Employment – intensive road construction and poverty alleviation: What is the evidence?

Introduction

Unemployment and underemployment is a major problem in the developing world. Paid work has the potential to provide people with a dignified route out of poverty, but in many countries employment opportunities do not exist on the scale required. The construction and maintenance of infrastructure, and particularly roads, has long been seen as one of the most promising sectors for large-scale, pro-poor job creation.

The quantity of employment generated from any given investment largely depends on the 'technology' employed – where *technology is defined to embrace the combination of labour, materials and equipment required to deliver the outputs*. This briefing note discusses the rationale for choosing a technology that favours the use of labour. It explores the benefits, as well as some significant challenges, in adopting this approach. The review is restricted to rural roads which have been at the centre of much of the work on labour based technologies to date.

The briefing note draws on material from a review of documentation on the topic including 89 evaluations of projects with donor involvement, as well as interviews with politicians and practitioners in 5 countries (Benin, Cambodia, Kenya, Peru and Togo).[1] It is structured as follows: section 2 provides a rationale for the adoption of employment-intensive methods in construction projects and programmes. Section 3 documents some of the potential benefits that can be derived from adopting this approach with specific attention paid to its potential for making a contribution to the alleviation of poverty. Section 4 discusses some essential pre-conditions for successfully incorporating employment-intensive methods into infrastructure projects and programmes. Section 5 concludes.

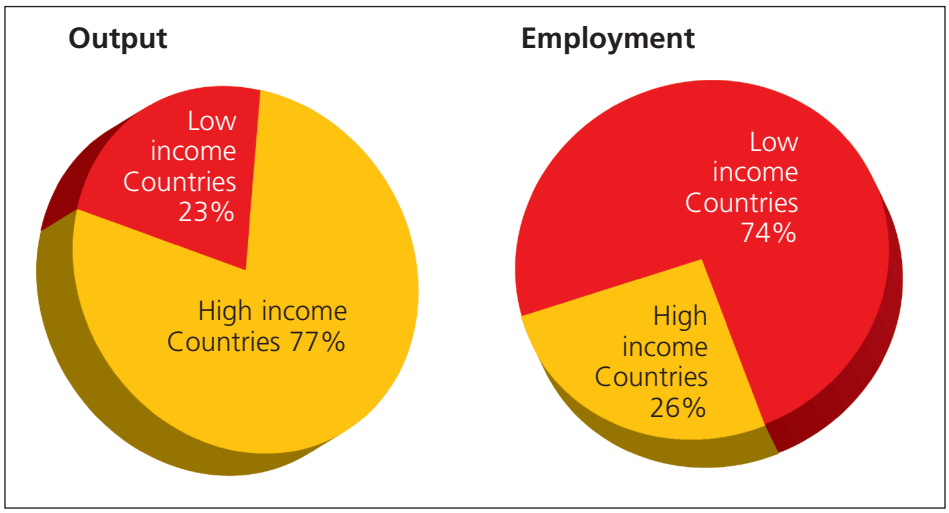
Understanding employment-intensive construction

All investment in infrastructure will create employment. Research by the International Labour Office (ILO) in 2001[2] found that the high-income countries are responsible for 77% of global construction output, but only 26% of global employment in the construction industry. The position of low-income countries is reversed with 74% of global construction employment and only 23% of global output (Figure 1). This means that the 'employment intensity' of construction activity is already much higher in low-income than in high-income countries.[3]

Employment may be increased still further by changing the labour/equipment balance to favour the use of labour, or by using materials with a high labour content. There is no universal optimum combination of labour, materials and equipment in construction; the right balance will depend *inter alia* upon wage levels in the country, the state of the road (see Box 2) and the availability of willing workers. But a significant body of evidence demonstrates that a deliberate policy to increase the employment-intensity of investments, through the adoption of labour-based technologies, can have positive outcomes in low-income/low wage economies.

