

Transport, Urban Infrastructure Upgrading and Employment Creation

— A labour and community based approach

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Abbreviations

ASIST	Advisory Support, Information Services, and Training for labour-based programmes
CBOs	Community Based Organisations
CDCs	Community Development Committees
ILO	International Labour Organisations
ISS	Institute of Social Studies, the Hague, Netherlands
NGOs	Non-Governmental Organisations
NHDA	National Housing Development Authority, Sri Lanka
PUSH	Project of Urban Self Help, Lusaka, Zambia
UNCHS	United Nations Centre for Human Settlements (Habitat)
UNDP	United Nations Development Programme
UNV	United Nations Volunteers
WFP	World Food Programme

FOREWORD

The ILO promotes employment-intensive policies in infrastructure development, in order to generate employment and alleviate poverty. The ILO has experience in the promotion of policies and methodologies for labour-based construction and maintenance from projects and programmes in many parts of the world and especially in Africa. This experience extends to urban and rural works in the construction and maintenance of roads, paths, tracks, irrigation systems, water supply schemes, sanitation systems, and solid waste management. Participation by communities and the private sector has been actively promoted.

In order to respond more effectively to the increasing demand from countries wishing to introduce labour-based approaches to the construction and maintenance of infrastructure, a technical advisory service was established in 1990 under the project named ASIST (Advisory Support, Information Services and Training). The first phase of ASIST concentrated mainly on rural roads, but the project's scope, now in its third phase, has been widened to include rural transport and employment-intensive and community based approaches to urban infrastructure upgrading.

Rural travel and transport

ILO/ASIST introduced a rural travel and transport component in 1994, in recognition of the fact that roads are not enough to solve the transport burden of the rural poor. Rural transport is here defined in terms of the provision of "access". This encompasses both the location of social and economic services and the ease at which people move themselves and their goods to these facilities. In order to prioritise the access needs of households the Integrated Rural Accessibility Planning (IRAP) is used. IRAP is a participatory planning process which is simple to use and concentrates on using minimal resources.

Urban infrastructure upgrading

During the last five years, the ILO has carried out urban sector pilot projects in Uganda, Kenya and Tanzania, in cooperation with various other partners (City Councils, Community based Organisations and organisations such as UNDP, Ford Foundation, EDF and UNCHS). These pilot projects tested innovative approaches to alleviate urban poverty, adopting employment-intensive and community based strategies to upgrade unplanned settlements.

1. Introduction

1.1 The problem: rapid pace of urbanisation

By the end of the century, nearly half of humanity will be living in urban settlements. The most alarming aspect of this trend is its rapid pace, especially in less industrialised countries. Latin America has almost reached the level of urbanisation of industrialised countries already, while Africa and Asia still have lower levels, but face a much faster rate of urbanisation (ILO, 1996, p.8).

One of the main problems of urbanisation is the increase in urban poverty. Urban poverty has the highest incidence in Africa, where more than 40 per cent of the city dwellers are living in absolute poverty. This percentage is likely to increase significantly in the future (ILO, 1996, p.14).

Poverty is directly related to unemployment and underemployment. Formal unemployment tends to be low in developing countries, where large numbers of job seekers cannot be employed in the formal sector, and find some kind of employment in the agricultural and informal sectors. However, the informal sector also has its limits in absorbing the growing number of job seekers, and many are therefore underemployed, and work relatively unproductively, as a survival strategy. For these reasons, mayors in Africa recently pinpointed un- and underemployment as the most significant problem in their cities.

In unplanned and low income areas many people earning a living by transporting people and goods using non motorised transport. Also the improvement of basic transportation infrastructure can be carried out using labour based methods creating employment and skills improvement for the urban poor.

1.2 Transport needs in unplanned or low income areas

Unplanned settlements house a significant part of the total urban population. Kibera, for example, is the biggest unplanned settlement in Nairobi, housing 0.5 million of the city's 2 million inhabitants. In Dar es Salaam, 70 per cent of the population live in unplanned settlements.

The urban poor rent or construct their own houses in unplanned "squatter" settlements, which are hardly serviced at all. These settlements are characterised by the poor state of housing, poor or absent access and water and sanitation facilities, flooding, heaps of garbage, violence, and limited access to education, health facilities, and social services.

