design programme manager

3. An instructor in brick making

4. A fieldworker in Community Development

5. The Research & Development programme manager

Presentation of results takes the following pattern (5.2) the ECATU's strategy for rural development (5.3), the ECATU finances (5.4), profile of Sidwadweni (5.5), building technologies in use (5.6), personal characteristics of respondents (5.7), community perceptions of soil-cement bricks (5.8), community experiences with soil-cement bricks.

5.2 THE ECATU'S STRATEGY FOR RURAL DEVELOPMENT

As explained in the previous chapter, the Eastern Cape Appropriate Technology Unit has various programmes aimed at eradication of poverty and uplifting of communities. For the purposes of this study we shall examine only those involved in diffusion of technologies.

5.2.1 THE SOCIAL FACILITATION PROGRAMME

The Community Development Programme otherwise known as the Social Facilitation facilitates community driven development.

The objectives of the ECATU Social Facilitation Programme are as follows:

- To facilitate implementation of projects

- To facilitate skills acquisition for project sustainability

To ensure project sustainability, community development training precedes all operations.

Activities include the following:

- Verification of needs for requested physical structures,

- Preparation of communities for project implementation and maintenance

- Institution building and creation of development awareness through workshops.

Our research found the training workshop content too general and lacking focus. Another shortcoming was that technical matters were not handled in the facilitation process, as community development officers were not educated in such.

5.2.2   THE BUILDING AND DESIGN PROGRAMME

This programme is concerned with the following:

- Provision of appropriate building technologies and training communities in the use thereof

- honing artisans' skills through project implementation

- facilitating the optimum use of local resources

- provision of infrastructure and facilities for socio-economic activities

One of the Building and Design programme's responsibilities in project implementation as outlined in the *TATU Building Programme* (undated: 4) is training the community in soil-cement brick production. It would appear, however, that this training is given only to community groups seeking assistance for self financed projects (Building & Design Branch Report 1990:4). Reports abound that people would claim to be setting up community projects in order to be loaned soil-cement brick-making machines and to receive training. Thus some people were able to build better structures using soil-cement bricks. Groups who required this machine were mainly women working with youths.

The brick production instructor also divulged that the ECATU had very few soil-cement brick machines and borrowers never returned them on time, and quite often the machines would be returned broken. Repairs are not done at the ECATU due to lack of expertise. In addition, the instructor has no skills and no formal training other than a few days' course in brick making.

Soil-cement bricks were developed as a response to a critical shortage of classrooms in the region. The situation was so desperate that in some areas pupils were learning under the trees and in old abandoned buses. The ECATU took up the challenge and introduced the soil-cement bricks to address the problem. A soil-cement brick-making machine was imported from Swaziland. About 80 bricks could be produced from a bag of cement and eight wheelbarrows of soil (ECATU 1996/7:3).

The ECATU brick-making programme, which hired and trained some individuals for manufacturing soil-cement bricks, cement blocks and bricks as well as paving bricks for sale to the public, was popular. Certain individuals would come and watch. Unfortunately, due to lack of funds, brick production had to be discontinued but the four ECATU soil-cement brick making machines continue to be loaned out.

The decision to stop production was received with trepidation because of job losses, but it opened opportunities for ex-trainees to start small

businesses (ECATU Annual Report 1998/9: 21). There are now at least two soil-cement brick projects about two and half kilometers from the ECATU. Summarizing the impact of the soil-cement brick technology, the ECATU Report states the following:

- 300 classrooms and five rural clinics have been built
- Informal settlement dwellers in and around Umtata use this technology for building their homes
- Income and employment opportunities have been generated for a number of people (ibid).

5.2.3 THE SKILLS TRAINING SUB-PROGRAMME

This was one of the programmes involved in technology transfer. There was an organised training programme in carpentry, welding and sewing, after which trainees were encouraged to start their businesses. However, brick making was not under this programme and thus did not receive the attention it deserved.

5.2.4 THE MEDIA AND INFORMATION PROGRAMME

This is a sub- programme of Community Development, whose task is to reinforce the work of and support all ECATU programmes. Manuals on the use of various technologies were produced and some of those were Soil-Cement Brick-Making and Soil-Cement Building. Sadly, the responsibility of giving direction to the ECATU programme managers, to ensure that the

ECATU objectives were met was ignored. Further, the existence of the Public Relations Office alongside the Media and Information programme created confusion and misunderstandings. All these problems had a bearing on the quality of the ECATU operations.