Virtually all construction projects comprise at least some elements (work items) where labour-based methods could be used. But certain infrastructure sectors lend themselves more easily to these approaches than others. Global experience with labour-based technologies has to date been mainly in rural (gravel and earth) road construction and maintenance projects,

Figure 1: Distribution of global construction output and employment in 1998



Source: The construction industry in the twenty- first century: Its image, employment prospects and skill requirements, ILO, Geneva, 2001

BOX 1: Definitions

The objective of increasing employment in infrastructure investment is probably most closely associated with the work of the International Labour Office (ILO), which has been promoting employment intensive approaches since the 1970s. 'Employment-intensive' is the term they use to mean the optimal use of labour to reach maximum effect on employment, while paying due regard to cost and quality issues. This is achieved through the development and promotion of labour-based technologies whereby labour is supported by equipment to deliver construction works to the required standard.

It is important that this approach is distinguished from interventions in the context of emergency relief where the aim is to maximise employment - e.g. by using only labour and hand tools - in order to provide cash (or food) to the target population. Too often such emergency programmes lack the technical expertise needed to ensure that the assets created are durable.

where using labour in place of equipment can generate up to five times more employment. But there are many other possibilities such as technologies for irrigation, upgrading squatter settlements or providing all-weather road surfacing materials (brick, stone) produced locally using a high proportion of labour.

The focus on rural roads is perhaps not entirely coincidental as it is here that the potential exists to make a significant impact on poverty. Employment-intensive construction and maintenance projects can absorb unskilled labour in the rural areas where poverty is particularly severe and employment opportunities outside of agriculture are rare. At the same time, roads are key to the provision of access, which is essential for economic development and improved health and education and without which rural communities have to spend unproductive time getting their produce to markets or simply meeting their daily needs.[4] In this context there is a dual development objective – to provide the infrastructure needed for development and to create productive employment that could help to alleviate poverty.

BOX 2: Equipment may be needed

Roads that have deteriorated to an extremely poor condition may require graders to return them to a maintainable state.

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Whenever there are dual objectives it is inevitable that tensions will arise over which takes priority. Within employment-intensive approaches there is often a tension between social objectives (employing as many people as possible) and technical objectives (constructing to the required standard). The documentation reviewed suggests that identifying where the emphasis should lie depends on the local context. But it is also very much affected by the experience and priorities of the agents leading the projects: where social scientists are in charge the emphasis is more likely to be on the social side, whereas engineers place higher priority on technical standards. This is clearly demonstrated in the Roads 2000 programme in Kenya (Box 3).

BOX 3: The Kenya Roads 2000 Programme: a social protection or an infrastructure project?

R2000 is an ambitious programme for the rehabilitation and maintenance of rural roads throughout Kenya which has the full backing of the Kenyan government. A key feature of the R2000 Programme is the deliberate emphasis on the optimum utilisation and development of locally available resources, where technically and economically feasible, and in a socially and environmentally sustainable manner. It is financed by the Kenya Roads Board with funds from the Road Maintenance Fuel Levy and is principally implemented by the Kenya Rural Roads Authority (KERRA) among other Road Agencies. In addition to employment generation and training (of contractors, consultants, supervisors, clients) in labour based approaches, the programme addresses cross-cutting issues such as workers' rights, gender equality, protection of the environment, HIV/AIDS and stakeholder involvement.

KERRA is supported by several development partners each of which is responsible for a number of individual districts and each of which takes a slightly different approach. The Swedish International Development Agency (SIDA) was responsible for implementation in Nyanza Province and saw this as a social protection project, promoting a participatory approach and spending an estimated 70% of time on social issues. They developed the method for stakeholder involvement in prioritising the roads for rehabilitation (which was subsequently adopted, in principle, as the policy across the R2000) while also creating road committees to oversee implementation. SIDA outperformed the other R2000 donors on social and employment indicators. Between 2004 and 2009, SIDA generated the equivalent of 8,126 full-time jobs, twice the number of the nearest development partner; 49% of SIDA's project costs went to wages whereas the other donors' average was 20%.

However, engineers responsible for other districts expressed the view that too much attention to social issues may mean the quality of roads suffers. SIDA and other donors have expressed some concern over the quality of roads they have constructed which may be less durable due to the failure to secure adequate compaction. Creating durable assets has to take priority. There are also disagreements about the method for prioritising roads for rehabilitation with many engineers expressing preference for a network approach.