City Councils often do not have the capacity and the resources to address the problems of the unplanned settlements and limit their services to the planned areas. Transport for the poor is among these services which are often severely constrained.

Current estimates for the City of Dar es Salaam show that motorised transport provides less than 50 percent of the daily trips of the residents. The average mobility of middle and low income households is estimated at less than 2 trips per person per day which is very low. This indicates that many people are immobilised and stay around their homes. The study also showed that 57% of all trips were less than 3 km which is within the range of a pedestrian trip. It is not possible to increase the share of motorised transport due to serious resource constraints among which are capital, land availability and unaffordability of motorised transport by the majority of residents. On the other hand it is important that the level of mobility of the majority of residents be increased so that they can participate in wide ranging economic activities (Rwebangira, 1995).

There are various strategies to improve the transport situation for the urban poor which include infrastructure upgrading and the promotion of non motorised transport. Accessibility planning, involving the community and local authorities, is needed to define the transport needs and the type of interventions. Depending on the need and the affordability a community can for example chose between different type of infrastructure (roads, access roads or tracks, bicycle lanes or footpaths) and/or the improvement of non-motorised transport facilities.

This paper will concentrate on the upgrading of infrastructure that directly improves the access in unplanned and low income settlements.

The access roads in unplanned settlements are very poor, and are often characterised by serious flooding, large potholes and open holes (e.g. manholes) creating dangerous situations for the road users and residents. Quite often the settlements are not accessible in case of emergencies like fire or accidents. The absence of access can also hamper social and economic development as for example trucks providing supplies to small enterprises, charcoal truck, pit latrine emptier and waste collection trucks can not enter the settlement.

Although the above indicates that some access roads need to be constructed, the construction of standard roads is often not affordable nor desirable. The construction of normal standard roads, for example, will often involve the demolition of houses which is not acceptable for the community. Therefore there is a need to plan together with the community which type of infrastructure is needed and to decide on the location of the infrastructure (e.g. in some locations bicycle lanes or foot paths would have priority and in other locations access roads are necessary).

The above stresses the need for a strong involvement of communities in the planning of their priorities and a government willing to develop appropriate standards and regulations for infrastructure in unplanned areas.

1.3 Innovative approaches to upgrading unplanned settlements

Upgrading, in this paper, means construction and rehabilitation of physical public infrastructure, such as roads, bicycle lanes, footpaths and drains. As part of upgrading, maintenance systems need to be set up.

Presently, most city councils are unable to provide adequate public infrastructure and services to the urban population, especially to the urban poor. New approaches have to be developed to address the problems in low income urban area.

First and foremost, the need to upgrade unplanned settlements is stressed. Demolishing settlements and trying to construct new shelter has generally proved too expensive, while the urban poor were often unable to pay the rent of the newly constructed housing. Upgrading unplanned settlements requires legalising unplanned settlements — a main problem in many cities. In Nairobi, for example, the illegal status of unplanned settlements makes investments very risky, causing projects to fail or not take off at all (UNDP, 1991; Habitat, 1996; ILO, 1996; George McRobie, 1996). In Zambia, unplanned settlements can be legalised if basic services are available and upgrading seems feasible.

Secondly, it is acknowledged that the provision of services and shelter can be a creator of employment. Infrastructure can be constructed and maintained, and solid waste can be recycled and transported, by using local labour and resources.

Thirdly, it is more and more accepted that city councils should play an enabling role, while the private sector and/or the community should be involved in the provision of shelter (UNCHS, 1994; ILO, 1993; William Fox, 1994).

Labour/ community based upgrading of unplanned settlements, as discussed in this paper, combines all three approaches.

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2. Labour-based technologies

2.1 A definition: cost-effectiveness and quality

Public infrastructure is often constructed and maintained adopting machine based approaches, without considering technological options. However, with relatively low wage levels in many developing countries, labour-based technologies are often more cost-effective, and deliver the quality standard of infrastructure. A definition can be based on these characteristics:

“Labour-based technology is the most cost-effective mix of labour and (light) equipment, that can construct or maintain infrastructure to the required standard”¹.

