SOCIAL JUSTICE
DECENT WORK

EIIP

Employment-Intensive Investment Programme

Developing the construction industry for employment-intensive infrastructure investments

GUIDE

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Foreword

Investments in quality infrastructure play an essential role in addressing livelihood development challenges. Several global platforms have reconfirmed this, including most recently, the G20. The G20 Principles for Quality Infrastructure Investment (QII) concluded that, "all workers should have equal opportunity to access jobs created by infrastructure investments, develop skills, be able to work in safe and healthy conditions, be compensated and treated fairly, with dignity and without discrimination." And furthermore, the Development Working Group (DWG) of the G20 also stressed the importance of infrastructure investment to "support sustainable economic growth through decent job creation, capacity building, and voluntary transfer of expertise and know-how on mutually agreed terms, in particular for the local communities and private sector, including SMEs" (2019).

Investments in modern water supply schemes, sanitation, local clinics, schools and access to transport are crucial in terms of delivering basic social services. Equally, such investments, and other economic and productive infrastructure investments in roads and railways, access to energy and telecommunications as well as markets are important for the development of the local economy. A concerted effort in improving and operating such infrastructure can provide local industries with new market opportunities both locally and globally and thereby create a significant number of new decent jobs.

Since the 1970's, the ILO's Employment-Intensive Investment Programme (EIIP) has promoted a local resource-based (LRB) approach to rural and urban infrastructure development. A key concept in this approach is the effective use of local resources, such as labour, materials, local contractors and consultants, appropriate technologies, tools and equipment. The approach also increases the value of local knowledge and finance, both, which are essential for an efficient asset management culture and maintenance operation. Infrastructure investments represent a significant part of public expenditure. Employing a local resource-based approach can increase the creation of productive and decent jobs, while at the same time maintaining cost and quality in construction. It also implies that with no additional costs, local industries can access a larger market share of public investments, which in turn stimulates local economies.

The infrastructure development needs in many countries both in urban and rural areas have the potential to provide significant market prospects for a local construction industry. When applying a local resource-based approach, it is possible to increase the involvement of local consultants, contractors and manufacturers, material suppliers, skilled and unskilled labour, thereby stimulating local economies, which in turn can create new jobs and income beyond the initial provision of infrastructure.

Four decades of experience have shown that by securing the necessary skills and a conducive business environment, local contractors are capable of providing and maintaining essential basic infrastructure that facilitates access to social services and economic opportunities. At the same time, it is also important to secure the requisite capacity with the relevant government authorities and agencies to effectively plan and manage such works. The necessary capacity with both contractors and agencies would include competencies on how to provide safe and decent jobs in the local construction industry.

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Chief, Development and Investment Branch
Employment Policy Department

Trail bridges provide crucial access in rural areas like here in Nepal

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List of abbreviations

ADB	*Asian Development Bank*
BoQ	*Bill of Quantities*
CBO	*Community-based organization*
CCI	*Cross-cutting issue*
EIIP	*Employment Intensive Investment Programme (of ILO)*
EODBI	*Ease of Doing Business Index*
EU	*European Union*
FIDIC	*Fédération Internationale des Ingénieurs Conseils*
GDP	*Gross domestic product*
GIS	*Geographic Information System*
IADE	*National Business Development Institute in Timor-Leste*
IFC	*International Finance Corporation*
ILO	*International Labour Organization*
LB	*Labour-based*
LI	*Labour-intensive*
LRB	*Local resource-based*
NGO	*Non-governmental organization*
NQF	*National Qualification Framework*
OSH	*Occupational safety and health*
PMGSY	*Prime Minister's Rural Road Programme in India*
QC	*Quality control*
RAI	*Rural Access Index*
SDG	*Sustainable Development Goal*
SME	*Small- and medium-sized enterprise*
SMC	*Small- and medium-sized contractor*
SSF	*Social safeguards framework*
TNA	*Training needs assessment*
TVET	*Technical and vocational and education and training*
UN	*United Nations*
UNCDF	*United Nations Capital Development Fund*
UNICEF	*United Nations Children's Fund*
WB	*World Bank*

Acknowledgments

This guide on developing the construction industry for employment-intensive infrastructure investments is encouraging a local resource-based (LRB) approach to rural and urban infrastructure development and maintenance. The effective use of local resources, such as labour, materials, local contractors and consultants, tools and appropriate equipment is key to this approach. An effective and efficient application of an LRB approach requires that authorities responsible for the different infrastructure investments and small-scale contractors involved in the provision of local infrastructure services are knowledgeable about applying such employment-intensive work methods.

These guidelines describe how the local construction industry and authorities in charge of local infrastructure works can be mobilized to efficiently provide such services. It identifies the key players in the sector, common challenges that restrict their operations and suggests possible solutions and best practices that have proved effective in developing the required capacities in the past.

The guide is presenting policies, strategies and good practices that have proved to effectively build and maintain local infrastructure, increase the participation of local entrepreneurs, create new job opportunities and build sustainable livelihoods. The different chapters and sections are structuring this presentation into three major headings; useful information, evidences from experience and some guidelines.

A previous version of this guide was first developed by a team of consultants and ILO staff comprising Peter Bentall, Andreas Beusch and Jan de Veen. It was based on consultations during and after a labour-based contracting practitioners' workshop, held in Zimbabwe in November 1995.

This revised guide is the result of the combined efforts of a wide group of practitioners, consultants and ILO specialists. The development of the guide has also involved a participatory and consultative process with inputs from independent stakeholders and experts on the subject. I would therefore like to acknowledge the contributions of all those involved in the review and compilation of this new version of the guide.

In this context, I would like to extend my gratitude to Andreas Beusch, Geoff Edmonds and David Tajgman who authored drafts, and the extensive inputs provided by the peer reviewers Hervé Bonnet, Eddy Bynens, Walter Illi, Dejene Sahle and Kirit Vaidya for their in-depth study, analysis and preparation of additional source materials that subsequently informed the development of this new guide. Augustus Asare, Htun Hlaing, Eav Kong, Collins Makoriwa, Robert Petts, Tomas Stenström and Albert Uriyo provided specific case studies and experiences, which have contributed in enriching this guide.

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Water supply in Kibera, Nairobi, Kenya

DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 1

Introduction

Preparing macadam surfacing of access roads at Nias Islands, Indonesia

EIIP

Employment Intensive Investment Programme

Chapter 1

Key issue

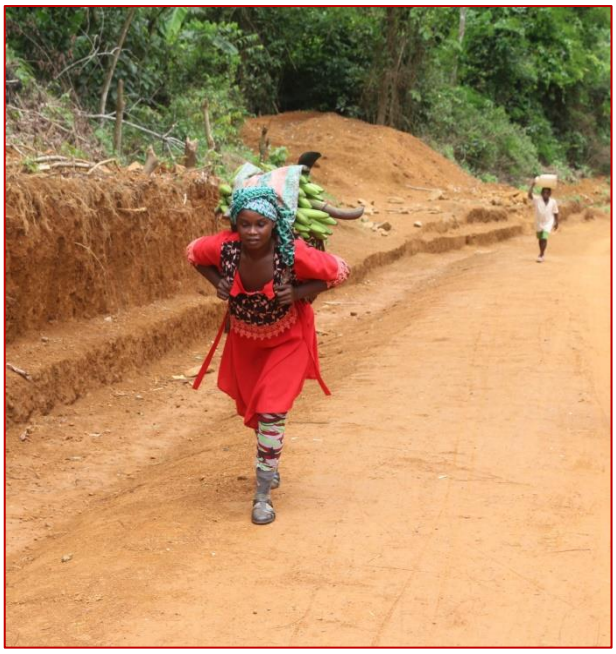
Promotion of the construction industry by making optimal use of local resources in addressing infrastructure development challenges and creating productive and decent employment.

1. INTRODUCTION

1.1 Situation overview

Over the past 40 years the ILO has been working with its constituents in promoting a more local resource-based (LRB) approach to rural and urban infrastructure development. The approach focuses on the effective use of local resources – labour, materials, local contractors, tools and appropriate equipment as well as organizational and financial capacities. In the 1970s and early 1980s, the focus of ILO and other development partners was on strengthening public sector delivery of infrastructure works through force account arrangements managed by government technical agencies.[1] One of the first major programmes to which the ILO provided support was the Rural Access Roads Programme in Kenya. This nationwide programme of farm to market roads built more than 8,000 km of rural roads during the period from 1976 to 1983. Labour costs represented some 40 per cent of the total construction cost and a labour-based maintenance system was put in place. The government ministry in charge of the programme directly employed the workforce.

Over time, it was recognized that private contracting firms could provide many of the services being implemented by the public sector. Starting in the late 1980s, major efforts were therefore been made to facilitate the contracting of works by different agencies and improve the capacity of domestic construction industry and assist local entrepreneurs to enter the sector. The local resource-based approaches promoted by the ILO programmes have since recognized the important role of the local construction industry and have placed great emphasis on strengthening the capacity of local contractors as well as the ability of local government to plan and manage infrastructure works. The ILO has provided support to such programmes in some 65 countries in Africa, Asia and the Pacific, Latin America and the Middle East.



Access to transport still remains a challenge for many in bringing produce to markets. Example from Cameroon

In the last two decades there have generally been major improvements in the provision of local infrastructure, both in rural and urban areas, which have contributed to significant reductions in poverty levels in most countries. Nevertheless, deficits in economic, social and environmental infrastructure continue to hinder development in many places. Lack of economic infrastructure (e.g. roads, irrigation, etc.), social infrastructure (e.g. health, education, water and sanitation) and environmental infrastructure (e.g. flood protection, soil and water conservation, afforestation, etc.) are major obstacles to economic growth and improvement of livelihoods. Hence, investment in infrastructure remains a high priority in most

[1] In force account operations government uses its own resources including personnel, materials and equipment and employs labour directly to undertake infrastructure works.

Rural road maintenance works are creating new job opportunities in Nepal

low and middle-income countries.

Employing local resource-based approaches in infrastructure investments can create new productive and decent jobs, and strengthen capacity in the domestic construction industry. Furthermore, it advances socio-economic development and contributes to national cohesion and solidarity through income-generating jobs, skills development and improved public services.

The experience of the ILO in this sector is documented in guidelines and studies on the use of local resource-based approaches in infrastructure works, on capacity building of the different players in the sector and on the promotion of small- and medium-sized contractors (SMCs). Following the initial experiences with contracting development in the 1990-ies, the ILO published a guide on "Capacity Building for Contracting in the Construction Sector" that synthesized the experience from recent capacity development programmes for local infrastructure works applying local resource-based approaches (ILO, 1999). In parallel, relevant labour standards were simultaneously introduced when offering new job opportunities and income to women and men living in the vicinity of the construction sites (ILO, 1998).

Social, technical, economic, environmental and political changes, as well as lessons learned from studies (Beusch, 2010) and innovations in more recent development cooperation require that these manuals and guides be updated.

This new guide continues to focus on contractors and government agencies engaged in local infrastructure works. These players constitute a significant part of the construction industry and are subjected to many of the challenges and opportunities faced by the industry.

This chapter looks at the larger context in which the local contractors need to operate and provides an overview of their important functions and relevance in the industry. Before addressing themes relevant to the capacity development for local infrastructure works, it is, therefore, necessary to review the construction industry and its environment.

1.2 A global overview of the construction industry

The construction industry converts a range of resources into social, economic and environmental infrastructure. It is one of the most influential sectors both globally and in individual countries. The construction sector contributes significantly to the gross domestic product (GDP) of all countries. It is also a major employer. It is estimated that it provides on average 7 per cent of total global employment or some 220 million people.[2]

The construction industry involves a large range of participants. The key players are the contractors, the consultants, the government agencies and the private investors. In addition, there are significant backward linkages like material and equipment suppliers, accountants, lawyers and insurers and also those benefitting from incomes earned and infrastructure provided (forward linkages such as retailers, transporters and exporters).

[2] World Bank and ILO figures analysed by the author.

Box 1
Key features

- Construction typically contributes 5–9 per cent to GDP in developing countries.
- Construction also provides backward and forward linkages to the rest of the economy. Backward linkages, or derived demands, represent a value, which, in most instances, exceeds the value added by the construction industry itself.
- The construction industry is an important source of employment in all countries. Moreover, direct and indirect employment created by the backward and forward linkages with the construction sector is substantially higher than employment in construction.
- The construction industry as a whole is largely made up of small firms. It provides entrepreneurial opportunities for many small businesses and plays an important role in the distribution of income.

Being such a major industry and given its role in the construction and preservation of a wide range of infrastructure and geographical spread, a diversity of laws and regulations control its activities. This framework includes financing, procurement systems, contract law, codes of practice, ownership and usage rights, import policies, licensing requirements and labour legislation.

The construction industry has certain distinctive features that set it apart from others: (i) a large proportion of the demand for its services comes from the public sector, and are managed by local infrastructure works agencies; (ii) contractors are responsible for building the infrastructure but generally take no part in its design; (iii) output is specific to a location that requires movement of labour, equipment and materials to the job site; (iv) construction demand can vary considerably from one year to the next making it difficult for contractors to retain staff, obtain finance and plan for investment in equipment; and (v) some contracts can stretch over a number of years requiring contractors to plan their resource use over longer periods of time without full control over their availability and cost. Therefore, contractors are basically resource managers, dealing with the management of labour, materials, finance and equipment. The management is made more challenging as contractors often depend on numerous suppliers and support services. Finally both the local infrastructure works agencies and contractors are subject to a regulatory framework over which they individually have little control.

Local authorities often lack capacity to plan and contract works. Building capacity in Central African Republic

The provision of local infrastructure is usually the mandate of local government institutions. Local councils are responsible for providing facilities such as potable water, sanitation, access roads, school buildings, etc. In order to build and maintain such infrastructure they need the capacity to plan and manage such works, which is typically carried out by consultants and contractors. Unfortunately, many local government institutions lack the required capacity to provide such services in an effective manner.

1.2.1 Contribution to the economy

Table 1. Regional average value added in construction as a percentage of GDP

Region	Value added in construction (% of GDP)
South Asia	6.2
Latin America and Caribbean	6.1
East Asia and Pacific (excl. China)	5.7
Sub-Saharan Africa	4.4
Europe	5.1
Total (108 countries)	5.6

Worldwide the construction sector is a major contributor to national economies. The output of the sector, as with other sectors, is generally represented by its value added, which is defined as the value of output of the sector less the value of inputs (the raw materials and intermediate inputs) which go into the production of the output. It is commonly represented as a portion of the overall GDP as shown by region in table 1.

The impact of changes in the global economy also can have an effect on the construction industry. After the global financial crisis of 2008, the output of the construction industry worldwide dropped by 15% in the succeeding two-year period.[3]

1.2.2 Employment

According to the ILO World Employment Social Outlook Report Trends 2018, more than 3.3 billion people are working worldwide. While many workers receive regular wages and salaries, jobs vary greatly. The vulnerable employment rate, which is defined as the share of own-account workers and contributing family workers in total employment, remains above 42 per cent. In 2017, almost 1.4 billion workers are estimated to be in vulnerable forms of employment, and every year an additional 17 million join them. Furthermore, almost 200 million people are unemployed which represents some 5.6 per cent of the labour force.

Globally, the construction industry provides employment to some 220 million.[4] The industry is a significant contributor to the level of employment in all countries. This covers a large range of trades such as plumbers, carpenters, scaffolders, electricians and plasterers. In addition, a range of professions are involved such as engineers, architects and surveyors. For unskilled workers the employment is often temporary, insecure and dangerous.

The construction industry is well known for the instability of employment. Large companies can afford to retain a sizeable labour force but are still subject to economic growth and recession. Small-scale contractors often do not have the financial stability to be able to retain staff between one job and the next. In times of economic growth these contractors can expect to have a steady flow of work. However, in times of economic slow-down, competition for the reduced volume of works means that they cannot afford to retain staff, and particularly unskilled staff.

For those employed by small-scale contractors their situation is often tenuous. This is due to the fragile nature of the companies that employ them. Work is often seasonal and dependent on a range of factors, many of which are outside the control of the industry.

Statistics of employment levels in the construction industry are often hidden within the overall figures for all sectors. However it is clear that the industry is a major supplier of jobs in most countries.

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[3] Change in global value added in construction 2008-2010, author's analysis.
See https://data.oecd.org/natincome/value-added-by-activity.htm

[4] WB and ILO figures analysed by the author. Further analysis based on the Gross Fixed Capital Formation (GFCF) in construction suggests the figure is much higher.

Box 2
Employment – expanding labour-based methods

Labour-based methods have been used strategically to improve rural transport infrastructure over the past 35 years. These methods produce gravel roads of equal quality to those built using equipment-based methods. They also generate rural employment in a cost-effective manner.

Nevertheless, these methods have not been applied on a large scale because of industry's reluctance to adopt them. First, contractors believe the cost of learning this new technology is high. Second, it has been argued that the cost of managing large labour forces makes labour-based methods less competitive.

Labour-based methods appear to be more attractive to small firms than to large firms. Being small, they can supervise their sites better and find it easier to increase worker productivity and control truancy. Small firms that wish to use equipment-based methods face high variable costs: they either own older, less-efficient equipment with high maintenance costs or must rent equipment at a high cost.

Source: Expanding labor-based methods for road works in Africa, Technical paper No. 347, World Bank.

The local resource-based approach also provides skills learning opportunities for local artisans (e.g. masons, carpenters, stone chisellers, pavers and blacksmiths) and makes use of local materials (such as gravel, sand, stone, bricks and timber) and tools and light equipment.

From the perspective of contractors, another advantage of the local resource-based approach is the lower capital requirements than for the equipment-based approach because of the reduced need for expensive construction equipment.

Local resource-based technology is particularly well suited for the construction, rehabilitation and maintenance of infrastructure, such as local roads, buildings, water supply, sanitation, irrigation schemes, flood protection and environmental works.

Announcement of employment opportunities in up-coming rural infrastructure works in Kashmir, Pakistan

Comparative studies from several countries clearly show that using local resource-based work approaches provides infrastructure of equal quality and at competitive costs as compared to conventional equipment-based work methods. Timely delivery has also proven to be possible through good management practices. In addition, it creates significantly more employment than conventional equipment-intensive work methods.

1.2.3 Decent Work Agenda and EIIP

The local resource-based approach creates productive and decent employment, quality infrastructure and skills learning opportunities in line with the objectives of the Decent Work Agenda launched in 1999 and reaffirmed in 2008 by the ILO Declaration on Social Justice for Fair Globalization. It is now enshrined in the United Nation's Sustainable Development Goals (SDGs) "Decent Work and Economic Growth" (Goal 8).

The Decent Work Agenda has four pillars, these are:

- Employment promotion: To promote the creation of productive jobs and sustainable livelihoods.
- Rights at work: The work environment should include recognition and respect for workers' rights and understand just laws, especially for poor and disadvantaged workers.
- Social protection: Social policy must permit each worker safe working conditions, access to fair compensation for loss of income and access to quality medical care.
- Social dialogue: Employers' and workers' organizations must be strong, independent and able to communicate to avoid conflicts and to build cohesive societies.

The ILO EIIP has demonstrated that local resource-based methods can be effectively used to promote productive and decent job creation.

1.2.4 Conflicts and natural disasters

The levels of security and social stability have marked social and economic effects. The obvious effects of conflicts and unrest are loss of life, disruption of normal life and related social and impacts, the displacement of the population, the malaise caused by the overall climate of fear and despair, and destruction of infrastructure. People's livelihoods and economic activity are also impacted.

Devastation from the 2005 earthquake in Gunungsitoli, Nias, Indonesia

The implication for the construction sector and infrastructure investment is that work cannot proceed in a normal way. The average construction output, measured as value added in 190 countries in 2012, was 5.6 per cent of GDP. In a group of 10 countries, where civil strife or armed conflict was prevalent, it was only 3.5 per cent.[5]

[5] World Bank database.

Box 3

Impact of armed conflicts

Armed conflict has been called one of the four traps that keeps the world's poorest countries poor and the world's "bottom billion" confined to a life of poverty in stagnant or shrinking economies.

The average annual cost of conflict in Africa, for example, has been estimated at 15 per cent of GDP, or roughly one-and-a-half times the average African spending on health and education combined, a tremendous economic burden with dramatic social consequences.

Conflict-ridden countries in that region have 50 per cent more infant deaths, 15 per cent more undernourished people, life expectancy reduced by five years, 20 per cent more adult illiteracy, two- and-a-half times fewer doctors per patient and 12 per cent less food per person compared to their regional neighbours living in peace.

Source: International Labour Conference, 97th Session, 2008 Report IV Promotion of rural employment for poverty reduction.

Repair and reconstruction of infrastructure are essential elements in the strategies for restoring security and stability. Local infrastructure investments can provide a stabilizing influence on communities. It can provide employment to those whose livelihoods have been lost or disrupted during the conflicts.

Perhaps more important are the positive social and economic impacts of rehabilitated and functioning rural roads, health centres, classrooms, irrigation canals and other amenities and services. Investment in rural infrastructure contributes to the stability and a sense of normality and reassurance that post-conflict areas require.

Moreover, extreme events such as hurricanes, floods, earthquakes and tsunamis destroy infrastructure, which are often built without respecting the technical standards or to lower technical standards. Repair and restoration are much needed after extreme weather events.

Applying a 'Building Back Better' approach to increase infrastructure's abiliity to withstand challenges faced by climate change has become normal. In addition, ensuring that proper periodic and routine maintenance is carried out as planned increases the infrastructure's ability to withstand such calamities.[6]

Rebuilding society and houses after the earthquake devastation. Nias, Indonesia

[6] See also ILO Recommendation No. 205 – Employment and Decent Work for Peace and Resilience, 2017.

1.3 Rural infrastructure – economic and social development

1.3.1 Rural infrastructure and poverty

The rural population still accounts for some 45 per cent globally, but there is a continuous shift in the population from rural to urban areas. In South Asia and Sub-Saharan Africa they still constitute roughly two-thirds of the population (table 2).

Table 2. Rural population as a percentage of total population

Region	Rural population as a percentage of total (2016)
OECD countries	19.5
East Asia and the Pacific	42.5
South Asia	66.5
Latin America and the Caribbean	19.9
Middle East and North Africa	35.5
Sub-Saharan Africa	61.7
World	45.7

Source: https://data.worldbank.org

Poverty levels have fallen significantly in the last ten years (table 3). The Millennium Development Goal (MDG) of halving the share of people in extreme poverty between 1990 and 2015 has been achieved. Nevertheless, according to the latest figures 761 million people are still living on less than US$1.90 a day. The US$1.90 per day is at present used as the global measure of monetary poverty. According to a recent assessment using a multi-dimensional index including factors such as access to schools and electricity, and improved sanitation, 1.6 billion people are living in poverty.[7]

Table 3. Poverty change by region

Region	Poverty headcount at $1.90 per day (%)	
	1990	2013
East Asia and Pacific	61.4	3.7
Latin America and Caribbean	16.0	4.9
Middle East and North Africa	6.2	2.3
South Asia	44.6	14.7
Sub Saharan Africa	54.4	41.0
World	35.3	10.7

Source: http://iresearch.worldbank.org/PovcalNet

Access to basic rural infrastructure is still lacking in several countries and this is a major impediment to socio-economic development and the achievement of the SDGs. Infrastructure is a key enabler for economic growth, social welfare, stability and security of the rural population.

Without road access, communities are isolated and isolation is a fundamental cause of poverty. The lack of rural clinics contributes to poorer health care and higher child and maternal

[7] Oxford Poverty and Human Development Initiative. Global Multidimensional Poverty Index (MPI), 2015.

morbidity and mortality rates. Insufficient classrooms, poor school facilities, and difficult access to schools contribute to high absenteeism and fewer children – particularly girls – being able to benefit from education. Lack of irrigation schemes limit farm production and improvement in the livelihoods of farming households. Lack of improved water sources implies higher mortality rates from water-borne diseases.

The substantial rural infrastructure deficits, which exist in developing countries, need to be addressed to improve conditions for the rural people, to continue economic growth and poverty reduction and to cater for population growth.

An important part of the challenge is to ensure that the social and economic benefits of growth result in productive employment, poverty reduction and an equitable distribution of the fruits of growth. A key issue in achieving this is the extent to which attention is given to both urban and rural development. A balanced strategy encompassing rural development priorities would include: (i) an adequate level of investment in rural infrastructure; (ii) a local resource-based approach; (iii) the development of local contractors; and (iv) strengthened local government authorities' capacity to manage works.

1.3.2 The rural infrastructure contribution to development

There needs to be a concerted effort to provide the necessary infrastructure to reach global development goals. In the SDGs, there has been a clear admission that quality infrastructure is necessary in order to beat poverty.

In order to achieve this, the total demands need to be established, matched with the necessary resources to build the required infrastructure and given a clear timeline for servicing the entire population. This is done in some sectors but certainly not in all.

1.3.2.1 Rural access roads

All-weather rural roads provide essential access to basic services such as health and education and facilitate the improvement of other services such as potable water and sanitation. Rural roads also improve access to markets, jobs and other economic activities.

In 2006, the World Bank (WB) with partners developed the Rural Access Index (RAI)[8], which attempts to assess the relative accessibility of the rural population to an all-weather road. The RAI measures the percentage of rural people who live within two kilometres (typically equivalent to a walk of 20–25 minutes) of an all-season road as a proportion of the total rural population.

Rural road in Assam, India

[8] World Bank. Rural Access Index: A Key Development Indicator. Roberts, Shyam, Rastogi, 2006.

An "all-season road" is a road that is motorable all year round by the prevailing means of rural transport (typically a pick-up or a truck which does not have four-wheel-drive). The results by region are shown in table 4[9].

Table 4. Rural Access Index (RAI) by region, 2006

Rural Access Index (RAI) 2006								
Region	Sub-Saharan Africa	South Asia	Middle East and North Africa	Latin American Countries	Europe and Central Asia	North America	East Asia and the Pacific	Global
RAI	34	57	59	59	82	86	90	69

The SDGs of the UN clearly recognizes that there is still a strong need for access to rural roads in all of the developing regions.[10]

1.3.2.2 Rural water supply

According to the United Nations (UN), 5.2 billion people (71 per cent of the global population) used safely managed drinking water services in 2015 – that is, an improved water source located on premises, available when needed and free from contamination. An additional 1.3 billion people (17 per cent of the population) used a basic drinking water service – an improved water source not more than 30 minutes away. This means that 844 million people still lacked even a basic level of service.[11] Of these, almost a quarter relies on untreated surface water. The water quality is not assured, because of the availability of boreholes and wells, and a lack of water treatment facilities.

Water supply and sanitation needs remain big, so are opportunities for contracting and in particular community contracting involving indigenous people. Paraguay

[9] The RAI was updated for some countries through further studies in 2016. Ref: New Rural Access Index: Main determinants and correlation to poverty, World Bank, 2016.

[10] SDG Outcome 9 is concerned with building resilient infrastructure, promoting inclusive and sustainable industrialisation and fostering innovation, and has adopted the RAI as one of its indicators.

[11] The Sustainable Development Goals Report, 2018. https://unstats.un.org

Box 4
Benefits of rural roads in India

Government expenditure on roads has been found to have the largest impact on poverty reduction (163 persons lifted out of poverty for each million rupees (INR) invested) and a significant impact on productivity growth. Rural road connectivity promotes access to economic and social services thereby generating increased agricultural productivity, non-agricultural employment and non-agricultural productivity which in turn result in expanding rural growth opportunities and higher income.

Other impacts observed are the doubling of farmers' incomes, a reduction in freight charges by more than 60 per cent, increase in literacy rates by 8 per cent, an increase in land prices by 80 per cent, about 12 per cent higher prices for agricultural produce, timely help during medical emergencies, particularly for pregnant women, and increased attendance of girls in school after the construction of roads and distribution of bicycles under a separate government programme.

Source: Studies undertaken by the Prime Minister's Rural Road Programme, PMGSY.

The Prime Minister's Rural Road Programme (PMGSY) in India

The PMGSY is a good example of how effective strategies for rural development can achieve significant results in a limited period of time. Recognizing the need for improved access in rural areas, the Government of India decided in 2000 to connect all villages with a population of more than 500 inhabitants with all-weather roads. As opposed to past piecemeal efforts to improve rural connectivity, the government launched a nationwide programme with clear functional goals.

By 2017, the programme had built more than 512,000 km of rural roads providing access to nearly 130,000 communities with an estimated population of 110 million.

At present the programme is getting close to its original goal. To reach the remaining identified communities, activity levels have increased, with a total output of 10,556 km constructed in 2017. Sourced out of taxes on diesel, funding has increased in recent years, reaching an output of 156 km of new roads completed every day in 2018.

These impressive outputs have been achieved in part because the government established a highly efficient planning and management organization and created a conducive business environment in which domestic contractors can operate in an efficient manner. The programme expects to reach its target within the next couple of years.

1.3.2.3 Improved sanitation

Access to sanitation is the second important element for hygiene and prevention of spread of diseases. The UN estimates that 2.3 billion people lacks even a basic level of service, and 892 million people continue to practise open defecation.[12] This leads to pollution and to the spread of diseases such as cholera and gastroenteritis.

1.3.2.4 Health centres

Since 2000, maternal deaths worldwide have dropped by 37 per cent. Nevertheless, in 2015, 303,000 women around the world died due to complications during pregnancy or childbirth. Almost all of these deaths occur in low-income settings. In 2015, 5.9 million children die before the age of five years.[13] Many women give birth at home and may not see a skilled health worker before or after delivery. Further health workers often lack access to critical supplies and medicines.

Data on access to health infrastructure such as clinics and rural health centres are limited. However, there is a huge backlog of primary health infrastructure in many developing countries.

[12] Ibid.
[13] Ibid.

1.3.2.5 Schools

Adequate infrastructure is required in order to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (SDG 4)

According to the UN, some 57 million children of primary school age remain out of school.

At the global level, the participation rate in early childhood and primary education was 70 per cent in 2016, up from 63 per cent in 2010.

The lowest rates are found in sub-Saharan Africa (41 per cent) and Northern Africa and Western Asia (52 per cent).[14]

The schooling of children, particularly girls, and absenteeism or leaving school prematurely are directly related to the proximity (access) to a properly equipped school (classrooms, sanitation facilities, clean water, etc.).

1.3.2.6 Irrigation schemes

Water harvesting and irrigation schemes can increase yields and income for farmers, enable diversification and help to improve food security. Irrigation systems also provide farmers with a more reliable water supply and thus have the potential to improve consistency in food production and strengthen climate resilience. Increased access to water can graduate farmers from a subsistence economy into viable smallholder enterprises. Experience shows that the construction and maintenance of water harvesting and distribution structures is very much compatible with the use of local resource-based approaches.

1.3.2.7 Climate change

Climate change is already affecting us all. However, the impact falls disproportionately on the poor in low-income countries as they have the least capacity to deal with its consequences.

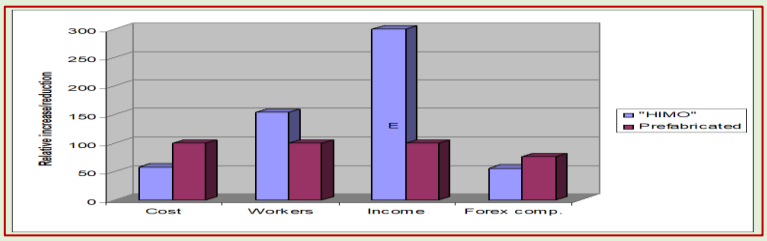
Two types of responses are required to: (i) protect and preserve natural resources and infrastructure to mitigate against the adverse effects of climate change, and (ii) repair the damage caused by climate change events. Given the scale of the response required, a centralized national-level approach to the implementation of adaptation works and dealing with damage following climate change events may not be practical.