Source: Interviews with participants: data provided by the ILO chief technical adviser to KERRA.

The benefits of employment-intensive approaches in the construction of rural roads

Economic benefits

Several comparative studies have shown that employment intensive approaches (based on labour-based technologies) for rural road construction can prove more cost-effective than equipment-intensive approaches at the market wage rates prevailing in most low-income countries. Cost comparisons are very difficult as there are wide variations in the cost of road rehabilitation/maintenance depending on the intensity of the rehabilitation and the nature of the terrain. Some evidence is provided in Figures 2 and 3 and 4. In Tanzania the comparison was made between 3 pairs of roads with similar intensity of rehabilitation and in similar terrain. In the other countries, the costs shown are the average of many projects. In all cases the cost comparison is for roads of the same quality.

But the economic rationale for employment-intensive construction extends beyond immediate cost savings to the secondary effects from the way in which funds are spent. A study of rural road construction in Nicaragua found that the percentage of total funds spent on equipment was only 21% when labour-based methods were used, compared with 69% with equipment based methods.[5] In the majority of countries where labour-based approaches are appropriate, equipment is by definition imported, as are spare parts. Hence the use of labour-based methods can generate significant savings on foreign exchange.

The Nicaragua study found that unskilled labour represented 47% of total costs using labour based methods and only 3% when equipment was used. A study in Cameroon found the comparable expenditures to be 50% and 6%.[6] The higher spending on labour will generate further beneficial employment effects through increased spending of wages in the local economy. Quantitative estimates of the multiplier effects of expenditure by workers employed on labour based infrastructure projects have been made in studies in Nepal, Rwanda and Madagascar, supported by the ILO. Typically, assuming imported consumer goods to account for 15 to 25% and a marginal propensity to consume of 60% to 80%, the multiplier would be in the range of 1.5-2.8.

Short term employment benefits for the poor

The most immediate poverty-alleviating effect of a rural road lies in the income that can be earned from employment in its construction or maintenance. Employment-intensive methods entail the creation of an optimal number of unskilled and semi-skilled jobs, which are readily accessible by individuals with low levels of education or training. Suitably targeted, the poor can benefit most directly through earnings from these activities.

Several project evaluation and impact studies have found evidence in support of the operation of a 'self-targeting' mechanism in employment-intensive works – namely, that most of the unskilled labour is carried out by the poorer groups since the wage rates offered do not attract the better-off. But the poorest may have difficulty engaging. A study in Cambodia found that the poorest households have a high dependency ratio with few adults available for work.[7] They may therefore be unable to take advantage of the opportunity for employment, or they may be obliged to employ others to undertake their normal duties (e.g. farming) in order to release adults for work on the road. There have been similar findings from various African countries. Evidently, the relative benefit of incomes derived from employment-intensive works depends on the *opportunity cost* of labour – that is the value of the income foregone in order to participate in the employment-intensive works.

The *opportunity cost* of labour is likely to be highest during busy agricultural seasons – notably planting and harvesting. There is evidence from many counties (Cambodia, Laos, Nepal, Afghanistan, Mozambique,

Figure 2: Cost savings from using employment-intensive approaches in rural road projects

	(a) Equipment based (US$/km)	(b) Labour based (US$/km)	(c) Difference (US$/km)	(d) % advantage of LB (c ÷ a x 100)
Tanzania: *(i)*				
Pair A	28,125	17,500	10,625	37%
Pair B	14,000	10,250	3,750	27%
Pair C	12,250	8,250	4,000	33%
Mozambique: *(ii)*				
Full rehabilitation	15,618	10,114	5,504	35%
Periodic maintenance	10,852	6,635	4,218	39%
Zimbabwe & Lesotho *(iii)*	81,000	51,000	30,000	37%

Source: (i) United Republic of Tanzania, Ministry of Works, Comparative study of labour-based and equipment-based methods in roads work in Tanzania, Final Report, May 2004. http://www.ilo.org/emppolicy/pubs/WCMS_ASIST_8087/lang--en/index.htm