¹ The definition is an edited version of a definition of Joshua Nyoni et al (1995, p.iii).

This indicates that the optimum mix of labour and equipment differs from country to country, depending on the actual costs and availability of labour and equipment. This requires research and pilot projects, which the ILO has undertaken in various countries.

A known example in Sub Saharan Africa is the construction and maintenance of rural access roads, where labour-based technologies are to an increasing extent replacing machine based methods. A recent study in Zimbabwe and Lesotho, for example, concluded that in both countries labour-based technologies are cheaper than machine based methods, while full adoption of labour-based methods would create as much as 18% of the formal sector employment in Lesotho, and 6.6% in Zimbabwe (see box).

Rural Roads in Lesotho and Zimbabwe

- In Lesotho, labour-based road construction can potentially create 8,271 full time jobs. In Zimbabwe 75,000.
- Labour-based methods are about 37% cheaper than machine based methods in Lesotho, and a marginal 4% in Zimbabwe (where minimum wage levels are set far above market levels).
- Valuing employment creation at "shadow cost pricing", economic costs of labour-based methods are respectively 50% and 79% lower than machine based approaches in Lesotho and Zimbabwe.

Source: Maria Lennartson and David Stiedl, 1995

2.2 Local resources

Labour-based technology is sometimes referred to as the "effective use of local resources", since not only local labour is used, but other local resources as well. This includes local materials, the private sector, community organisation, and government capacities (John Ssekatawa et al, 1996, p.8).

In Tanzania (Hanna Nassif project) access roads and storm water drainage have been constructed whereby most transport of construction material within the settlement was carried out by hand carts. The hand carts were hired from the private sector.

2.3 Appropriate standards

Standards for urban infrastructure are often set at a level which is not appropriate for urban unplanned settlements. Roads in urban planned areas and rural roads, for example, are generally much wider than urban roads in unplanned areas can be, considering the limited amount of open space available. Also the need for foot paths and bicycle lanes are often not acknowledged.

Standards thus need to be adjusted to the urban environment. However, minimum standards need to be carefully considered to prevent dangerous situations (such as collapsing houses). Some of the major adjustments for roads and drainage are as follows:

Roads: In unplanned settlements the actual road width tends to be smaller and depends on the distance between houses. An adjusted minimum width standard should prevent demolition of these houses wherever possible. Innovative designs have been developed to suit the urban environment: roads have been designed with only a drain on one side to gain space, or with a drain in the middle. In the city of Indore, India, roads are even used as storm water drains themselves!

Another difference between rural and urban roads is the number of road crossings: urban roads have much more road crossings, where culverts or drifts have to be constructed for the side drains.

Bicycle lanes and foot paths: In highly densely populated areas it is not always possible to construct roads and options like footpaths and bicycle lanes should be considered. The community plays an important role in defining their access needs and in the preparation of plans for the location of footpaths and bicycle lanes.

Furthermore, foot bridges need to be constructed for pedestrians to cross the side drains. This increases costs and construction time.

Drains: For drains, the changes in the standards are even more drastic than for roads. Mitre or turn out drains are generally not feasible, and the storm water drains thus have to carry all the water out of the area. Many unplanned settlements are in low lying areas, which increases the need for large drains. Careful designs, including the location of crossings and footbridges, are thus essential.

Other issues to consider while constructing a drain have been learned from various pilot projects:

- There are many obstacles in the ground, such as cables and water pipes, which delay construction. Pit latrines and solid waste may mean having to stabilise the ground first.
- Continuous adjustments to the design are needed, to prevent demolition of houses, pit latrines, or other structures, and to cope with unexpected problems (such as obstacles in the ground, or resistance to construction for cultural or religious reasons).
- Solid waste should ideally be managed, to prevent the drains being filled up with waste.

Lastly, road side drains often need to be lined and constructed with concrete, adding significantly to the cost.

2.4 Advantages of labour-based technologies

Advantages are:

- Cost savings, and especially savings in scarce foreign exchange.
- Local employment generation and poverty alleviation. Labour-based works are self targeted towards the poorest members of society, since most created employment is casual, requires low skills, and is lowly paid (ILO, 1993, p.2).