A local resource-based approach is likely to be more appropriate and would provide work for local contractors and create local employment. The EIIP has documented experiences of local investments for climate change adaptation in its Green jobs through green works publication (ILO 2011).Nevertheless, the resource requirements and capacity to undertake and manage such works remains a challenge.

[14] Ibid.

Box 5
Sector programmes
School building programme in Madagascar

A comparison of technology options in the 'Education for All' school building programme in Madagascar revealed that the LRB approach was more than 40% cheaper, that direct employment creation was 50% higher, income three times higher and foreign exchange usage 20% lower compared to prefabricated imported steel constructions.



Adaptation to climate change – Watershed management, Gonaives, Haiti

Haiti had seen increasing damages to its infrastructure from hurricanes. Following hurricane Jeanne, an important protection of the Gonaives basin with its city and surrounding agricultural lands was implemented with ILO support. An erosion control network was built including tree planting (agroforestry) and contours for slope protection, check weirs for gully protection and river training for flood control on the plane and through the city as displayed by the four photos below.

Training of local government organisations who were managing the works and associations contracted by the project was essential, so was employing a local labour resource-based approach for all works and material supplies to sustain the approach.

1.3.3 Demand for rural infrastructure

As can be seen from the previous section, local infrastructure plays an important role in reaching social and economic development goals. With the present development goals, the general principle is to reach full coverage on issues such as health, education, water, sanitation and other basic services. Since the shortages are well known, the logical next step in a planning and programming process would be to establish the level of additional infrastructure investments in each of these sectors. This would not only serve as the basis for long-term investment projections, it would also give good indications of the potential market opportunities for local contractors and future employment generation potential.

Taking stock of the additional infrastructure required is also important in order to monitor progress against this type of ultimate goals. This allows for annual monitoring of progress made against long-term goals and makes government and development partners accountable to the annual development achievements. To varying degrees, this process is already taking place in several sectors, e.g. water, sanitation, and works related to road access.

It can be estimated with some confidence that to bring all of the rural population to within 2 km of an all-weather road would be a gargantuan task. For instance, sub-Saharan Africa has about 940,000 km of designated rural roads, with a replacement value estimated at $48 billion. Even more has to be invested to address the huge access gaps, i.e. the remaining two-thirds of the population who do not have access to an all-weather road. The development and maintenance of this network will require a concerted effort in which the entire capacity of the construction industry will need to be mobilized. Seen from a more positive side, this creates substantial business and employment opportunities in which local contractors will play an important role.

While investments in local road access usually takes up a major part of development budgets, the need for other basic infrastructure will also require significant efforts in order to reach the entire population.

Rehabilitated irrigation canal in Siem Reap, Cambodia

In addition, it is estimated that climate change adaptation works will require a global annual investment of $40 billion. While a significant proportion of this will go to coastal erosion control, flood protection and exploration of new fresh water sources or improved means of recycling, a major proportion will be related to protecting and strengthening rural infrastructure.

The four main types of rural infrastructure affected by climate change are rural roads, flood prevention structures, soil and water conservation, and irrigation. Rural roads will need to be built with more culverts, footbridges, dykes and sea walls to limit the effect of floodwaters. Solving the linked problems of soil erosion and water availability, contour trenches, terraces and diversion ditches will be necessary.

Local contractors or community groups have the ability to implement a significant proportion of this work. Moreover, the local resource-based approach would be particularly appropriate, as the local community not only understands the local situation but also recognizes how much the infrastructure benefits the community.

1.4 Urban Infrastructure

The UN Report *Urbanization Prospects* (2014) states: "The urban population of the world has grown rapidly since 1950, from 746 million to 3.9 billion in 2014. Asia, despite its lower level of urbanisation, is home to 53 per cent of the world's urban population, followed by Europe (14 per cent) and Latin America and the Caribbean (13 per cent). As the world continues to urbanise, sustainable development challenges will be increasingly concentrated in cities, particularly in the lower-middle-income countries where the pace of urbanisation is fastest. Integrated policies to improve the lives of both urban and rural dwellers are needed."

The report elaborates further: "Sustainable urbanization requires that cities generate better income and employment opportunities, expand the necessary infrastructure for water and sanitation, energy, transportation, information and communications; ensure equal access to services; reduce the number of people living in slums; and preserve the natural assets within the city and surrounding areas."

Street paving in Togo

Reconstruction needs of streets and sewage system after flooding. Nabeul, Tunisia

Accordingly there are five central issues facing the world's growing urban areas, namely: (i) improving security of tenure; (ii) upgrading slums and improving housing; (iii) expanding city-wide infrastructure and effective service delivery; (iv) creating urban jobs through local economic development; and (v) providing alternatives to slum formation.

The report also stresses that the lack of appropriate infrastructure impacts severely on the livelihood of urban dwellers, particularly for those living in informal settlements. Upgrading housing and public infrastructure for water supply, drainage, sanitation, transport and energy are essential. Local authorities and communities working in close partnership would best achieve this.

Compared with infrastructure in rural areas, urban upgrading works require a stronger focus on combined technologies and work approaches for the different infrastructure elements, such as sanitation, water, roads, drainage, electricity, social-service facilities, clinics, schools, etc.

Urban infrastructure works can create significant job opportunities for the rising population. In addition, good infrastructure attracts investors and industrial enterprises and thus the creation of valuable jobs. [15]

Local contractors can carry out much of the urban infrastructure works and, in some cases, local communities do them.

The local resource-based approach is suitable for many types of urban works, in particular for the provision of essential public services in low-income settlements.[16]

The LRB approach can also be effectively applied for waste management and the maintenance of various infrastructure assets.

1.5 Structure of the construction industry

The construction industry has many players or stakeholders. Clients, consultants and contractors are seen as the key players in the industry. However, the other players listed in table 5 also have significant roles to play. They are part of the forward and backward linkages of the industry and play a major role in shaping the way in which the industry operates.

Table 5. Construction sector stakeholders with their roles and responsibilities

Stakeholders	Roles and responsibilities
National and local policy-makers	Policy- and decision-makers at national and local level are essential in establishing the enabling environment for the development of the construction industry and in promoting the type and volume of public infrastructure to be provided. Close cooperation between the private sector and policy-makers is thus essential.
Clients, public and private	Clients identify needs and initiate works, procure consultants and contractors for the design, execution and supervision of works as well as monitoring and payment of service providers. For infrastructure works, the main clients are relevant sector ministries at various levels and local authorities.
Consultants for design, supervision and other functions	Engineering consultants conduct studies (such as feasibility, social and environmental safeguard studies, geological and hydrological surveys, etc.), design infrastructure, prepare cost estimates, prepare contract tenders and supervise works by contractors.
Contractors main and subcontractors	Contractors execute infrastructure works and supply the necessary resources (labour, tools, equipment and materials). The work of contractors may be supervised by consulting engineers. The main contractor may subcontract some of the works to smaller or specialized firms.
Suppliers	Suppliers are often specialized firms selling construction materials, tools and equipment – and spare parts. Suppliers are expected to offer and sell safe and good quality goods.
Banks, insurance companies and private investment funds	Bank and insurance companies provide financial services including loans, performance bonds and guaranties. They also provide financing for infrastructure works and as such play a major part in the development and operations of contractors.
International partners and donors	Includes bilateral and multilateral development partners that provide finance and support services, e.g. technical assistance, research, etc.

[15] Fransen and Simba, 2000.
[16] ILO, 2008.

Stakeholders	Roles and responsibilities
Regulatory and standard setting bodies	Regulatory and standard bodies may be governmental or private institutions, which may operate nationally or internationally. Their main function is to develop and maintain product specification standards, process standards and behavioural standards, e.g. anti-corruption, corporate social responsibility, etc.
Legal service providers	The services of lawyers and other legal personnel may be required for all types of legal matters but mainly with regards to procurement regulations, conditions of contract, disputes and auditing.
Auditors	Internal and external auditors carry out technical and financial checks of infrastructure works during and after implementation of works. This is necessary to assure the client and the public that the work is being carried out in accordance with specified norms and standards and within budget.
Professional associations	Associations play an important role in the construction sector, both for contractors and engineers. Their main role is to promote the interests of their members, develop industry standards, and provide support services (e.g. training, advice, promotion, etc.) and lobby for works.
Trade unions	Trade unions protect workers' rights and promote their common interests in issues such as fairness of pay, safe working environments, hours of work, benefits, etc.
Tertiary education institutions	Universities and other higher learning institutions provide the construction industry with the required professionals. It is their responsibility to closely cooperate with the construction sector partners in the formulation and implementation of appropriate educational programmes, both academic- and practice-oriented.
Vocational education and training institutions	Vocational training is essential to secure an adequate supply of competent and skilled artisans and technicians. They are the backbone of the construction industry and thus it is important that vocational education institutes collaborate closely with the industry and its professional associations.
Communities	Communities are the ultimate users and beneficiaries of public infrastructure and they should be empowered to participate in the entire programme cycle from identification to the final commissioning and operation of infrastructure assets.

1.6 Doing business

The preparation, planning and implementation of publicly financed infrastructure works are all part of a process framed by a set of regulations and procedures, which are long and binding. This often means that works contracts can be signed with a contractor more than six months after the award. Further, the payment approval and processing procedures are usually complex and require the intervention of many actors and is very time consuming. The delays and complexities of the system are difficult for SMCs to cope with. These delays in payment for work make it difficult for small-scale contractors to meet their payroll and financial obligations on time.

Banks generally consider small-scale contractors riskier clients than larger firms because of the higher incidence of bankruptcies amongst them. Banks are also aware of the frequent delays and complexities of the public sector payment systems. Hence, they are reluctant to provide guarantees or loans to small firms engaged in local infrastructure works contracts, whether they are short-term for cash flow management or long term for purchasing equipment. This imbalance in banks' treatment of large and small companies in the construction sector places local contractors at a disadvantage.

1.6.1 Business environment in low-income countries

The challenges posed by the complexities of local infrastructure works contracts, and the reluctance of banks to offer financial facilities and guarantees to local contractors, are symptoms of the demanding business environment in many low-income countries. The difficulties of doing business in such environments are multidimensional and include lack of regulations at one end of the spectrum or very complex regulations at the other end, such as poor application of regulations and irregularities associated with their application, the difficulty of obtaining credit and the issue of late payments. These issues and many others are features of the business environment faced by entrepreneurs in the construction industry.

It is important to have effective rules in place that advance both regulatory quality and efficiency, and they must be easy to understand and follow. To realize economic gains, reduce corruption and encourage small- and medium-sized enterprises (SMEs) to flourish, and eliminate unnecessary red tape. Still, specific safeguards must be put in place to ensure high-quality business regulatory processes; efficiency alone is not enough for regulation to function well.

This is reflected in the reports of the Doing Business project of the World Bank Group. They advise on appropriate measures of business regulations and their enforcement across 190 economies (countries). Its ease of doing business score captures the gap between an economy's performance and a measure of best practice using 41 indicators, covering 10 Doing Business topics. It includes topics such as starting a business (with indicators such as number of procedures, time, costs and minimum capital needed), obtaining credit (strength of legal rights index and depth of credit information index) and enforcing contracts (time, costs and quality of judicial processes), etc. It also looks at construction permits with indicators on procedures required for a business in the construction industry, time and cost to complete each procedure, and building quality control practices including the quality of building regulations, the strength of quality control and safety mechanisms, liability and insurance regimes, and professional certification requirements. It is important to note that flexibility in national labour legislation on issues like minimum wages, dismissal protection and working hours are excluded from these indicators and hence from Doing Business' scoring and ranking of competitiveness.

The ease of doing business ranking compares economies with one another; the ease of doing business score benchmarks economies with respect to regulatory best practice, showing the absolute distance to the best regulatory performance on each Doing Business indicator. When compared across years, the ease of doing business score shows how much the regulatory environment for local entrepreneurs in an economy has changed over time in absolute terms, while the ease of doing business ranking can show only how much the regulatory environment has changed relative to that in other economies.

There is a pattern of greater ease of doing business associated with higher GDP per capita. The ease of doing business ranking in the Doing Business 2019 report shows that 75 per cent of the low-income countries find themselves in the lower quarter of the ranking and all but one in the lower half, while none of the high-income countries are in the lower quarter and less than 20 per cent in the lower half (see figure 1 below).

Figure 1. Ease of doing business in different categories of economies

Source: Doing Business 2019 figures, author's analysis.

Any rational government that cares about the economic well-being and advancement of its constituency pays special attention to laws and regulations affecting local SMEs. Effective business regulation affords micro and small firms the opportunity to grow, innovate and, when applicable, move from the informal to the formal sector of an economy. Interestingly, the Doing Business 2019 report shows that the best improvements to the ease of doing business score over the last year (2018–2019) have been in low-income countries in Africa, Middle East and South Asia, so much is being done to catch up.

The International Organization of Employers (IOE) is among those trying to improve upon this situation in collaboration with its members across the world. Their programme Enabling Environment for Small Enterprises (EESE) is providing guidance and capacity building with public and private partners to facilitate the growth of enterprises. It covers areas of work like the promotion of socially and environmentally responsible public procurement, lending and investment, and the promotion of sectors and value chains (IOE, 2014).

1.6.2 Financing and the public sector

The majority of infrastructure works is funded by the public sector. This is appropriate as much of the works are related to social as well as economic objectives. Infrastructure support governments' efforts to facilitate increased economic and social development. The provision of some of these services is devolved to local government authorities, which means that local contractors are reliant on the capacity of these agencies to manage infrastructure works. However, in many cases these agencies are not equipped with the resources necessary to effectively deal with the planning, tendering and supervision of works. At times, they also operate under complex and restrictive regulations. The result is that they may appear obstructive in dealing with contractors and consequently hinder rather than foster effective and efficient use of contractors.

Overregulation in the contracting procedures and contract documentation, delayed payments and limited flexibility can result in contracts being ineffectively implemented. Several countries have resolved this problem by strengthening the capacity of local institutions in contract management and better use of consultants.

Participatory planning in the capacity development of many newly established communes in Tunisia

Bilateral and multilateral donors are also significant contributors to the development of infrastructure. If properly tailored to the needs of the sector and with adequate provisions for capacity building among the contractors and implementing agencies, this can lead to improvements in planning, budgeting and works implementation. Some of the best results from such programmes of capacity building with local government agencies and contractors have been taking place in countries emerging from conflicts or disasters when a consolidated effort has been made to work together, also with systems and regulatory frameworks development.

1.6.3 Corruption

Corruption is a global issue and occurs in all sectors of the economy. However, it is particularly evident and significant in the construction sector. Transparency International's Corruption Perception Index, which defines corruption as "the misuse of public power for private benefit" ranks countries from 100 (very clean) to 1 (highly corrupt). As table 6 shows, the level of corruption tends to be greater in the regions with the highest infrastructure challenges.

In their report on corruption in the construction industry, Price Waterhouse Cooper (PWC) [17] refers to Transparency International's "Bribe Payers Index" which identifies sectors most likely to bribe a public official. Infrastructure works contracts in the construction sector emerge as being the most likely to involve bribery. PWC suggests that this is because construction companies have a business model that exposes them to a greater proportion of the recognized corruption risks than almost any other industry. This is because they are involved in significant one-off, long-term contracts, often for the public sector, using complex supply chains.

Corruption comes in various forms in the construction industry. The two main forms are collusion between bidding contractors and outright bribery. In the former, contractors work together to ensure that one of them wins the bid and the winning bid is sufficiently high for the contractor to make side payments to the colluding parties.

The second instance is where a contractor bribes the client's staff to win the contract or to approve inflated invoices or payment even though the work is below the standard required.

In most countries, a range of laws and regulations prescribe how to carry out procurement. These define what information the procurement agencies are required by law to disclose. However, procurement agencies do not disclose all the information required. A study by the Infrastructure Transparency Initiative in eight countries[18] in 2011 revealed that procurement agencies disclosed less than 60 per cent of the information required by law.

The advent of e-tendering ensures that the procedure is more transparent and renders procurement of infrastructure works less vulnerable to collusion or bribery. There is also a range of other measures that can be put in place to reduce or eradicate the curse of corruption.

Table 6. Transparency International – Corruption Perception Index, 2018

Corruption Perception Index	
Americas (32 countries)	44
Middle East and North Africa (18 countries)	39
Sub-Saharan Africa (49 countries)	32
EU and Western Europe (31 countries)	66
East Europe and Central Asia (19 countries)	35
Asia and the Pacific (31 countries)	44
Global (180 countries/territories)	43

[17] Price Waterhouse Cooper: Fighting corruption and bribery in the construction industry (2014).

[18] Infrastructure Transparency Initiative (CoST) Report on baseline studies: Internal comparison (2011). The International Secretariat for CoST is hosted by Engineers Against Poverty (EAP).

Box 6

Corruption and collusion in construction: A view from the industry

On the basis of discussions with contractors and project managers in Ghana, Nigeria and the United Kingdom, Ladbury (2003) found informal systems that involve practices that are common to all three countries' construction industries.

These include:

- bribery to get onto tender lists or to win contracts;
- submitting false information in documents;
- forming a cartel;
- submitting several bids from the same contractor under different names;
- front-loading the tender;
- putting in a low bid and then making claims or skimping on materials;
- not making good defects and foregoing retention.

Source: Wells, 2013.

Reducing corrupt practices in rural infrastructure works in Cambodia

In a detailed study on business practices in the Commune/Sangkat development fund in Cambodia, four key areas were identified where measures can be taken to reduce collusion and corrupt practices in construction works:

- Increasing the participation in individual tenders makes collusive practices more difficult. When the programme allowed for bids from contractors from all provinces it seemed to reduce the incidences of collusion. By encouraging more firms to bid for works could further reduce the risk of collusion.
- The introduction of computerized systems with web-based portals for submitting bids can facilitate a wider participation in tenders. E-bidding removes several methods used to restrict and limit the number of tenders being submitted. It also makes bidding documents more available to the public and removes some of the collusive practices of selective distribution of bid documents.
- Corrupt practices during works implementation can be reduced by strengthening supervision. Having competent and independent third party inspection of works may improve quality and introduce more accountability in terms of invoiced quantities of works.
- Elaborate and time-consuming payment procedures create an environment that encourages informal fees to facilitate payments due to the contractor. With the numerous clearances required, checks and counterchecks, stamps and signatures and supporting documents, payments often take an inordinate amount of time to conclude. The use of one-stop services and wire transfers may streamline such processes and reduce petty corruption.

Source: Johannessen, 2010.

1.7 Small-scale contractors in the construction industry

Local contractors contribute to the economic and social development of the country by building and maintaining infrastructure in the same sectorial manner as contractors with multi-million dollar turnovers. Therefore, they are subject to the same regulatory framework, the same procurement procedures, and fluctuations in demand and government policy. To be able to survive in a competitive market, they also have to deal with the same issues of contract management, marketing, access to finance, tender preparation and staff training. As noted earlier, for smaller contractors, the constraints and costs of the business environment are more serious.

Local or small-scale contractors usually work in their own local geographical area. The benefits of using local contractors are that they are familiar with the local area, they understand the local government structures, they are aware of the technologies and materials that are appropriate for the area, they generally employ local labour and are familiar with the way of doing business in the area. In addition, local contractors and their performances are well known by regional and local clients including local government and public implementing agencies.

Local contractors include micro-service providers able to carry out minor works. They are often not part of the formal classification and are often owned by one individual. They will usually have a limited range of skills and capacities.

The characteristics and capacities of the different types of contractors are given in table 7. A new entrant to the rank of contractors faces a wide range of challenges, which for many are insurmountable. The construction industry is well known for the number of bankruptcies and the majority of these occur among the small-scale contractors.

Table 7. Contractor types and profiles

Type	Typical contractor profiles	
	Description	Works capacity
Micro contractors, also known as petty contractors	• single person • labour only • limited skills • not registered (nor classified)	• labour only contracts • minor repair works, • routine maintenance
Small-scale contractors	• often registered as tradesmen and may be classified • locally-based enterprises led by local builders, technicians, certified tradesmen, etc. • possess basic equipment and hand tools • low capital security • some entrepreneurial skills • some technical skills but limited managerial experience	• building construction works • subcontracts for special skills • construction and repair of simple structures • rural road rehabilitation and maintenance works
Medium-sized contractors	• registered and classified • possess some equipment • limited capital security • good entrepreneurial skills • sound technical and managerial capacity	• building construction • major rehabilitation and maintenance works • bridge and culvert works • road surfacing works
Large-scale contractors	• registered and retain the highest classification • good access to equipment and capital • proven entrepreneurial skills • good technical and managerial capacity • capable of deploying a wide range of construction equipment	• large infrastructure works • complex building and civil works

In addition to the various categories of contractors, there is a range of options involving community contracting. These have all the basic elements of standard contracts but in a simplified form. Generally, this contracting arrangement is simpler and quicker to use than when

applying the standard procurement procedures for engaging formal contractors. Nevertheless, it is important that contracting of community groups follows established procedures in a transparent and accountable manner.

The overall objective is to involve the communities and thereby instil a sense of community ownership, and to make use of the skills and aptitudes of the community. Experience has shown that community contracting has certain advantages for simple infrastructure works.

In most cases the type of work chosen for such contracting practices is conducive to the use of employment-intensive work methods, thereby offering new job opportunities for local communities. The type of works to be performed through community contracts and the types of contracts to be used depend on the capacities of the parties involved, the legal context and prevailing administrative and financial procedures.

Communities can take on a number of issues along the project cycle from identification through implementation to operation and maintenance. Community contracts therefore come in various forms and the communities can take on different roles that may include: (i) decision-making during planning; (ii) oversight and monitoring of the project; (iii) execution of projects (contractors); and (iv) workforce. When properly developed and implemented, community contracting can also be used to build community organizational and negotiation capacities, develop skills and provide valuable work experience both in terms of developing and managing projects and works, and in terms of jobs in the implementation of the works. Such contracts will involve time being spent by the government agency responsible in raising awareness and supporting the development of management and implementation capacity within the community.

However, the most common community contract is for the execution of works where the community is the contractor and has the responsibility for organizing and implementing the works. These can take several forms:

- direct contracts between the client and the community (with their leadership);
- contracts between the community and a contractor; or
- contracts with a group of people from the community.

Community contracts are also known as micro-enterprises in some countries where the workers are co-owners. Usually, they are registered as a non-profit organization and are commonly used for road maintenance in several countries in Latin America and Africa.

One more form of community contracting is where a contract is awarded to a commercial contractor with the stipulation that part of the work should be subcontracted to communities. The contractor is responsible for training, preparing monthly plans, providing hand tools and materials and for managing and paying the community team.

Community group improving a local road, Nepal

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DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 2

Enabling environment

Proper drainage is essential when building climate resilient infrastructure. Timor-Leste

EIIP

Employment Intensive Investment Programme

CHAPTER 2

Key issue

What are the measures required to create a favourable environment for the effective participation of domestic contractors in the delivery of local infrastructure works using local resource-based approaches?

2. ENABLING ENVIRONMENT FOR LOCAL CONTRACTORS

Overview

This chapter elaborates on the environment in which local contractors operate and conduct their business. A distinction is made between elements of the environment that are directly related to contractors' operations and capacity, and elements representing the broader environment. The rationale for this distinction is that contractors are responsible for taking actions to modify their own operations, strategy and capacity. However, local contractors have limitations, hindering their ability to improve their performance. Further there are aspects of the external environment which exacerbate their problems but which are beyond their control.

Therefore improving the business environment for local contractors requires: (i) interventions which support them to overcome their limitations; and (ii) addressing elements of the environment that create obstacles to conducting their businesses in an effective manner. An example of the second category is improving the contracting agencies' capacity to administer and manage contracts at the operational level. At the policy level, there may be a need to expand opportunities for domestic contractors by allocating more resources for infrastructure works that use a local resource-based approach.

This chapter can be used as a guide to: (i) conduct a situation analysis of the environment for the development of a sustainable local infrastructure programme; and (ii) determine the policy changes and measures required to improve the environment. The situation is complex because elements of the environment for the sector are determined at different levels of government (central and local), and contractors are operating at the interface between the public and private sectors. While the focus of this chapter is on making the environment more conducive and enabling for local contractors, the measures have wider benefits for all parties engaged in the improvement of infrastructure.

Structure of Chapter 2

Section 2.1 Current situation	Describes the situation in which the local contractors in the infrastructure sector operate and identifies stakeholders; outlines features of contracting; poses key questions that need to be answered to create an enabling environment for the industry.
Section 2.2 Challenges facing local contractors	Describes the challenges facing local contractors in developing their own capacities and those posed by the external environment.
Section 2.3 Issues related to contractors' operations and capacity	Identifies and describes the specific aspects under the control of local contractors to positively affect their development and measures necessary to address and thereby improve their performance.

Section 2.4 Issues over which contractors have little control

Identifies and describes the external factors influencing the situation of local contractors; specifies their challenges; including the policy environment, the market for their services, the rules, regulations and contracting procedures.

Aspects analysed include international and domestic economic situations; national development policies; construction sector policies; economic and social policies; decentralization policy.

2.1 Current situation

The roles of small- and medium-sized businesses in the construction industry and the challenges they face have been the subject of many studies. The conclusions of these studies have been surprisingly similar in relation to the difficulties that small-scale contractors face in starting and developing their businesses. A paper presented already in the 1970s on the situation of small-scale contractors in the United Kingdom[19] came to the conclusion that:

- the small firm is strong on production but weak on management and administration;
- economic changes tend to work against the small-scale contractor;
- small firms have difficulties in providing acceptable financial securities;
- excessive competition reduces the chance of a stable workload;
- small firms find borrowing or obtaining credit expensive, sometimes prohibitively so.

This list has since been mirrored in various studies. Small-scale contractors in developing countries suffer from many of the constraints that are shared by their counterparts in the industrialized world. However, they have additional problems, some of which are self-imposed, but most are the result of the environment within which they operate.

As noted in Chapter 1, there are many actors or stakeholders in the construction sector whose roles are defined and constrained by national, provincial, local and sectorial policies. The stakeholders can be placed in two categories, direct and indirect.

- The **direct stakeholders** are the actors who between them are engaged in initiating, procuring, designing, estimating, planning, implementing and monitoring public infrastructure works. Chapter 3 elaborates on the direct stakeholders who form the core of the infrastructure delivery systems. They are briefly introduced here as: (i) the client or the contracting agency who initiates the works, procures the services of other direct stakeholders (consultants and contractors), enters into contracts with them and pays them; (ii) the consultant who designs the infrastructure (technical and financial aspects), assists the client in the procurement system, monitors and controls the work; and (iii) the contractor who performs work under a contract entered into with the client, and under the supervision of the consultant.
- The **indirect stakeholders** could be put in two broad categories: (i) those who provide goods and services to the direct stakeholders; and (ii) those who shape or influence the regulatory and policy environment.

The **first category of indirect stakeholders** includes suppliers of tools, equipment and materials, banks and insurance companies, other providers of loans and guarantees, professional associations promoting the interests of contractors and agencies supporting SME development.

The **second category of indirect stakeholders** includes national and local policy-makers and implementers, regulatory and standards bodies, auditors, trade unions, employers' associations, tertiary education institutions, vocational training institutions, and last, but definitely not least, users of the infrastructure assets.

[19] Edmonds and Slater: Small Firms in the Construction Industry. Civil Engineering and Public Works Review, 1973.

The perspective of the private sector, especially that of local contractors, is very important in order to look at how favourable the business environment is and whether or not certain measures are required to improve it.

The following questions can be used to capture the prevailing situations:

- Are there sufficient market opportunities to sustain individual businesses and the industry?
- Are there transparent and fair procurement practices for goods, services and works?
- Are the contracting processes and contracts suitable for local infrastructure works?
- Are the contracts with contractors and consultants managed appropriately by clients securing provision of securities, timely payments and cash flow?
- Are contractors provided adequate technical support and guidance during tenders and works implementation?
- Do contractors have opportunities and support for developing their technical skills and management capacities?
- Do contractors have adequate access to finance at fair rates and under reasonable conditions?
- Do labour laws and employment conditions applicable to infrastructure works provide for decent remuneration and adequate protection of the workers while remaining fair to the employers?

Features of the infrastructure sector with implications for the environment in which local contractors operate include:

- Development of public sector infrastructure is usually planned, implemented and monitored by government agencies, which could be national, regional or local. Different construction industry service providers including consultants and contractors support them during the project cycle. Construction works and, in particular local infrastructure works, constitute a significant potential market for local contractors.
- Maintenance of infrastructure is normally the responsibility of regional or local governments and is often neglected because of resource limitations. Infrastructure programmes are increasingly making provisions for maintenance, which in turn is becoming a growing market for the local construction industry.
- Government policies and development strategies, including the roles of central and local governments, and related legislation, regulations and institutional arrangements form the framework within which the construction industry operates. As such, this framework, and how it is implemented, has a significant impact on the operations of consultants and contractors involved in local infrastructure works.
- Contractors are classified according to their technical capabilities, financial standing, equipment holding and experience. This classification determines the type and size of works for which they are qualified. It is up to the contractors to apply for registration and document their capacity to undertake various types of work. The classification system is intended to provide clients with some confidence that the contractors have credible skills, capacity and resources to carry out the work.
- Procurement of works, services and goods are conducted through different tender procedures. The most common practice is an open tender that allows all qualified contractors to submit bids. Restricted tendering can be used in specific instances to limit the number of competitors who are invited to prepare bids. It is preceded by a notice of expressions of interest, which allows for the screening of potential bidders from which a limited number are invited to bid. Direct purchase entitles clients to select known entrepreneurs for urgent works, specialist inputs or for works below a threshold value specified in the procurement code.

Local contractors have neither the power and influence nor the capacity to contribute towards the creation of an environment conducive to the industry. Making the environment more suited for small-scale contractors does not require the creation of a totally different context, but rather to adapt rules, regulations and procedures to enable them to create sustainable businesses.

The creation of a favourable environment for local contractors involves engagement on better terms with their suppliers of goods and services (first category of indirect stakeholders), while influencers of policy and regulations (the second category of indirect stakeholders) are instrumental in improving the engagement between the direct stakeholders and their suppliers. This encourages the key partners in the provision of infrastructure (direct stakeholders) to work with a level of mutual trust and collaboration rather than as adversaries.