5.3   ECATU FINANCES

A study of ECATU reports revealed that fiscal constraints as well as government policies have impacted on development efforts in the Eastern Cape. Although the ECATU has not been shut down, it is greatly threatened by the government's move to privatize parastatals. Questions are still being asked as to how the ECATU escaped the government's axe when other corporations in the Eastern Cape were closed down.

According to the report of the ECSECC Task Team on the future of the ECATU (December1996), a decision to close this corporation was rescinded and the ECATU advised to restructure in accordance with its mandate, its strengths and opportunities. The process of restructuring is underway but is moving very slowly.

However, the ECSECC Task Team also noted that the ECATU's problems were due to "long-term under-funding and inadequate management and evaluation mechanisms" (ECSECC 1996:13).

Indeed, according to ECATU/TATU reports budget reduction was apparent year by year as shown by the following table.

TABLE 2:   ECATU FUNDING DURING THE PERIOD 1993 -1999

FISCAL YEAR	PROPOSED BUDGET IN RANDS	ALLOCATED AMOUNT
1993/4	4 000 000 was proposed and was to include a contribution from IDT	Figure not available
1994/5	2 013 900	1 233 521
1995/6	2 105 000	604 250
1996/7	8 266 821	1 000 000
1997/8	10 416 400	1 079 645
1998/9	Figure not available	127 000*

*This amount came from sources other than government and was used to complete building projects started in the previous year. No government funding was allocated to the ECATU in 1998/9.

(ECATU 1996/7 Development Progress Report)

5.4   A PROFILE OF SIDWADWENI

Sidwadweni is situated along the N2 road, about 33 kilometers from Umtata and 39 kilometers from the ECATU headquarters. It is trust land under the administration of a traditional leader.

Of the 200 households, most of which are female-headed, about 70 per cent are not employed and depend for their living on remittances from relatives working in the cities. Others are doing temporary jobs, and yet others receive welfare grants. Their main occupation is gardening. Almost all have gardens in which they grow mealies and vegetables and rear poultry.

Across the road from the village is a school that was built by ECATU in 1994 with soil-cement bricks, and it is for that reason that the two villages were chosen for this study. The ECATU principle of employing local labour in setting up projects has various benefits on project beneficiaries, one of which is skills acquisition. It is during implementation of such projects that technology should be transferred not only to those directly involved in implementation but also to the whole community, through exposure to technology in the course of decision making, monitoring and evaluation of their projects.

5.5   BUILDING TECHNOLOGIES IN USE

Types of building technologies at Sidwadweni vary according to social status. The traditional mud brick is most prevalent, and even those who use other types of bricks still have additional structures of mud bricks. Very few have soil-cement houses and those few were happy with the technology.

The histogram below shows distribution of building technologies at Sidwadweni (Nkanini-thembamqala)