(ii) IT Transport Ltd., Final Report Cost Comparison study: Mozambique regional roads, December 2003

(iii) D. Stiedl 'Technology Choice: 10 years on: An Update on the Experiences of Lesotho and Zimbabwe with Labour-based Technology', ILO February 2005

Figure 3: Weighted average cost of gravel roads in Cambodia

Labour-based Projects	USD/km	Equipment-based projects	USD/km
• ADB Rural Infrastructure Improvement Project: 77km	11,116	• Norwegian Peoples Aid / Action Nord Sud : 48km	12,356
• ILO Upstream Project: 36km	13,733	• MPWT Rehabilitation Emergency Project: 438km	25,528
• ADB Rural Infrastructure Improvement Project: 525km	14,663	• MPWT Primary Road Restoration Project: 438km	19,121
• ILO Upstream Project: 7km	16,732	• DPWT Urban Road Restoration Project: 12km	20,678
Overall average	14,061	Overall average	19,420

Source: 'Jobs or Machines: Comparative Analysis of Rural Road Work in Cambodia', ASIST-AP / ILO, Bangkok, 2003

Thomas Sennet – World Bank

Malawi, Zambia) that projects have struggled to find labour at these times. Variability in labour availability can present a major challenge if not integrated into project planning. But if construction work is timed to take place in the agricultural slack season evidence suggests that such interventions can improve food security[8] and reduce the need for seasonal migration in search of work.[9]

Poverty reduction in the longer term

Forging a strong link between employment-intensive approaches and poverty reduction goes beyond creating short term employment. For poor households to work themselves out of poverty, a prolonged period of waged work is required. But construction work is temporary: once the road is completed the demand for labour dramatically falls.

Continuous employment in new construction can be provided if workers are prepared to move to the work. There is evidence from a number of countries that contractors seek to keep the most committed and able workers, while workers who have received training and acquired some skill in road building will want to continue to work in construction. This inevitably involves migrating from rural to urban areas, from one part of the country to another, or even overseas. While beneficial for the individuals, this does create a tension with the objective of providing jobs for local communities. Indeed, the DANIDA-supported rural roads rehabilitation programme in southern Benin has become a 'victim of its own success in this regard', with (trained and experienced) workers from one project area travelling to work on other rehabilitation sites in neighbouring regions.[10] A similar finding (albeit in an urban context) comes from the ILO Hannah Nassif urban infrastructure upgrading project in Tanzania (1994 to 2001). Hannah Nassif is an unplanned settlement with a population of some 20,000 located some 4 kms form the centre of Dar es Salaam. Having gained considerable construction skill from several years of involvement in the upgrading project, the Community Development Association offered their services as a contractor in other community upgrading schemes in the city, thereby precluding the possibility of generating employment for local labour from that community. This suggests a trade-off between employing local labour and developing an experienced construction workforce: the attempt to retain benefits within a specific community may in the long run be counter-productive to the development of national and local construction sectors.[11]

Trevor Samson – World Bank

Investment in routine maintenance is the best way to create on-going employment for people in the vicinity of the works – albeit at a lower level than in new construction or rehabilitation. Unfortunately, examples of regular employment provided to those living alongside the road through routine maintenance have been particularly hard to find. But an excellent example comes from Colombia where rural road maintenance using cooperative micro-enterprises is fully mainstreamed into government policy (Box 4). However, it is generally recognised that building a system to manage and maintain rural roads (whether equipment or labour based) faces many challenges and requires donor involvement over a protracted period of time. Still, if it can be done the benefits

BOX 4: Road maintenance in Colombia

In the late 1980s many countries in Latin America started to outsource routine maintenance, as part of an overall reform process to foster the use of the private sector. The majority of routine maintenance is now by private contractors. Colombia was one of the countries that spearheaded the reform process. It also pioneered the creation of micro-enterprises. The Ministry of Transport , with the United Nations Development Programme and the ILO, initiated a programme to form cooperative micro enterprises to improve the maintenance of the national road network and to create jobs for the people with little or no formal education or training living alongside the roads. The system was, and still is, highly successful and serves as a model for many other countries in Latin America. Cooperative micro enterprises have since been established in Venezuela, Honduras, Ecuador and Bolivia, while single-owner microenterprises are more common in Guatemala and Peru. Microenterprises have been found to have several advantages over the single-owner variety.