- Local economic growth. Materials are locally manufactured, creating local employment and economic growth (backward linkage), and better infrastructure and temporary local employment will boost the local economy (forward linkages).
- Sustainability and local maintenance. By using local resources, labour, and organisation, an environment has been created for sustainable maintenance.

These advantages make labour-based technologies appropriate for the construction and maintenance of minor works in urban unplanned settlements.

3. Community management and participation

3.1 Towards community management

Communities may be involved in the planning, management, implementation and maintenance of public infrastructure. Involvement in planning and management is important to facilitate that the public works address priority needs of the local population.

Community participation in construction and maintenance of public infrastructure is important to maximise the use of local labour and resources, and to allow local management. For example: the construction of a road or track may result in the demolition of houses, and the need to develop alternative shelter. This needs to be discussed with the inhabitants.

How to involve the community, however, is open for discussion. Communities may fully participate in the planning, construction and maintenance of public infrastructure, or may fully manage only some of these activities. Of the two, community management has the significant advantage that it promotes the feeling of local ownership, which is an important motivator for local maintenance.

Under a community management system, the community may either decide to construct and maintain infrastructure itself, or may subcontract construction to a private contractor. Local fund raising then becomes one of the issues to promote sustainability of the management system and the created infrastructure.

Three important lessons can be drawn from the experience in community management:

1. Community management requires commitment from the community, which is most likely if the community directly benefits from the activity. For example: construction and maintenance of a road within the boundary of the community specifically benefits the community, while many people benefit from a road connecting two villages. The community will thus not be very committed to construct and maintain the road between the two villages, since it is not “their road”, while they would construct and maintain a road within their boundary.
2. Facilitating community management is likely to take more time in an urban than in a rural setting. The reason is that urban communities tend to be less

cohesive than rural communities and organisation thus takes more time. On the other hand, there are often many NGOs and CBOs to assist in the construction and maintenance of upgrading activities.

3. In an urban environment, unpaid labour is less acceptable than in rural areas, since people need income to survive. In rural areas people tend to have other means of income (often in agriculture).

3.2 Community contracting

A community contract is an agreement between a Community Based Organisation (CBO) and an external support agency (government, local authority, NGO, donor agency) to carry out any development activity for the benefit of the community (Jane Tournee and Wilma van Esch, 1997). A community contract can be used to employ a CBO to construct and maintain public infrastructure².

To organise construction, the roles of central and local government, Community Based Organisations (CBOs), and NGOs in funding and construction needs to be clear. Community contracts are a mechanism to create such rules for construction and to clarify the roles of the partners involved. A contract needs to be signed with a legal representative of the community as the contractor, called a CBO, and the external support agency (government, city council, NGO, or donor agency) as the client. The contract describes the work to be carried out by the CBO, and the funding and assistance provided by the external agency. The community may construct or maintain a drain, sanitation facilities, or a hospital, or may perform any other kind of developmental work.

Community contracts can vary in their terms and application. A contract can allow the CBO to organise only the labour-component of the works, or can allow the CBO to organise both labour and materials. Some contracts even allow for the inclusion of a small profit, which may be used for maintenance. Also, maintenance contracts may be performed by the CBO without any assistance, while more difficult works will require external assistance from engineers and community mobilisers (Jane Tournee and Wilma van Esch, 1997).

Community contracts tend to adopt labour-based technologies, since the CBO should be able to implement the work itself. Labour-based work can relatively easily be managed locally, using local resources and labour. Routine maintenance can then be taken over by the community, through the acquired skills.

Experiences from Sri Lanka, Tanzania, and other countries indicate that community-based construction through community contracts can be a cost-effective method to provide infrastructure of a required standard (Jane Tournee and Wilma van Esch, 1997; ILO, 1993; UNCHS, 1994a; ISS, 1996).

² The CBO is thus the contractor. The CBO may also be the client, if they employ a private contractor to construct or maintain infrastructure for them. This involves a normal commercial contract.