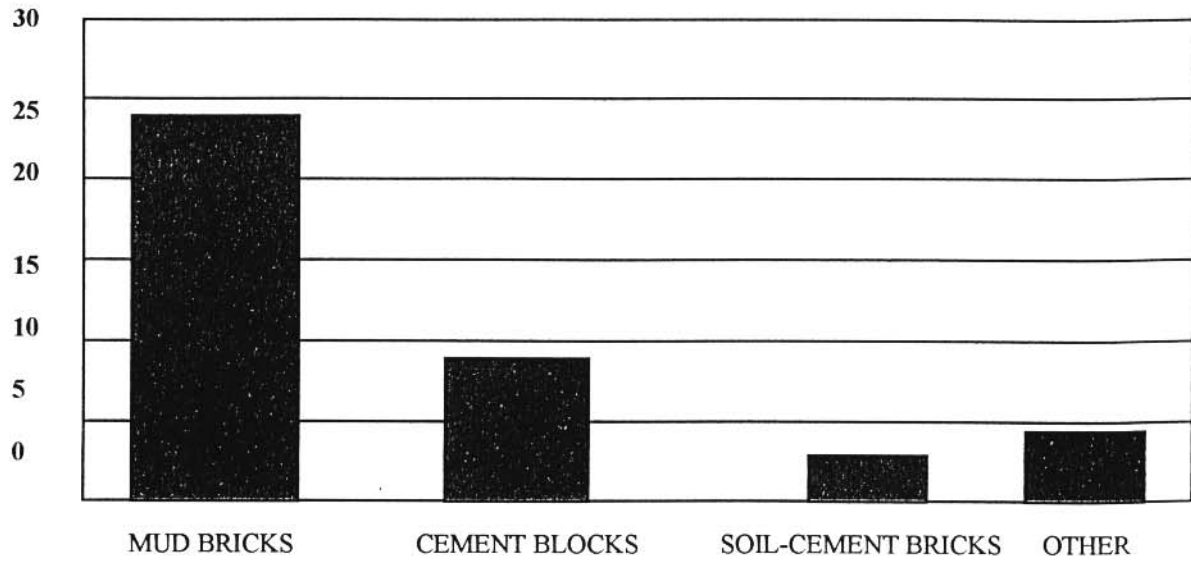GRAPH 1: BUILDING TECHNOLOGIES AND THEIR DISTRIBUTION AT SIDWADWENI

FIGURE 2: PHOTOGRAPH– SOIL-CEMENT BRICK MANUFACTURING

FIGURE 3: PHOTOGRAPH- SOIL CEMENT BRICKS

FIGURE 4: PHOTOGRAPH– SOIL-CEMENT BRICK STRUCTURE

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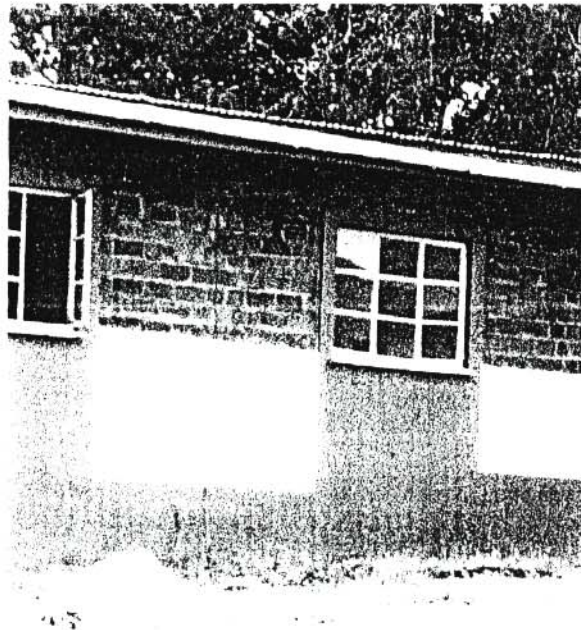
5.5.1 COST COMPARISONS

The introduction of low cost building technologies promotes home ownership by the poor. It is specifically for this purpose that soil-cement bricks were invented. As an addition to other existing brick making technologies, the introduction of soil-cement bricks gives the community a wider choice to fulfill and meet their needs.

The appropriateness of this intermediate technology lies in its simplicity and the small-scale traditional process, as well as its moderate mechanisation. Production with capital-intensive machinery requires highly skilled manpower, whereas appropriate technology utilizes existing skills, talents, local resources and skills inherent in communities (Slabbert1984:7).

According to the ECATU Building Branch manager, who introduced the bricks to the rural communities of the Eastern Cape, soil-cement bricks compared to other popular bricks fare as follows:

TABLE 3:   COMPARISON OF BRICK COSTS

BRICK TYPE	% SOIL-CEMENT COST REDUCTION
Cement brick	25%
Burnt brick	25%
Cement blocks	15%

Mud bricks, though obviously much cheaper than the above technologies inclusive of soil-cement, are difficult to compare for the following reasons:

- There is no standard production technique. Mud can be mixed with straw, which is said to make them stronger.

- They are not weather resistant on their own, and thus have to be produced seasonally.

5.6 PERSONAL CHARACTERISTICS OF RESPONDENTS

Personal characteristics as discussed here are gender, age, family size, and homeownership.

5.6.1 GENDER

The high incidence of female- headed households in the Kei district is typical of South African rural areas and is attributed, partly, to the Glen Grey Act, the cornerstone of the apartheid policy on homelands, which demanded that nine tenths of Africans spend their lives in daily labour (House of Assembly 1894:381).

According to estimates, women who are either unmarried, widowed, or whose husbands are migrant labourers head about 66% of Sidwadweni households.

Most of the female-headed households are better managed than male-headed households and are perceived to be better off than the rest. Most women fall in the following categories:

(i)   employed

Amongst this group were traders, owners of small informal businesses and some government employees.