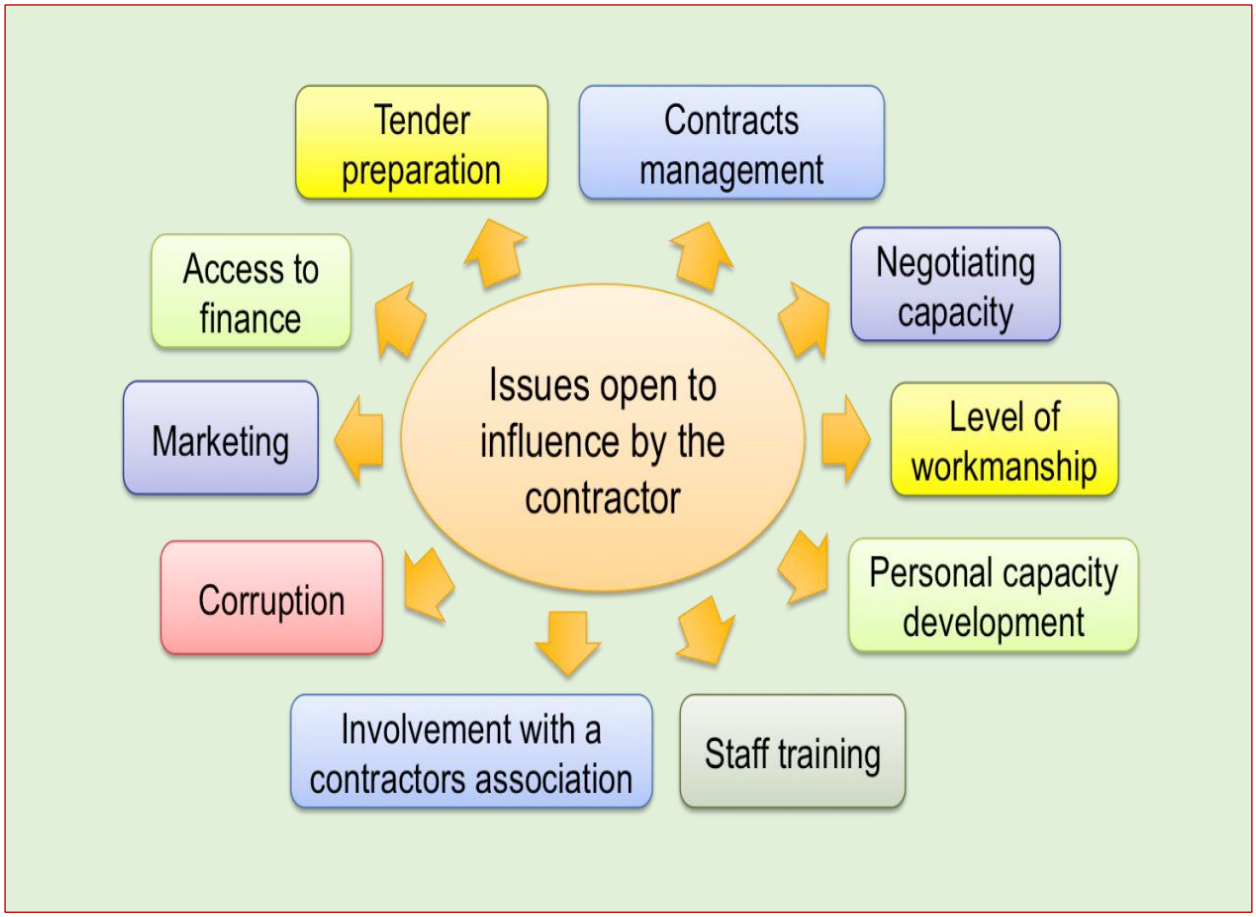
2.2 Challenges facing local contractors

Ideally, the roles and the responsibilities of the main parties involved – clients, consultants and contractors – are well understood as they are based on a procurement system that regulates their respective rights and obligations. Consequently, the client, the consultant and the contractor are generally in well-balanced contractual relationships to negotiate and arrive at mutually acceptable solutions with recourse to the regulatory systems and the law if necessary.

Large contractors generally have sufficient authority, knowledge and influence for contractual arrangements to work fairly. Local contractors on the other hand are generally in a position of disadvantage because of their size and often because of their lack of understanding of the intent of contract documents and their own rights. As a consequence they generally react to the demands of clients. Small-scale contractors usually have no say in the design of works but are totally responsible for quality and performance. In tendering, the room for manoeuvre is limited. Material, labour and equipment prices will be similar for all contractors. The small-scale contractor must therefore rely on reducing overheads, increasing labour productivity and having more effective site organization and operations.

Local contractors face a range of challenges in managing their enterprises and contracts profitably. Some of these are directly related to the contractors' own capacities and operations in managing works especially for public sector clients. Others are issues over which contractors

Figure 2. Elements of contractors' business operations



have little control but they form an important part of the business environment at a broad level and more specifically.

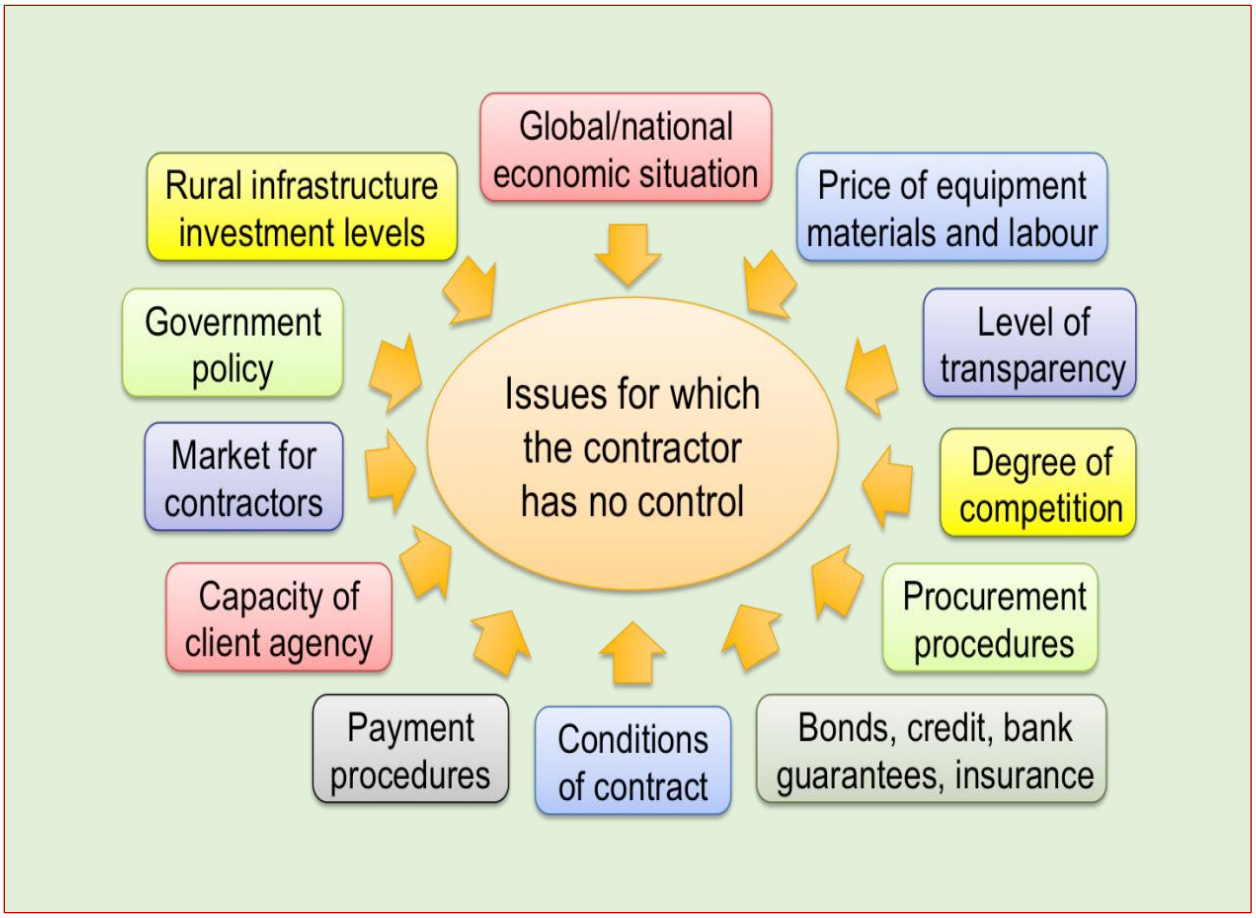
Figure 2 provides an overview of the elements, which are directly related to contractors' business operations. While local contractors are responsible for developing and managing their enterprises and improving their capabilities, it is often useful to provide support on all these aspects. The support required for each element is further elaborated in Section 2.3.

Figure 3 shows the elements of the business environment on which the contractors have no influence but have an impact on the construction industry. For example the global economic situation (growth and unemployment in the rest of the world and increase in prices of raw materials) is beyond the control of policy-makers in a country but affect the national economy.

These affect the contracting industry directly and indirectly, e.g. through higher prices or fewer business opportunities. The level of investment in infrastructure, the prevailing contractor classification and the priorities given to local contractors impact on the growth and stability of business opportunities for contractors.

While there are a number of elements of the external environment with specific implications for local contractors, many of the aspects are under the influence of government development strategies, the prevailing institutional arrangements and the effectiveness of planning and implementation. Local contractors are commonly blamed for inefficiencies, poor performance and delayed outputs without much consideration being given to the environment in which they operate. A more constructive approach would be to acknowledge that many local contractors possess (or have the potential to develop) technical and management capabilities with little support. Experience shows that they do respond to development support, and has often proved to be effective in implementing infra-structure works using local resource-based approaches. Policy changes in this direction can have a significant impact on the business environment making it more conducive to contractors. Details of interventions to address the above external challenges are presented in Section 2.4.

Figure 3. The external environment



2.3 Issues related to contractors' capacities and operations

Most local contractors are mainly engaged in housing construction. As opposed to works for private sector clients, public contracts for local infrastructure works often involve particular challenges for local contractors. These may include insufficient technical or managerial capacity or business related issues. Still, these challenges can be addressed through a combination of measures, some by the individual contractors themselves while others may benefit from some form of external support.

2.3.1 Preparation of bids (in response to calls for tenders)

For many local contractors, the tender specifications are complex and difficult to understand. Because of this complexity and time pressure, contractors focus on estimating the costs of the works and do not pay sufficient attention to details in the general and specific conditions of the contract – wrongly assuming that these clauses are always the same.

The preparation of a bid requires financial and technical competence and a sound understanding of the legal language in the contracts. The contractor must be able to estimate the direct costs (which is not a problem in general), but also the indirect costs such as overheads, the cost of obligations, warranties and borrowing needed to manage cash flow taking into account the payment schedule and the likely delays in payment (common for public sector contracts) and taxes. An allowance should also be made for the profit margin.

The instructions to bidders usually indicate that candidates may ask for additional information or explanations on specific contract work during the period between the call for tenders and the submission of bids. The request is made in writing to the contracting authority. Small-scale contractors often do not use these provisions due to lack of experience.

Finally, the instructions to bidders also state that the contractors are required to familiarise themselves with the work site. Unfortunately, this provision is at times used as an argument to deny the contractor more time or additional payments on the grounds of difficult site conditions not known at the time of bidding.

2.3.2 Managing a construction enterprise

To develop their businesses and meet the expectations of their clients, contractors are required to manage construction works and their businesses in parallel.

2.3.2.1 Construction site management

Construction site management comprises several tasks to be undertaken by either the contractor or site agent or his/her other employees. These include:

- **Planning.** This establishes the schedule of work and enables the tracking of progress. The schedule is updated regularly to reflect field activities and to determine the measures needed to complete works on time.
- **Setting out and execution of works**. Transferring dimensions from the layout plan to the ground using appropriate techniques and instruments in readiness for the execution of works. It further includes mobilizing the necessary resources and carrying out the work.
- **Monitoring and recording** of the inputs and outputs, quality of works as well as other implementation processes to identify any problems on site and resolve them before they become too large. These records make it possible to prepare progress reports including documenting outputs, use of inputs and productivity. The information also enables the contractor to report on progress and facilitates the handing over of the works to the client. Compliance with social and environmental safeguards is also an aspect of monitoring.
- **Verification of workers' conditions** is concerned with ensuring compliance with prevailing labour regulations with the aim of taking any corrective actions promptly to comply with relevant requirements.

Site management does not in general pose a problem for experienced contractors but training and support is useful for those with limited experience on the use of local resource-based work methods or new entrants into particular types of works. Experience shows that weak control of site activities results in low productivity and ineffective use of resources. Site journals and accounts of activities should be recorded on a regular basis.

The financial management during the course of the works includes monitoring expenditure on labour, equipment, materials, consumables and overheads, and tracking income (requests for advance payments and deposits, follow up of submitted invoices and receipt of payments).

Monitoring expenditure is also necessary to avoid losses and possibly to request cost increases. The costs of inputs provide essential information for estimating actual unit rates to be compared with those estimated initially.

It is imperative that the contractor submits invoices in a timely manner, thereby securing a healthy cash flow that allows for timely cost recovery. In the best of cases, payment of a monthly invoice takes about thirty days, from the time the invoice for completed work is submitted to the client to its payment. During this time the client's representative or supervising consultant will have verified that the work has been completed to the required standard and the payment processed.

On the job training – Setting out. Central African Republic

2.3.2.2 Management of the business

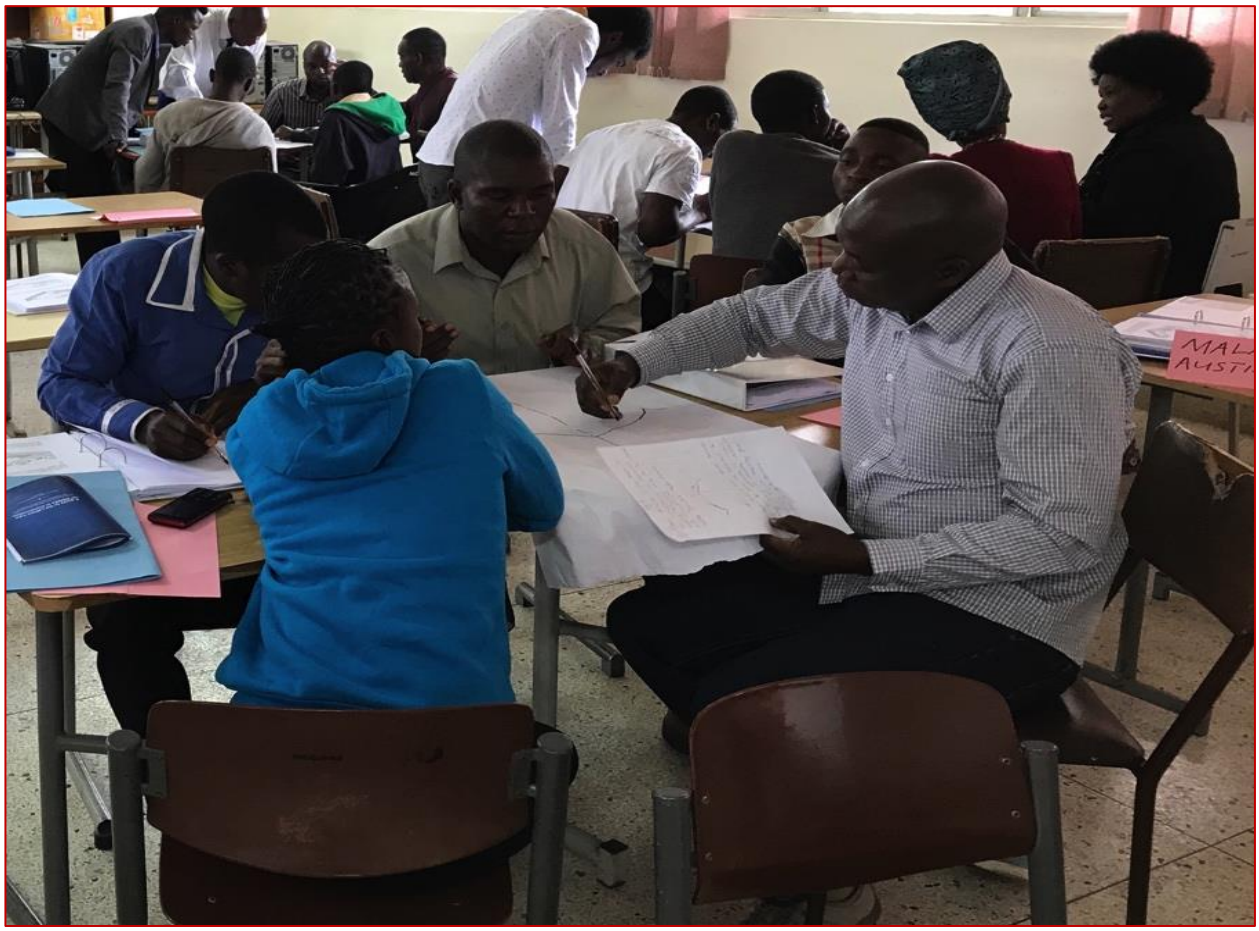
The management of a business refers to a rational use of resources to achieve the objectives of a company relating to the strategic direction of the business, its development and expansion, turnover and profitability. Aspects of management also include preparation of a business development plan defining medium and long-term objectives as well as developing a business strategy. The strategy should define the brand and positioning of the business (in relation to construction programmes and competition) and take into account the strengths/weaknesses of the company.

The business development plan must also identify the human resource development needs and a comprehensive action plan to meet such needs. The contractor will also have a threshold of profitability, which depends on the set unit rates and the expected performance of the company. The profitability threshold and the unit rates determine whether the contractor finds it worthwhile to bid for a contract.

Once this plan is established, for the medium and long term, more detailed plans and budgets for annual management are required which include: (i) activities to secure the annual work programme; (ii) measurement and control to monitor performance; and (iii) timely action put in place for corrective measures.

The planning of annual activities should result in an estimate of the workload of the business for the year. In so doing, the contractor takes into account the business's resources, the results for the previous year and the planned growth of the company. In this respect, it is crucially important that contractors regularly check information on the market size and opportunities, which, among other elements, will be defined by the scale and nature of infrastructure works at the national and local levels. However, most small-scale contractors often do not have access to such information and require support particularly at the formative stage of their businesses.

Sound financial management is essential for the health of the company. The contractor must estimate working capital requirements essential for cash flow management because of the time lag between expenditure and payments received. During construction, cash inflows and



Classroom training on technology choice for rural road works, Zambia

Box 7
Involving local contractors in local infrastructure works

Local administrations in developing countries typically have limited financial resources available to invest in development works. These resources are usually allocated for minor works such as the provision of roads, schools, water supplies and sanitation, or to technical services such as agriculture extension or vocational training.

Small local firms often have the technical capacity to carry out the above works but lack business and management capacity. Most of them are not familiar with formal bidding procedures, which are complex and time consuming. As a result, these firms may be deterred from bidding for public contracts, they may be unable to meet the stringent registration and qualification requirements, and/or be discouraged by the high costs of submitting a bid. In turn, the local administration may lack the technical capacity or financial resources needed to fully implement the procurement rules. The result can be that the procurement process fails because of procedural errors or because of a lack of bid submissions from local firms.

Source: UNCDF, 2013.

outflows can be balanced reasonably well if the clients pay promptly. However, at the beginning of the works (for example, the first two months) the contractor must have available funds to purchase materials, operate equipment and pay workers in addition to meeting other initial costs. The possibility of obtaining advance payments included in the contract is not often a reality since the contractor must produce an equivalent guarantee deposit.

In these circumstances there are only two solutions, either the contractor possesses the necessary funds or seeks a bank credit. Local contractors involved in local infrastructure works contracts often face obstacles in obtaining credit – which is discussed elsewhere. For good financial management, contractors aim to reduce borrowing for working capital as much as possible. They need to get paid as promptly as possible. This requires tight control and knowledge of the billing cycle, timely submission of invoices, knowledge of the type of billing required and the supporting evidence required to avoid disputes which lead to the blocking of invoices and further delays.

The contractor must also ensure the release, as soon as possible, of the bank security related to the bid and the completion guarantee to be free from any restrictions including blocked accounts.

For a local contractor who is the only technically qualified person in the company, it is a challenge to be responsible for the supervision of works and at the same time manage the company, including the finances. If it is a family company, a member of the family may be able to assist with basic management. The alternative is engaging an external specialist, e.g. an accountant, to help with business management.

2.3.3 Skills development

The provision of technical and management training is essential to improve the capabilities of local contractors. Training can be offered through local vocational training institutions or dedicated sector-based training centres. In some countries Business Management centres, private or state owned, have been created in order to support contractors in the management of their businesses. This support can last for several years and may involve training and mentorship in budgeting, balance sheet preparation, accounting, taxes, labour legislation, costing equipment, etc. It is important that small-scale contractor training involves practical field training on both technical and managerial aspects (e.g. demonstration works and trial contracts).

Contractors can also find some support from professional associations and chambers of commerce (whose assistance is similar to those of management centres, but usually for a shorter period).

Local contractors are not a homogeneous group. Some of them are medium-sized businesses, well established in the industry and likely to have more resources and skills. This may place them in a better position to undertake public infrastructure works. Whatever their size, however, the contractors need to stay competitive by regularly upgrading the skill levels of their employees and work actively to remain in the construction market.

2.3.4 Access to finance and equipment

SMEs are characterized by a shortage of working capital and funding for survival and expansion. Many local infrastructure works contracts, on the other hand, do not offer advance payments. When they do, the conditions are not favourable, for example, they require guarantee deposits. At the beginning of a new contract, the contractor has many financial obligations (e.g. a performance bond, insurance premiums, purchase of materials and site installations) and, in the absence of an advance payment there is no cash inflow, which is conditional on work progress.

Some public procurement regulations have provisions that allow reimbursement of up to 80 per cent of the materials purchased by contractors and delivered to site. Given the financial constraints faced by local contractors and the difficulties of obtaining credit from banks, this is a good practice that can be incorporated in procurement codes for local infrastructure works.

Commercial banks consider small-scale contractors to be high-risk clients, and they protect themselves by limiting the amount of credit and charge higher interest rates. Local contractors require loans principally for purchasing equipment and working capital. In addition contractors are required to rely on bank guarantees in business transactions, for example, when purchasing materials or even as conditions of works contracts. These guarantees impose restrictions on contractors' use of funds since banks often block deposits equivalent to the guarantees.

Governments in some countries have responded to this problem in two ways:

- by establishing lines of credit for commercial banks to facilitate access to credit for local contractors at reasonable interest rates;
- by creating specialized institutions to support the development of local entrepreneurs – they have advantages compared with commercial establishments, such as the provision of loans specifically adapted for small businesses at low interest rates, more rapid response, less complex conditions and more flexible management of loans.

Some countries go even further in creating instruments for guaranteeing loans to commercial or specialized banks. Often these are agencies that guarantee certain categories of loans offered by the banking institutions to local contractors. States and banks hold their capital. Box 8 on Tunisia shows that it is possible to ease the financial burden on local contractors through commercial banks with the intervention of state agencies. In other cases, support is provided to young entrepreneurs and/or small construction company owners through the creation of funds to equip trained contractors with light equipment on a revolving loan basis (ILO and WB, 2018).

Stone cutting machine sizing materials for wall construction and paving. Togo

Box 8
Financial support to SME development in Tunisia

Tunisian SMEs, most of which are in the informal sector, represent 90 per cent of the economic activity of Tunisia. Regular financial institutions meet only 13–20 per cent of SMEs' funding requirements and they give two main reasons for this meagre support to SMEs. First, they believe SMEs lack transparency in the management of their businesses, and second, SMEs are very often family owned businesses and therefore perceived to be precarious and unsustainable.

According to a study conducted in 2013 by the International Finance Corporation (IFC), leasing companies provide in the order of 13 per cent of the equipment funding needs of SMEs. The owners meet the rest, about 67–74 per cent of the funding needs.

In order to improve this situation, the Tunisian government has put in place two institutions providing specialized loans and loans on concessional terms to SMEs:

- The Tunisian Solidarity Bank (BTS). Its mission is to grant loans to the holders of university degrees and people with professional qualifications or craft skills who do not have sufficient guarantees to convince commercial banks.

  The loans can be used to purchase equipment and materials and as working capital. The duration of loans varies from six months to seven years at 5 per cent interest rate.
- The Bank for the Financing of SMEs (BFPME), which provides long-term assistance to local contractors. They grant loans for the purchase of equipment, intangible investments (e.g. education and training), working capital, and start-up advances for SMEs that have successfully tendered for public contracts. The bank also supports SMEs with information on business opportunities, introductions to supporting institutions, the processing of funding schemes, the supervision and monitoring of work together with local authorities, and technical assistance. The duration of BFPME medium-term loans varies from 2–7 years and long-term loans from 8–10 years, with average interest rates of 3–4 per cent above the Tunisian wholesale money market rate.

  The loans are primarily for higher education graduates (occupational integration), and for initiators of development projects in high value-added sectors (ICT, biotechnology, renewable energy and protection of the environment).

These two are banks under the supervision of the Ministry of Finance. The funding is sourced from the government, national companies and the private sector. The two institutions have created regional offices to be closer to their customers (SMEs).

An alternative available to contractors in need of equipment is leasing. Leasing companies purchase the equipment and rent it to contractors for a specified period with the option to acquire the equipment at the end of the leasing period.

The main advantage of this solution is the speed of processing while the main disadvantage is that leasing rates are higher than the interest rate charged by commercial banks.

Source: ILO project "Projet Initiatives de Développement Local Intégré – PIDLI". Tunisia.

Market place in Sidi Bouzid, Tunisia

2.3.5 Engagement with professional associations

Professional and industry associations promote the interests of their members and those of the industry within which they operate. They can also be avenues for sharing vital business information and influencing policies and practices. They also provide training opportunities to their members on relevant trades.

Associations can be grouped to form a federation in a given sector. The main areas of intervention of associations are the following:

- business services – associations provide:
  - information regarding changes in the business environment, the labour market and social affairs (labour legislation, social security, occupational safety and health);
  - advice, support and information to enterprises on technical aspects (technology developments and innovations); and
  - professional development (assessing skills development needs and providing training programmes);
- monitoring of the business environment – associations analyse and publish articles to inform its members on:
  - the economic and business situation including changes to policies (taxation, financing, regional development, standards and quality); and
  - the social situation (e.g. legislation, employment, occupational medicine, health and safety, studies on the prevention of accidents and reconciliation of conflicts);
- representing the profession or industry – associations:
  - promote the interests of the industry and their members;
  - work with policy-makers, public administrators and regulatory bodies (e.g. policy issues relating to the industry;
  - advocate for fair and inclusive public procurement regulations, tender procedures and codes of conduct, etc.; and
  - work towards the development of the profession in general through for instance training and financing).

The small-scale contractors face different capacity and operational challenges compared to their counterparts in large enterprises. Large enterprises are traditionally well organized but their associations have not been much occupied with the specific challenges of small-scale contractors. Therefore, small-scale contractors need to form their own associations and affiliate with associations of larger businesses if necessary to leverage influence. Alternatively they can form branches reserved for SMEs in established associations of conventional larger enterprises. The local contractors' associations or their branches should have regional representation to secure the particular interests of their local members. The associations representing the interests of local contractors would be well placed to draw the attention of government authorities to the problems and obstacles they face in the construction sector.

2.3.6 Negotiating position of local contractors

Large contractors often have the capacity to negotiate with contracting agencies on equal terms. They are financially stable, are members of influential business associations and have a good understanding of the legal and regulatory framework of the industry. This is not the case for local small-scale contractors.

Smaller contractors can, of course, use contract provisions in the public procurement procedures to negotiate better terms with the contracting agency. This could be to negotiate a contract with price revisions instead of fixed prices or to make claims for and obtain compensation for failure to comply with contract conditions on the part of the client. But in all cases, this requires that the contractor is familiar with procurement regulations and the detailed conditions of contracts.

Box 9

Association of small-scale contractors in Zambia

In Zambia, an association of small-scale contractors was formed among participants of a training programme for road contractors in Eastern Province in the late 1990-ies. They worked jointly on improving efficiency of their operations. However, there was not enough work on an on-going basis to ensure long-term commercial viability of small-scale contractors which caused problems of underutilization of plant and equipment, and difficulties in retaining good staff.

Representatives of the association established direct contacts with the government and donors on a continuous basis to advance distinct policies aimed at promoting the engagement of small-scale contractors as subcontractors on larger contracts in order to alleviate the expressed concerns over the lack of work opportunities.

Source: Uriyo, A.G., Mwila, J., Jensen, L., 2004.

Moreover, local contractors are not in a position of strength in negotiating with their suppliers because the quantities of equipment and materials they purchase are small and contractors often have difficulties in paying suppliers on time.

Promotion of the business and intelligence gathering can strengthen the negotiating position of contractors:

- Promoting the business to his/her existing and potential public and private clients (e.g. through the preparation and distribution of brochures), and positioning the business to better meet with needs of these clients in comparison with competition from other businesses.
- Intelligence gathering about the market and competition is needed to gain an understanding of the market conditions and competitors. Intelligence on the current contracts of competitors, their difficulties (technical problems, payment problems, litigation, etc.) and strengths (resources, such as staff and equipment), represents important information.
- Intelligence gathering is also required to stay informed about national and sectoral policies and other developments, e.g. revision of procurement regulations, changed emphasis in decentralization and the launch of new infrastructure development programmes.

Businesses can usually find support from their professional associations to promote their enterprises and gather commercial intelligence.

2.3.7 Corruption and collusion

It was indicated in Chapter 1 that corruption is a major problem in the construction industry globally. The location of the industry, especially for infrastructure works, at the interface of the private and public sectors is suggested as a possible reason. At the local level, it is no less prevalent but tends to be on a smaller scale.

Such practices have serious implications for the effectiveness and efficiency of infrastructure works and ultimately for the development of small-scale contractors. At the most basic level, the individual contractor can choose to engage in corrupt practices. However, if corruption is widespread and systemic, a contractor, especially a small-scale contractor, may feel they have little choice if they want to continue obtaining contracts.

Some measures at the level of contract management can improve the situation as indicated below. However, reducing systemic corruption requires more fundamental changes in a society and at all levels of governance. Rigorous anti-corruption measures should be applied, among others, to: (i) monitor and incentivise the reduction of corruption; and/or (ii) change the rules of the system (Hanna, et al., 2011).

Clarity, transparency and good management in contracting and works implementation reduces the risk of corruption. Table 8 shows the potential for corruption and collusion in the absence of good practice for an open tender with the lowest price method. The tendering processes used in

practice can be more complex requiring discretion and judgement on the part of contracting agencies, which at times leaves more scope for corruption.

Table 8. Award of open tender / lowest price method of contract

Assumption	Implications of non-compliance
Design is complete before tendering	Incomplete design means that costs cannot be estimated accurately and changes are needed post-contract, opening the door to post-contract negotiations and opportunistic behaviour over variations and claims.
Bidders can accurately estimate costs at the tender stage	Estimating errors may lead to the acceptance of unrealistically low tender prices, which means insufficient funds in the contract to deliver the works according to the specifications. A contract price below the estimated cost means that something has to give – either prices are inflated to cover the real costs or works below specifications are accepted.
	Inability to estimate costs accurately, and the danger of predatory pricing by competitors, can drive contractors to bribe and collude in order to win contracts. Bribery and low contract prices both encourage cheating during construction.
Client has made adequate budget provisions for the work	Late payment weakens the bargaining power of clients and is a major reason why contracts are not enforced.

Source: Adapted from J. Wells. Corruption and collusion in construction: a view from the industry, 2013.

Public bodies in some countries require contractors to include a declaration of anti-bribery, anti-corruption and anti-collusion in their bids (e.g. undertaking not to offer gifts to influence the procurement process during the tender or during the execution of the works). Similarly, contractors subjected to fraudulent pressures have to make independent choices and, in worst-case scenarios, request the cancellation of their contracts, with the possibility of claiming compensation damages for the disruption of their work. For most contractors and especially small-scale contractors such action is fraught with difficulties and dangers. Sometimes it is difficult to provide convincing evidence of fraudulent pressures, which may result in delays in receiving compensation and endanger their businesses by jeopardising client relationships thereby affecting their future market prospects.

An adverse side effect of operating in an established corrupt environment that the government is attempting to limit is that the controls introduced, stringent auditing procedures and scrutiny and approval at various levels of administration, often cause further delays in payments to contractors.

Collusion between contractors is another form of malpractice with implications for contract costs and the functioning of the contracting market. In some cases contractors may collude at the bidding stage to ensure that one of them wins the bid and the winning bid is sufficiently high for the contractor to make side payments to the colluding parties.

For contracting agencies, the remedies against corruption and collusion are, among others: (i) widening competition at the bidding stage; (ii) requiring declarations of non-collusion in bid documents; (iii) preparing accurate cost estimates; and (iv) close scrutiny of bids, if necessary with the assistance of consultants.

Industry associations have a role to play in establishing codes of conduct for members, which proscribe corrupt and collusive behaviour and in influencing policy-makers and government agencies on these matters. They can also facilitate dialogue between the client bodies and service providers to collectively combat the scourge of corruption and promote fair and inclusive growth of the industry.