3.3 Advantages of community contracting

Advantages of community contracts are (Jane Tournée and Wilma van Esch, 1997, 1997):

- ✓ Community initiatives are recognised and supported.
- ✓ Community organisation can be strengthened and self esteem and a feeling of ownership for the created assets increased.
- ✓ Funds, skills and knowledge are retained in the hands of the community, which can ease maintenance.
- ✓ It generates employment in the local community, and provides an opportunity for job training.
- ✓ The CBO is answerable to the people they represent and must demonstrate openness in all their dealings.
- ✓ Unplanned settlements are very congested. Community implementation allows continuous negotiations with all householders, which can prevent demolition of houses, delays due to disagreements, and can reduce compensation to be paid.

These advantages make community contracting very attractive for the construction and maintenance of infrastructure in urban unplanned settlements.

4. Case studies

Experience in various countries indicate that the potential for labour and community based approaches in urban unplanned settlements is huge. This section aims to describe practices to give an idea of the possibilities. The section does not aim to be complete, or to analyse any example in detail.

COMMUNITY CONTRACTING IN SRI LANKA

The system of community contracting was first piloted in Sri Lanka in 1986, by the National Housing Development Authority (NHDA), with the assistance of UNCHS.

When a community decides it wants to establish a development programme, NHDA organises a two-day workshop to set up the programme and to agree upon an implementation schedule. This is possibly followed by half-day workshops, to plan more difficult and specific issues. In the next step, the CDC is established and legalised.

When a construction programme has been agreed upon, the NHDA establishes a community contract with the Community Development Committee (CDC), under certain conditions. The CDC will be given funds for construction and a small profit, comparable to the costing of commercial contracts. The CDC can then decide how to implement the works, but usually uses local labour and labour-based technologies.

In the period from January 1986 to December 1988, a total of 83 community construction contracts was awarded to 70 different CDCs. After 1988, the number of contracts reduced, due to organisational and legal problems, combined

with financial problems in NHDA. However, the development of community agents (praja sahayakas) in 1989 as extension agents helped to sustain the process, and the methodology is now generally accepted (ILO, 1993, p.49-54; UNCHS, 1994)

STORM WATER DRAINAGE IN KALERWE, UGANDA

Kalerwe is an unplanned settlement in Kampala, which suffers from severe flooding, restricting transport during the rainy season. In 1993/94, the ILO and UNDP established a project to assist the community to construct drains. Community contracts were established with a CBO for labour-based construction, in which the CBO would manage all labour. Within one year, an extremely short time-span, the community constructed 2.3 km of main drain (including a foot path/bicycle lane at one side), 1.4 km of secondary drain, and 1.4 km of tertiary drain. They received technical training, and a number of trained staff left to work for other projects.

The project was technically very successful and created a lot of local employment (17,720 workdays paid; and 4,400 workdays unpaid). However, maintenance proved a problem, due to unclear arrangements between Kampala City Council and the CBO (Luzira, 1995).

HANNA NASSIF, DAR ES SALAAM, TANZANIA

The Government of Tanzania has attempted to upgrade the area of Hanna Nassif in Dar es Salaam several times, but failed due to lack of funding. The inhabitants therefore continued to face problems of flooding and poor access, and decided to take action. They informed the City Council of Dar es Salaam, and together managed to arrange donor support. Thus a project of Ford Foundation, UNDP, UNCHS, UNV and ILO was established, with the ILO as executing agency. The local Community Development Committee had managing authority over the project, while the City Council was the co-signatory.

The project piloted labour/ employment based approaches in Dar es Salaam. The CDC successfully constructed about 700 meters of storm water drains, 1 km of roads, and 1.5 km of side-drains, 700 meters of foot paths and pedestrian and vehicle crossings. The achievements of the project were:

- improved access and drainage (the Hanna Nassif area where the improvements took place is now accessible during the rainy season)
- the local employment creation of the project was significant, with at least 14,430 worker days created
- the CDC grew stronger and has set up a “road toll” which all incoming cars in Hanna Nassif have to pay to maintain the infrastructure
- new initiatives have started for example solid waste collection by hand carts.