(ii)   receiving remittances from their husbands

These are women whose husbands are migrant labourers. In addition to remittances, they do small jobs such as domestic work and handicraft.

(iii)   some of those in (ii) have not seen their husbands in the last 10 years and there has been no communication and no remittances

(iv)   receiving welfare grants.

These are older or middle-aged disabled women, most of whom have to support large families. A few in this group live with working family members, who from time to time will bring in wages.

Common with all women is that they live in well-maintained mud or cement blockhouses and huts. Very few have soil-cement houses.

Men were found to be less hard working than women, mostly unemployed except for small temporary jobs. But it is mostly men who were acquainted with soil-cement bricks, some having made or used them in building houses or community project structures.

5.6.2   AGE

With the government's massive housing programme, brick making has become a lucrative business. The simplicity of soil-cement brick technology enables all age groups up to 70 years - except in cases of sickness - to play a role in brick manufacturing. Amongst those interviewed the age distribution was as shown below:

TABLE 4: AGE DISTRIBUTION

AGE GROUPS	N	%
<29	4	10
29-39	9	22.5
40-49	12	30
50-59	10	25
60-69	5	12.5
>70	0	0
Total	40	100

5.6.3   FAMILY SIZE

In societies where children support their parents financially it is a huge loss to control childbirth, for the more children, the better the standard of living (Martinussen 1997: 147)

The practical confirmation of this assertion was seen at Sidwadweni, even though the desire for large families seems to be gradually diminishing in the face of changing values and economic development, where education is regarded as crucial for progress. Nevertheless with the exception of a few, all respondents, married and unmarried, have families or relatives living with them. A lot more live with extended family members, thus making demand for accommodation, for which brick manufacturing could be faster and easier. Large families, though costly to rear, can be advantageous when it comes to production. Working together in a production process reduces the burden and monotony of work (Martinussen op cit).

5.7   COMMUNITY PERCEPTIONS OF SOIL-CEMENT BRICKS

Amongst those interviewed were a couple of builders one of whom told researchers that soil-cement bricks were not good for big structures. To substantiate his point he showed them a big house, which he said had bad cracks. On close inspection by the team the cracks were not alarming and are common with all brick technologies. The above sentiment, however, was echoed by one of the ECATU Community Development Officers, who recounted that communities have rejected the use of soil-cement bricks for constructing their schools, because they believe soil-cement bricks are "good only for small structures. Big ones such as classrooms and clinics tend to crack", he said.

The few who had soil-cement brick structures were happy with them and their builder disputed claims regarding poor technology.

Community perceptions about soil-cement bricks are shown in Table 5 below.

TABLE 5:   COMMUNITY PERCEPTIONS: SOIL-CEMENT BRICKS

PERCEPTION	NO. OF RESP.	%
It is a bad technology	2	5
Not familiar with soil-cement bricks	24	60
Uncertain of cement-soil ratio mix	7	17.5
Soil-cement bricks are not good for big structures	3	7.5
Brick making machines are expensive to hire and labour for making soil-cement bricks is costly	3	7.5
Soil-cement bricks are good	1	2.5
Total	40	100

5.8   COMMUNITY   EXPERIENCES   WITH   SOIL-CEMENT BRICKS

It was learnt that one of the community members had a soil-cement brick-making machine and was making bricks for sale.

On investigation it was further learnt that the entrepreneur was producing 120 instead of 80 bricks from one bag of cement, and was charging R3.00 per brick when the average price is R1, 65 per brick. Because these bricks were very similar to the traditional mud bricks, which most people can make for themselves at little or no cost, the soil cement bricks were not in demand.

5.9   SUMMARY

In this chapter the empirical data was presented. The personal characteristics of respondents as well as community perceptions of and experiences with the soil-cement bricks were highlighted.

In the next and last chapter the findings will be discussed. A conclusion will be drawn and recommendations will be made.

CHAPTER 6

6.   FINDINGS AND RECOMMENDATIONS

The purpose of this investigation was to establish reasons for non-adoption of soil-cement bricks at Sidwadweni.

The findings will now be discussed. A conclusion will be drawn and recommendations will be made.

6.1   DISCUSSION

A study of the ECATU Building and Design Programme report (1990) revealed great interest in soil-cement bricks in Umtata. A number of people realised the potential for a business venture, and indeed there was a high demand for bricks.