2.4 Issues over which contractors have little control

2.4.1 Global/national economic situation.

As noted in Chapter 1, the global and national economic situation has a direct impact on the construction industry. Economic recessions usually have a significant impact on construction sector activity because the private sector then cuts back on investment. Following the financial crisis, global value added in construction fell by 15 percent per cent between 2008 and 2010.

On the other hand, governments with fiscal space can increase expenditure to compensate for the fall in private sector spending. Investments in infrastructure have proven to be an effective means for creating demand and initiating growth during recessions. In general, infrastructure investment and economic growth are interdependent since the investment contributes to economic growth and growth increases the demand for improved infrastructure and provides greater fiscal space.

Village water system, Afghanistan

The levels and fluctuations in government investment expenditure have a direct effect on the construction industry. Large construction companies with sound financial situations can adapt to the level and fluctuations of government expenditure in direct contrast to small construction firms. Further, the level and proportion of budgets allocated to rural infrastructure development clearly have implications for the construction industry in rural areas.

2.4.2 Government policies and development strategies

The development and growth of the local construction industry is to a great extent determined or influenced by government policies and strategies. National employment policy, private sector and small-scale enterprise development, rural livelihoods and poverty reduction as well as investments in support of government development objectives are important in this respect.

Long-term development plans can be good indications of future capacity needs for different sectors and market prospects for the domestic construction industry. Investment projections derived from development plans determine the size of the future infrastructure programmes and therefore the market prospects for local contractors. Disseminating such information in an appropriate form enables individual contractors to position themselves in the market and orient their businesses towards specific sectors (e.g. roads, housing, irrigation among others).

National plans often indicate clear priorities to certain types of infrastructure. When priority is given to improving rural access, rural roads receive a significant share of funding. If the government decides to improve agricultural production, then irrigation infrastructure may be targeted. Equally, there are examples where national plans give more attention to the preservation of existing public infrastructure, which in turn may favour local small-scale contractors engaged in maintenance works.

With the focus on the Millennium Development Goals and more recently the Sustainable Development Goals, it is clear that many indicators of success depend on heavy investments in infrastructure such as roads, school buildings, health centres, water and sanitation. These in turn will create significant business opportunities for existing and emerging contractors.

2.4.3 Economic and social policies

Government economic and social policies can impact local contractors as businesses in a number of ways:

- Taxes, customs duties and other fiscal measures affect the cost of inputs such as equipment, materials and consumables.
- Labour regulations (such as minimum wages, conditions of employment and protection and welfare of workers) have both productivity and cost implications for most enterprises. When applying local resource-based work methods, the conditions of work have an important impact on the productivity of a main production factor (labour) and the wage bill, and the costs associated with engaging a large labour force constitute a significant proportion of the cost of works.
- Available business development support including finance, training and market access can have a positive impact on the performance of local contractors and require policy intervention at appropriate levels.

2.4.4 Contractor classification

Contractor classification is an important element of the rules and procedures that are regulating the construction industry. Contractors are classified according to their capabilities, financial standing, equipment holding and experience. A consistently applied classification system is a form of up-front quality assurance and is intended to provide clients with some confidence that the enterprises bidding for contracts have credible capacities and resources to carry out work of a specified type and scale. It enables the client to specify the class of contractors permitted to bid and hence excludes enterprises from bidding that do not meet with the requirements. However, contractors have either very little or no say in determining the categories and the requirements under these categories. For small-scale LRB contractors, a common practice is to place them in a category of their own following their successful completion of appropriate training programmes, thereby facilitating their access to local markets.

Human and material resources are essential in the classification of contractors. Indonesia.

Box 10

The delayed payment to contractors and a regulatory solution

In Peru, the cost of delayed payments was a major issue for contractors. These costs are usually to be borne by the employer. The General Regulations for Public Works Tenders and Contracts stipulated the payment of the accrual of commercial interests on delays beyond the specified payment period. It is extremely difficult for a public administrator to pay interest, which has not been budgeted. The provision, therefore, resulted in prompt contract payments.

Source: World Bank, Pakistan Infrastructure Implementation Capacity Assessment (PIICA): Technical Note 1. Development of the construction industry – a literature review, 2007.

The example of Singapore

As a result of a sharp decline in demand in the construction sector in Singapore, a series of payment conflicts appeared between the owners and the main contractors, and between contractors and their subcontractors, as well as with suppliers.

In order to deal with this situation the Government put in place a law in 2004, aimed at improving cash flow in the construction industry by: (i) defending the rights of contractors to ask for interim payments for completed work; and (ii) providing a framework for rapid and less costly resolution of payment conflicts through arbitration.

The main features of the act were: (i) the right to obtain payment for works implemented and goods and services supplied; (ii) the establishment of an arbitration process for contractual disputes; and (iii) the right of the contractor to suspend work and services if the payments due are not made following an arbitration decision in the contractor's favour.

Source: New developments in the construction industry in Singapore, G Ofori, 2004.

Payment procedures for local infrastructure works in Tunisia

The Procurement Code is specific on the system for the settlement of contractors' invoices adhering to the following steps:

- Step 1: Request by the contractor for the measurement of works.
- Step 2: Measurement of works by the resident engineer within eight days of the request.
- Step 3: Submission of payment request accompanied by the measurement of works to the client.
- Step 4: The client authorizes payment following approval of the invoice within thirty days;
- Step 5: The payment is made within 15 days after the authorization of payment.
- In total, the process is intended to take a maximum of 53 days or 1.75 months.

Source: Public Procurement Code, Tunisia.

Local contractors must possess the human, material and financial resources corresponding to a given category in order to be certified for and be able to participate in tenders.

Table 9 shows the requirements for contractor categories 1 and 2 in the building sector in Tunisia. This example also illustrates some difficulties faced by small-scale contractors in undertaking local infrastructure works contracts.

Table 9. Example of specifications of requirements for Category 1 and 2 contractors, Tunisia

Category	Human resources	Equipment	Capital	Maximum threshold
1	1 Senior technician 1 Construction site overseer	1 utility vehicle 1 mixer 1 pneumatic hammer 1 office	20 000 TND[1] (9 000 EUR)[2]	300 000 TND[1] (136 350 EUR)[2]
2	1 Engineer 2 Senior technicians 1 Construction site overseer	1 pick-up truck 1 compressor 1 crane 1 mixer 1 pneumatic hammer 1 office	50 000 TND[1] (22 700 EUR)[2]	500 000 TND[1] (227 250 EUR)[2]

[1] Tunisian dinar. [2] Euro.

Note: Procurement process

Procedures for tender and award of contracts are governed by the Public Procurement Code and apply to all types of works, regardless of the technical difficulty and the cost of the infrastructure. The client works with the technical directorates of regional departments or with a consulting company and sets up committees responsible for: (i) opening the bids; (ii) tender evaluation; and (iii) selecting and announcing the successful bidders.

Most of the steps need to be audited and approved by regional or national authorities responsible for compliance with prevailing public procurement regulations. The process requires a long period from the launch of a call for tenders to signing the contracts. Such delays can be detrimental to the success of local contractors since it requires the locking in of funds in return for bank guarantees and the underutilization of equipment and staff.

Stone pavements using local resources by recovering waste from former large marble quarries. The old knowledge and experience of paving is taught to new contractors. Thala, Tunisia

2.4.5 Execution of contracts

The provisions and conditions of a local infrastructure works contract usually place a maximum of responsibilities and obligations on the contractor. The consequence is an asymmetrical partnership in which the client has the controlling hand over the contractor. The contractor must put in place a performance guarantee, register the contract and find the funds to buy materials and rent equipment before starting the works. In the course of the contract, the contractor often encounters delays in payment for completed work in spite of clearly specified time limits for the processing of invoices and making payments.

2.4.6 Decentralization and management capacity

Increasingly, countries transfer development responsibilities and resources to local government authorities. The rationale for decentralization is that local economic and social development activities are better managed locally. The overall management responsibility for rural infrastructure usually lies with local government. Local authorities can therefore be important clients of local contractors. Their capacity to procure and manage civil works contracts therefore has serious implications for the development and growth of the local construction industry.

While decentralization is desirable in principle, for it to work effectively the local institutions need to possess the necessary capacity and resources to effectively manage their affairs. Furthermore, local authorities need to have the capacity to plan and supervise infrastructure works and manage public funds in a transparent manner. This includes being able to pay contractors on time in accordance with agreed conditions of contract.

The capacity and resources required for planning, work supervision, financial management, processing payments and monitoring and evaluation are generally lacking in local government institutions. These need to be strengthened by increasing the resources and recruiting and training staff to better manage the decentralized functions.

Governments in many countries recognize the need for capacity development alongside decentralization. A good example is the rural development institutes established across India that provide training to local officials in how to plan and implement local development activities. Similar arrangements are in place in countries like Bangladesh, the Philippines and Zambia. The training enables officials in local government to cope with the new responsibilities when new rural development programmes are launched.

While local government agencies are among the most important clients for local contractors involved in local infrastructure works, they are by no means the only clients. Equally, the responsibility for rural infrastructure development is shared among a number of national agencies and local authorities. Hence, assessing the actual or potential size of the market for local contractors needs to take into account the respective size of all involved sectors (i.e. transport, water, health, education, irrigation, etc.).

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Providing rural road access in the foothills of the Himalayas, Nepal

DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 3

Delivery systems

Head loads remain a common method to transport goods to rural markets. Comoros

EIIP

Employment Intensive Investment Programme

Chapter 3

Key issue

What are the common delivery systems for local infrastructure works and what is the appropriate approach to develop the required contract management and implementation capacity?

3. DELIVERY SYSTEMS

Overview

Construction and maintenance of local infrastructure are increasingly implemented through decentralized and devolved governance structures. The local authorities, the private construction industry and communities must therefore be capable of coping with the challenges that might come with the decentralization of central government functions. A sustainable capacity development approach for local infrastructure works is normally required to meet the trend towards decentralization and long-term demand from multiple contracting agencies.

Infrastructure works can be delivered through different arrangements, i.e. through the private sector, by force account units or through community contracting.

The previous chapters demonstrated that there is a great potential to contribute to economic and social development by improving infrastructure using local resource-based approaches. By creating a more enabling environment, local contractors, consultants and community organizations can be engaged in the effective delivery of infrastructure services.

For effective and sustainable capacity development, the approach adopted needs to take account of the different sectors, agencies and organizations involved in local infrastructure works. This chapter outlines common delivery systems and possible capacity development approaches.

Structure of Chapter 3

Section 3.1 Delivery arrangements for local infrastructure works	Discusses in general the delivery systems for the provision of local infrastructure; investigates the opportunities and challenges that come with the decentralization process; highlights the importance of capacity development at local level for all partners including government and the private sector; and lists the main implementation arrangements for local infrastructure works.
Section 3.2 Delivery systems for capacity development	Describes the possible delivery systems for capacity development for local infrastructure works in general; outlines contractor and consultant capacity development through government agencies or an appointed development agent; discusses the merits and demerits of contractor development through subcontracts or joint ventures; and, in given situations, presents community contracting as an alternative to conventional contracting.

3.1 Delivery arrangements for local infrastructure works

Key issue

What are the delivery systems for decentralized provision of local infrastructure works?

Useful information

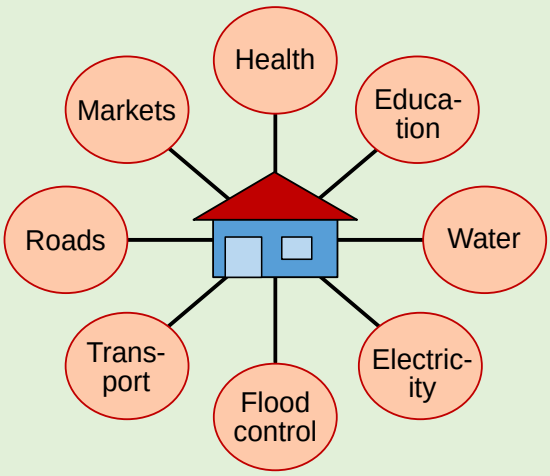
- ✓ The meaning of 'decentralization' and its implications in the given context with regard to political, fiscal and administrative arrangements.
- ✓ The governance structure (centralized, decentralized, etc.) and the setup and regulatory framework for the construction industry.
- ✓ The potential stakeholders to be involved in the decentralization, private sector engagement and capacity development processes and their roles and functions, including (i) government line ministries and works implementation authorities at central and local levels; (ii) national and international funding institutions; (iii) construction industry development agencies; (iv) labour unions; (v) construction industry associations; (vi) government and private financial service providers; (vii) equipment and material suppliers; (viii) education and training providers; and (ix) NGOs and community organizations.
- ✓ The nature and volume of infrastructure works likely to be implemented at local level in the near and further future (e.g. new construction, rehabilitation and maintenance of various types of infrastructure).
- ✓ The authority and administrative set-up for the provision of public infrastructure at local level within the decentralized framework. Which local institutions are involved and how are the functions of planning, managing works and maintaining public infrastructure distributed between them? What are the roles and functions of the central government line ministries (technical departments) with regard to financing, regulatory functions, technical advice and support, auditing and monitoring.
- ✓ Advantages and disadvantages of force account operations: Where and when are force account operations a feasible alternative and how they can be managed cost effectively.
- ✓ Potential for community contracting: Where and when are the various forms of community contracting appropriate, e.g. contracts with community groups or micro-enterprises in communities.

Experience

- ⇆ There is a general trend to decentralize government functions due to political, economic, social and good governance reasons. This includes shifting the decision-making and resources to local levels with more direct participation of the beneficiaries. The following opportunities and challenges may be encountered:
  - o opportunities include: (i) increased community participation in the planning, implementation and supervision of works; (ii) fund allocation for locally identified needs; (iii) local/decentralized management of works; (iv) beneficiaries' involvement in monitoring; (v) improved transparency and accountability; (vi) increased utilization of locally available resources; and (vii) enhanced local technical and management capacities;
  - o challenges include: (i) misunderstanding of devolution and decentralization processes; (ii) lack of capacity within local authorities to take over responsibility and effectively implement works; (iii) political involvement and power struggles; (iv) restricted resource allocation and distribution; and (v) reluctance of central government departments to reform and devolve functions;

Box 11
What is decentralization?

Decentralization is commonly defined as the transfer of power from central government to subnational (e.g. regional, provincial or district) authorities. This includes the transfer of public functions from central to intermediate and local government. It will include the provision of certain types of public infrastructure and often with some elements of private sector involvement. Ideally, this shift of authority is combined with the transfer of the resources required to perform the given responsibilities.



Division of key tasks and responsibilities

The division of functions and responsibilities between the different levels of government varies from one country to another, and depends on the type of works and the conditions in which the works are carried out. Despite this, there are certain trends in most local infrastructure development programmes as shown in table 10.

Table 10. Decentralisation and division of tasks and responsibilities

Key task	Level of responsibility			
	National	Provincial	District	Commune
Data collection			✔	✔
Planning	✔	✔	✔	✔
Budgeting	✔	✔	✔	
Plan approval	✔	✔	✔	
Budget approval	✔	✔	✔	
Source of funds	✔	✔	✔	
Standard setting	✔			
Authority to classify	✔	✔	✔	
Works implementation		✔	✔	
Supervision		✔	✔	
Maintenance			✔	
Award of contracts		✔	✔	
Monitoring	✔	✔	✔	✔
Accounting		✔	✔	

- Decentralization and delivery through the private sector or the community are not straightforward processes and their effectiveness can be constrained for a number of reasons:
  - decentralization is a dynamic process that involves a number of partners with differing interests and capacities to participate in an environment of local autonomy and decentralized government;
  - changes in roles of central government agencies and line ministries from traditional bureaucratic authorities to enabling agencies with key functions devolved and decentralized are usually slow and complex processes;
  - decentralized provision of infrastructure requires competent managerial and technical staff at local levels and thus increases the importance of capacity-building programmes;
  - the degree of participation in and perception of decentralization processes by communities can also differ considerably and may not be the same as that of politicians and civil servants;
  - developing sustainable delivery systems is more complex because infrastructure works may be implemented by several different agencies.
- Involvement of multiple agencies poses some challenges for the development of a contracting capacity proficient in employment-intensive work methods. In the absence of firm policy directions and appropriate capacity development, the different contracting agencies may place different emphases on adopting local resource-based approaches. A clear policy direction reinforced by effective implementation is therefore required by all agencies engaging in employment-intensive infrastructure works.
- Central agencies often fail to build sustainable arrangements for preserving existing and newly constructed infrastructure assets. Once the construction works have been completed, maintenance and operation of the infrastructure are handed over to local government authorities, which do not necessarily have the means or capability to maintain the infrastructure. Coherent policies are also needed to: (i) coordinate local infrastructure investments by multiple agencies; and (ii) secure a common strategy for maintaining infrastructure assets.
- The possible main delivery arrangements for local infrastructure works are: (i) works executed by a central line ministry or technical agency; (ii) infrastructure works programmes implemented by local government agencies; (iii) force account units in central or local government agencies; or (iv) works executed by communities.
- Most local infrastructure works are implemented by central or local government agencies and rely heavily on the private construction industry. Even where there are force account units still in operation, such works usually take place alongside or in combination with works carried out by private contractors.

Box 12
Force account operations

Force account is an implementation approach by which construction or maintenance works are carried out by a workforce employed by a government institution.

Equally, equipment and materials are supplied and managed by the government agencies given the responsibility for the construction, repair and maintenance of public infrastructure.

Force account is sometimes referred to as ‘direct labour’.

Box 13

Zanzibar: Retaining and strengthening force account operations for maintenance of the road network

The Government of Zanzibar (a semi-autonomous region of the United Republic of Tanzania) has a long history of public infrastructure works using force account. Privatisation of operations is considered problematic due to the unique geography of island archipelagos. The Ministry of Communications and Transport retains force account works units to maintain the road network on the islands.

In order to strengthen the maintenance capacity on Pemba Island, the Government decided to implement a road rehabilitation project that would enable its staff to gain essential skills to implement works using local resource-based approaches. The Government hired the services of an international consulting firm to:

- advise the Government on the procurement of appropriate equipment, materials and tools;
- develop and introduce labour-based work methods for the rehabilitation of low-volume sealed roads;
- plan and supervise works;
- train all department staff from engineers to plant operators and mechanics;
- mobilize and train workers from the communities along the roads;
- introduce a sustainable maintenance system.

The project lasted for four years and rehabilitated 45 km of paved rural roads using labour-based methods. The force account unit on Pemba Island is now maintaining the road network using the labour-based techniques introduced during construction. With an optimal size of the workforce, the right equipment and good site supervision, it is possible to deliver quality infrastructure on time and at competitive costs.

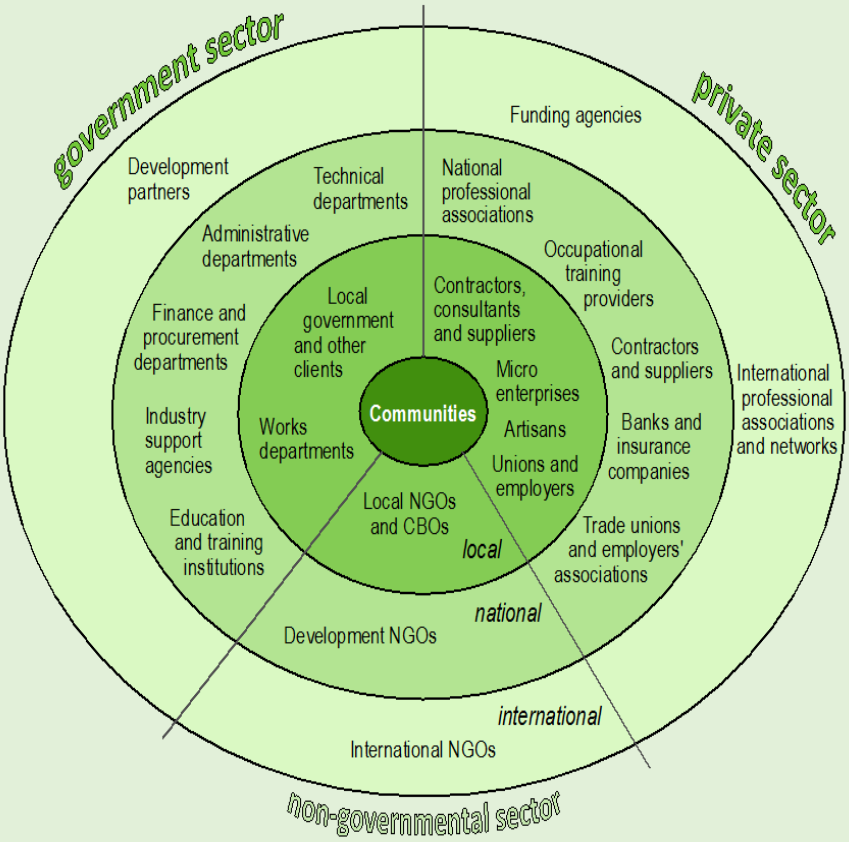
Rural road works in Pemba Island, United Republic of Tanzania

Routine road maintenance creates contracts and jobs on a regular basis. Cancun, Mexico

- Since the late 1980s, there has been increasing reliance on contracting works to the private sector with the aim of improving infrastructure delivery and economic efficiency. The restructuring led to the dismantling of public sector force account units with the expectation that the private sector would take over. In many cases, the dismantling of the force account capacity was too rapid for the private sector to fill the gap and, as a result, fairly well-functioning maintenance operations in many countries were disrupted.
- Local infrastructure works often consist of a number of comparatively small work sites dispersed over a large geographical area. Such works are difficult to manage due to demanding logistical requirements (supervision, supplying materials, tools and equipment to sites and payment of workers) and shortage of competent staff. Adequate works planning and implementation capacity is required within local government and in the private construction industry, together with the active participation of local communities. This can only be achieved if effective capacity development measures are introduced.
- While local government authorities have been given a wide mandate to provide a variety of infrastructure services (e.g. roads, water, sanitation, waste management, flood control, public buildings, etc.) their means to provide such services are often limited, in terms of technical, managerial and financial capacity. A major portion of the work carried out by local authorities consists of repair and maintenance of existing facilities, which require fairly limited technical and managerial skills. Therefore, local authorities usually rely on small-scale contractors to carry out works. However, small-scale contractors still need to possess the required capacity to deliver the necessary services on time and to the desired quality.
- Employment-intensive work methods using locally available resources for local infrastructure works are often more compatible to the capacity of SMCs. With their local knowledge and presence, locally-based contractors are in the best position to undertake smaller works and maintenance operations that do not require much equipment.
- The involvement of communities in the planning and implementation of local infrastructure works has shown good impact, e.g. creation of ownership, increased employment opportunities, commitment to maintenance and improved governance.
- Local government institutions need to be provided with competent staff, logistical support, adequate budgets, effective planning and management arrangements, procurement and accounting systems to effectively manage works carried out by local contractors.

Box 14
Overall partnership landscape for contracting development

Figure 4. Partnerships in contracting development



Working with communities in reconstruction efforts after the 2013 Typhoon Haiyan. Tacloban, Philippines

- Infrastructure provision is not a one-off exercise but a continuous asset management process. While central agencies may be interested in capital-intensive construction works, local authorities will be held accountable for the upkeep of the infrastructure. Equally local contractors usually find it easier to work with local authorities due to their proximity and knowledge of the local environment.
- While many governments have vested the mandate to provide local infrastructure services with local government institutions, it is still common to see large development programmes executed by central ministries, technical agencies or temporary project organizations.

Some guidelines

- The delivery capacity for local infrastructure using local resource-based approach is not a quick-fix process but requires thorough understanding and engagement of all the stakeholders over time. In this context, awareness raising and gradual capacity development of local decision-makers, planners, contracting authorities, private contractors and communities are crucial. Particular attention should be given to local authorities responsible for planning, design, contracting, supervision, work certification, etc., of the infrastructure works.
- There has to be a clear division of responsibility and tasks between the different levels of authority, e.g. national, regional, district and community. Key tasks for infrastructure provision and management include: data collection and evaluation; standard setting and control, appraisal and planning; budgeting; approval of plans; approval of budgets; source and disbursement of funds; procurement of works; implementation of works; supervision; maintenance funding; implementation, monitoring, accounting; and technical and financial auditing. Consensus has to be sought on the reforms needed in these functions to facilitate an enabling environment.
- To reach sustainable capacity development, there is a need for a common approach in infrastructure works programmes implemented at various levels. Standards and specifications for infrastructure works are usually coordinated and monitored centrally by sectoral authorities. The actual implementation of local infrastructure works should remain the responsibility of the local authorities.
- Central government should create an enabling environment and offer capacity development for local authorities and contractors providing technical support, establishing appropriate work and cost norms, and making provision for occupational education and training. Collaboration arrangements between central and local authorities need to be negotiated and agreed upon at both political and administrative levels.
- Programme management units with the reinforcement of technical assistance are often necessary during the initial phase for the establishment and institutionalization of effective programme coordination and support services. The functions may include technical, managerial, administrative and human resource development aspects. It is important from the start to ensure that such units become permanent sections within the institutions with their own set-up, staff and budgets.
- Effective and long-term sustainable capacity development at local level requires comprehensive and long-term development commitment with full participation from all partners. It also needs to consider strategies that:
  - avoid fragmented ad hoc development interventions but emphasize comprehensive approaches in which all partners are involved;
  - assume an empowerment approach to institutional strengthening, particularly for local authorities and development committees;
  - respond to the demand for infrastructure investment and is not top-down and supply driven;
  - take account of local structures and institutions, work within them and strengthen them;
  - encompass all the necessary development support measures, e.g. defining effective procurement systems, access to finance, skills development, bids packaging, conditions of contract and technology choice.

3.2 Delivery systems for capacity development

Key issue

What are the principal delivery systems for local infrastructure works and how can they be strengthened through capacity development?

3.2.1 General considerations

Key issue

What are the general conditions and requirements that govern the approach for developing effective local-level contract management for public infrastructure works?

Useful information

- ✓ Capacity development requirements for local infrastructure construction and maintenance works: What are the current gaps in capacity in government institutions and contracting agencies? What are the development opportunities and what can realistically be achieved within given timeframes?
- ✓ Necessary support arrangements available for the development of: (i) new contractors entering the sector; and/or (ii) established small- and medium-sized contracting firms in order to enable them to prosper in the open market, e.g. financial support, equipment provision, training and mentorship programmes, etc.
- ✓ Expected support arrangements to enhance the management capacity of contracting agencies to be able to efficiently manage local infrastructure contracts, e.g. advisory services for contracting agencies, management and administration support, training and mentorship.
- ✓ Potential for institutionalizing contractor and consultant development initiatives into existing support schemes, e.g. in continuous professional development programmes in collaboration with professional associations and industry development agencies.

Experience

- ⇆ In the past, various approaches have been introduced for developing the capacity of SMCs and locally operating consultants with varying degrees of success and impact. The most common systems are:
  - **Contractor and consultant development through a government contracting authority**: Training and support programmes for local contractors are often implemented by line ministries, such as public works, rural roads or rural development departments in collaboration with national training institutions and with technical assistance support;
  - **Contractor and consultant development through an appointed agent:** The implementation of some facets of a contractor development programme can be outsourced to private sector agents such as consultants, contractors and private training providers;
  - **Contractor and consultant development through subcontracts or joint ventures:** This approach relies on the idea of pre-determined apportioning of contract works with the intention that small-scale contractors will understudy their larger and well-established business partners and benefit from their experience and support;
  - **Community contracting:** This is a growing approach for securing local infrastructure works and known under different names, such as petty contractors, micro-enterprises and community contractors. Community contracting, also requires technical support, training and adequate supervision of work.

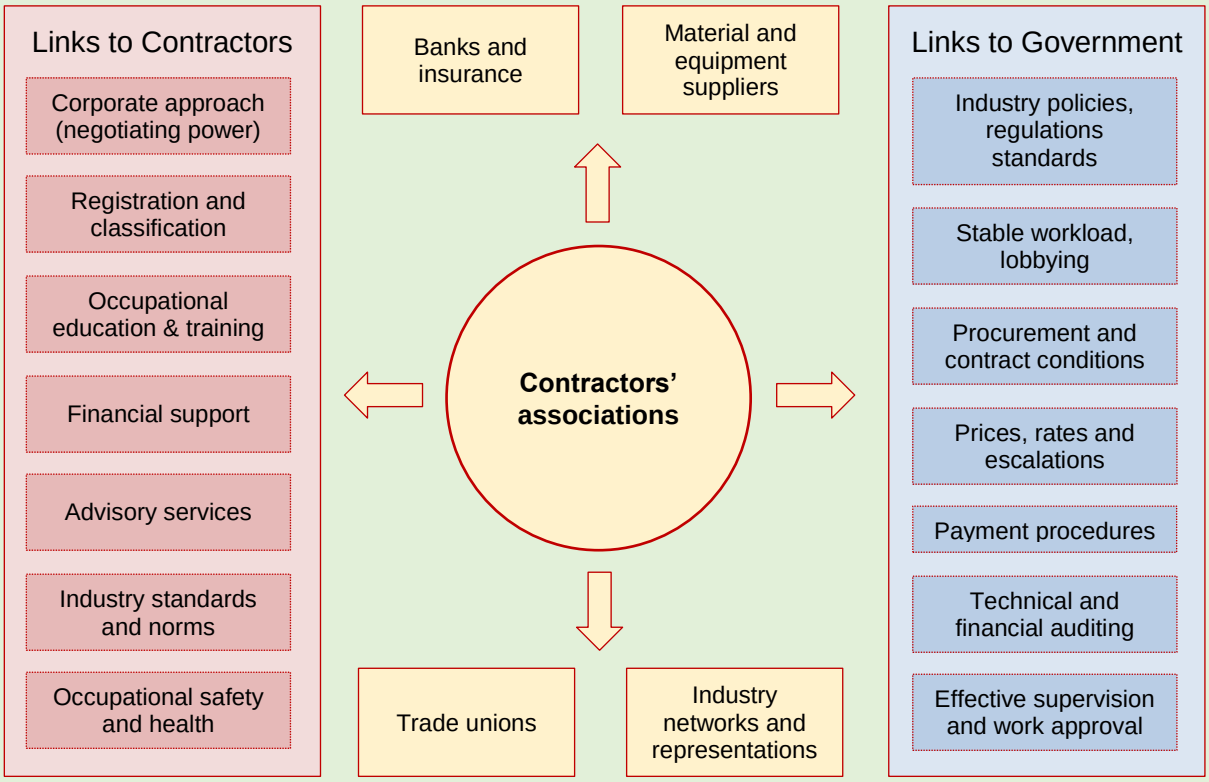
- Most contractor development schemes are components of projects and programmes designed to improve infrastructure to tackle one specific type and volume of infrastructure within a single sector, e.g. increased agricultural production, improved sanitation and health, reduced erosion, land rehabilitation, etc.
- On the other hand, broader multiple sector programmes involved in local infrastructure works with a primary objective of livelihood development and employment generation do not sufficiently involve the private sector.
- It is rare to find programmes in the construction industry with the prime objective of creating a general contracting capacity in the public and private sector. As such contractor development programmes tend to be limited in terms of scope, resources and timeframe.
- This usually reduces the impact that can be expected, with limited institutionalization of capacity building systems and approaches. As a result important partners such as contractor associations and local consultants are not sufficiently involved in the process. The result is that the construction industry is not in a position to adequately take over sector capacity development functions.
- Established contractor associations tend to neglect the challenges faced by small-scale contractors. Government construction industry development agencies are usually inadequately resourced to provide the necessary assistance. However, there are trends in many countries to ease business start-up and registration, to facilitate access to micro credit and to offer training. There is also an increasing awareness of the need to improve local capacity and create markets for locally-based firms.

