Labour-based approaches to infrastructure building and maintenance

The issue
Poverty and underdevelopment are closely correlated with lack of functional infrastructure and underemployment (ILO, 2010; OECD, 2005; World Bank, 1994). Infrastructure, including social and economic infrastructure, helps to build the conditions for economic growth and poverty reduction. In addition, the use of Labour Based Approaches (LBAs) to build and maintain infrastructures is currently recognised as playing a way to promote pro-poor growth through job creation, transfer of income to the poor, and creation of useful infrastructure. Further, LBAs produce ‘second round effects’ which include income multipliers generated by spending of wages, impacts on local labour markets, micro-enterprise development, capacity building, as well as enhanced employability of workers after the programme finishes (OECD, 2005).

Policy options: equipment-based and labour-intensive approaches
A key consideration in the delivery and maintenance of infrastructure is whether it will contribute to poverty reduction and pro-poor growth through long-term employment and transfer of income to the poor, micro-enterprise development, capacity building and the creation of quality infrastructure.

Equipment-based approach relies significantly on the use of machines supported by a relatively small amount of labour, optimised to construct and maintain quality infrastructure in a cost-effective manner (ILO, 2010). The approach is usually delivered by multinational companies or their affiliates, with limited use of local resources. In contrast, labour intensive approach is premised on the maximisation of labour in order to create maximum short-term employment, usually as a response to a crisis or for social welfare purposes (ILO, 2010; Devereux, 2002).

A key weakness of both approaches is that they fail to address the underlying problems of poor infrastructure, unemployment, poverty and underdevelopment. Use of equipment-based approaches does not
contribute to reducing high levels of unemployment in developing countries. On the other way, labour intensive approaches invariably pay low wages for self-targeting reasons (Lipton, 1996). Low wages make it impossible for poor people to earn their way out of poverty, and consequently undermine the global call for ‘decent wages’ (Miller, 1992; ILO, 2004). But perhaps more importantly, labour intensive approaches provide short-term unskilled employment to the poor, which make little impact on structural unemployment and underemployment. The approach is often criticised for lower quality and sustainability of the infrastructure being created.

The limitations of equipment-based and labour-intensive approaches led to a re-think of policy for infrastructure delivery and maintenance. Labour-based approaches, when good practices are followed are now regarded as effectively contributing to pro-poor growth.

**Policy instrument: labour-based approaches**

Defined operationally, labour-based approaches refers to the optimum and flexible use of local labour and locally available materials, skills and capacities, supported by the use of appropriate equipment, where technically and economically feasible (ILO 2004; 2010). Broadly, the approach is aimed at creating employment (i.e., short- and long-term) and the development, rehabilitation and maintenance of infrastructure that underpins pro-poor growth. Labour based approaches prioritise the quality of employment rather than the quantity of the labour force, and emphasises on local capacity building, through skills training, and local participation. Therefore, it can contribute to sustainable pro-poor growth outcomes, both directly and indirectly. Direct impacts entail employment creation, opportunities for income generation, micro-enterprise development, and capacity development, while indirect impacts relate to ‘second round’, long term multiplier effects derived from employment, income and the infrastructure created.

**The contribution of labour-based approaches to pro-poor growth**

Experience in Africa, Asia and Latin America has shown that labour based approaches have several benefits. These include:

- **Creation of jobs**, particularly for the unskilled and poor people over long time periods. For example, a southern Africa study indicated that labour-based road construction projects generated approximately 75 000 full-time jobs in Zimbabwe, accounting for 6.6% of total formal sector employment in 1995, and 8,271 in Lesotho which was equivalent to 18% of total formal sector employment during the same year (Lennartsson and Stiedl 1995).
- **Increases in savings, investments and consumption**. Injection of cash income into a local economy boosts the level of economic activity, as income earned is actively spent on goods (e.g., food, clothes, and mobile phones) and services (e.g., health, education and rural financial services) thereby generating income and profit for others. Further, savings earned from infrastructure projects can be used as start-up or working capital for business ventures, such as petty trading. Indirect employment generated by labour based approaches has been estimated to range from 1.5 to 3 times the number of directly generated jobs.
- **Positive gender impacts** as substantial numbers of employees in labour-based infrastructure projects are women. An increase in household income, especially among women, is closely associated with improved household nutrition, access to educational and health services, which benefits the poor. More importantly, effective targeting provides capacity building and economic opportunity to poor women by ensuring their priority access to training and supervisory roles.
- **Stimulating local entrepreneurship**, community participation and promote the development of micro-enterprises, which helps in the expansion of local industries through back-and forward-linkages with other sectors of the economy. For example, in Cambodia, the promotion of small-scale contractors in road construction programmes stimulated the domestic construction industry and the transport sector, especially in the sourcing and transportation of gravel materials.
- **Develop skills and capacity of local labour** that can be used in other income generating activities as well as in subsequent maintenance works.
- **Provide durable infrastructure** which can stimulate pro-poor growth. However, the nature and extent of growth is a function of the type of infrastructure created and
its output effects. Physical, economic and social infrastructures have distinct impacts on poverty and economic growth. Although labour-based approaches can play an important role in the delivery and maintenance of public infrastructure and in stimulating pro-poor growth, there is scope for negative impacts. For example, increased participation of women in public infrastructure projects may add extra heavy manual labour requirements to already overworked women. Further, women’s participation in infrastructure projects has also been viewed as adversely affecting their reproduction, the quality of care they can give to their children, and even indirectly leading to child labour as children take over women’s work (cf. Devereux, 2002).