After the closure of the ECATU brickyard a number of soil-cement brick making projects mushroomed near the ECATU headquarters, and because of their low cost, soil-cement bricks were popular with low- to middle income groups who wanted more durable structures than those of the mud brick.

At Sidwadweni the situation was different. Only three households had soil-cement brick structures, all constructed by one builder, who lived at the far end of the village. The owners of all three structures were happy with them but community members were either sceptical or critical of them. The

builder divulged that he was trained in soil-cement brick making by the ECATU. Curiously, although he made soil-cement bricks at home, he seemed to have a low profile and his skill was relatively unknown. All of these factors were fertile ground for negative publicity, which became a counter influence in technology diffusion.

The study reveals no indication of a conscious effort to market the technology. The unavailability of brick making machines was not at all in the interests of technology diffusion and cast serious doubts that the ECATU had serious intentions of transferring this technology. Those who replicated the soil-cement technology were enterprising groups who pushed their way through and got the brick-making machine by hook or crook. ECATU should have launched a promotion campaign for soil-cement bricks. In Honduras People to People, a non-profit foundation whose mandate was to promote communication and exchange between disadvantaged Latin Americans and North Americans and Europeans, used a promotion campaign to transfer technology for cashew processing. This foundation first identified producers (farmers) and carried out a market survey in America to gauge the need and success of the product. Thereafter it offered loans for the development of the technology. Producers were trained in operations and maintenance, and documentation was kept to enable others to replicate the project. Major successes were recorded from

this project and all parties involved benefited one way or other through their experience (Buatsi 1988: 3).

At the ECATU users' manuals were inaccessible to the rural poor as they were in English. A small number of soil-cement brick making manuals in vernacular was quickly sold out and there were no attempts to reprint them. There were no other accounts in the corporation's records about technology promotion. There also does not seem to have been any communication between communities and the Media and Information programme, except for the purpose of selling literature. Community views on the corporation's technologies and operations were not heard during this period.

It would seem that poor programme co-ordination (also mentioned by Hanratty 1988) is one of the main reasons for the corporation's poor performance. Good intentions were marred by fragmented approaches. For instance, the absence of technicians/engineers at facilitation workshops to tackle technical problems is indicative of poor planning. One then assumes that there were at times unanswered questions at such workshops. Some of these shortcomings were pointed out in previous studies on the corporation's operations (Hanratty 1988) but there were no visible attempts to improve the status quo.

The ECATU's main business is research, development and transfer of appropriate technologies. A skills training programme therefore becomes

very relevant. It is however, deplorable that although such a programme existed, it did not incorporate instruction on soil-cement brick making. Instead soil-cement brick training was the business of the Building and Design team alone. It is here contended that soil-cement brick training, should have been a component of the Skills Training sub-programme and made accessible to all.

6.2   CONCLUSION

Soil-cement brick projects were introduced by the ECATU to improve rural and peri-urban housing as well as to generate income. Because project focus was on maximum utilisation of labour as well as on creating accessible social services for all, it can be rightly concluded that the soil-cement brick technology is an appropriate strategy for poverty eradication. Expatiating on this point, Dunn (1978:53) states that such projects must benefit the user as well as the community, by for example, honing skills, improving the standard of living, promoting development of new industries, creating new products in place of imports.

The ECATU' attempts to uplift the living standard of the poor through the introduction of soil-cement bricks have not been successful at Sidwadweni due to poor diffusion strategies. The notion that utilisation of local labour in the building of a community school in the area would promote the technology was misleading. Although the opportunity presented itself for

the community to learn and replicate the technology, this did not happen. Understandably because in all the ECATU building projects, brick manufacture was not done on site but rather bricks were carted from ECATU headquarters where the brickyard was. Consequently very few Sidwadweni households have used soil-cement bricks in physical structures.

Lack of exposure to soil-cement brick manufacture also resulted in rumour mongering and negative publicity. The few households who have used the technology with success were isolated, and because their structures are plastered, it was not possible to notice the difference.

It would also seem that those who claimed to have the know-how appeared to be more interested in personal gain and therefore used unjust means to achieve their goal. More bricks were made from one bag of cement than should have been the case, as a result quality was compromised and the ignorant exploited. The production cost made the bricks unaffordable. Consequently a lot of harm was done to this technology, which, in addition to being new in the market, faced a lot of competition.