Some guidelines

- A realistic assessment of the capacity development requirements for local infrastructure works is essential. This needs to be carried out together with all relevant partners. Roles, responsibilities and potential to participate in the development process need to be identified and agreed upon by all concerned partners. It is important to determine the limitations, risks and possible mitigation measures if the process does not evolve as intended.
- As noted in Chapter 2, sectorial policies, procurement regulations, and procedures and work standards have to be streamlined to ensure that all local stakeholders (government, private sector and communities) are fully involved and supported in the capacity development process. For example, adjustments may need to be made to standard civil works contracts to enable local contractors and communities to gain access to works.
- Procurement regulations may need adjustments to meet the specific needs of local authorities and to facilitate the involvement of local entrepreneurs and communities in implementing public work contracts.
- Contractor development schemes require strong partnerships between government and private sector. The government's role is to secure an enabling environment and to provide development support. Professional associations, construction industry and business development agencies as well as financial service providers need to respond in a structured approach with an agreed objective of developing a strong local private construction industry. Particularly contractor associations have to take the lead in developing their own industry by ensuring that they fulfil all roles and responsibilities as an effective association. These roles and responsibilities are outlined in the diagram in box 15.

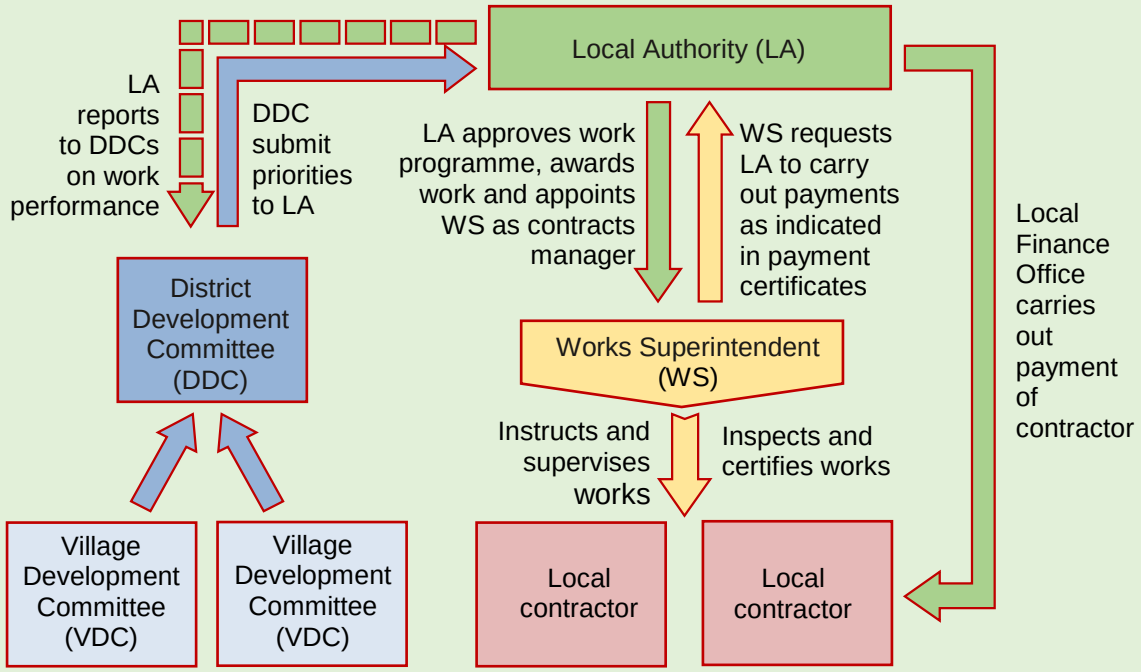
Box 15

Functions and services of contractors' associations



Common partnership arrangements at local level

Figure 5. Partnerships at local level



3.2.2 Contractor and consultant development through a government technical agency

Key issue

What are the measures required and what level of technical support is needed for local contracting capacity development implemented by government technical agencies?

Useful information

- ✓ Capacity of local contracting agencies to manage and administer contracts and to provide necessary support for small- and medium sized contractors and locally-based consultants.
- ✓ Capacity of technical agencies to guide and support locally-based contracting development in terms of technical standards and work methods, including the use of local resource-based approaches, appropriate contract management arrangements and the provision of technical advisory services.
- ✓ Private sector capacity and incentives for providing the necessary support services (for example, by professional associations, industry development agencies, consultants and financial service providers) and necessary public sector interventions to induce private sector support.

Experience

- ⇆ Technical assistance has in the past been successful in building local capacity to effectively deliver local infrastructure services. However, to reach the full development potential, there is a need to establish an overall strategic approach and detailed planning.
- ⇆ Technical assistance needs are generally underestimated and often do not address the full capacity building needs of local institutions, contracting agencies and professional associations. A strategy should be agreed at the start and should clearly define the roles of technical support personnel. This strategy should outline the changing role of technical assistance when line management responsibilities are progressively handed over to local staff and a plan for sustaining capacity development and institutional changes beyond the period of technical assistance.
- ⇆ Specialized technical assistance is useful for: (i) the development of central/regional/district planning, monitoring and supervision capacities; (ii) the development of a local training capacity for technical, management and business skills; (iii) setting up and running of demonstration sites; and (iv) the development of systems and contractual procedures that allow for local resource-based work methods and locally-managed contracting.
- ⇆ Competent counterparts and local specialists can be hard to find. Local authorities are often understaffed with shortages of competent technical and management personnel. There may be a need to prepare staff development plans to match skills with responsibilities and performance requirements.
- ⇆ In other cases, regional or local expertise is frequently ignored or undiscovered and not utilized adequately. The remuneration offered to local personnel is often not sufficiently attractive and salary schemes are not revised to reflect the prevailing economic realities. A strategy needs to be developed as early as possible to establish appropriate positions and attract suitable individuals.
- ⇆ Systems and procedures usually have to be modified to suit the requirements of locally-managed infrastructure works, e.g. decentralized responsibilities, appropriate contracting methods, use of available local resources, need for prompt payment and a quality assurance system.

Box 16

Kenya: Developing a local contracting capacity through the Government contracting agency

The mandate of the Kenya Rural Roads Authority (KeRRA) is to offer guidance on the construction, maintenance and management of the rural road network. The on-going devolution process shifts the implementation responsibilities for infrastructure works to the County governments. Their capacity to manage complex projects had to be developed. At the same time, local SMCs and local operating consultants needed increased capacity to implement infrastructure works using available local resources.

The large-scale Roads 2000 Programme in central Kenya is implemented by KeRRA with the objective *'to attain and sustain excellence in road maintenance that contributes to poverty reduction and wealth creation amongst the rural communities'.*

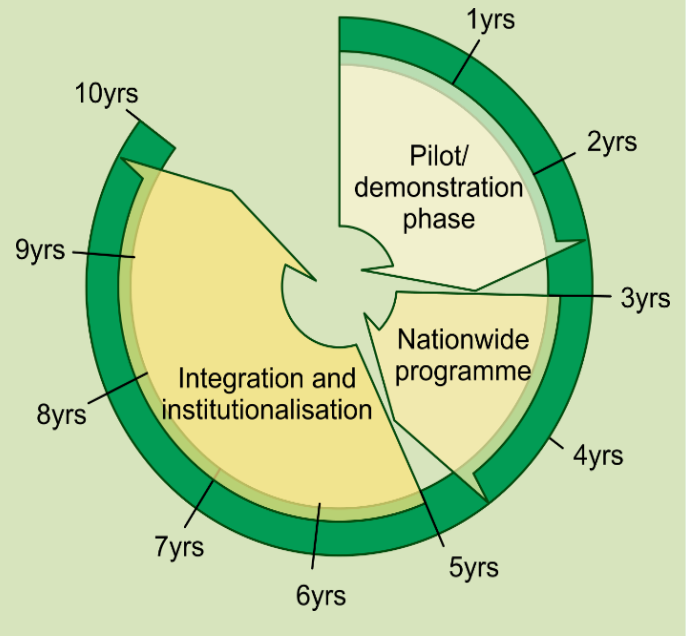
The expected outputs in the form of capacity development (besides the physical outputs) are:

- improved capacity of the KeRRA regional offices to plan and manage the development and maintenance of rural road assets;
- capacity of contractors and consultants increased through the full participation of the private sector;
- assistance to training and sensitization of both County government road sector staff and contractor trainees nominated by County governments.

To bring about the expected results, KeRRA has employed a management support consultant consisting of an experienced international consulting firm in a joint venture with two national firms. The main objective of the consultant services is to assist in managing and implementing the capacity building programme and to ensure the physical outputs.

The programme started in 2007 and is planned to end in 2019. By that time it is expected that the counties will have the required capacity to manage their own road networks; they should then be able to plan and implement infrastructure work contracts at county level using well capacitated locally based contractors and consultants.

Figure 6. Time required for phased contractor development



The time required for phased contractor development is longer than one might think.

The lessons learnt so far indicate that a 10-year timeframe is definitely required to create a sustainable contracting capacity at local level (see figure 6).

Furthermore, this is only possible if the government agency implementing the programme is fully committed and supported with the necessary technical and managerial assistance.

- The amount of training required for contractors, consultants and contracting agency staff is generally underestimated. There is usually a need for business management training in tandem with the technical training. During a pilot or demonstration period, technical assistance staff may have to assume certain executive managerial responsibilities, such as designing and planning of works, central management and supervision, which should subsequently be handed over to the contracting agency staff and consultants. It is important to clearly define the role of technical assistance staff in the management of works and contracts under the responsibility of the contracting agency.

Some guidelines

- Contractor and consultant development through government technical agencies is a common approach for overcoming capacity shortcomings in the relevant infrastructure sector. The requisite capacity can be developed within a relatively short period of time to address the specific needs of an individual project. However, such an approach is fragmented and does not address the overall development needs of the construction sector.
- Close cooperation is required with industry development agencies, professional bodies, contractor associations and training institutions.
- Capacity building may start with a pilot phase with emphasis on training and adjusting existing management systems appropriate for local contractors and the context in which they operate. Appropriate administrative systems and contractual procedures have to be developed and introduced during the initial phase. With increased local capacity in management and training the pilot could then evolve into an expanded programme phase with reduced reliance on external resources and assistance.
- Technical assistance should focus on strategy development for the implementation of government policies in this field, on institution and capacity building, and on the development, testing and introduction of systems and procedures. Technical assistance options include the use of: (i) consulting firms with relevant experience (national or international or preferably national in collaboration with international); (ii) international agencies (UN or NGO); (iii) qualified and experienced individuals with established credentials; or (iv) specialists provided by bilateral or multilateral funding agencies.
- A decision would have to be taken on how and where to institutionalize the training for the contracting agencies, contractors and consultants for long-term development and sustainability.
- A great deal of experience and documentation is available from past capacity building programmes that can be utilized to develop local expertise. The same applies for knowledge and skills transfer and experience sharing between practitioners including exchange programmes and study tours that show excellent results.
- With an adequate enabling environment (including political and policy support), smaller pilot schemes can develop into large-scale programmes within a period of two to three years. However, a long-term perspective (five to 10 years) is necessary to build adequate capacity and a sound institutional framework for contracting works using local resource-based approaches.

Box 17

Nepal: Suspension bridges, south – south cooperation

More than 5,000 suspension trail bridges have been constructed in Nepal during the last four decades. HELVETAS Swiss Intercooperation Nepal holds more than 40 years of experience in trail bridge technology. This expertise has also been applied in other countries including Bhutan, Burundi, Cameroon, China, Ethiopia, Guatemala, Honduras, Indonesia, Laos, Mozambique, Switzerland, the United Republic of Tanzania, Viet Nam and Zimbabwe.

In order to expedite and expand access to this experience and expertise, HELVETAS Swiss Intercooperation Nepal has set up a south-south cooperation unit. This unit offers specific expertise to governments, private sector institutions, and civil society organizations. The ILO, HELVETAS Swiss Intercooperation country offices and the African Development Bank have employed the unit's expertise.

Example: working with the ILO in Indonesia

An agreement between HELVETAS Swiss Intercooperation Nepal and ILO Indonesia was established in 2010. Technical assistance was provided to build 27 bridges in Nias Island including preliminary surveys, detailed design and bid preparation, procurement, manufacture of bridge components, work implementation and final inspection. Nepali trail bridge specialists conducted 21 bridge surveys. They supported the construction of eight bridges providing site verification, design, cost estimates, procurement and quality control of goods and services, and final assessments of the constructed bridges. In addition, a team of policy-makers, government officials, and ILO staff from Indonesia carried out study visits to Nepal. They visited various bridge sites and interacted with user committees, policy-makers, government officials and the HELVETAS Swiss Intercooperation team in Nepal.

Source: HELVETAS Swiss Intercooperation Nepal, South-South Cooperation Unit.

Suspension bridges also provide crossing of floodplains in Zimbabwe

3.2.3 Contractor and consultant development through appointed agents

Key issue

Can experienced local consultants, agencies or organizations act as development agents?

Useful information

- ✓ National policies and implementation strategies on private sector construction and local contracting development.
- ✓ Level and availability of technical professionals and training providers qualified to implement and provide training in local resource-based construction technology.
- ✓ Availability of suitably qualified and experienced organizations from the public and private sector who can provide the necessary development support for local contractors and consultants. Can they be appointed as development agents?

Experience

- ⇆ Local contracting agencies can become overburdened with the rising contract management responsibilities and tasks in expanding programmes. The capacity to manage and supervise an increasing number of construction and maintenance contracts can rapidly lead to non-professional performance, delays in contract implementation, compromised quality and increased costs.
- ⇆ The development team approach can include the actual management of the works by a consultants' team led by a construction manager and a materials manager, with contractors initially supplying only labour and tools. With experience, the contractor assumes increasing responsibility for materials procurement, transport, storage and provision of securities and other financial obligations. The development team approach has been successful in countries where a high level of technical resources is available in the private sector.
- ⇆ In places with a less developed local construction industry, it may be possible to involve non-governmental organizations or parastatal agencies in a construction management role. Such organizations or agencies will primarily administer, monitor and manage payments for local infrastructure works. Consultants are hired for design and supervision while local contractors or community organizations implement the works. It is often necessary to fine-tune procurement and contract management procedures, and provide targeted training for local authorities, consultants and contractors.

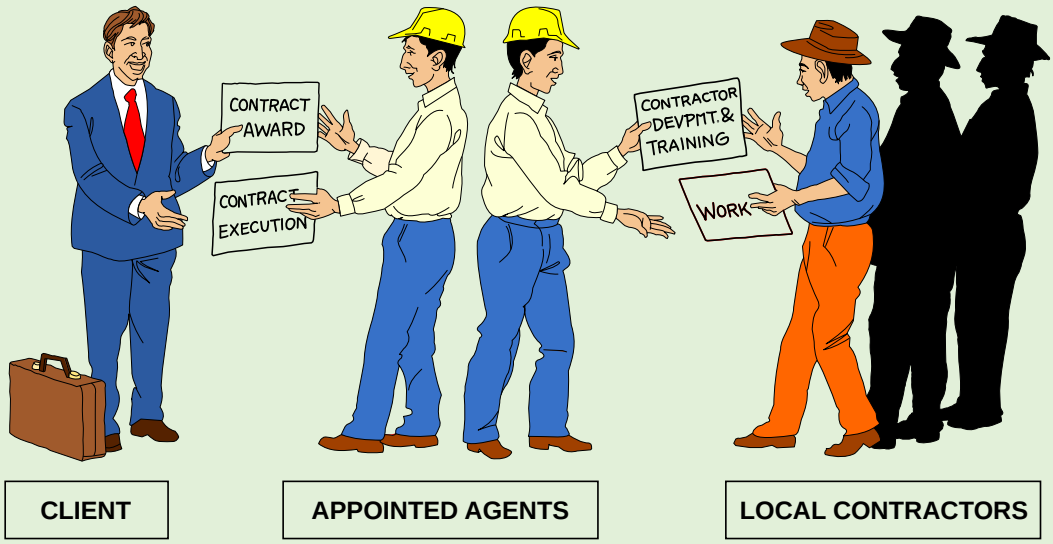
Some guidelines

- ☛ Different options for providing management support may be considered. Such support can be given directly through the appointment of a team, or indirectly by requiring the contractor to meet given socio-economic objectives (e.g. resource specifications through targeted procurement, see section 5.2.4).
- ☛ If the appointed agent approach is chosen, the scope of contractual responsibilities for the agent must be clearly defined. This may include the agent designing, preparing and procuring, or be restricted to supervising and mentoring the contractor(s).

Box 18

Appointed agent

Figure 7. Appointed agent between client and contractor



The AGETIP experience

(Agence d'exécution des travaux d'intérêt public contre le sous-emploi)

In their initial phases, contractor development programmes often offer material assistance (appropriate construction equipment) and usually provide technical and business management training. With a growing number of small firms, development programmes usually shift their focus towards the training of consultants and the development of a comprehensive contract management capacity within the contracting agency.

The TIP (Travaux d'Intérêt Publics) executing agencies are a particular case, the first one started in 1989 in Senegal, followed by several other African countries. As of 2018, 18 agencies are operational in 15 countries. They are organized as a network called AFRICATIP (www.Africatip.net). These agencies have approached their capacity development challenges from a different angle. As private sector contracting agencies, the AGETIPs were able to mobilize and use existing local contractors and consulting companies very quickly, and only subsequently focused on the introduction of cost-effective labour-based methods and business management skills.

Although quality and employment aspects were not dealt with initially, the size and scope of the AGETIPs, as well as the fact that they were often successful in mobilizing and recruiting qualified local staff, compensated for such deficiencies and reduced to some extent the need for training. Nevertheless, once well established, the AGETIPs recognized the lack of technical and management skills of their local contractors and consultants, and have set up appropriate training programmes for their own staff, and for contractors and consultants.

3.2.4 Contractor development through subcontracts or joint ventures

Key issue

How can the general contracting experience of larger contractors be used for the benefit of developing local contractors through subcontracts or joint ventures? What are the additional measures required to support this approach?

Useful information

- ✓ The number and capacity of experienced large- and medium-sized contracting firms operating at national or regional levels.
- ✓ Contractor associations representing large-scale and possibly also small- and medium-sized contractors and their capacity to participate in the development process for local contractors through subcontracts or joint venture arrangements. The following are leading questions in this regard:
  - What is their scope of representation and what are their existing support services?
  - What is their readiness to participate in a development programme for locally-based SMCs?
  - Are there realistic possibilities to motivate the associations and their members (large-scale contractors) to adopt local resource-based work methods, to act as lead contractors for new and existing local contractors and to fulfil training and mentorship roles?
- ✓ Engineers' association representing the civil engineering society in the country:
  - What is their scope of representation and what are their existing support services?
  - Is there a readiness to participate in the development of new and existing local consulting firms, e.g. through subcontracts, association agreements or joint ventures?
- ✓ The desirability, feasibility and legal status of regulating subcontracts and joint venture agreements.

Experience

- ⇆ Large- and medium-sized contracting firms may feel threatened by the idea of developing potential rivals and thereby losing work opportunities in the long term. Large firms are usually experienced in managing small-scale contractors through subcontracts but not in training and mentoring.
- ⇆ Large- and medium-sized contractors principally rely on heavy equipment for civil works and focus on ways of increasing equipment operations, rather than utilizing labour. Large contractors need training and reorientation even when their attitudes are favourable. The ability to work with communities and use local resource-based approaches may be new challenges for large construction firms.
- ⇆ A contract with the lead contractor should specify a well-defined training programme for the support and management of a predetermined number of small-scale contractors. The contracting agency designs and pays for this component as a regular pay item in the works contract. Alternatively, the contracting agency engages a training manager to oversee training provided by separately appointed training providers.
- ⇆ Unless specifically defined as having a training function, subcontracting to smaller firms has its drawbacks. Subcontracted work is usually limited to a few specific activities or supply of unskilled labour. As a consequence, this arrangement has limited potential in terms of skills development and growth potential for the contractor. Also, the conditions of work and compliance with labour legislation may be negatively affected in this model. Larger firms may simply transfer these responsibilities to smaller subcontractors who are more numerous and more difficult to control. As a result, the risk that workers may be exploited increases.

Box 19

South Africa: Merging of subcontractors

In South Africa, experienced large-scale contractors play the role of managing works by smaller emerging firms or communities.

Initially, the appointed main contractor meets and agrees with the local community on its involvement in certain work activities. These are split into nominated subcontracts for local contractors or community groups for which the managing contractor supplies training, materials and mentoring. In most of the communities, skills exist from previous experience in construction work.

One favourable side effect of this approach is that subcontractors (with a mentor) manage to join forces to form a medium-sized construction company.

The other type of engaging small-scale contractors in the infrastructure sector is through learnership programmes, which takes a duration of two years. Selected small-scale contractors receive theoretical and practical training for four months, with the practical training done on real project sites.

After the theoretical and practical training each Company is awarded a Training contract by the participating Local Authorities to the value ranging from 500,000 – 1 million South African rand (ZAR) with a Mentor assigned to the Company. Besides the Mentor, the Learners receive support from the Municipalities, Consulting Engineers, Training service providers and the National and Provincial Departments of Public works.

After successful completion of the first training contract the Learners may receive further short-term problem-oriented theoretical training after which they will be awarded the second trial contract of a larger scope, typically ranging from ZAR 1 – 3million. After successful completion of the second trial contract the Learner companies exit the programme and are able to survive on the open market.

Source: EPWP – http://www.epwp.gov.za.

Certified labour-based contractor carrying out road surfacing works, South Africa

Some guidelines

- Capacity building through subcontracting or joint-venture arrangements has to be used cautiously as it cannot replace full-scale training and development programmes. Basic technical, operational and business management competencies can only be acquired through dedicated training programmes. Subcontracting and joint-venture arrangements may therefore at best be used for on-the-job learning and support.
- There are two ways of securing training objectives through subcontracting. These are: (i) making it attractive to the contractor to freely incorporate such elements in tenders; or (ii) specifying in the tender that such elements form part of the contract. It is necessary to establish indicators to assess performance and monitor and evaluate the achievement of outputs clearly defined in the contract under both options.
- Targeted procurement encourages the contractor to actively look for ways to meet the socio-economic objectives defined by the client through sub-contracting and joint ventures. Bid proposals that meet or exceed such targets – for example, in terms of an increased use of local resources and community participation – earn a financial bonus. The contractor should be required to indicate in their bid proposals how such targets will be met and identify the partners. In addition the key performance indicators need to be included in the contract conditions for ease of measurement and evaluation of success.
- One form of joint venture agreement between a lead large-scale contractor and local subcontractors with a capacity development component could be suitable for large projects. The lead contractor would carry out the major works that require equipment and superior technical competence. The local subcontractors would carry out labour-based works components (e.g. bio-engineering activities, dry stone masonry, drainage excavation and lining, cobble-stone dressing and paving, and quarry rehabilitation). The joint venture agreement and contract conditions would include on-the-job experience and training for local subcontractors and a mentoring role performed by the lead contractor. Basic theoretical and practical training provided by established training institutions could precede on-the-job training within the joint venture.

3.2.5 Community contracting

Key issue

What are the appropriate arrangements for community contracting and what types of works are appropriate for such contracting?

Useful information

- ✓ National policy and implementation strategies on community participation in public infrastructure works.
- ✓ Type and scope of infrastructure development works at local level, and type and size of works suitable for community contracting.
- ✓ Relevant/accepted community mobilization and participation arrangements that already exist and could be utilized for local infrastructure works.
- ✓ Potential local partners to collaborate with in community contracting, e.g. locally-based NGOs, government (social, labour) departments, training providers and the private sector.

Experience

- ⇆ Irrespective of whether community contracting is used, it is important to involve communities in the identification, prioritization and selection of works. Community consultations are also useful for establishing labour availability and optimal timing of works since labourers are recruited from the communities close to the work sites.

Box 20

What is a community contract?

Community contracts emerge from a process whereby communities identify and prioritize solutions to their challenges. Agreeing on the plans to be realized would indeed form part of the community contracting process. This process is managed with or by the community or by a representative body of the community. In most cases the community organization is a registered Community Development Council representing a particular community.

The technical preparation of the plan is usually facilitated by the organization assisting the community or commissioned by the community. The works contracts usually involve the construction of small-scale community infrastructure identified during prioritized need assessments forming part of the community action planning.

Over time, however, community contracts have been used for a number of innovative activities beyond the construction of simple infrastructure facilities, such as for the provision of services and skills development.

The typical type of community contract would be for works that can be classified as follows:

- physical improvements within the settlement;
- technically not complicated in nature;
- mostly labour intensive, rather than using mechanized work methods;
- not capital intensive;
- not requiring highly specialized skills;
- relatively easy to manage.

UN-Habitat and community contracts

UN-Habitat promotes community contracts within the framework of a community action planning approach. A community contract is a contract awarded to a community organization by a government agency, NGO or project to carry out physical works that have been identified in the Community Action Plan.

Source: UN-Habitat, Regional Office for Asia and the Pacific, Community contracts.

Involving communities in all programme aspects can improve sustainability. Battambang, Cambodia

- Community contracting has been commonly used for construction and maintenance of local infrastructure to engender community ownership of the assets. Communities can also be empowered by being involved in decision-making regarding identification, planning and oversight of works.
- Community contracting has been successfully introduced in many countries particularly in the housing sector. In many cases, there has been a paradigm change from conventional practices of involving communities to providing labour only to a community contract system where the community manages and executes all the works.
- It may not be easy to introduce community contracts in an established government system that is used to award contracts through competitive bidding among private contractors. Obstacles are mainly related to the legal status of community groups and award of contracts through sole sourcing.[20] Therefore, community groups usually need to register as legal entities before they are allowed to do business with local authorities. Competitive bidding can usually be waived on the basis that the cost of works is based on established government work norms and thereby leaving little room for price variations.
- There is encouraging experience with community contracting for securing adequate maintenance of local infrastructure assets by devolving ownership and capacity development. For example, communities involved in the planning and construction of water supply and irrigation systems are also trained to operate and manage the systems as well as to plan and organize maintenance of the system of which they take ownership.
- Experience shows that local government institutions are more conducive to this approach than centrally-run infrastructure works and sectoral departments. Local authorities have more experience and skills in engaging with and mobilizing local communities.
- It is necessary to distinguish community contracting from self-help schemes or “voluntary” labour contributions. Community contracting for local infrastructure works providing public assets always involves paid work.
- To establish community contracting as an effective infrastructure delivery system there is usually a need for extensive capacity development within local government authorities, which includes social mobilization, technical and managerial training, aspects of organizational setup and negotiation with various partners.

Some guidelines

- Community contracting requires distinct contract documents and purposely designed procedures. Works contracted to community groups are relatively small, utilizing local labour, materials and skills. They should be technically sufficiently simple to be implementable with limited technical knowledge and skills. Relevant training and guidance should be provided to the community and the local authority. Supervision and monitoring are necessary to ensure sound implementation.
- Whereas the primary aim of private contractors is to make a profit, the objective of community contracting is to ensure inclusive participation of the community in the entire work process to create ownership and to secure maximum benefits for the local communities. Therefore, community contracting does not start with the award of contracts but involves communities through the entire project cycle with the help of technical and social mobilization teams (identifying and designing the works, managing the implementation, controlling the finances, procuring materials and expertise if required, providing and managing the labour force, administrating the works including accounting, and monitoring and ensuring accountability to the community).The introduction and mainstreaming of community contracting require dedicated development and support which:
  - standardize work methods;
  - prepare simple to follow technical guides;

[20] Sole- or single-sourcing: awarding a contract to an identified organization without inviting competing bids.

- establish realistic work norms and unit rates;
- introduce appropriate contracting arrangements;
- clearly prescribe the conditions of employment;
- prescribe occupational safety and health measures;
- develop practical quality control tools;
- ensure that adequate training and capacity development are provided.

- Contract documents and procurement procedures for community contracts are different from conventional contracts in scope and content. In most cases, community contracts do not involve competitive bidding (are single sourced) and contract documents are relatively simple. Still, it is important to ensure that both the procurement process and the documents are legally sound and transparent.

Street paving in Togo

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Schoolchildren benefitting from bridge across flood plains. Myanmar

DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 4

Contractor identification and registration

Building an agro-processing plant, Zimbabwe

EIIP

Employment Intensive Investment Programme

Chapter 4

Key issue

How can we increase the participation of local contractors and consultants in local infrastructure works through appropriate identification, classification and registration procedures?

4. CONTRACTOR IDENTIFICATION AND REGISTRATION

Overview

The volume of local infrastructure works, both in rural and urban areas, is steadily increasing. This is a considerable market potential for small-scale contractors and locally operating consultants. The nature of works is relatively simple, mainly requiring mainstream designs and therefore relying on less technical expertise. The works are also well suited to the utilization of locally available resources, such as labour, materials, local enterprises and artisans. Moreover, SMCs and consultants can manage such works provided that contracts are packaged in a manner that match the technical and financial capacity of the local construction industry.

Experience shows that an effective system for the classification and selection of contractors and consultants, responsive to the needs of local infrastructure works, is important when opening the public infrastructure construction market to local contractors and engineering consultants.

The capacity of the local construction industry may, however, not be sufficient to cope with the actual workload and nature of work. Capacity development programmes, therefore, need to be able to target the most suitable and promising contractors and consultants, both for works implementation as well as when training is offered. Fair and transparent screening and selection procedures are important in order to ensure the successful implementation of such a programme.

Structure of Chapter 4

Section 4.1 Situation overview	Identifies the potential market for local infrastructure works; highlights the possible industry capacity gaps and effective measures to fill these; discusses the type and level of capacity required to deliver the local infrastructure works; suggests appropriate delivery methods.
Section 4.2 Contractor and consultant profiles	Discusses the typical profile of small-scale construction businesses and their suitability for local infrastructure works; illustrates the clients' preferences in selecting work and service providers; outlines potential avenues for the development of a local delivery capacity.
Section 4.3 Selection procedures	Outlines appropriate and fair contractor screening and selection procedures (for capacity development and works); discusses examples of selection procedures and criteria; highlights the importance of contractor associations and development agencies.
Section 4.4 Registration procedures	Identifies contractor classification and registration requirements; outlines different classification systems supporting small-scale and labour-based contractors; illustrates common limitations of classification systems for smaller firms; suggests particular registration measures to enable small-scale contractors to successfully compete in the domestic market.

4.1 Situation overview

Key issue

What are the potential workload for, and the existing capacity of the construction industry at the local level? Which are the most appropriate delivery methods, and should there be a private sector development programme?

Useful information

- ✓ Current, planned and potential public infrastructure works in terms of:
  - typical works appropriate for local small- and medium-sized contractors;
  - typical type and size of construction and maintenance works;
  - location of public infrastructure, e.g. rural, peri-urban, urban, etc.;
  - controlling contract management authorities, e.g. central government departments, technical agencies, local councils and their capacity to manage works.
- ✓ Capacity of the local construction industry to deliver the required works and services:
  - number, type, size and skills of existing contractors and consultants;
  - legal requirements and criteria for contractor registration and certification;
  - strengths and weaknesses of the local construction industry;
  - major challenges faced by local contractors and consultants;
  - potential for contractors and consultants to develop and sustain their businesses with reasonable profit margins and long-term market prospects.
- ✓ Appropriate delivery methods for local infrastructure works:
  - large-scale and/or small- and medium-sized contractors involved in works;
  - local consultants involved in design and supervision of works;
  - local resource-based work methods;
  - participation by community work groups;
  - force account operations, e.g. for maintenance and emergency works.
- ✓ Existing national/sectoral policies in regard to delivering local infrastructure works, such as optimizing productive employment and decent work creation, creating a sustainable local-based private sector capacity and promoting right-based approaches.