Source: Gunter Zietlow, Using micro-enterprises to create local contracting capacity- the Latin American experience in road maintenance. http://www.zietlow.com

BOX 5: Use of earnings from employment-intensive works in Rwanda

A survey of some 585 former workers on employment-intensive projects in Rwanda was undertaken in 2009, as part of the evaluation of the employment-intensive road rehabilitation components of two EC-funded programmes: PARES and DPRP.

Some 60% of women workers interviewed and 47% of men confirmed that they had been able to save some of their earnings, but only 22% had maintained these savings at the time of the survey. The savings were used primarily for clothing (94%), food (92%), payment of the mutual health insurance (84.3%) and to service existing debts (41%).

However, some workers had managed to invest in income-generating activities, with 18% investing in livestock, 16% starting a (micro) business and 10% developing an existing business.

Source : Evaluation et analyse ECOFIN conjointes des programmes d'appui à la réinsertion économique et sociale des démobilisés de la ville de Kigali (PARES) et de la partie HIMO du volet 'Soutien aux districts' du DPRPR », Contrat Spécifique n° 2009/201548, Juin 2009, Rapport Final

BOX 6: Use of earnings from employment-intensive works in Benin

The 2006 'Socio-Economic Impact Assessment' of Danida's PASR rural roads sub-project in Benin included a household survey covering 260 men and 140 women in the Zou department engaged in the employment-intensive rural road rehabilitation works:

- 83.5% (234 persons) of those surveyed (and who participated in the construction works) stated that they spent the income primarily on basic needs, particularly household food expenses
- 9.4% said that they invested the income in the diversification of their economic activities (small business, livestock)
- 6.4% said that they gave priority to spending the income on the acquisition of material goods (especially bicycles and motorcycles which could be used to earn income)

Source: Ministère des Affaires Etrangères – Danida, Etude d'Impact socio-économique de Réhabilitation des Pistes Rurales au Bénin, Septembre 2006

BOX 7: Rural Access Programme (RAP) Nepal

RAP was developed by the UK Department for International Development as a multi-dimensional progamme of interventions based on the provision of low cost roads linking targeted poor and disadvantaged communities to the national communications network. Between 2001 and 2008 more than 300 Km of earth roads were built through mountainous terrain in remote areas. RAP went through a number of phases but throughout maintained the focus of matching investment in roads construction with social and economic interventions. These included (i) micro-credit schemes (ii) the introduction of new income generating activities and (iii) the forming of new institutional structures (cooperatives etc.) to sustain the new incomes. The project resulted in a significant increase in the incomes of 12,000 households. The increased income can initially through employment in the road construction, but this was sustained by the new income generating activities, taking full advantage of the reduction in transport costs facilitated by the road. Further employment is created through maintenance work on the road. A second, 3 year phase of the project was initiated in 2011.

Source: Rural Access programme-Nepal 2000-2008, WSP International Management Consulting. See also www.rapnepal.com

are substantial, in terms of maintaining access as well as providing on-going employment for the local population.

If on-going employment in construction/maintenance is not available an alternative route out of poverty may be found in ***self-employment through re-investment of wages*** earned during the construction period in farming or a small business. But this depends on the length of waged employment and the capacity of the worker to save and/or invest beyond immediate household needs. A review of the evidence provided by expenditure surveys suggests that, when programmes are targeting the poorest sections of society the cash earned is primarily used to support household consumption – in the case of the poorest, the consumption of food. There are also cases, such as the example from Rwanda, where a substantial proportion of earnings were used to pay off debts. The Rwanda study highlighted in Box 5 in fact concluded that there is no automatic link between employment-intensive activities and capacity of investment in income-generating activities. A similar pattern emerged from Benin (Box 6). However, it can be seen that in both countries a minority of workers did manage to save from their earnings and invest in other than basic needs, providing the potential for socio-economic benefits in the longer term.