Soil-cement bricks are popular with the low- to middle income groups in other areas, and previous studies reveal that a great number of people know about them (Hanratty 1988).

In Umtata and other areas soil-cement bricks have been used for accommodation and for income generation. Lack of interest at Sidwadweni leads one to believe that the Sidwadweni communities are not enterprising.

The ECATU Communication programme, the objective of which is to advertise and market the corporation and reinforce the operations of the various programmes through information dissemination, has not been effective in its mission. Manuals were produced and sold at R5 each but apparently never reached any or reached very few of the Sidwadweni population due to the high illiteracy rate and lack of entrepreneurship, and consequently lack of know-how and non-adherence to manufacturing specifications took its toll and brought the technology into disrepute. There was no focus on technology diffusion and yet the aim of the ECATU research is not only to find appropriate technologies but also to transfer them to rural communities so that all aspects of their lives will be enriched.

A large number of schools have been built from soil-cement bricks, resulting in huge savings. This per se is merely technology testing which should be followed by a conscious effort to diffuse technology.

Poor leadership, lack of focus and poor strategies for and lack of concerted effort in uplifting rural communities undermine noble ideas. The organisational structure created for the realisation of the ECATU vision was appropriate for a successful technology transfer. However, the strategy and the vision appear to have been lost over time.

The study shows that this community could be interested in soil-cement brick technology both for income generation and for improving housing standards. The invitation to the ECATU to hold demonstrations and give instructions on soil-cement brick manufacture is proof thereof.

Opportunities for making soil-cement bricks for wealth creation were identified but greed, self-centredness and lack of know-how brought the technology into disrepute. Were the ECATU to pay immediate attention to the call for demonstrations and instructions, a lot of harm could be averted.

The above arguments support the hypothesis that non-adoption of soil-cement bricks by the Sidwadweni communities was due to the agent's flawed diffusion methodology and poor marketing strategy. The findings are however, not to be generalised to the whole Kei district.

6.3   RECOMMENDATIONS

Eradication of poverty in the rural areas is a serious challenge to the state, particularly in the light of the present government's democratic constitution, which grants equal rights to all citizens.

In their helplessness, rural communities are looking upon the government and its agencies to improve their lot. The adoption of soil-cement bricks by the Sidwadweni communities has to be promoted by government in the following manner:

a) An enabling environment for development agencies must be created.

The role of the ECATU in rural development is an important one. The provincial government should therefore ensure that this development agency has adequate funding to carry out its mandate as well as the following responsibilities:

(i) Mentoring and Support for Producer Cooperatives

Experience has proven that cooperatives survive only for short periods because of inflation, lack of financial management experience, lack of supportive structures and policies as well as lack of skills for maintenance and repair of equipment (Durning 1989:174). However, successes have been recorded in North Pakistan and other countries where production was not collectivised but groups came together to perform specific tasks of "mutual benefit" with support from government, whose intention was to promote self-help (Durning 1989:174). Because of these challenges soil-cement brick co-operatives should be attached to the ECATU, which would support them particularly in marketing and planning as most rural communities are not acquainted with such issues as product quality, price, service and distribution channels because of their geographically limited network. Thus, each co-operative would have to be nurtured by the ECATU until its members gain a good measure of self-confidence and relevant skills. Mentoring and growth would also have to focus on issues of sustainability, some of which are mentioned below.

Capital growth

The habit of living from hand to mouth, inherent mainly among the poor by virtue of their circumstances, should be discouraged if co-operatives are to survive. The advisability of reinvesting profits should be emphasized.

Continuous product improvement

Producer cooperatives tend to focus on production (because they understand it better) at the expense of marketing and design. The importance of exposure to competitors and friends should not be undermined, for according to Oldham & Hockson (1991:384) only then can rural communities broaden their horizons, innovate and improve their products.

Pricing

Pricing should take into account training of labourers, and outsourcing should be avoided, as it would send production costs skyrocketing and render the projects unsustainable. Cooperatives should be encouraged to successfully manage projects independently of external agents.

(ii) Development of a Communication Strategy

Both the Media and Information Unit and the Public Relations Office are concerned with promoting ECATU operations (TATU Report 1992), and as such their responsibility is to ensure that people are well informed about new developments and technologies so that they can make informed choices.