Experience

- ⇆ Local infrastructure works are often of smaller size and usually require less sophisticated technical design solutions. They are therefore suitable for execution by small-scale contractors with the direct involvement of the communities. Small-scale contractors are usually found in all parts of the country and are relatively easy to mobilize.
- ⇆ When properly organized, local contractors can be competitive in providing timely, cost-effective and quality construction and maintenance of local infrastructure.
- ⇆ Reforms over the last two decades to create a lean and efficient governance structure within public institutions have led to increased outsourcing and thus commercialisation and privatisation of public works and services. The situation has also allowed local contractors to participate in public infrastructure development and maintenance. Equally, it has created opportunities for local engineering firms to take part in design works, contract preparation and supervision services. However, there is still scope for improving the capacity of local government authorities to effectively manage smaller rural and urban infrastructure works using appropriate technologies.
- ⇆ Devolution and decentralization efforts in many countries have created new market prospects for locally based construction firms. With the development of appropriate procedures for contract packaging, procurement, implementation and managing works there is often a good potential for increasing the participation of the local private sector. Equally, roles, functions and responsibilities of government agencies at central and local

Box 21
ILO's Decent Work Agenda

Productive employment and decent work are key elements to achieving a fair globalization and poverty reduction. The ILO has developed an agenda for the community of work looking at job creation, rights at work, social protection and social dialogue, with gender equality as a cross-cutting objective.

'Decent Work' is defined as productive work for women and men in conditions of freedom, equity, security and human dignity. Decent work involves opportunities for work that: (i) are productive and provide a fair income paid on time; (ii) provide security in the workplace and social protection for workers and their families; (iii) offer prospects for personal development and encourage social integration; (iv) give people the freedom to express their concerns, to organize and to participate in decision-making that affects their lives; (v) protect against exploitation of the under-age; and (vi) guarantee equal opportunities and treatment for all.

level may need to be realigned to improve planning, design and management of local infrastructure works.

- The advantage of local resource-based methods has been demonstrated in many countries in terms of creating employment and durable assets, promoting local business opportunities as well as upholding right-based approaches. However, its full potential has not been reached especially where these approaches have not been mainstreamed in national development policies and plans. This is mainly due to lack of awareness on the important role that the small-scale contractors can play in the provision of local infrastructure works.
- Professional associations for engineers and contractors have been involved successfully in local resource-based methods in some countries but they could play a more constructive role in terms of promotion and advocacy of the approaches.
- There is often a mismatch between infrastructure demands and the existing capacity of the local construction industry, on the one hand, and between demand and supply of the skills required by the sector on the other. This hampers efforts to carry out works in a timely manner and to the required quality. Sufficient local capacity can however be developed to meet the local demand, provided there are adequate resources and commitment from relevant stakeholders.
- There is insufficient awareness about the employment potential of the local resource-based approach, its development potential for the local construction industry and the effect on the local economy as a whole.
- Innovations in technology and work methods (performance-based maintenance, network-based maintenance, community contracting, etc.) as well as diversifications in the use of

Box 22
Key characteristics of a local contractor

- Operates in a sector with large market fluctuations
- Often engaged in different business activities
- Limited access to finance
- Only operates in a limited geographical area
- Possesses a limited fleet of equipment
- Can only maintain a small core group of (skilled) workers
- Employs a limited number of technical staff
- Limited exposure to government procurement
- Most experience from private building industry

local resource-based approach in various sectors (buildings, agriculture, environment, etc.) are taking place in most countries with good results.

- Efforts to contract community groups to carry out local infrastructure works is increasing and showing good results, particularly for works requiring less skills and equipment.

Some guidelines

- An overall assessment of the contracting situation on the ground is essential before embarking on a contracting development programme. The most important issues to investigate are listed above. To gather such information it is necessary to have a dialogue with all potential programme partners, including:
  - concerned central government agencies (ministries of works, finance, labour, commerce, etc.);
  - business and construction industry development agencies;
  - employers and workers associations;
  - local authorities including their technical units and executing officials;
  - professional associations of engineers and contractors;
  - training institutions;
  - community representatives.
- It is important that the assessment of the construction industry not only investigates the capacity to build new infrastructure but also looks at how the private sector can become an effective provider of maintenance of existing infrastructure assets. In this regard the involvement of community work groups should also be considered.
- There is a wide range of works suitable for local consultants, small- and medium-sized contractors as well as community work groups, as shown in the table 11 below.

Table 11. Works suitable for local consultants, contractors and community work groups

Rural infrastructure	Urban infrastructure
• Irrigation schemes • Earthen dams and dykes • Water supply • Sanitation and sullage disposal • Access roads (earthen, gravel and sealed) • Trail and foot bridges • Water ponds • Watershed management systems • Erosion control and slope protection • Buildings • Social housing • Renewable energy sources (bio-digesters, energy kiosks) • Infrastructure maintenance	• Water supply • Sanitation and sullage disposal • Drainage systems • Solid waste management (storage, collection, transportation and disposal) • Urban roads (gravel, sealed, cobble/block-stone pavements) • Buildings • Social housing • Renewable energy sources (repair and maintenance of solar panels) • Infrastructure maintenance

- In general, there is a need to assess future local infrastructure development plans in terms of what and how much will be built by the various agencies at central and local levels. This is necessary in order to make a reasonable assessment of the extent of the required capacity of the construction industry in terms of mobilizing skills, equipment, materials, etc., to meet planned targets.
- There is usually sufficient entrepreneurial drive in the industry including basic technical skills that can be further strengthened with dedicated capacity development interventions (staff training, improving the business environment and introducing local resource-based approaches thereby generating more employment and boosting local economies).

Box 23

Nias, Indonesia: Community contracting in the Rural Access and Capacity Building Project (RACBP)

The objective of the RACBP was to improve rural transport infrastructure on the island of Nias as part of a larger restoration programme that took place in the aftermath of the Tsunami in December 2004. Two significant features of the RACBP consisted of:

- strategic rural access improvements, including the construction of light traffic, all-weather roads, pathways and trail bridges for pedestrian, bicycle and motorbike traffic;
- building capacity of local government at district and sub-district levels, small-scale contractors, work supervisors, local communities and project staff in the planning and delivery of the investments in the rural transport network.

Communities were involved throughout the planning and implementation of work through a specifically established facilitation process. Transparent and documented processes for the mobilization and organization of the communities were established to ensure fair and inclusive selection throughout the project cycle, i.e. identification, implementation, maintenance and operation of the infrastructure.

Some 15–25 per cent of the construction works were contracted to community groups. Community contracts were mainly used for unskilled operations such as bush clearing, cleaning drains and culverts, earthwork operations, spreading of gravel and Telford road base construction. Community groups were also directly engaged for the construction of mass concrete and masonry foundations for suspension bridges. In total about 50 community contracts were awarded.

To further improve and sustain rural access, RACBP also carried out spot improvement and maintenance of existing roads and trails, carried out through community contracts. Community contracting proved very productive in mobilizing necessary inputs to these works.

Community groups were given on-the-job training in planning, organizing and implementing construction and maintenance activities. The community groups were not registered companies and therefore had a limited legal status. A standardized contract agreement was therefore developed for labour-only works that contained the rights and duties of the community work group, the responsibilities of the employer, regulations on payment and other important conditions (ILO RACBP, 2010).

Bridge under construction to cross area frequently flooded. Nias, Indonesia

- Once the capacity development needs have been identified, these need to be translated into appropriate development strategies and capacity building plans with detailed activities and inputs. Different types and sizes of work require tailor-made arrangements to address specific development needs.

4.2 Contractor and consultant profiles

Key issue

Who among local contractors and consultants are the most appropriate targets for capacity development programmes?

Useful information

- ✓ National and local government procurement policy and regulations.
- ✓ Existing classification systems and registration procedures for civil engineering contractors and consultants at national and local levels.
- ✓ Size and composition of the existing domestic construction industry.
- ✓ Numbers and sizes of emerging and established contractors and consultants.
- ✓ Existing or potential community contractors and work groups.
- ✓ Existing contracting capacity and gaps in the sectors concerned.

Experience

- ⇆ Some countries operate a contractor registration and classification system that recognizes labour-based contractors. The classification criteria in regards to key staff, equipment, facilities, financial requirements and experience are then adjusted to the particular requirements of works carried out using labour-based methods. Usually these contractors are registered at the lower classification levels for smaller contract sums.
- ⇆ There is often an abundance of micro 'contractors' operating in the informal sector. Many do not have any formal technical background but are prepared to and capable of doing business. Most of them wish to grow and venture into a wider field of construction activities. This can be facilitated through technical, financial and managerial capacity development.
- ⇆ Local authorities prefer working with existing firms with a known track record.

Preparation for emulsion-based surface sealing, Zambia

Box 24
Advantages and disadvantages using established local contractors

The use of established local entrepreneurs may have both advantages and disadvantages. These vary somewhat with the local situations but generally they may be summarized as below.

Advantages

- Rapid and less costly mobilization of services;
- Their performance (track record) is often well known to the client;
- Are likely to source labour, materials and equipment locally;
- Possess knowledge and experience in working in prevailing local conditions;
- Involve reduced operational risks and thus lower costs;
- Are easier to access and mobilize for maintenance and emergency works;
- Can build long-term working relationships with local clients, thereby securing long-term market prospects;
- Have a reputation to maintain in local communities and with local clients;
- Are protected by the local community;
- Employ local artisans and staff;
- Less overheads and reduced mobilization makes them cost competitive.

Disadvantages

- Insufficient supply of qualified contractors at local level may not meet required capacity levels in terms of both skills and workloads;
- Insufficient availability of local contractors may discourage competition and thus create a monopoly situation that can hinder emerging contractors from entering the market;
- May not have the requisite technical and managerial skills for cost effective and quality works;
- Create a 'dependency syndrome' with local contracting agencies;
- Few local contractors may increase the risk of collusion.

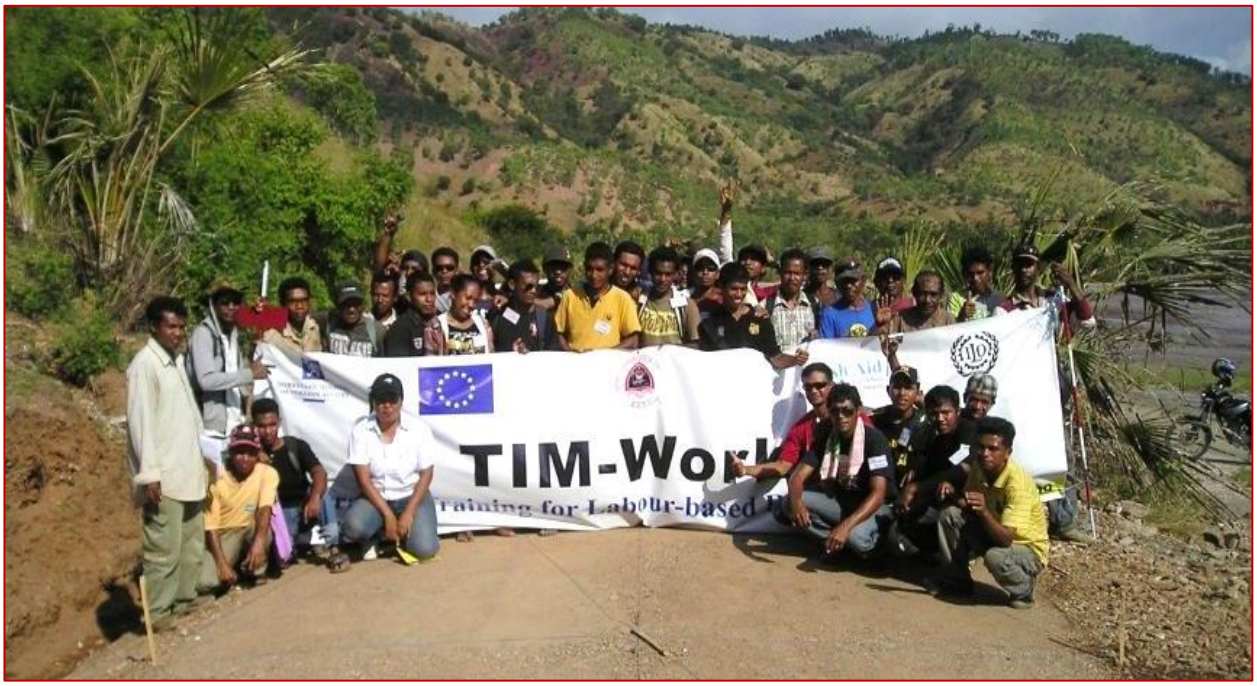
Timor-Leste: 'Preferential treatment' of established contractors through lump-sum contracts

Peace came to Timor-Leste after decades of war and unrest. A large part of the country's infrastructure was destroyed during the troubled times. At that time, the construction industry was dominated by international contractors and consultants, mainly from Indonesia, Korea and the Philippines, plus a limited number of large-scale Timorese companies. The few existing locally-based firms were contracted for smaller works in the districts. The majority of such work was issued through sole-sourcing arrangements at negotiated rates, the justification being that there were insufficient capable contractors available for a competitive bidding process, and also because of the limited capacity at district level to prepare contracts and arrange tenders. This led to a monopoly situation with non-transparent contract award procedures and consequently high costs and sub-standard work quality. The approach also made it difficult for new contractors to enter the market.

- Due to the limited private construction sector representation at local level, established contractors and consultants can create a monopoly situation. As a result, introducing new contractors and consultants to establish a truly competitive market can be difficult.

Some guidelines

- When introducing approaches that increase the use of locally based resources, it is essential to engage national and local governments. A supportive policy framework can improve the opportunities for local contractors to gain access to public infrastructure works and also improve efficiency in the provision of local infrastructure services.
- Engaging existing firms usually entails less risk than attempting to develop new contractors. Existing firms have a proven record of surviving in the private sector and generally require less support to take part in public infrastructure works. Taking advantage of existing capacities is therefore recommended. On the other hand, existing contractors may have only survived at local level due to an 'obliging treatment' by the client and not necessarily because of their proven performance. A careful capacity assessment of the situation on the ground may still be required.
- The creation of a special classification for labour-based contractors is one option for promoting local contractors and local resource-based approaches. It is also possible to use existing national contractor classification systems, which are based on contract sum and conditions that are favourable for the inclusion of small-scale contractors.
- The educational background and business experiences of emerging contractors willing to take part in a contractor development programme may vary and a particular attention must be given when designing a contractor development programme. Their potential must be carefully assessed and various operational options need to be considered in order to develop a cadre of capable small-scale contactors at local level.
- Contractors naturally wish to develop their potential to a level at which they are comfortable. Measures should be taken to support them to diversify in order to increase their range of operations and business opportunities. It is, therefore, important that development programmes are not restricted to one sub-sector alone, e.g. rural roads, building works, dam construction, etc., but that they are offered a more inclusive range of learning elements, enabling them to venture into a wider variety of works. Prior to formulating a development programme an assessment should be carried out to identify all the potential construction or maintenance works in a given local area.



Training local contractors in rural road construction in Timor-Leste

Box 25

Capacity development for contractors and consultants

Ethiopia: How graduate engineers can become contractors

Options for developing a local contractor capacity[1]	
Potential contractors	Probable capacity development required
Large- and medium-sized established equipment-based contractors	Reorientation to labour- and local resource-based construction methods
Established building contractors	Reorientation to labour-based civil works
Established and experienced entrepreneurs (not necessarily with construction experience)	Reorientation to labour-based small-scale contracting with a potential path to further growth
Construction builders and artisans	Development to labour-based small-scale contractors, particularly for works in urban low-income settlements, peri-urban and rural areas
Graduate civil engineers and technicians	Development to labour-based small-scale contractors and consultants with a potential path to further growth
Youth (with required literacy and numeracy levels)	Development to supervisors or labour based small-scale contractors and maintenance works
Micro entrepreneurs and subcontractors	Development to labour-based small-scale contractors for construction and maintenance works
Community work groups	Development of community contractors for smaller construction jobs or maintenance works requiring labour only and semi-skilled workers

[1]*For each of these options a tailor made training and capacity development programme is required.*

South Africa: Training requirements to qualify as a consultant for labour-based works

For labour-based works in the Expanded Public Works Programme in South Africa, eligible consultants are required to have a Labour Intensive Certificate Level 7 in accordance with the National Qualification Framework (NQF) for design works, and Level 5 for work supervision (Department of Public Works, 2015). These certificates can be obtained by attending accredited training courses. The main subjects covered are indicated in the table below.

NQF Level 7: LI design consultants	**NQF Level 5: LI supervision consultants**
Labour-intensive works (contract) Planning and design of roads, structures, water and sanitation. *Subjects of Learning:* 1. Policies and procedures for Implementation of LI construction in the EPWP 2. Roles and functions of EPWP and construction sector stakeholders 3. Development and promotion of LI work strategies 4. Application of LI construction systems and techniques to work activities 5. Planning and designing LI work projects 6. Preparing and manage LI contracts	Labour-intensive works (Contract) Supervision for roads, structures, water and sanitation. *Subjects of Learning:* 1. Policies and procedures for implementation of LI construction in EPWP projects 2. Roles and functions of EPWP and construction sector stakeholders 3. Management of LI work projects 4. Application of LI construction systems and techniques to work activities 5. Manage and supervise LI works contracts

LI = Labour intensive.

- There is often good scope for increasing the involvement of local consultants in the planning, design and supervision of local infrastructure works. Contracting agencies should therefore create opportunities for active participation of local consultants.
- Local consultants may require some form of introduction to and orientation on (i) rural and/or urban infrastructure technology options (appropriate design and work methods); and (ii) contract preparation, tendering and supervision of minor works at local level executed by labour-based contractors and/or community groups. Tailor-made training, preferably accredited, need to be developed to secure the required competencies
- With proper guidance, community work groups can manage small works contracts that require limited technical skills, relying on traditional knowledge and artisanal skills that are present within the community. Careful assessment of existing competencies and possible skills gaps as well as close supervision and mentoring is of paramount importance in securing the desired performance of community work groups.

4.3 Selection of contractors and consultants for training and capacity building

Key issue

How to ensure a fair and transparent screening and selection of candidate contractors and consultants?

Useful information

- ✓ The typical profile of contractors to be targeted that are best suited to participate in the development process.
- ✓ The size and scope of and timeframe for the work programme for which contractors are being identified.
- ✓ How works are packaged into various size and type of contracts.
- ✓ The number and type of contractors required based on market prospects including volume and diversity of future work, typical contract size and geographical spread.
- ✓ The existing targeting and selection procedures/criteria, for instance, for targeting special groups identified by government affirmative policies and strategies. For example:
  - government policy may require special consideration to employment of youth, women and vulnerable groups;
  - national/local strategy for engaging graduates in productive economic activities;
  - support to small-scale contractors;
  - inclusion of people with disabilities;
  - special consideration to emerging contractors from a certain area or headed by women, youth, ex-combatants, scheduled tribes, lower casts, etc.;
  - promoting community participation.

  This may need to be weighed against the need to provide more extensive support to such contractors in terms of access to finance, materials, equipment and capacity building.
- ✓ Potential for a development path within the construction industry, e.g. support arrangements by sector development agencies (construction development board, chamber of commerce) and professional associations.

Experience

- ⇆ Entrepreneurs may initially be hesitant to adopt labour-based work methods and take on local infrastructure works contracts.
- ⇆ Local contractors are highly motivated to succeed in a capacity development programme, because they see future business opportunities.

Box 26
Egypt: Small-scale contractors trained to operate in a diversified market

When contractors are provided with development support, the focus is often on one particular type of infrastructure, e.g. buildings, irrigation or road works. The trained contractors usually find it difficult to venture into other types of work. This may be because of the kind of training they have received, or because of their ties and financial commitments, such as the repayment of equipment loans to the contracting agency or local credit institutions.

The Social Fund for Development in Egypt implemented a public works programme with the twin objectives of creating employment through the use of labour-based work methods and developing rural infrastructure. The programme included rural road works, water supply schemes and environmental works (mainly canal maintenance). An ambitious programme was implemented throughout the country, in which 150 emerging and 30 established contractors were trained to take on all types of construction works so as to allow them to compete in various sectors and create more avenues to successful jobs.

For the first batch of 24 trainees, 162 candidates were selected through interviews and testing. Over 90 per cent of the selected trainees were university graduates with a wide range of degrees, including engineering, architecture, commerce and tourism.

Cambodia: Matching work content in contracts with contractor skills and capacity

The Rural Infrastructure Improvement Programme was the first major programme in Cambodia in which works implementation was decentralized to the provincial offices of the Ministry of Rural Development. Equally, it was decided to fully utilize the local construction industry in the provinces, engaging local contractors and builders for the construction of rural roads, bridges, wells, schools and other public buildings.

Although they had not been involved in local infrastructure works in the past, initial surveys showed that local builders and contractors were available and interested in such works. Their skills appeared relevant to the common types of work required. Equally important was their entrepreneurial skills and ability to operate in the construction sector. Taking into consideration the capacity of these entrepreneurs, works were carefully packaged into appropriate size contracts matching their skills and financial capacity. The contracts were gradually increased in ensuing bid rounds when it became evident that the contractors were performing well.

Smaller businesses and local masons were trained and engaged in culvert works. Contractors involved in building two to three-story houses were trained in the construction of small bridges. Existing small- and medium-sized contractors with experience in civil works, such as foundation works for buildings, were trained in rural road construction. Since the firms had limited equipment, local transporters were mobilized for supply of gravel as separate supply contracts.

Finally, community contractors were developed from the workforce during the construction stage to ensure routine maintenance of completed roads.

Bridge construction by local contractors in Cambodia

- Selection of candidate contractors for a capacity development programme often depends on the objective of individual development programmes. Contractor development often become a by-product of projects in which the main objective focuses on combatting poverty through different means such as infrastructure improvement, developing the agricultural sector, employment creation, etc. This often leads to a situation where contractors are trained for only a very specific type of work with market prospects for a limited period of time, which in turn limits their potential to fully diversify or develop.
- Several countries have developed criteria for selecting suitable contractor candidates for training. These are usually based on educational background, targeting mechanism (affirmative action, youth, women, etc.), work experience, commitment from candidates, assessment of business acumen, etc. The chosen criteria have at times determined the success rate of such development programmes. Sometimes the selection criteria are linked to the technical requirements of the existing contractor classification system.
- Contractor development programmes have devoted significant efforts in providing technical and business development support (mainly training) to both existing and emerging contractors. Over time, many of these contractors do not survive when they start looking for work outside the confines of the programme in which they were trained. Those who are still in operation have been successful in adapting to shifting market prospects. Supporting contractors already operating in the sector results in higher survival rates.
- Entrepreneurial drive is a fundamental requirement for a successful contractor, above educational and technical qualifications or experience, while, of course, a combination of all is ideal. In many cases the owner of a contracting firm is not a technical person but a general businessperson who operates with technically qualified personnel. Securing experienced technical staff should weigh heavily in the selection. It is useful to prescribe a certain minimum technical team as a precondition for participating in a training.
- Training programmes need to consider the possible limited literacy and numeracy competencies among contractors, their supervisors and workforce.
- Besides creating new job opportunities, the mobilization of community groups is common in works that are of direct benefit to themselves as the main users of the created assets. Engaging community groups for maintenance works has a high success rate, although it requires more technical and managerial support.

Some guidelines

- Work specialization when packaging contracts is an effective approach for targeting potential contractors and developing the local construction industry. Local contractors may initially not have the skills to carry out different types of work and can only handle relatively small contracts. Larger works can be split into several contracts: (i) according to the type of work, e.g. earthworks, structures/concrete works, stone masonry, road pavement works, bio-engineering, etc.; or (ii) into manageable pieces, e.g. a section of a road or irrigation canal, section of watershed contour bunds, etc. This has basically two advantages namely: (i) increased participation of local contractors; and (ii) it allows for the training and other business development support to be designed along a careful growth and development path that leads from specialization to diversification. It also has the advantage of spreading (and thus limiting) the risk to several players as works are distributed into several contracts.
- The disadvantage of breaking contracts into many parts is that the client has to manage several smaller contracts that otherwise could have been implemented by one single contractor.
- The support to the contractors should be based on a progressive development path to facilitate future participation and survival in the open construction market. This means that only contractors showing a realistic potential for success should be considered.

Box 27
Timor-Leste: Identification and selection process for contractors in the Enhancing Rural Access Project (ERA)

The training is open to contractors from selected target districts. It is advertised in newspapers and the radio in addition to targeting existing contractors through the Timor-Leste Chamber of Commerce and Industry (CCI-TL) network. Companies are requested to apply through the CCI District Offices. As training capacity becomes available, other districts are given access to the training.

The targeted companies are local construction firms that own some equipment (typically employ less than 10 permanent staff) and have some experience in road works. Previous exposure to labour-based works is considered an advantage. Contractors should be members of an association registered with CCI-TL. ERA has a target of at least 30 per cent female-headed companies participating in the training.

The selection process is based on the information provided by companies when they apply for the training. Each company is assessed on the basis of capacity and experience and its relevance to the works at hand.

Companies are assessed on their permanent employees and the more relevant staff they employ. The contractors who are invited to participate in the training need to enrol a stipulated number and categories of staff, i.e. two site supervisors, one engineer as well as the company owner. Usually, the companies need to recruit additional site supervisors. The minimum required educational level for supervisors is a high school diploma, preferably from a technical college. The engineer should preferably be a permanent staff member of the company. If not, the company needs to prove that it has employed an engineer for the period of the training and subsequent trial contracts. All companies are scored, and taking female-headed companies and geographical spread into consideration, a ranking is established.

The ranking is based on pre-determined criteria, which have been agreed with CCI-TL for objective scoring. Each submission is further analysed and ERA reserves the right to check that the information provided is accurate before accepting any company for training. The composition of trainees is also submitted to CCI-TL for verification. The announcement of successful candidates is through the District CCI Offices.

Trained contractor carrying out rural road construction works. Timor-Leste

- An appropriate selection process and essential criteria for a contractor development programme may be based on one or more of the following:
  - a detailed questionnaire on company registration and experience, staff qualifications, equipment holding, fixed assets, financial status, geographical base, and educational background of key staff;
  - information workshops, interviews, and written test assessment;
  - participation in a compulsory short training on tendering procedures for all tenderers as a condition to submit an eligible tender.
- The candidate trainees submitted by the contractors as site managers and supervisors are usually screened through interviews and testing, verifying that the trainees meet the prescribed qualifications. Before the candidates are finally accepted to the training programme, it is advisable to insist that the contractor or the trainee submits proof of employment with the contractor.
- An independent selection panel can be formed to secure transparency and adherence to established selection criteria. Panel members may include representatives of the contracting agency, training centres, professional associations and local communities.
- In establishing the selection criteria, the following questions may be considered:
  - What is the size and nature of a typical contract?
  - Does the contractor need to make significant investments in order to carry out the envisaged works? (This varies for building works, water works, irrigation or road works);
  - What criteria can be applied to determine entrepreneurial talent?
  - How to evaluate and weigh training performance of (i) the firm as a whole and (ii) the contractor and his/her supervisory staff on an individual basis?
  - How important is the criterion that contractors should be local to the work area?
  - Can local communities provide useful inputs in the selection of local contractors, e.g., for maintenance of public infrastructure assets or when being involved through community work groups?
- It is recommended that contractor associations and industry development agencies be consulted when developing the selection criteria. Equally, it is useful to involve these institutions when addressing obstacles regarded by local contractors as significant barriers to existing and future job markets, and how to overcome these barriers.

4.4 Registration procedures

Key issue

How can local contractors proficient in labour-based works technology be recognized within an existing registration and classification system for the construction industry?

Useful information

- ✓ National construction industry (e.g. chamber of commerce, construction development board, etc.) registration and classification system: its legal basis, effectiveness, reform proposals, and government policy initiatives.
- ✓ Government registration and classification system and thresholds for different types of work, e.g. civil works, building works, water, sanitation.
- ✓ Whether a new class for labour-based contractors exists within the prevailing registration and classification system.
- ✓ The existence of professional associations which local contractors can join in order to secure their certification and classification.
- ✓ Existing registration and classification systems and requirements for engineering consultants.
- ✓ Registration requirements for community work groups.

Box 28

Timor-Leste: Adjusting registration requirements to allow labour-based road contractors access to public works

The Ministry of Public Works in Timor-Leste introduced a new contractor classification system for road works with the aim of standardizing the classification criteria for the entire country and all public works agencies. Whilst this in principle was a positive development, it was not sufficiently adapted to the particular conditions that prevail at local level where small-scale contractors carry out the majority of rural road works using labour-based methods. For example, to qualify for the lowest class, contractors would have to show proof that they own an excavator, a front-end loader and a tipper truck, which is beyond the means of most local contractors, and this sort of equipment is not necessary for such works when using labour-based approaches.

After the new requirements were made public, on-going contractor development schemes negotiated with the Ministry to adjust the classification system by providing sub-classes with relaxed equipment holding requirements, to allow emerging labour-based contractors to enter a reasonable progression path.

United Republic of Tanzania: Classification of construction firms including labour-based road contractors

Types of contractors

- Building contractors
- Civil works contractors
- Mechanical contractors
- Electrical contractors
- Specialist contractors (including labour-based contractors)

Classification of contractors

There are seven classes for building, civil, electrical and mechanical contractors. For the specialist contractors, there are only three classes (1–3). Foreign contractors are restricted to classes one and two in the former types and to one, two and three in the latter type. The table below shows the class limit for any single contract (million TZS).

Class limit for any single contract (million TZS[1])					
Class	**Civil**	**Buildings**	**Mechanical**	**Electrical**	**Specialist**
One	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Two	5 000	3 000	2 000	2 000	400
Three	3 000	2 200	1 200	1 200	150
Four	1 500	1 200	600	600	…
Five	750	600	300	300	…
Six	300	200	150	150	…
Seven	150	120	75	75	…

[1] *United Republic of Tanzania shilling 2296 = 1$ (2019).*

Categories of contractors

- Local contractors
- Foreign contractors

Local construction firms are those with majority shares owned by citizens of the United Republic of Tanzania. Firms not meeting these criteria are registered as foreign companies.

Experience

- The purpose of a classification and registration system is to regulate and monitor the industry in terms of capacity to perform different construction work, codes of conduct and participation in industry sectors. Often national classification systems exclude new entrants (emerging contractors) and do not cater for the specific requirements of local resource-based work methods.
- Classification requirements may prevent potentially good participants from joining a development programme. The positive and negative effects of the existing classification system should be carefully assessed when launching a contractor development scheme.
- In some countries companies have been certified as labour-based contractors based on achieved training results. For example, the owner of the firm, the site agent and site supervisors all have to qualify individually but also as a firm through a dedicated learning path:
  - introduction and formal training;
  - practical skills development, site and business management training;
  - trial contract(s) with extensive mentorship.

  Official accreditation and recognition of such training is essential to ensure mobility and marketability of skills gained through such training.
- A separate classification may be introduced for contractors proficient in the use of labour-based work method. For instance in the road sector, such companies have been certified as a special category, thus qualifying to bid for works following the successful completion of specific training courses.
- Classification systems usually allow contractors in higher categories to bid for works in lower categories. In times with limited work, this may adversely affect the development of small-scale contractors. Particular measures may need to be carefully considered to avoid the risk of local contractors being forced out of the market.
- The establishment of strong contractor associations can be of significant assistance to small-scale and emerging contractors. In reality, their associations rarely support local contractors. A contractor development programme should therefore pursue close cooperation with the contractor associations and provide support to ensure the promotion of emerging contractors.

Some guidelines

- Existing certification criteria are generally based on human and financial resources, equipment ownership and work experience, often with the result that small-scale contractors are excluded. There may be a need to modify such registration criteria to:
  - reflect the full capacity of contractors to mobilize and manage works and also provide some space for development;
  - recognize the value of training and business development support;
  - include contractors trained in the use of local resource-based work methods as a special category within the existing classification system.
- The following factors should be considered in respect of the classification of local contractors involved in works applying local resource-based approaches and ensuring their participation in the domestic market:
  - liaison with the organizations involved in registration and certification of construction firms;
  - the need for works to be suitably packaged to secure the participation of local contractors (contract size, duration and type of works);
  - appropriate arrangements allowing contractors to be certified as proficient in labour-based work methods, e.g., after successful participation in accredited training.