**Challenges in Implementing LBAs**

The adverse impacts of LBAs are inextricably linked to problems in programme design and implementation, which may undermine the contributions of LBA to poverty reduction, employment and growth. Frequent design problems include unclear programme objectives, especially incoherence between short term and long term objectives within an integrated LBA framework; hastily prepared technical appraisals due to financial or time constraints (which may lead to unrealistic programme targets and underestimation of potential constraints) and the lack of participation of beneficiary communities and local government institutions in programme design. In addition, the assessment of social viability, suitability of projects for local resource based implementation, and the range of available implementing modalities (e.g., use of force account, micro-enterprises, established contractors and community organisations), and assessment of institutional capacity of local government and beneficiary groups, have been neglected at the design stage. Yet such a broad analysis is vital to assess whether delivering an infrastructure project using LBA will be appropriate.

Experience from Africa and Asia has shown that five factors constitute the key challenges in implementing LBA. These include: (1) lack of participation of key stakeholders, (2) inappropriate administrative systems and procedures, (3) lack of capacity and skills required for successfully implementing LBAs in public and private sectors as well as among NGOs and community groups, (4) ineffective systems for procurement and management of contracts, and (5) effective monitoring and evaluation to ensure that standards are met and objectives are attained.

Labour-based approaches have both positive and negative effects, but the contributions that the approach makes to pro-poor growth outweigh its adverse impacts. However, there are important challenges to identify and to address when one wants to use labour based approaches.

**Key points of discussion**

The key issues to take into account when considering labour-based approaches include:

- **Context:** there is need to pay attention to social, economic, and institutional factors as well as an analysis of the extent to which local resources can be used.
- **The choice of infrastructure** is important when seeking the greatest pro-poor growth impact.
- **Employment:** Labour-based approaches are suitable for both short and long term employment. Stimulating long term employment needs to focus on the quality of employment and assets created rather than on its quantity.
- **Availability of sufficient technical capacity, funding and adequate monitoring and evaluation** to ensure successful implementation of public infrastructure projects
- **Effective programme design and implementation** of LBA should be based, at first instance, on clearly stated objectives, and the ways in which these could be achieved through effective work organisation, stakeholder participation, targeting of the poor, capacity building of different stakeholders, and improved management of contracts.

**Designing labour based approaches in infrastructure delivery and management projects**

Given the importance of labour-based approaches to pro-poor growth, several key principles should guide their design and implementation. These include:

**Supportive policy framework**

There is a need for governments and donors to make deliberate policy choices that support the use of labour-based approaches on infrastructure projects. Donors should untie support to developing countries to allow them to build infrastructure using labour-based approaches. Governments may institutionalise
labour-based approaches in their national programmes and policies. For instance, under the Presidential Order 94 of 1991, the Philippines Government made its government policy to utilise labour-based approaches in infrastructure programs and projects, including foreign-funded projects, whenever possible and feasible. Appropriate policies and legislation are vital in providing an environment conducive for the adoption of labour based approaches, optimising impact of infrastructure investments on employment creation and poverty reduction.

Governments and donors should support the integration of labour-based approaches in development plans and programmes at national and sub-national level. For instance, the Government of Tanzania put labour-based approaches and technologies at the heart of its PRSPs, notably in the road sector. In all road works, priority was given to labour-based technologies wherever technically feasible and financially efficient. Further, in Tanzania, the use of labour-based technology was consistent with the poverty reduction and agricultural and rural development strategies as well as the national transport policy and the construction policy (Government of Tanzania cited in ILO, 2010:11). Thus, macro-economic, sectoral and cross-cutting policies should complement each other to ensure that the policy framework is supportive of LBAs’ contribution to employment creation and pro-poor growth.