Communication systems should provide regular interaction between developer and clientele (Henry undated: 3). Such communication should be

in the form of site meetings, liaison with development committees, community meetings and briefings with chiefs /headmen and Transitional Rural Committees. Technology demonstrations should be done and communities should send representatives. The ECATU communication team should listen to community views on the corporation's operations.

(iii) Incorporate soil-cement brick making in the Skills Training programme.

Brick making, machine maintenance, book-keeping, stock keeping and project administration as well as housing construction should be some of the focus areas.

The ECATU's present practice of importing soil-cement brick machines from Swaziland makes no economic sense, and as Tapscott (1982:32) points out, the importation of technologies, "instead of providing a base for appropriate technology has led to a syndrome for technological dependence". The soil-cement brick machine is so simple that it would not require a lot of ingenuity to manufacture, and instead of the one-cavity mould, a better machine, a double- or four-cavity mould could be manufactured. Thus job creation would result also from machine manufacture and maintenance and this would be a further step towards self-reliance.

(iv) Organise, encourage initiative and momentum

As mentioned by Hanratty above, some communities complain that soil-cement brick making is laborious. This statement reflects a state of general

apathy and a negative attitude to work, and yet it is because of the labour intensive nature of projects that employment can be created.

Rural communities have to be conscientised about the importance of manual work. According to Schumacher (1973:127), work forms character, dignity and social responsibility in individuals. Work should meet one's needs within one's locality (Tapscott 1982:41).

(v) Lobbying

Lobbying for removal of government regulations and statutes that hinder the advancement of producer cooperatives by, for instance, setting standards that promote the use of certain specific materials for building public structures, should be considered. For example, some government-built schools in the Eastern Cape are made with the prestigious face-brick, which is very costly and requires sophisticated equipment and rare materials to produce. Because soil-cement brick manufacture is a Local Economic Development initiative, the government should not only support but also promote it.

The quality of soil-cement bricks is questionable to skeptics. Others complain that the bricks are badly damaged by exposure to rain. Obviously, soil-cement bricks cannot compare with face bricks and other sophisticated technologies but a complete, plastered soil-cement structure is quite durable and cannot be distinguished from others. For more durability, Yogeswaren, an engineer and Head of the ECATU Research and Development programme suggested in a personal interview (2000) that the ECATU

should give technical support to improve construction design of the physical structure as well as the brick. He advises that design should consider the direction from which winds blow and from which rains come, and ensure that the structure will be heated by the sun, and that splashing of rain against the walls of the structure will be avoided.

b) Technology Assessment

The national government should have a technology assessment committee whose brief would include study and assessment of newly introduced hardware and their impact on development, specifically the social, economic, environmental and political consequences as well as their cost-benefit analysis. This committee should advise government and policy makers. The rationale according to Cook (1994:7) is that "the values and interests that determine which technology is to dominate, in fact greatly shapes the society of the future".

c) Women Involvement

Women are drivers of community development, and according to ACFOA (1992:12), wealth and benefits accrued by women are inherited by younger generations. For this reason and because of the interest shown by women in this project, it would be profitable to promote women involvement in soil-cement brick manufacture.

The plight of Sidwadweni women is no different from that of others. They constitute the majority of the population; they are industrious and many are household heads, yet they are at the bottom of the economic ladder.

Involving them in soil-cement brick making would reduce their vulnerability to unemployment and broaden their horizons.

6.5 COMMUNITY DEVELOPMENT IN A NUTSHELL

Community development is a slow process. It is not a goal but a journey. " It means being ready to travel in a mammie wagon with people – with all the delays, punctures, breakdowns and sweat ... rather than in one's Range Rover with two spare wheels, cool coke in the icebox, and a fixed timetable", says Pradervand (Durning 1989:172).

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LIST OF APPENDICES

APPENDIX 1:QUESTIONNAIRE FOR SIDWADWENI RESIDENTS

General

Community: ....Headman/Chief: ....

Respondent's Name: ....Sex: ......Age: ....