The approach used in Hanna Nassif has been used by various organisations (City Council, NGOs, CBOs and international organisations) in upgrading other unplanned settlements. In addition a Hanna Nassif second phase has been established to continue improvements in a larger area of Hanna Nassif (including integrated solid waste management).

PROJECT OF URBAN SELF HELP (PUSH), LUSAKA, ZAMBIA

Zambia has the highest urbanisation level in Africa — 50 per cent —, and faces high unemployment and poverty. The Government of Zambia noted the problem, and asked the World Food Programme (WFP) to assist to implement a food-for-work project. In a study, they identified flooding, access, sanitation, and solid waste as the main problems in unplanned settlements.

The pilot project aimed to create employment for 3,000 workers. The ILO was asked to provide training on the labour-based construction of drains and roads, and to adapt the designs of rural roads and drains to the urban environment of Lusaka.

Construction targets were set on the basis of rural road construction. This however proved too high for various reasons:

- Solid waste needed to be removed before construction could start.
- The number of vehicle crossings was more than double the number in rural areas, and thus more culverts and drifts needed to be installed. This took considerable time and money.
- Bigger drains were required for the storm water, since mitre (turn out) drains could not be used.
- The target group, the poorest of the poorest, often lacked construction skills and required considerable training. This increased costs and lowered labour productivity.

ROAD IMPROVEMENT BY AN NGO IN NAIROBI

In Kawangware, an unplanned settlement in Nairobi, an NGO rehabilitated a road of 400 metre from the main road to the Kabiro Youth Polytechnic. Rehabilitation was organised through a community based organisation, which also took responsibility for maintenance. An engineer oversaw the rehabilitation for a period of 6 weeks, using local labour and equipment.

The project differed from other projects, in that an existing NGO was assisted for a specific activity, and no time needed to be spent on community mobilisation.

BICYCLE LANES IN KISUMU

Recently ITDG and a local bicycle association in Kisumu requested ILO to assist in the labour based, community based construction of bicycle lanes in Kisumu. The local bicycle association consist of people running local bicycle taxi services from the outskirts of the town to the centre as many people can not afford the public transportation to town. However the bicycle operators have to drive on the roads which creates dangerous situations as the roads have not sufficient space for bicycles and motorised transport.

5. Conclusions

The need for innovative approaches to alleviate urban poverty and to improve access for the urban poor is widely recognised. Specifically labour-based technologies are seen as an innovative method for constructing and maintaining access infrastructure in unplanned settlements, and thus for improving the living and working environment and for creating local employment. Community Based

Organisations can be a partner in constructing and maintaining (small scale) infrastructure. International experience suggests community contracting as a mechanism to involve CBOs in the actual work.

However, labour/ community based approaches are still not widely recognised as an option to create transport facilities and to upgrade urban unplanned settlements. Promotion of these approaches, and further studies into infrastructure standards and community participation remain essential.

Various lessons can be learned from the pilot projects:

- Policy makers and planners at central and local governments, including city councils, need to be made aware of the advantages of labour/ community based approaches to upgrade unplanned settlements.
- Organising a community is very time-consuming. Various pilot projects are not sustainable since inadequate time has been allocated and the CBO is thus not sustainable enough as a management agency to maintain the infrastructure over a long period of time.
- Urban infrastructure is significantly more expensive than rural infrastructure. Some reasons in relation to road and drainage construction are: the high number of crossings that need be constructed (requiring culverts, drifts and bridges); the need for lined and large storm water drains; the need for a dialogue with the community to prevent demolition of structures; and the high number of obstacles in the ground.
- Engineers and technicians need training in urban community/ labour-based approaches.
- Maintenance of infrastructure should be addressed from the start of the project, by involving all relevant parties and by providing training. Organisational structures, policies and laws also need to be adjusted to suit the local situation. By-laws may for example allow CBOs to obtain funds for maintenance from the local population.
- Contracts need to be simplified to suit CBOs.
- Solid waste management, drainage and roads require an integrated approach: without roads solid waste cannot be collected, while without solid waste management the drains will fill with waste.
- We need to find a balance between community executed works, and the use of small contractors. In the choice, the cost, quality of the infrastructure, and sustainability should play decisive roles.

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