**Institutional framework**

Policymakers should develop an effective institutional framework that support the use of labour-based approaches, preferably by strengthening existing institutions in terms of capacity development and reform or the adaptation of existing systems and procedures. This can be achieved through a policy coordination unit that seeks to support labour-based approaches by assessing the employment potential of public infrastructure investments, appraising technology options of infrastructure projects, and monitoring policy coherence and application. Ideally such a unit should be located within government structures to ensure legitimacy and sustainability. The institutional framework should enable the private sector, community groups, and micro-enterprises to contribute to both policy processes and the delivery and maintenance of public infrastructure.

Capacity building is essential for successful adoption and implementation of labour based approaches, and this has to be conducted across all sectors (e.g., private sector, community groups, government and non-governmental organisations) and at national and sub-national levels. For instance, small contractors should be trained in labour-based techniques to bid for, and successfully execute, small to medium-sized public infrastructure programmes using labour based approaches. For instance, the Roads Training School in Zambia has been responsible for training private small-scale routine maintenance contractors since 1995.

Equally important is the need to build capacity of the public sector to delegate infrastructure execution to small contractors and for public sector to play a contract management role. Contract system for public infrastructure programmes should be suitable for small contractors. The modification may include the unbundling of infrastructure projects from multi-million dollar contracts into contracts. Further, modifications of the contract system can be used to enforce decent working conditions to workforce employed by small-contractors, and to promote women’s access to work, and on national minimum wage standards.

**Infrastructures that serve the poor**

Donors and governments should support labour-based infrastructure projects that enable the largest possible number of people to engage in productive activities and improve their access to social services. Sectors that have potential for increased use of labour based approaches, and benefit the largest proportion of people include, water and sanitation; irrigation; transport; housing; slum upgrading; forestry and environmental interventions.

**Gender sensitivity in infrastructure delivery**

Given the adverse impacts that the delivery and maintenance of public infrastructure have on women, it can be suggested that the provision of seasonal work on infrastructure projects, for instance, after the agricultural season, may lessen women’s workload. Further, the construction of crèches in areas where infrastructure projects are being implemented, provide women with an opportunity to take up formal employment on infrastructure projects without undermining the quality of care they give to their children. For instance, in India and Botswana, the provision
of work after the agricultural season boosted the participation of women as was the provision of crèches. More importantly, there is need to introduce gender sensitive employment policies in infrastructure projects, which ensures the employment of women at levels, including technical and managerial levels of in infrastructure projects. For example, in Jamaica, the Women’s Construction Collective was set up in 1983 to equip low-income women with building skills, as well as to assist them in finding employment help women find employment in construction industry. This enabled women to be employed as skilled personnel in the construction sector in Jamaica (UNCHS, 1990 cited in Masika and Badden, 1997).

Targeting the poor
A key aspect of publicly funded infrastructure projects is that the benefits should reach the poor. As such, an effective strategy aimed at targeting the poor should meet both the short term needs of the poor, and long term poverty reduction goals. Short term needs of the poor can be met by the provision of immediate relief through wages, set in line with industry-specific national minimum wage or other remunerations, such as food. Given the inherent weaknesses of paying low wages to ensure the effective targeting of the poor, other targeting mechanisms such as ‘means testing’ (i.e., beneficiaries are selected on the basis of a set of agreed indicators, such as lack of livestock, lack of household assets), job rotation, and community-based targeting (where community members actively identify the poor amongst themselves). However, the latter is vulnerable to local social and political dynamics to the extent that selection of the ‘poor’ might reflect political and cultural differences. In the long run, LBA will effectively contribute to poverty reduction if it can guarantee the quality and sustainability of assets created, as well as develop skills and capacities of the poor.

Monitoring and evaluation
A strategy for monitoring, evaluation and assessment of impact is vital in the implementation of labour-based approaches. Since infrastructure projects delivered through labour based approaches are designed to meet specific social and economic objectives in addition to the delivery and maintenance of public infrastructure, these aspects must be monitored and evaluated too. Aspects to be monitored and evaluated include, inter alia, acquisition and use of materials, technology used, quality of infrastructure created, direct and indirect job creation, wage rates, and private sector and small business involvement. Findings from such evaluations and impact assessment can be communicated to shape policy, planning and implementation processes and to ensure the replication and expansion of labour-based approaches.