Occupation:

1. Are you a homeowner?

2. What bricks have you used for your house?

3. Have you ever heard of soil-cement bricks?

4. Who introduced them to you?

5. What do you think of them?   Good / bad /unaffordable /

   don't know them

For respondents who answer GOOD

1. Where did you see them?

2. Can you make them?

3. Who trained you?

4. Did you use them?

5. How do they compare with others?

    Mud

    Cement blocks

    Face bricks

    Cement bricks

6. Do you encourage others to use them?

7. If not, why?

For those who answer BAD

1. Where did you see soil-cement bricks?

2. In what manner are they bad?

3. Who made the bricks you saw?

4. Can you make these bricks?

5. How can they be improved?

6. After such improvements would you use them?   Yes   No

7. If no, why not?

For those who respond UNAFFORDABLE

1. What bricks do you normally use? Mud / face brick / cement bricks/ cement blocks / other

2. What, in you opinion makes them unaffordable? Soil/ cement / brick machine

3. What form of assistance do you require?

For those who DO NOT KNOW ABOUT THEM

1. Did you ever work on ECATU building projects?   Yes /   No

2. Have you seen structures built with soil-cement bricks?   Yes /   No

3. Don't your friends/neighbours/relatives use them?   Yes/   No

4. If they do, why have you not learnt from them?

5. What bricks do you use?

6. If you could be trained in making them would you use them? Yes /No

APPENDIX 2: QUESTIONNAIRE FOR BUILDING AND DESIGN MANAGER

General

1. For how long have you worked at the ECATU?

2. What are your responsibilities?

3. Where do you get funding?

4. What is your annual budget?

5. Do you get the same amount each year?

6. Within your unit how do you allocate your budget?

7. How many people are in your branch?

8. What are their roles?

Soil-cement bricks

1. For how long have you been doing business with soil-cement bricks?

2. What were your objectives then?

3. What are your objectives now?

4. Enumerate your activities in soil-cement brick making

5. What percentage of your budget went to soil-cement brick training?

6. How much demand is there for soil-cement bricks?

7. How much demand is there for training in making these bricks?

8. Who gives training?

9. How competent is s/he?

10. Can he train all your applicants?

Support for Soil-cement brick makers

1. How do you assist those who want to start brick-making projects?

2. How many brick making machines do you have?

3. Are they enough?

4. How much is each?

5. Who manufactures them?

6. Can't ECATU make them?

7. What efforts do you make for those who need but cannot afford brick making machines?

Monitoring and Evaluation

1. How do you ensure that those who make the bricks adhere to specifications?

2. How do you ensure that the purpose for which you introduced soil-cement bricks is served?

3. Do you ever hear the opinion of your clientele about soil-cement bricks?

4. If yes, what do they say?

5. What do you do with negative opinion?

6. In your opinion, why are people still using mud?

7. Why do they prefer other bricks to soil-cement?

Technology Adoption

1. How do you encourage adoption of this technology?

2. Was the introduction of this technology a response to need/problem?

3. What need/problem?

4. Has it solved that problem/met that need?

5. What are your suggestions for a broader adoption of this technology?

APPENDIX 3:QUESTIONNAIRE FOR TRAINER

General

1. For how long have you worked as a trainer in brick making?
2. Have you been trained in community development?
3. What are your duties as trainer?
4. Is there a lot of demand for training in soil-cement brick making?
5. Are you able to meet this demand?
6. If not, what are your problems?
7. How do you propose to solve them?

Soil-cement brick production

1. Do you have a training programme?
2. What activities do you carry out?
3. What are the objectives of this training?
4. Do you think your objectives are met? Explain.
5. Do you get feedback from your trainees about your training?
6. Do you get feedback from your trainees about the finished product?
7. What do you do thereafter?
8. In your opinion, is the soil-cement brick training adequate?
9. If not, what should be done to improve it?

APPENDIX 4:QUESTIONNAIRE FOR COMMUNITY DEVELOPMENT OFFICER (CDO)

General

1. What is your role in community development?
2. What are the objectives of community development in your organisation?
3. How do you go about developing communities?
4. How much time is allocated to these activities
5. Are you able to meet your objectives within your time frames?
6. What do you do when time runs out before you complete your work?
7. Do you get feedback from communities regarding your efforts to develop them?
8. How do you deal with criticism?

Soil-Cement Brick making

1. What is the CDO's role in the soil-cement brick-making project?
2. How do you ensure that your advices are followed?
3. What do you do to promote this technology?
4. What do you do to encourage adoption of your technologies?
5. Do these methods bring success?
6. Have any of your technologies been rejected?
7. In such cases what do you do?
8. In your opinion, are soil-cement bricks widely adopted by rural Communities?
9. If not, what is the reason?
10. What needs to be done about the problem?