Box 29

Ethiopia: Supporting SMEs for the construction of cobblestone roads in Mekelle, Tigray

In the Ethiopian construction sector a small-scale contractor refers to companies with a capital outlay of below 50,000 Ethiopian birr (ETB) (approximately $2,500). Small-scale contractors require the same range of technical and managerial skills as their more established counterparts.

In a local infrastructure programme micro and small enterprises were supported and secured access to work on the construction of cobblestone roads. The programme provided technical and business training as well as contracts for a limited time. The emerging contractors were also given assistance to register and establish their businesses. Typically small-scale contractors were registered either as proprietary ownership (individuals), or private limited companies.

The targeted group included individuals or existing SMEs with construction experience, graduates of technical colleges and those with secondary level education that were interested in the road construction works. The training was developed following three key skill areas as shown below.

Technical training	Management training	Entrepreneurial training
Theory on: • Basic mathematics • Calculating quantities of works • Appropriate use of tools and equipment • Cobblestone road construction • Practical training on understanding work plans and drawings • Levelling of roads • Organizing a construction site • Paving techniques (basic skills)	Theory and examples on: • Construction contracts • Subcontracting SMEs • Preparing a tender • Cost calculations • Work scheduling on a construction site • Labour management • Contract payment	Theory and examples on: • Business plan development • Legal issues • Taxation system • Financing • Basic accounting • Company organization • Contracting (client) • Insurances • Knowledge sharing

From the first 17 trainees who entered the programme, 16 found work after completion of the training. Three out of the five established SMEs that joined the training diversified their operations to become cobblestone construction SMEs. Three engineers from implementing agencies, who also participated in the training, became private contractors. One woman created her own SME-cooperative. The remaining trainees established two SME-cooperatives and continued in the programme. In total, six new SMEs were created.

Source: Case Study and lessons learnt, Support for SME-creation for cobblestone road construction in Mekelle, Tigray, GTZ, 2009.

- the need to certify engineers, technicians and supervisors as individuals as distinct from companies;
- encourage the formation of a labour-based contractor association so as to lobby the particular interests of this group or make arrangements that support and promote small-scale contractors through established contractor associations;
- the modalities required to gain support and recognition from construction and business development agencies, e.g. institutions responsible for construction development, chambers of commerce and professional associations.

☛ Registration of consultants as recognized specialists on local resource-based construction technology should be encouraged on the basis of obtained training certification.

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DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 5

Contracts management

Bridge building in Indonesia

EIIP

Employment Intensive Investment Programme

CHAPTER 5

Key issue

How can an appropriate contracts management system contribute to developing and sustaining small and medium-sized labour-based contractors and locally based consultants in the construction industry?

5. CONTRACTS MANAGEMENT

Overview

Contracting cannot happen in isolation. It is an integral part of managing an infrastructure works programme. The effective design of these arrangements depends on the nature of the works and a series of programme specific requirements and parameters.

Project management can be described as the process of planning, implementing and supervising a programme from commencement to completion within given budgets and timeframes with defined outputs, utilizing the human and financial resources available.

Within this process, the contracts management system contains the procedures allowing the client to procure works and services from the private sector within a framework in which the obligations of both parties are clearly defined and thus describe how to achieve the defined work outputs. The aim is to obtain the specified and agreed services to the prescribed quality in a timely and cost-effective manner.

Appropriate management systems and procedures allow local contractors to participate effectively and fairly in the construction market.

Structure of Chapter 5

Section 5.1 Contracting systems and processes	Outlines the planning and implementation cycle and key role players; lists the principal contracting arrangements and contract types suitable for local contractors; discusses common works procurement processes; outlines planning, monitoring, reporting and evaluation systems and procedures; appropriate specifications that defines amongst others quality assurance requirements as well as cross-cutting social and environmental issues.
Section 5.2 Tendering and award of contracts	Discusses appropriate contract administration processes including contract documentation; common tendering procedures, tender adjudication and award of contract.
Section 5.3 Managing contracts	Outlines arrangements for contract management, work supervision arrangements; describes possible payment procedures and dispute resolution arrangements; suggests how consulting services can be supervised; summarizes contract administration processes and discusses appropriate payment procedures.

5.1 Contracting systems and processes

Key Issue

What are appropriate contracting arrangements and processes that allow local contractors to effectively participate in infrastructure works programmes?

5.1.1 Appraisal, planning and implementation

Key Issue

What are the overall planning and operational arrangements to ensure successful implementation of local contracting programmes?

Useful information

- ✓ National legislative and policy frameworks plus implementation strategies in respect of: (i) construction industry development; (ii) utilization of locally available resources; (iii) employment creation; (iv) environmental protection; and (v) social inclusion.
- ✓ Prevailing government procurement policy and regulations.
- ✓ Regulations and procedures for planning, budgeting and implementation of local infrastructure works as well as the accepted role of all relevant stakeholders.
- ✓ Contractor registration, classification and qualification procedures and standards.
- ✓ Construction standards and work specifications for local infrastructure works executed by private contractors applying local resource-based work methods.
- ✓ Guidelines on local resource-based work methods: (i) occupational safety and health; (ii) quality assurance; (iii) community participation; (iv) social and environmental safeguards; and (v) other cross-cutting issues. Considerable efforts have been made in many countries to develop appropriate and user-friendly guidelines and procedures.

Experience

- ⇆ Supportive policy and legislative frameworks are crucial for the local contracting industry and often signify the earnest efforts being made in many countries towards developing small-scale enterprises. However, their operationalization is often unsatisfactory and limited to individual projects. More needs to be done to address the huge capacity demands for local infrastructure development.
- ⇆ Contractor development programmes are often not participatory and do not involve the key stakeholders. Local contracting agencies are often very weak. Targeted information to and training of planners and designers under such programmes have shown positive results.
- ⇆ Appropriate contracting systems including technical standards and specifications provide consistency, quality and effectiveness of contracting capacity development.
- ⇆ Technical standards and specifications are well developed for most infrastructure works but are often not sufficiently elaborated for local infrastructure.

Some guidelines

- ☛ Consultations with national construction development boards, professional associations, tender boards and other relevant government and private sector bodies are useful from the onset in any contracting development programme.
- ☛ Consistent, effective and user-friendly procedures for the appraisal, planning and works implementation are crucial particularly in a decentralized setup. Appropriate training and mentorship is, therefore, needed in order to build such capacity. Effective partnership management is essential, particularly when involving local communities.
- ☛ Awareness campaigns on local resource-based approaches and how they can be integrated into decentralized administrations, local communities and private sector operations would facilitate the design, planning, implementation and evaluation of works.

Box 30

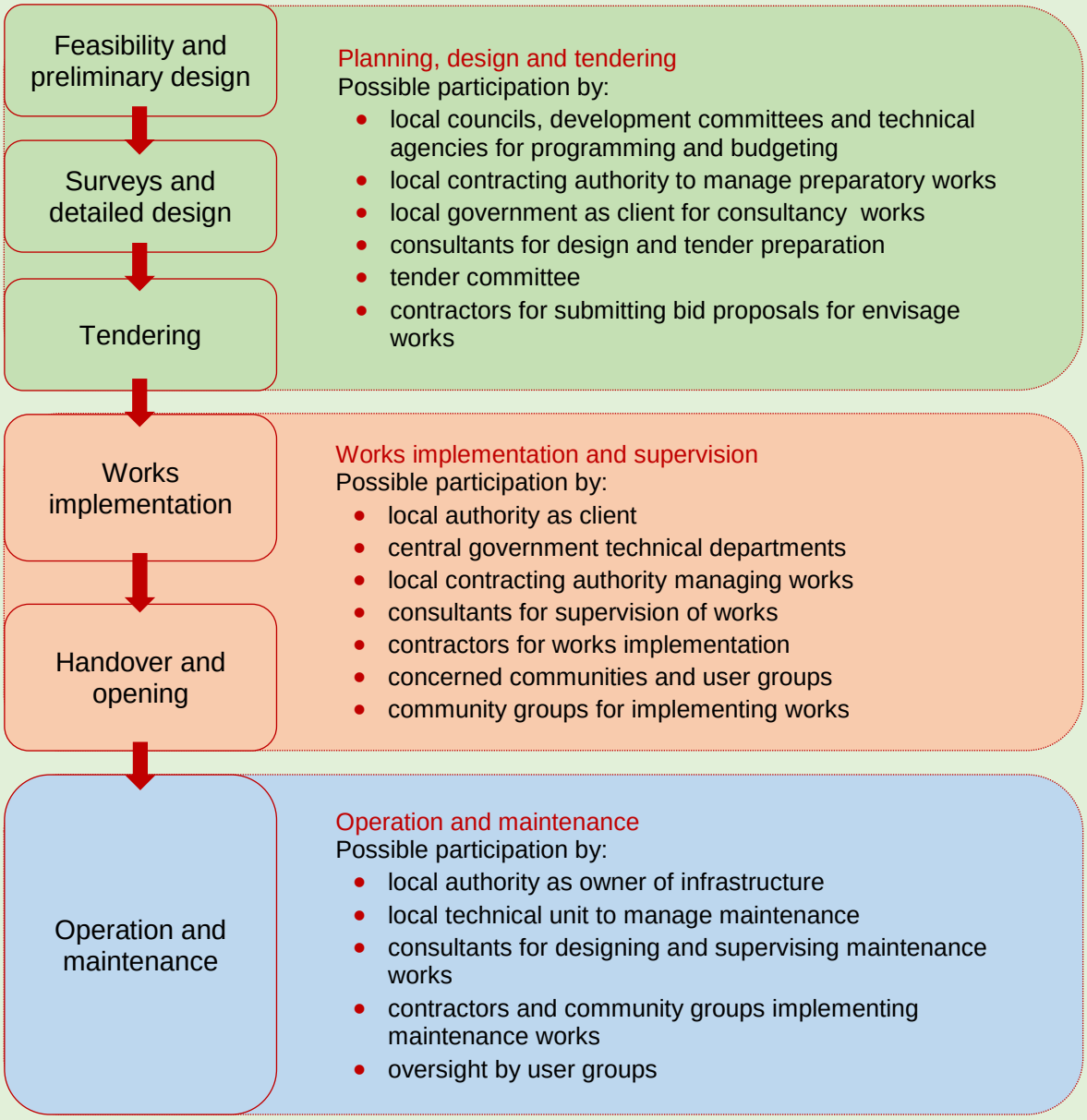
Typical project cycle and the potential partners

The various stages of planning and implementing infrastructure works require the involvement of different stakeholders as shown in this diagram. When preparing new works, it is important to seek the timely involvement of the relevant partners. Sufficient time needs to be allocated in work schedules for each of the envisaged activities.

Experience shows that the planning stages may take a similar amount of time as the actual works implementation. The time and duration of the activities and inputs from various stakeholders should therefore be clearly described in the work programme.

It is essential that detailed capacity assessments be carried out before and during a contracting development programme. This should ensure that all stakeholders possess the skills required to conduct their respective duties and deliver their expected outputs in a timely and professional manner.

Figure 8. Project cycle and potential stakeholders



5.1.2 Procurement of works and professional services

Key issue

What are the important procurement issues to consider when building capacity for infrastructure development programmes involving local contractors and local resource-based methods?

Useful information

- ✓ Governing policy and legal framework as well as public procurement procedures. Particularly important is to know whether or not the laws and regulations for decentralized procurement differ from that of central government.
- ✓ Responsible procurement authorities and entities with their roles, functions and organizational setup, particularly for local level procurement.
- ✓ Procurement procedures for local infrastructure works that involve local contractors and communities.
- ✓ Applicable methods of procurement for professional (consultancy) services.
- ✓ Specific laws and regulations that address fraud, waste, corruption and collusive practices.

Experience

- ⇆ Particular attention can be given to equity in the sense of promoting locally-based enterprises, women, youth and people living with disabilities, and creating new employment opportunities in local infrastructure works. The aim of the procurement system is to secure open and effective competition, quality outputs, value for money, fair dealing (ethics), accountability and equity.
- ⇆ The quality, cost and timely completion of works depend to a large extent on how procurement is managed. The capacity at local level to effectively manage procurement needs to be adequately developed.
- ⇆ There is a lack of coherence in existing procurement policies and legal framework in some countries.
- ⇆ Local tender committees are often established on an ad-hoc basis and can at times be insufficiently prepared for the task.
- ⇆ Lack of enforcement of procurement regulations and conditions of contracts can severely impact the development of local contractors.
- ⇆ Community contracting has become increasingly favourable. However, this involvement of communities is not always in conformity with existing procurement regulations.

Culvert construction by local masons in Svay Rieng, Cambodia

Box 31
Procurement of works, goods and services

Generally procurement is categorized either as *works, goods or services.* Different procurement methods are used for each category. In broad terms these types can be described as follows:

- **Works** (or "construction/building") signifies building or repairing any type of physical fixed infrastructure at a particular location. This means any type of infrastructure assets, e.g. buildings, roads, bridges, wells, irrigation channels, dams, drainage structures, etc.
- **Goods** are any kind of physical objects that can be moved. This means supplying any type of construction materials or equipment to be delivered without necessarily being part of the works.
- **Services** are any kind of contracted activity that does not result directly in a physical asset. In the context of infrastructure works programmes this normally means:
  - any type of *study* (e.g. feasibility studies, geological or hydrological surveys, environmental impact assessment, social impact assessment, specialized studies and evaluations);
  - *technical designs* (surveys, drawings, structural analysis and calculations, determining quantities of work, preparing engineering estimates);
  - *supervision of works* (work method and processes, work schedule, inspection and quality control, measurement of work, payment approval),
  - *Reviews, audits and evaluations*, covering technical, economic and social criteria.

Procurement often involves a mixture of the above types, such as when works are combined with the supply of materials.

E-procurement

The use of e-procurement is growing in the field of infrastructure works and is more and more becoming standard practice when tendering civil works. It has also proved to be quite effective in managing rural infrastructure works with a large number of small contracts.

E-procurement can be introduced in contracts management systems to cover parts of or the entire system. A simple first measure can be to announce procurement plans and invitations to tender on the Internet. Today, there are dedicated web sites for the purpose of advertising business opportunities. Existing government websites can also be used for this purpose.

E-tendering is also an effective and inexpensive method of distributing voluminous bidding documents. Distributing tender documents electronically reduces the transaction costs for the client when providing this information to interested bidders. The use of the Internet for this purpose can also remove intended and unintended restrictions on access to bidding documents. It can contribute to a wider participation of tenderers, who no longer need to show up at a public office to obtain the bidding documents.

Some E-procurement systems also cover the works implementation phase. In essence this is a progress monitoring and reporting system, keeping track of actual start dates, percentage completion of works and payment records. The same information database can also provide information of where different contractors are engaged, past performance and any blacklisted firms.

Typical portals for E-bidding

Chile:	mercadopublico.cl/Portal/login.aspx
India:	eprocure.gov.in/eprocure/app
South Africa:	etenders.gov.za

- Local authorities are often in need of capacity development support to effectively carry out procurement of works, goods and services in a fair and transparent manner.
- Single source contracts for works, goods and services are often issued by local contracting authorities, which do not have the capacity to manage competitive bidding or where there is insufficient private sector delivery capacity.

Some guidelines

- Close cooperation with contractor and engineering associations should always be an integral part of any contracting development initiative to advocate for the streamlining of procurement regulations and practices.
- Limited and simplified bidding methods have proven to be an effective approach in the initial stages when developing emerging entrepreneurs. Once fully trained, the firms are gradually exposed to competitive bidding in an open market.
- Early briefing of communities, e.g. through public disclosure mechanisms, community coordination committees, village development committees, community works committees, etc. is crucial in ensuring transparency and accountability.
- Timely and widely advertisement of works through all media channels including the internet (e.g. E-bidding), public notice boards and professional associations is important in order to secure easy access to bidding documents.
- Electronic procurement (E-bidding) contributes to fair and transparent procurement. E-procurement has a number of advantages over 'paper procurement': (i) increased transparency; (ii) helps control corrupt and collusive practices; (iii) promotes free and fair competition; (iv) saves time; (v) allows for easy access to bidding documents; and (vi) results in easier and more reliable data management.

5.1.3 Contracting arrangements and methods

Key issue

What are the suitable arrangements and methods for contracting works at local level?

Useful information

- Who is in charge of various types of infrastructure? The mandate for the provision of different infrastructure services is usually regulated by national legislation and regulations.
- Possible arrangements for the design and supervision of construction works at national and decentralized levels, i.e. directly by the contracting authority or by consultants.
- Appropriate arrangements for contracting works to community groups, nature of community group (e.g. construction committee, youth group, women group, etc.) and their delivery capacity (e.g. kind of work, availability of skills and other resources).
- Applicable contracting arrangements to suit the particular requirements of different types of work, as well as to adequately respond to the size and complexity of the envisaged works.

Experience

- Design and supervision of local infrastructure works are to a large extent carried out by government agencies with little involvement of private sector. The capacity to efficiently manage works at local level is often insufficient, resulting in poor governance and low quality of works and a lack of asset management.
- The on-going devolution and decentralization process in many countries allows locally based consultants to start and sustain their business, provided the contracting authorities are ready to outsource design and supervision of construction works.

Box 32
Mali: An innovative approach to forest management

The forest development project "Management of Forest Resources in Kita District", took place in three phases from 1990 to 2004. Funded by Norway and the UNDP with the technical support from ILO, the project's main objectives were to create sustainable employment and income, and contribute to preserving natural resources. Through a participatory community approach, village communities successfully negotiated community contracts with the Forest Department. Contracts written in French or local language, stipulated the rights and obligations of the village by which they assume responsibilities to protect, maintain and develop national forest reserves in return for certain felling rights and an employment priority for their members. Prior to the contract agreements, the project objectives were explained to the villagers. The villagers received directives and training concerning harvesting methods and the species to be preserved. The arrangement not only succeeded in eliminating the typical spiral of illegal land clearance and repression, but also provided the communities with economic, environmental and social gains. This was illustrated by one villager's comment about the project: "The project has righted an injustice – it has returned the forest to the poor".

Some key achievements included:

- Exploitation, management and improvement of 100,000 hectares of forest through contractual agreements between village organizations and the forestry department;
- Agreement on a master plan for the preservation, development and exploitation of seven classified forests and a model plan for village forests;
- Acceptance of the model at national level, serving as a basis for a redefinition of the national forest code legislation in a decentralized environment;
- The equivalent of 800 permanent jobs created in the management and improvement of forests and woodlots;
- 95 rural markets established for trading of firewood;
- Durable forest exploitation providing 70 per cent of the energy requirements of Kita township;
- 95 women's associations involved in activities related to forest exploitation;
- Associations equipped through the introduction of 774 carts, 113 bicycles plus various equipment for other forest related occupations;
- A revolving fund (replenished by part of proceeds from wood sales and wood felling permits) to sustain interventions, paying for forest technicians and contributing to village development funds;
- Creation of a federation of forest management unions and village forest management associations;
- Capacity building for sustainable management and economically viable exploitation of forest resources.

A rural market for trading firewood in Kita, Mali

- Awarding contracts to communities provides direct benefits from income during works implementation through local employment, and create a stronger sense of ownership.
- There is a general trend to package works according to the actual capacity of consultants and contractors.

Some guidelines

- It is important that local contractors have improved and continued access to work. This will greatly improve their chances of developing their capital base and build viable businesses.
- Packaging works into appropriate size contracts can increase the participation of local contractors and facilitate their growth. Contracts can be arranged according to type of works as well as into appropriate volumes of work that corresponds to the technical and financial capacity of local builders, construction firms and communities.
- Works contracted to community groups are usually simple and relatively small, utilizing local labour, materials and skills. Such contracts usually require additional technical support coupled with custom-made training and mentorship (see *Annex I for description of community contracts)*.
- The form and thus legality of community contracting has to be confirmed and if necessary developed before embarking on such contracts. Relational contracts, such as verbal or informal contracts, are self-enforcing and are thus usually not used for public works.
- How to engage locally-based consultants depends on the specific services required and the capacity of the consultants. Design and supervision of works can be accommodated in one contract or split into two separate contracts: (i) a design contract that includes technical design and preparation of tender documents; and (ii) a supervision contract for the direct supervision of the works. Expert consulting firms or individuals usually provide specialized expertise in areas such as environmental and socio-economic impact assessments, geological and hydrological surveys, etc.
- There are different ways of packaging works into contracts suitable for the development of local contractors. Possible arrangements include: (i) a general contract where a main contractor manages all works and subcontracts special works or (ii) separate contracts issued by the contracting authority to smaller or specialized firms to avoid subcontracting and to retain direct control.

5.1.4 Contract types

Key issue

What are suitable contract types that meet the requirements of local contracting authorities and small-scale contractors?

Useful information

- ✓ Available types of standard contract documents for a given kind of work within the prevailing institutional and business environment that allows for:
  - the most efficient delivery of the intended outputs;
  - contractors to make a profit, share risks fairly and develop their businesses;
  - efficient management of the works by all parties to the contracts.

Experience

- Good efforts have been made to develop and introduce contract documents that are suitable for local infrastructure works applying local resource-based approaches. However, such contracts often remain ‘locked’ within individual projects without being mainstreamed in the construction industry.

Supply of stone for the construction of retaining walls in Timor-Leste

- Suitable and commonly used contract types for engaging local contractors and in developing their capacities include:
  - **Unit Price** (rate) contracts are based on a bill of quantities of projected work items for which the contractors quote their unit rates. The final price of the contract is the result of the quantities actually carried out and thus the quantities have to be measurable and accurately surveyed. Unit price contracts are usually the most suitable for small-scale contractors and their business development;
  - **Lump-sum** (or fixed price) contracts are based on a fixed price for works or services with a clear scope and a defined schedule. Lump-sum contracts are useful for smaller quantities of works or services that are well defined and when no variations are expected;

    Considering the typical nature of works carried out by local authorities, e.g. small works, repairs to existing infrastructure, maintenance and spot improvements, there is great scope for using lump-sum contracts which can provide a significant market potential for local contractors;
  - **Performance-based contracts** define a minimum standard/condition of the infrastructure the contractor needs to achieve when contracted to maintain infrastructure over a specified period of time. The period can range from seasons (e.g. rainy season) to several years depending on the type of infrastructure. How to achieve the desired standard is left to the contractor as long as he/she meets the performance standards or service levels during the contract period. Issuing and effectively supervising performance-based contracts requires careful assessments of the condition of the infrastructure by using well defined and agreed criteria;

    Performance-based contracts are normally carried out by experienced contractors and can be complicated for both local contracting authorities and contractors. Performance-based contracting should only be introduced where there is already a solid contracts management capacity within the client agencies;
  - **Petty contracts** are used to employ single persons or labour only (community) groups who are not registered as a business entity and which do not require significant construction skills. Petty contracts are usually written in simple language and easy to understand terms and conditions outlining the tasks, responsibilities and rights of both parties;

Petty contracts, using fixed rates and simple work agreements, have proven to be an effective approach for minor works, particularly in more remote areas;

- **Subcontracts** are contracts whereby local contractors are engaged by a lead contractor to carry out part of the works on their behalf. Subcontracting is a common feature in the construction industry and there seems to be an increasing reliance on subcontractors. The main contractor usually identifies the subcontractor. The practice of subcontracting can be misused when most or all the works is assigned to a different firm.

  Subcontracting has been used in the development of local contractors. The client then selects the subcontractors to ensure that the capacity building is targeting set objectives. For this to be successful the development needs to be linked to a predetermined learning path;
- **Community contracts** are used to engage local communities or individuals with common interests to plan for and carry out minor construction and maintenance works. Contracts for works are mainly issued in the form of 'works agreement'. This type of contract is suitable for small works not requiring special skills but where a high level of local participation is anticipated.

  Community contracts are useful in building the capacity of local communities through technical and managerial skills training, as well as for strengthening organization, ownership and sustainable maintenance operations;

- There are several other types of contracts that can be used in specific conditions such as:
  - **Time and material or cost plus contracts** are sometimes used when the scope of works cannot be clearly defined before works commence. The contracting authority and the contractor agree on hourly or daily rates, including additional expenses that may arise in the work process;
  - **The percentage of construction contracts** is common for consultancy contracts, mainly for design and supervision services. The compensation is a predetermined percentage of the cost of construction, often negotiated between a central contracting authority and the engineering associations;
  - **Supply contracts** are commonly used to purchase construction materials, usually bulk materials such as concrete, aggregate, reinforcement steel, sand and gravel. Such contracts are normally used for large quantities of materials, which in some cases are delivered over an extended period of time.
- Standard contracts are usually developed for the purpose of catering for all eventualities in large-scale works. Smaller works entail more limited risks and can often be contracted out using simplified documents. FIDIC and other institutions have developed model contracts suitable for local infrastructure works. These contracts have reduced sizes but still consist of legally tested documentation. For very small works the documentation can be even more limited while remaining legally acceptable and thus easier for micro-enterprises to understand.
- Standard work specifications are generally drawn up for a large variety of works and in most cases based on the use of equipment-intensive work methods. Local infrastructure works often rely on simple but functioning standard designs requiring mainstream construction technology and can often be carried out using labour-based work methods.
- Price escalations are normally not included in minor works. Experience shows that it is useful to include price escalation mechanisms also in the smaller contracts. Although these contracts may be of a comparatively short duration, delays in both the planning, tendering and works implementation are long enough to incur significant price increases. Particularly for contracts in local currency in countries with high inflation, price adjustments should be regular and automatic.

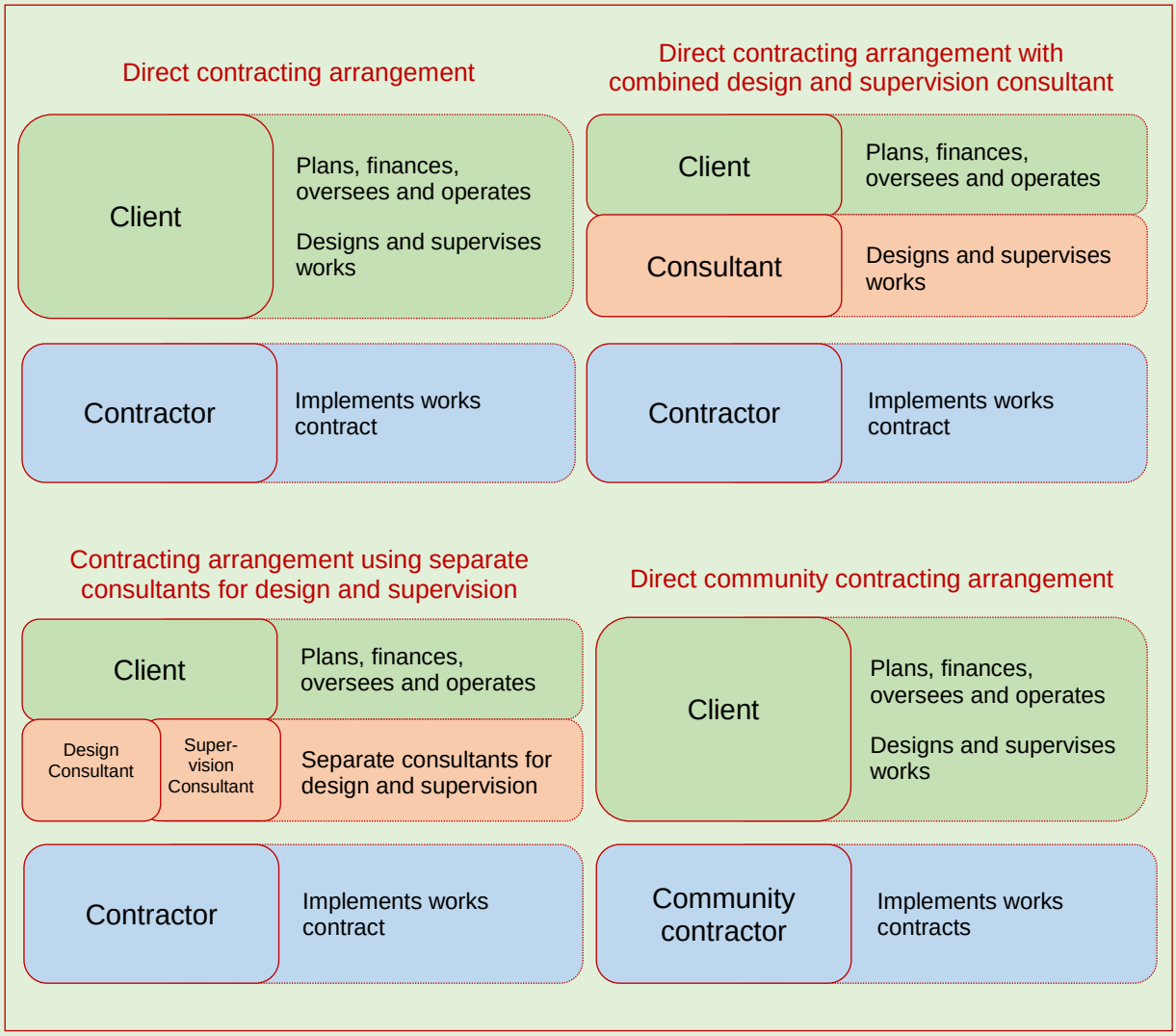
Box 33

Arrangements for design and supervision of works

Various contractual arrangements are in use for carrying out local infrastructure works as shown in figure 9. The most common practice is that the local contracting authority takes on the role of the client as well as the design and supervision function. This is the preferred approach for smaller works.

With larger and more complex works, the local authority may decide to hire one or more consultants for the design and work supervision. In community contracting, there are similar practices. Equally, the local authorities may choose to work directly with the communities or rely on a consultant or NGO to supervise the works and also provide guidance to the community group.

Figure 9. Types of contracting arrangements



Some guidelines

- Civil works contracts are legal documents and therefore it is important that they are reviewed from a legal point of view to ensure that they are in line with national legislation. Contract documents for local infrastructure works also need to recognize the typical size and value of such works and therefore simplify procedures for assignment of risks and liabilities. Finally, these documents would benefit from having simple and inexpensive procedures for dispute resolution.
- Specific requirements to secure the use of local resource-based approaches can be incorporated in existing and tested standard documents, in terms of work specifications, special condition clauses and design standards. References to specific works manuals are useful when prescribing the use of labour-based work methods.
- Special conditions commonly used to prescribe the use of local resource-based approaches should also include appropriate clauses for recruitment of workers, conditions of employment, payment arrangements and other labour issues (see Annex II for sample clauses that can be included in contract documents).
- Appropriate specifications need to be used when preparing civil works contracts. Specifications may be "method" or "performance" based, acknowledging that:
  - construction standards can be the same whatever technology or work methods are used;
  - local contractors have limited access to testing on-site and method specifications may therefore be more appropriate;
  - standard specifications are often based on equipment-based work methods and may need to be adapted when applying labour-based works technology;
  - performance indicators used for certifying works should be simple and easy to measure and allow for an objective assessment of the quality of completed works.
- Due to the nature of local infrastructure works such as access roads, small bridges, culverts, school buildings, clinics, irrigation and water supply schemes, there is great potential for standardizing designs. This helps contractors, reducing the amount of faulty works and contributes to a common understanding of quality requirements. It also allows for establishing common practices such as using locally available resources.
- It is in the interest of the client to see that the contractor who wins a tender also carries out the works. The main purpose of the tender process is to select the most qualified contractor to deliver the planned works. Subcontracting substantial parts of the works after the tender would risk that such good intentions are defeated.
- In a contractor development programme, there is a clear intention from the side of the client to ensure that those firms having received training and other development support also take charge and implement the works. They should not assign the works to others who have not been trained.