Sustainability:
- To ensure sustainability of both labour-based approaches and the infrastructure itself, there is need to:
  - Obtain political commitment and support from government, policymakers and local communities;
  - Strengthen existing institutions to accept or implement labour-based approaches at national and local levels, rather than by setting up entirely new institutions;
  - Emphasise improvement of operations and maintenance of public infrastructure through use of locally available resources and skills, affordable fees that takes into account people’s ability to pay for operations and maintenance of infrastructure created.

Conclusion
Labour based approaches have the potential to promote pro-poor growth mainly because they are designed to promote decent work (and with their multiplier effects) and high quality infrastructure. The impact of labour based approaches on pro-poor growth is a function of its scale, value of income transferred to workers, the extent of micro-enterprises developed and supported, and the type of infrastructure created.

Case studies
The following section presents case studies of successful implementation of labour-based approaches in Cambodia, Madagascar and Lesotho, and draws out the key lessons. It is apparent from the case studies that successful implementation of labour-based approaches mainly centres on policy reform, which ensured the embedment of labour-based approaches into policy processes at national and sub-national levels. The sequenced implementation of programmes that generated short and then long-term employment opportunities was also significant common feature. Further, programmes
that promoted self-reliance and self-sufficiency in operations and maintenance of the infrastructure and in funding training services were important in supporting labour-based approaches. This ensured the sustainability of the infrastructure, and the labour-based approach itself.

Similarly, programmes that seek to improve the skills and capacities of local people including local private sector contractors, and socio-economic conditions more generally, significantly contributed to the success of labour-based approaches as in Cambodia, Madagascar, and Lesotho.

References


Case study 1
Cambodia: Delivering irrigation systems using labour-based approaches

The government of Cambodia introduced labour-based approaches in infrastructure development and maintenance within its policy framework in the 1990s. This was partly aimed at addressing high levels of unemployment and underemployment attributed to the reduction in civil service, police and military and the return of border refugees after the peace process. In four northwestern provinces, namely Pursuat, Battambang, Bantemy Meanchey and Siem Reap, irrigation development and rehabilitation was implemented with the objective to reduce unemployment and underemployment, improve agricultural output, increase income for farmers and stimulate local economic development. The government of Cambodia, with the support of ILO and UNDP, embedded labour based approaches in infrastructure development and maintenance within its irrigation policy. Specifically, the use of Labour Based Appropriate Technology (LBAT) was established at provincial level.

The policy changes were complemented by a series of interrelated programmes implemented by ILO which sought to put labour based approaches into practice within the irrigation sector. The Labour-Based Infrastructure Rehabilitation Programme was the first programme to be implemented between 1992 and 1996. The aim was to generate employment through the construction and rehabilitation of irrigation infrastructure through labour based approaches, in line with LBAT guidelines. In this phase, the programme addressed short and long term unemployment.

Short term unemployment was addressed through creating direct employment for large numbers of people working on the rehabilitation and construction of irrigation infrastructure. This was strengthened by the collaboration between ILO and the World Food Programme, in 1994, which led to local people employed on construction and rehabilitation of irrigation infrastructure being paid in cash and food from WFP. Long term unemployment was addressed through increased irrigated agriculture and other economic activities associated with it, which were attributed to improved irrigation infrastructure.

The irrigation programme infrastructure was combined with a rural road rehabilitation programme. The latter ensured improved access to market for agricultural produce and access to health, education, social welfare and finance services for farmers.

The second programme implemented from 1996 to 1998 was the Labour Based Infrastructure Rehabilitation and Maintenance Project. This was aimed at providing employment in the rehabilitation and maintenance of essential infrastructure, and to assist provincial governments to develop a rural infrastructure maintenance strategy while strengthening LBAT capacities of provincial departments.

Technical Assistance to the Labour Based Rural Infrastructure Works Programme, also referred to as the Upstream Project, was the third project implemented by ILO from 1998 to 2000. The project was aimed at improving the socio-economic conditions of irrigators by assisting them to be self reliant in the operation and maintenance of the irrigation system. In addition, the project focused on institutional capacity building and skill development of local staff on labour based methods and technology, specific techniques for administration, planning, organisation and supervision of labour based works.