Our review of the evidence in fact suggests that the greatest and most sustainable benefit that the poor can derive from rural roads (whether constructed using equipment or labour) stems from the asset itself. Rural roads provide access to markets for farmers and in many cases this alone is sufficient to serve as a powerful catalyst to the expansion of productive activity. There is substantial evidence from Cambodia that the creation of all- weather roads has resulted in a significant increase in the quantity of farm products coming to market.[12] There are similar findings from a detailed study in Tanzania.[13]

Where the development of productive activities is held back by lack of finance or other missing inputs (seeds, fertilizer) or services (such as agricultural extension services, seeds, fertiliser, water) these could be channelled to the affected communities so that the creative energies of the local population can be released. Hence the design of future employment-intensive programmes might consider integrating a 'package' of appropriate measures aimed at supporting workers to develop sustainable income-generating activities, taking advantage of the improved access that the road has provided. An example here would be the Rural Access Programme in Nepal as detailed in Box 7. Understanding of the local context is essential in identifying the need for such complementary inputs and services.

In sum, the evidence suggests that the immediate positive effects of employment-intensive infrastructure programmes are real. But the longer-term contribution to alleviation of poverty in situations of chronic unemployment and underemployment is much less clear. The best chance of long term poverty alleviation would seem to be through the benefits provided by the road itself, plus on-going employment for local communities through the maintenance of the road.

The following section will examine the preconditions that should be met before considering involvement in labour-based rural road construction projects.

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Key challenges to incorporating employment-intensive approaches in rural road programmes

This section discusses some essential pre-conditions for the successful integration of employment-intensive methods into infrastructure projects and programmes, maintaining the focus on rural roads. Four issues are discussed :

- Capacity building, the need for a long time horizon and mainstreaming the approach
- Ensuring funds for maintenance
- Checking labour availability
- Time constraints and the need for prompt payment

Capacity building, partner government ownership and need for a long time horizon

Employment-intensive approaches cannot be adopted without prior planning. The documentation reviewed suggests that significant capacity building is required in order for programmes to be successful. Contracts for labour-based work are generally let to small and medium enterprises (SMEs) or to local communities and many of the challenges relate to lack of implementing capacity within these bodies. Others are associated with problems faced by government bodies in contracting with SMEs and in supervising the work. Quality control is essential in delivering an asset that is of sufficient quality and durability to be sustainable. This entails very close supervision by qualified personnel.

Where donors are promoting employment-intensive projects, the literature suggests that they will have a much greater chance of success where they carry out projects of a relatively long duration, or repeated programmes with a capacity-building element. But in order to sustain the capacity once built, the approach has to be mainstreamed into government strategy, planning and procedures.

Kenya and Cambodia were chosen for field missions as examples of countries where labour-based technology has been implemented over a number of years (15 years in Cambodia, 30 years in Kenya) and where it is official Government policy to incorporate the technology into infrastructure programmes – in particular programmes for constructing and maintaining rural roads. Much has been achieved in both countries. For example, Cambodia has made significant progress in building local government capacity and improving coordination among ministries at local level, while Kenya has developed standard documents and procedures for employment-intensive works. But in both countries implementation is still project based and capacity has been lost over the years as projects come to an end. In neither country is the approach fully mainstreamed, rather it is still seen as donor-led. In Cambodia the Ministry of Rural Development has a clear preference for using equipment and only uses labour-based methods when this is a requirement of the donor, which is less and less often the case as new projects are using equipment. In Kenya there is still considerable resistance to labour-based methods, particularly from engineers.

Scott Wallace – World Bank

Ensuring funds for maintenance

Ensuring that adequate funds are available for maintenance is a challenge for many types of infrastructure assets, but rural roads were identified in the study as the sector for which the need is most acute. Unsealed (gravel and earth) roads deteriorate very rapidly in countries with heavy rainfall if they are not regularly maintained. In Cambodia, government engineers have argued that, in the absence of a guarantee that funds will be available for routine maintenance, it is cheaper in the long run to seal the roads. Sealing roads using Double Bitumen Surface Treatment (DBST) with a stabilised layer below the surface is more expensive and requires equipment, but it can extend the lifespan of the road to 10-15 years.[14]

In recognition of the need for alternative ways of sealing rural roads so that rural communities have year round access, the UK Department for International Development has been supporting research to develop low cost, labour-based materials for road surfacing.[15] However, even with sealed roads maintenance is still required and with sealed roads this is very labour intensive.

Many countries have established Road Funds[16] but the funds are rarely sufficient and tend to be used for the maintenance of major roads. Traditionally, donors have funded road construction and rehabilitation but not routine maintenance and this creates a strong incentive for countries to ignore the need for maintenance, letting the road deteriorate until donors return for major reconstruction work. However, some donors are now starting to fund maintenance, recognising that failure to maintain is leading to rapid deterioration in the value of the assets that they have helped to fund. An interview with a World Bank official in Cambodia revealed that the policy changed in 2007/08 when donors, including the Asian Development Bank (ADB), decided that asset management was important and that routine maintenance should have priority over reconstruction. It is reported that the World Bank is now contributing to the Road Fund in that country and working with the ADB to help finance road maintenance. Given that the World Bank estimates that every US$1 invested in upkeep of roads returns US$4 in asset-longevity[17] this would appear to be a sound policy choice.

Checking labour availability

It cannot be assumed that labour is available and willing to work on construction projects in all rural areas and at all times of the year. Seasonal variance in the availability of labour is common, due to varying demand for labour in the agriculture sector, and this can affect the viability of employment-intensive approaches unless they are planned to coincide with the agricultural low season.

Some projects have found that the area in which they are working is too sparsely populated to draw labourers from the local vicinity. The adoption of labour-based approaches in such areas will attract workers to migrate to the region, generating concerns around local resource use, conflict, and the spread of HIV / AIDS.

In many other cases the young men have already migrated to nearby towns, capital cities or to neighbouring countries in search of employment, leaving women and older men available for work. In projects under the Rural Infrastructure Programme (RIP) funded by the German aid agency in northern Cambodia, the men are away in the city (Siem Reap) or in neighbouring Thailand, so it is the women who work on the roads. It is reported that wages for construction workers in Siem Reap are more than double wages in the rural areas.[18] In Nepal, seasonal migration of men to work in India prevented achievement of local employment targets, while the R 2000 programme in Kenya noted significant differences in the availability of labour in the various provinces

Time constraints and the need for prompt payment

Evidence from the documentation suggests that time is a more important consideration than cost in deciding whether to adopt employment-intensive methods. Employment-intensive implementation generally requires a longer programme than equipment-based interventions due to the need for capacity-building and awareness-raising at all levels, as well as the complexity of contracting arrangements. Time is also needed to mobilise the required number of workers and implementation of some tasks (e.g. transporting materials) will inevitably take longer when using employment-intensive methods. If programmes are too short, time pressures tend to push clients and contractors towards the use of equipment.

Time pressure may be due to the limited window for road construction and maintenance between rainy seasons (e.g. in Cambodia). Or it may be due to the late receipt of project funds. We came across many examples of slow disbursement of funds forcing the use of equipment in order to complete the project within the contract period. SMEs undertaking labour-based work are particularly sensitive to payment delays as they have little capital and need to make regular payment to the workers. Good practice requires the payment of significant advances up-front.

Conclusion

This review of evidence leads to the inevitable conclusion that labour-based construction is not an easy option for officials that want a quick fix. It requires a long time horizon, careful planning, a lot of capacity building, a guaranteed and regular flow of funds and serious commitment on the part of all involved. But when all of these are present, the evidence strongly suggests that the adoption of employment-intensive approaches to the construction of rural roads can generate important economic and social benefits, above and beyond those provided by the road itself.

It also has the potential to make a valuable contribution to the long-term alleviation of rural poverty, provided that the road is of good quality, supports productive activities on the part of the poor and a programme is successfully introduced to maintain it.

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