The labour based approach used in Cambodia resulted in the renovation of 76.74km of canals, the construction of 7.14km new canals, maintenance of 94.83 km of canals, construction of 81 new irrigation structures and the rehabilitation of 214 irrigation structures. In terms of employment, the construction, rehabilitation and maintenance of irrigation systems generated a total of 1 738 2741 workdays, including both direct and indirect employment, over the life of the project. Important to note is the fact that women constituted 43% of the labour force, and employment in the construction and maintenance of irrigation systems provided one of the few opportunities with equal pay for men and women.
Case study 2
Madagascar’s rural road construction programme

The government of Madagascar with the support from NORAD and ILO pilot-tested the use of labour-based approaches in public investment programmes in the infrastructure and construction sectors. This programme entailed the establishment of the Training Centre for Labour-based Works, which was responsible for providing training services in labour-based approaches to government agencies, small contractors and private sector organisations. The training centre was initially supported by NORAD, but later became financially self-sufficient as it provided training services paid for by the major infrastructure investment programmes operating in the country.

With specific reference to the Transport Sector Programme, the government and the World Bank as well as other bilateral and multilateral agencies, mainstreamed labour-based approaches by shifting approximately $50m of the total budget to rural roads which were to be constructed and maintained through labour-based methods. Tendering for these contracts was open only to contractors trained and properly qualified in labour-based approaches. Consequently, a labour-based approach in the construction of rural roads in Madagascar within the Transport Sector Programme was expected to:

- Generate annually 100 to 150 contracts of US$75 000 to US$120 000 each for labour-based contractors
- Generate some 16million workdays of employment between 2002 and 2007, that is equivalent of 16000 full time jobs per year (based on 200 workdays per year) over a five year period (instead of 4000 jobs if equipment-based techniques were used)
- Simultaneously pursue the objectives of job creation and decent work. The labour-based contractors were being trained in labour management issues, including conditions of recruitment, payment and safety of the work force. The inclusion of labour management clauses in contract documents provided a concrete example of the decent work agenda was put into practice in labour-based infrastructure delivery and maintenance of public infrastructure.
Lesotho has had long experience in the use of LBAs, which was supported by various development partners and international financial institutions. Labour-based approaches were aimed at creating employment and improving the delivery and maintenance of infrastructure. From the 1970s to 1990s, progress was made in developing working methodologies, standards of work, reporting and monitoring tools, capacity, and institution building. Externally-supported nationwide programmes were implemented aimed at the rehabilitation and maintenance of feeder roads. In Lesotho, road construction, rehabilitation and maintenance has developed significantly under the Labour Construction Unit (LCU), which was established as a pilot project in 1977 and then developed into a recognised department institutionalised within the Ministry of Works in 1988.

In the late 1980s, the government of Lesotho adopted a general policy to promote the extensive use of local resources in all sectors. It made its commitment by setting up resource allocation mechanisms (both recurrent and capital) and establishing a new institution, based on the LCU foundation, to promote the application of local resource-based approaches. Planning and prioritisation tools for rural roads have since been refined to include social issues and also respond to local level and long term government development priorities. Since the early 1990s, the government’s contribution, in the form of recurrent and capital budgets, has increased more than ten-fold.

The roads programme was started using government-run operations but has changed to using the private sector for implementation of labour-based works. The training division has trained contractors in routine maintenance, periodic maintenance, and rehabilitation, and is presently running a course for contractors to enable them to undertake full construction and upgrading of roads. A training re-orientation for consultants has also begun to increase capacity in the design and supervision of contracts. The programme is responsible for 17% of a designated section of the Lesotho gazetted road network.

In 1994, the Government of Lesotho launched a small contractor development programme with the objective of introducing a new group of private contractors to partner the government in providing a reliable transport system and creating employment in the delivery process. As part of the contractor development process, procurement procedures to support the active participation of small contractors using local resource-based methods were developed. Bidding was strictly defined, and contracts were awarded based on qualification and experience as well as considerations of health and safety, employment goals and use of labour-based technology, and contractor’s obligation to apply a specially developed monitoring system and timely payment of wages to workers. In view of this, between 1995 and 2000, the programme trained 56 contractors who carried out works valued at more than $56m.

In summary, the successfully implementation of labour-based approaches in the road sector in Lesotho partly rested on a set of complementary policies and process. This started with the institutionalisation of the LCU within the Ministry of Works, broad policy change that supported LBAs, government funding to the sector, and small-contractor development and training and the restructuring of contracts and procurement process to suit small-contractors. To support decent work, timely payment of worker’s wages and worker’s health and safety issues were made part of the contractual obligation between the government and the small-contractor, and in turn, small-contractor and workers.