5.1.5 Planning, monitoring, reporting and evaluation

Key issue

What are the planning, monitoring, reporting and evaluation systems that are conducive for the creation of a viable contracting capacity?

Useful information

- ✓ Type and level of detail of data and procedures required by: (i) implementing authorities; (ii) regulatory government departments; (iii) funding agencies; (iv) private sector consultants, contractors and professional associations; and (v) participating communities and the public.
- ✓ Financial and technical audit requirements for local infrastructure works.

- ✓ Performance indicators for: (i) works progress; (ii) contractors; (iii) consultants; (iv) community groups; and (v) contracting authorities.
- ✓ Particular monitoring and reporting requirements for: (i) environmental and social safeguards; (ii) socio-economic impact; and (iii) occupational health and safety.

Experience

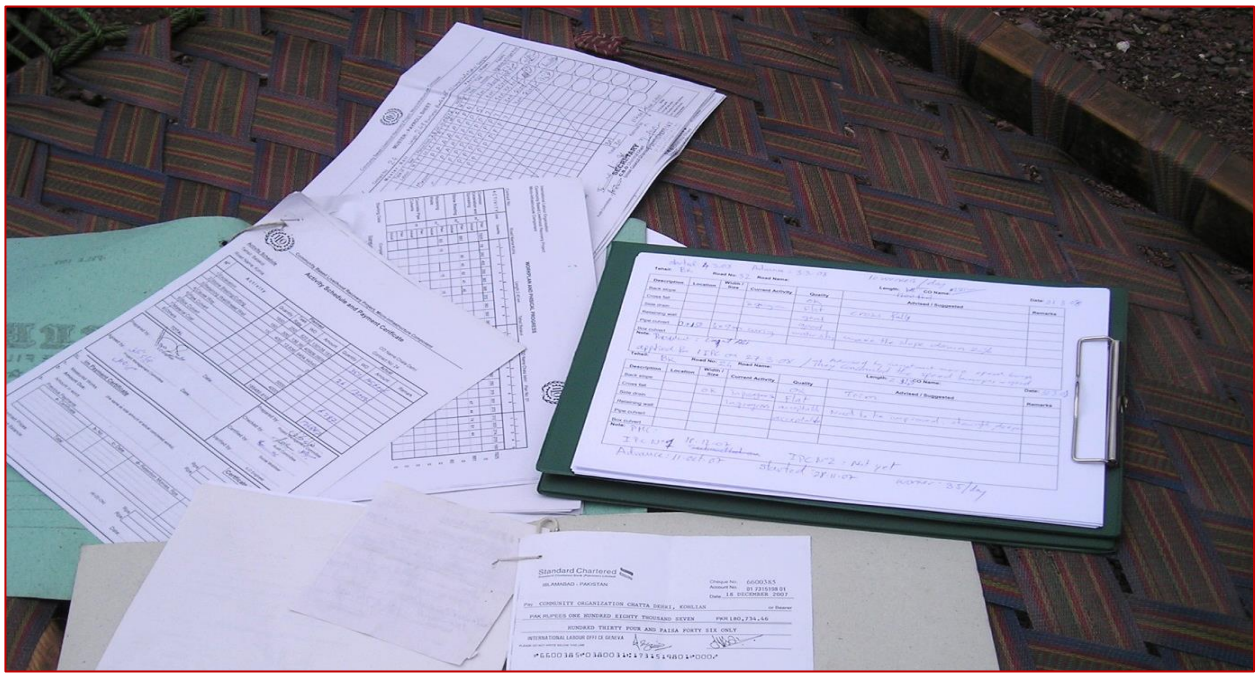
- ⇆ There is considerable scope for improving monitoring and reporting of local infrastructure works. The systems and procedures should cater for the information needs of decision makers both at local and national levels.
- ⇆ Monitoring and evaluation of contracting development programmes are often segregated and dictated by single project requirements rather than fitting into an overall implementation framework.
- ⇆ To secure expected levels of transparency and accountability, there is a need to enforce the monitoring of key performance indicators in local infrastructure works predetermined at the planning stage.
- ⇆ There is a need to identify relevant success criteria on the delivery of training other capacity building measures. These criteria should be included in the overall monitoring and evaluation system.
- ⇆ Many local infrastructure works programmes have developed impressive monitoring and reporting systems. Some of these are also accessible to the public through the Internet providing for social audits. These systems also announce business opportunities, publish results of tenders and progress of individual works contracts. The fact that data such as expenditure and work progress has become available to the public is a major step in terms of increasing transparency and accountability in public infrastructure works programmes.
- ⇆ Most contractors do not collect and analyse their performance data and make use of it, e.g. cost of equipment, post calculation of unit rates, labour productivities and systematic monitoring of material testing results.

Quantity surveying and proper documentation for good technical designs, budgets and progress reporting. Here from Cambodia and Nepal

Some guidelines

- It is important to design and implement a uniform planning, monitoring, reporting and evaluation system that contains all these elements.
- Before developing this system, agreement should be reached with partners on the type, format and frequency of data to be shared. Particular attention should be given to distilling key information, e.g. critical performance indicators that allows management to gain a sensible and timely overview and to make rational decisions.
- Typical performance indicators may include:
  - Physical progress (targets - achieved) *
  - Expenditure (budgeted – actual) and unit costs *
  - Progress on individual contracts (targets - achieved) *
  - Quality (compliance standard – achieved) *
  - Progress on procurement plans
  - Contracts register, monitoring past and current portfolio of works contracts, payment history and work performance
  - Social and environmental safeguards (compliance: targets – achieved - impact)
  - Gender and other means of inclusiveness (compliance: planned – achieved – impact)
  - Infrastructure safety (compliance: design – actual – impact) *
  - Occupational health and safety (compliance: standards – achieved)
  - Socio-economic (targets – impact)
  - Beneficiary surveys involving users of infrastructure
  - Recipients of capacity building support. *

  ** These indicators can also be used for performance assessment of contractors.*
- Keeping track of actual and comprehensive performance records of contractors and consultants is highly valuable information to continuously assess their performance. This information also helps keeping track of the performance development during the training programme and is useful when planning future capacity development programmes. Contractors, consultants and professional associations should be involved in the identification and development of the performance indicators.



Standardized forms are useful for achieving uniformity in reporting. Kashmir, Pakistan

Box 34

Contract register – performance assessment

Contract registers are useful for monitoring progress and performance of contracts and the volume of financial commitments held by the contracting authority.

The contract register provides valuable information about the performance of individual contractors that have been engaged in the past, and their ability to comply with the planned time schedules and budgets.

Therefore the contracts register can be an important reference source when carrying out a tender evaluation. Through the contracts register, it is possible to establish whether a bidder has previously carried out works for the local authority. It is also possible to quickly establish whether a contractor is currently engaged or in the process of being engaged for other works. A sample contracts register is presented on table 11. This information may affect the assessment of the contractor's current capacity to take on new work. If a contractor is already engaged in other local infrastructure works contracts, its equipment and qualified staff may already be committed.

All this information has a direct impact on the final selection of the best bid during a tender evaluation. As mentioned earlier, it is important that the evaluation committee selects a bid from a firm, which can commence works according to the time schedule specified in the bidding documents, with the required equipment and personnel. Equally, if the contracts register shows that a firm in the past has worked for the contracting authority, it is then a valuable source for obtaining information regarding the firms' past performance.

The Contract Register is kept in a designated file with the contracting authority. Copies are normally submitted together with the monthly progress and expenditure reports.

Table 12. Sample Contract Register

CONTRACT REGISTER

District:

Name and address of contractor:

Contract date: Contract value:

Contract reference number: Date started:

General ledger account code: Date completed:

Reference		Category of works	Invoice amount	Progress payment			Deductions	Retention on payment	Posted to G/L Y/N
Date	No.			Date	Amount	Contract balance			

Source: Training Guidelines, Small-Scale Contracting, Rural Infrastructure Works, Contract Management, Johannessen, ILO ASIST-AP.

5.1.6 Quality management

Key issue

How to integrate effective quality management into locally implemented public infrastructure works?

Useful information

- ✓ National design and construction standards, specifications and testing procedures. These are usually available from respective national authorities or in some cases from professional associations and construction development authorities.
- ✓ Work procedures and methods describing local resource-based work methods, which are not always included in the national design standards and specifications.
- ✓ Applicable quality management arrangements for planning and implementation of local infrastructure works:
  - o Are there adequate quality assurance measures through all stages of the works and do they follow an overall quality management concept?
  - o Who is responsible for quality management and what are the institutional arrangements?
  - o Are existing quality management systems appropriate for: (i) use in local infrastructure works; (ii) the development and sustenance of local contractors; (iii) the application of local resource-based construction methods; and (iv) for fair sharing of risks between the employer and contractor?

Sand replacement test to check soil density. Cambodia

Experience

- ⇆ It is rare to find a quality management system in place for the entire construction sector. And if there is, it may not be suitable for local works.
- ⇆ It is a common misconception that quality management is mainly an issue about quality control, in which the entire responsibility for ensuring adequate quality is shouldered by the contractor.
- ⇆ Existing quality control specifications do not give particular attention to local resource-based designs and construction methods. They also do not consider the limited material and performance testing capacity in remote places as well as the quality assurance responsibilities of planners, designers and work supervisors.
- ⇆ Securing skilled staff that can perform the expected works to high levels of workmanship is the backbone of any quality assurance programme. Experience shows that there is insufficient attention given to skills levels, while too much emphasis is placed on sophisticated specifications and testing procedures.

Box 35
Quality management

Framework of a complete quality management system

A total quality management system (QMS) consists of a set of policies, processes and procedures required for planning and execution of works. It also identifies the relevant partners with their roles and responsibilities in quality assurance (QA).

Levels and functions	Involved QA partners	
Policy framework, regulations and overall standards	Respective government authorities	Quality standards
Construction norms and standards, planning and design, monitoring and auditing	Government technical departments, professional associations, implementing agencies and consultants	
Contract preparation, tendering and award	National and/or local implementing agencies and consultants	Quality control
Works implementation: workmanship and quality control	National and/or local implementing agencies, consultants and contractors	

Quality control system with shared responsibilities

Engineer
(contract supervisor)

Responsible for controlling quality of works on behalf of client

Contractor
Responsible for delivering quality work as per specifications and professional workmanship practices

Checks measurements and workmanship compliance at site → **Measurements and workmanship**: Site quality control using specified measuring and control methods

Instructs the contractor to carry out laboratory and field tests → **Material, field density and concrete tests**: Requests service from field laboratory as instructed by the Engineer

Approves test results and work quality on site ensuring that works are carried out to correct dimensions, i.e. depth of foundations, thickness of soil layers, locations of trenches, height and width of walls, etc. → **Requests for approval**: Stage-wise approval to continue with works and preparation of payment certificates

Material and performance tests
Carries out testing services in laboratory and on site as requested by the Contractor

Field laboratory
Dynamic cone penetrometer and sand replacement tests, proctor and PI tests, gravel and aggregate grading tests, slump tests, stone water absorption, etc.

Central material laboratory
Sophisticated material tests if required

- Work supervisors are often not familiar with practical methods of controlling workmanship and therefore rely mainly on conventional material and performance testing (compaction, concrete strength, etc.).
- Technical audits are often carried out in total disregard of the appropriate design and construction methods applied.
- Good efforts have been made to develop and mainstream appropriate quality assurance and control systems suitable for the specific conditions of smaller civil works carried out by local contractors.

Some guidelines

- Quality management is based on clear guidelines on how contractors are expected to perform their work with good documentation of expected work outputs. This requires well-defined standards of workmanship and a common understanding of quality of materials and use of equipment. Defining such benchmarks is just the first step. Achieving these standards in a coherent manner only takes place when the industry, including clients, consultants and contractors, have all developed the necessary capacity to deliver good quality works.
- A good quality management plan consists of a comprehensive set of measures starting with standards and specifications, works planning (appraisal and preliminary design), detailed design, contract preparation, works implementation, supervision and approval, and finally auditing. These may be structured as follows in table 13.
- Decent facilities, appropriate equipment and qualified technicians are required for material and performance testing. In large-scale construction works, the contractor is responsible for providing these services will have to carry out the tests under the supervision of the client's representative. For smaller works carried out by local contractors, it is more appropriate to establish simple testing procedures under the supervision of the local contracting authority for proactive quality assurance.

  The testing scheme needs to (i) be suitable for local and remote areas; (ii) provide immediate results; (iii) concentrate on key quality and workmanship issues; and (iv) affordable for both the contractor and the employer.

Table 13. Quality management plan

Stage	Quality control element	Responsible bodies
International and national designs and construction legislation, standards and norms		• Government departments • Private construction industry (professional associations, construction development authorities etc.)
Design and preparation	• Preliminary and detailed designs with quality specifications • Contract preparation, including conditions of contract, works specifications, drawings and quality assurance and control	• Contracting authority or design consultants
Works implementation	• Securing required workmanship, organizing regular supervision and inspection and prescribing field tests	• Work supervisors from contracting authority or consultants • Contractor and his supervisory staff including skilled workers
Technical audits	• Technical audit during works and final quality of end products (destructive and non-destructive testing)	• Internal departmental audit facility • External audit by third party *Consultants may be hired in both cases*

Box 36

Material and performance testing for local infrastructure works

Local laboratories provide the testing services required in the works contracts. Such laboratories perform most routine tests with a basic set of affordable testing equipment.

Range of tests

- Grading test for sand, gravel and aggregate
- Plasticity index (PI) test for soils and gravel
- Standard Proctor compaction test
- Slump test for concrete and mortar
- Compaction density
- Concrete compressive strength test

Equipment

- Sand replacement equipment set, including mason hammers, chisels, scoops and brushes
- Set of standard sieves
- Scales to weigh materials
- Proctor test set (4.5 and 2.5 kilogram hammers)
- PI test equipment (Casagrande apparatus, moulds etc.)
- Drying oven with thermostat
- Dynamic cone penetrometer
- Slump test cone, including base plate and taping rod
- Schmidt hammer (concrete compressive strength)
- Compression testing machine
- 5m tape measures
- Sets of ordinary hand tools
- A qualified laboratory technician operating the field laboratory

It is possible to control the specified quality of most local infrastructure works using the above testing equipment in combination with rigorous checking of the workmanship.

Quality control items for setting-out, dimensions and workmanship

Many quality control activities on site do not require sophisticated test equipment but routine of continuous inspection. The following are common measuring and control tools used to check quality of works:

- Ranging rods
- Profile boards
- Dimension templates for earth works
- Straight-edges with spirit levels
- Line-levels and water tubes
- Camber boards (for road works)
- Tape measures
- A-frame for contour marking (for watershed works)

Kenya: Roads 2000 – regional testing facilities

The Government of Kenya through the Rural Roads Authority introduced the use of low- volume road sealing techniques for rural road improvement. This is technically more challenging than building earth or gravel roads and requires thorough quality monitoring and control. Neither the Engineer's Supervisors nor the Contractors' Supervisors were able to satisfactorily check the quality of completed works on site due to unavailability of test facilities and lack of know-how. In addition, material laboratories are located far from most works sites and the few centrally-located laboratories were difficult to access.

It was then decided to develop a simplified quality control system (check-list) tailored to the requirements of labour-based rural road works implemented by locally-based engineers and contractors. The new quality control system hinges on tests and checks that can be carried out without sophisticated equipment, while still allowing for rigorous control of workmanship.

Each regional manager operates a field laboratory, which is made available to the design consultants for material testing and to the contractors for the necessary construction tests. This arrangement has shown excellent results; tests are carried out when required, they provide immediate results and therefore avoid unnecessary delays. This inbuilt routine quality checks significantly improved the quality of works.

5.1.7 Cross-cutting issues

Key issue

How are cross-cutting issues (CCIs) effectively integrated into planning and implementation of local infrastructure works.

Useful information

- ✓ Relevant policies and legislative framework encompassing environmental and social safeguards.
- ✓ Specific targets and priorities set out by central or local government, e.g. fostering gender mainstreaming, employment creation, community participation, and poverty reduction.

Experience

- ⇆ Including cross-cutting issues has become common practice for all infrastructure works as defined in national policies and legal frameworks.
- ⇆ Community participation throughout the entire project cycle has become a common integrated feature in local infrastructure works. Community participation can contribute to more transparency, reducing corrupt and collusive practices, increased socio-economic development and ownership.
- ⇆ Mainstreaming cross-cutting issues is a lengthy process involving all partners.
- ⇆ Crosscutting issues can be included in the conditions of contract, bill of quantities or work specifications in order to secure that contractors calculate the related costs of fulfilling such demands.
- ⇆ Provision of detailed information, awareness raising exercises and dedicated training on cross-cutting issues in local infrastructure works has shown good results.
- ⇆ Some cross-cutting issues require careful introduction as they can be in conflict with traditional and cultural beliefs. Community consultation processes can take time and resources.

Contracting out maintenance works to community groups in Nepal

Box 37

Typical clauses addressing cross-cutting issues included in the particular/special conditions of contract

Environment

The Contractor shall take all reasonable measures to protect the environment on the site and to avoid damage or nuisance to persons and property. In particular, the Contractor shall carry out all activities in a manner that ensures:

- Minimum soil erosion on slopes and sedimentation deposition in the drainage works;
- Maximum preservation of trees and shrubbery;
- No entrance or accidental spillage of solid matter, debris and other pollutants and waste into water courses;
- The safe disposal of rubbish and waste.

HIV/AIDS

The Contractor shall institute on-site HIV/AIDS awareness and prevention campaigns for the duration of the contract. This shall include the siting of information posters, the issue of condoms and also awareness meetings on site for the employees. The meetings shall be arranged with the assistance of the local health authorities and AIDS campaign personnel, and shall be during working hours without loss of pay.

Source: KeRRA, Roads 2000 Kenya, Conditions of contract

Example of a cross-cutting issue included as a pay item

Item: HIV/AIDS awareness campaign

The Contractor shall organize an HIV/AIDS awareness campaign amongst his workers for the duration of the contract.

Aids awareness shall be included in the orientation process of all workers employed on the contract.

The Contractor shall display AIDS awareness posters in all buildings frequented by workers employed on the contract, where such buildings fall under the control of the Contractor.

In addition at least two of the Contractors vehicles regularly used on site shall display HIV/AIDS awareness posters. The posters shall be printed on gloss paper and shall be at least A1 size on buildings and A3 size or other approved size on vehicles. The message on the posters shall be supplied by the Employer through the Engineer.

According to ILO and Government of Kenya, the contractor shall not allow discrimination against persons infected or affected by HIV/AIDS and screening is not a requirement for job applications.

Measurement:

Measurement unit = month

The measurement shall be the month expressed as a percentage of the physical progress done or part thereof, measured over the duration of the campaign.

The measurement shall be taken after the work for this item has been carried out as ‘Actual work done’.

Payment:

The rate shall include full compensation for equipment, labour and material required for the provision of this item.

Source: Kenya Rural Roads Authority, Roads 2000 Kenya, Conditions of contract.

Some guidelines

- Cross-cutting issues should be integrated at all stages of planning and works implementation and cover issues such as:
  - advocacy for new or promotion of existing policies, laws and regulations; community consultation;
  - awareness raising among the parties to a contract and involved communities; appropriate instructions to planners, consultants and supervisory staff;
  - appropriate clauses in the conditions of contract (particular conditions, bill of quantities) and work specifications to ensure adherence (e.g. training, insurance, safety measures and equipment,
  - environmental safeguards, personal protective equipment);
  - inclusion of CCIs into training and mentorship programmes.
- Similar clauses may also be included in community contracts, in particular for environmental protection and occupational safety and health issues, while other cross-cutting issues may be taken care of through the community mobilization process or defined as the responsibility of the employer.
- Cross-cutting issues like environmental protection has two dimensions:
  - measures of technical nature are part of the engineering design and included as part of the works to be performed; and
  - other protective measures are more to do with awareness and ensuring good practices during works implementation. All measures may form part of an environmental impact assessment and are usually contained in an Environmental Management Plan.[21]
- For local infrastructure works, it is advisable to involve communities to some degree in the entire process from the early planning stages to works implementation. The degree and types of social interventions differ. Some implementing authorities maintain guidelines and codes of practice on social interventions including community participation (table 14).

5.1.8 Corrupt and fraudulent practices

Key issue

What are appropriate and practical measures to combat corruption in local infrastructure works?

Useful information

- ✓ Corruption Perception Index of Transparency International.[22]
- ✓ National anti-corruption laws, acts, regulations and authorities dealing with anti-corruption issues and how these are linked to prevailing procurement regulations including relevant clauses applied in contract documents.
- ✓ Guidelines on applicable measures for avoiding corruption in the public sector.

Experience

- ⇆ Corruption and fraudulent practices are widespread in the construction industry and can be a prominent hindrance for contractor development.

[21] The Kenya environmental guidelines for roads and bridges provide a good example of integrated environmental protective measures (Ministry of Roads, 2010).

[22] Ref: Corruption Perception Index Transparency International, www.transparency.org

Table 14. Community participation in the planning, implementation and operation of works

Stage	Responsible partners	Form of community participation
Appraisal and planning	• Government and non-governmental organizations • Funding agencies • Consultants	• Needs and social impact assessments • Community mobilization • Community consultation (information and awareness raising) • Involvement of village development committees
Design and contract preparation	• Contracting authority • Consultant	• Participation by community coordination committees and user groups representing different interests
Managing works	• Contracting authority • Consultant • Contractor • Community work groups	• Community steering committee and user groups monitor progress of works • Oversight and grievance mechanism established • Community groups participate in implementation of works through direct contracts or as subcontractors
Completion and handing over	• Contracting authority • Consultant • Contractor • Community work groups	• Community steering committee and user groups consulted on acceptance and takeover of facilities • Community agree on operation and management of infrastructure • Community work groups hand over and possibly become responsible for maintenance of infrastructure assets.

Consulting local community in Comoros

- Corrupt and collusive practices severely affect the effective provision of infrastructure services, in term of:
  - increased costs of infrastructure works, which in turn leads to fewer services rendered;
  - inferior quality works which in the long run adds to the costs of providing and maintaining infrastructure services;
  - preventing the entry of new local contractors into the market and discourage existing contractors from taking part in local infrastructure works, which in turn causes cost escalations;
  - skewed priorities of work, often favouring large contracts instead of repair and maintenance of existing infrastructure;
  - distorted planning priorities that favour vested interests instead of real demands;
  - ignored environmental and social safeguards, OSH and other cross-cutting issues and thus risk the livelihoods of local people.
- Fair and open planning and bidding processes, transparent accounting systems, public oversight, introduction of ethical business principles, enhanced education and training, inclusive contract documentation and effective auditing are measures that have shown positive results in combating corruption in infrastructure works.
- Enforcement of good tender and contract management practices is a central issue when attempting to limit corruption. Enforcement not only consists of insisting on applying prevailing rules and regulations but also ensuring that such regulations are known to all parties and that they know how to apply them. Training in contracts management and ensuring that such procurement processes are conducted within reasonable levels of accountability and transparency also contributes to good governance.
- Simple one-stop arrangements for business registration and permits improve the operating environment. Equally, streamlined tender and contracts management procedures with clear lines of responsibilities has the potential to reduce corruption in infrastructure works programmes.
- A good reporting system, documenting progress and outputs of civil works contracts is a central part of good governance practices. This can be further strengthened through community involvement in the monitoring process.
- A grievance mechanism can strengthen the monitoring and create more confidence in public services.
- E-procurement can improve transparency and accountability and may reduce the risk of collusion in tenders.
- Public access to information on work progress through the Internet has improved accountability.
- It has proven difficult to fully eradicate corruption in infrastructure works programmes. The concern should be to put in place all the necessary safeguards and to take adequate protective measures to ensure that quality of works are not compromised.

Some guidelines

- It is easier to fight corruption in the construction sector where a national anti-corruption policy exists and enforcement mechanisms are in place.
- There are two particular reasons for corrupt practises that directly relate to contractor development: (i) relationships between local officials and contractors, and (ii) lack of capacity and oversight. Suggested measures to combat local corruption in infrastructure works include:

Box 38

Corruption

What is fraud and corruption?

World Bank definitions of misconduct

The World Bank debars any contractor found to have engaged in one or more of the following forms of misconduct on a Bank-funded contract:

Corrupt practice: offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party.

Fraudulent practice: any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation.

Collusive practice: an arrangement between two or more parties designed to achieve an improper purpose, including improperly influencing the actions of another party.

Coercive practice: impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party.

Obstructive practice: deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or acts intended to materially impede the exercise of the Bank's inspection and audit rights.

Source: World Bank.

Preventing corruption

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. In pursuance of their primary objective of promotion and acceleration of industrial development, they work through four strategic priorities of creating shared prosperity, advancing economic competitiveness, safeguarding the environment and strengthening knowledge and institutions.

In their report 'Corruption Prevention to foster small- and medium-sized enterprise development' which they issued together with the United Nations Office on Drugs and Crime (UNODC), they state:

Corruption hurts all, but the pain is greatest among small and medium-sized enterprises (SMEs). They are usually the first to suffer in a marketplace where corruption exists, they are more vulnerable to corruption and, as a result, their profit margins and very survival are at stake when corruption takes hold. Since these companies are often the motor for development in societies vulnerable to poverty, the effects of corruption can be devastating.

Source: UNIDO and UNODC, 2007.

- assess corruption risks and formulate an effective anti-corruption programme;
- strengthen local capacity to manage infrastructure works contracts. This contributes to building the integrity of and good governance in local authorities;
- involve local communities and the public in an oversight and grievance role with good access to information.

- Fighting corruption relies on a good understanding of constraints in the business processes such as financial services, business operating permits, access to tenders, tender practices, contract award, inspection and payment of works, completion certificates, release of securities, etc. Awareness raising and knowledge sharing are important actions to start the process.
- National anti-corruption agencies may advise in the development of appropriate strategies and measures.
- Good knowledge of procurement regulations and the conditions of contract is a prerequisite for fighting corruption. Parties to contracts cannot defend themselves against injustice unless they fully understand their rights and obligations. Such information should be in a form and language that local officials and contractors can comprehend.
- In some countries civil works contracts usually include binding clauses on corruption. If not already mentioned in the bidding instructions or main conditions of contract, such clauses can be added to the special conditions of contract.
- Development and inclusion of a Code of Conduct on ethical business principles and standards for all partners can be a useful measure. A 'binding' code of conduct has to be developed in collaboration with all partners and needs to be disseminated to all involved actors and employees. A code of conduct may include:
  - core values and principles of all partner organizations and firms;
  - definition of corruption and unethical conduct;
  - conflict of interests (bribes, gifts, other forbidden activities);
  - information management (record keeping, information sharing, confidentiality, etc.);
  - recruitment and employment practices (favouritism, equal opportunities, discrimination, occupational safety and health, cross-cutting issues, use of public or company property, etc.);
  - relationship among parties to a contract (rights and duties, contractual arrangements, communication and information sharing, etc.);
  - reporting unethical behaviour (reporting channels, informer protection, etc.);
  - consequences of wrong conduct.
- Limiting corruption is a long-term process and requires continuous vigilance. Sound and clear procurement practices are necessary also as a yardstick against which the efficiency of the system can be measured.
- When new responsibilities related to infrastructure provision are transferred to local government authorities, it is important that reliable procurement practices are established in these institutions. Good intentions relating to governance will only materialise when the necessary management systems and procedures are established. Good contract management practices also depend on equipping institutions with the necessary means in terms of human resources and logistical support.
- Third party auditing can be used as an effective measure to enforce good procurement practices and achieve quality works. In this context, it is important to stress the value of technical audits in local infrastructure works. Such audits are useful both during and after completion of works.

Box 39

Monitoring, auditing and transparency

Good contract management practices depend on equipping institutions with sound management systems and the necessary capacity in terms of human resources and logistical support. Developing a Code of Conduct on ethical principles and standards for all partners can be a useful measure for improving business practices and strengthening monitoring and auditing. A 'binding' code of conduct is best developed in collaboration with all partners and should be disseminated to all stakeholders..

Establishing Code of Conduct – Framework Agreement for EPWP

South Africa has established such a Code of Good Practice for employment and working conditions in the Expanded Public Works Programme. The government and the social partners has agreed upon good practice guidelines for all stakeholders involved with the programme, which includes conditions of work, wages and rates of pay, disciplinary action and grievance procedures. It also promotes a common set of good practices and minimum standards in employment practices among the different sub-programmes, including the use of locally based labour with a focus on targeted groups like women, youth and disabled, and the provision of training for empowerment of disadvantaged groups and communities. The Code of Good Practice has been made public through the Government Gazette (see also box 88).

The most recent Framework Agreement from the Presidential Jobs Summit from 2018 identifies solutions to job retention and job creation blockages and opportunities that social partners (government, businesses, labour and communities) can work on to stimulate greater participation in the economy. It outlines important measures for how the infrastructure and employment programmes are monitored and audited as well as how the National Anti-Corruption Strategy is implemented in these programmes.

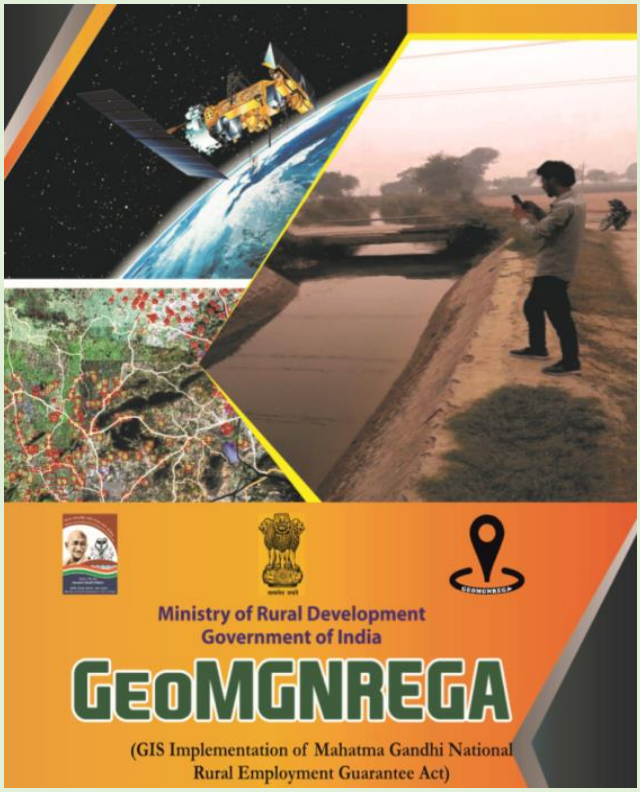
Auditing by community – transparency in MGNREGA

The public employment programme under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in India has recently improved the transparency in planning and implementation of construction and maintenance works, and in monitoring and auditing physical works and finance.

An important tool in this is the web-based information system that displays information on assets, contracts and works, budgets and payments, progress and audit reports, etc.

Communities can take part in a social audit and works can be compared with GIS-based information made available to communities.

Payments to individual workers are made through mobile banking and all workers can control their payments against data made available through this management information system.



5.2 Tendering and award of contracts

Key issue

What are the necessary measures and procedures in contracting out infrastructure works by local government authorities, ranging from national competitive bidding to community contracting?

5.2.1 Appropriate tender and contract documentation

Key issue

What are the measures for ensuring that tender and contract documents are appropriate for local infrastructure works?

Useful information

- ✓ National policy and legal framework for the procurement of works and services.
- ✓ Standard tender documentation in use for local infrastructure works,
- ✓ Standard contract documents used for hiring local consultants for design and work supervision, i.e. expression of interest, terms of reference, conditions of contract and their effectiveness in the award and management of contracts.
- ✓ Measures to be taken to reduce the financial and technical risks on contracts for smaller works to be carried out by local contractors and/or community groups.
- ✓ Requirements for inclusion of social and environmental safeguards in contract documents.

Experience

- ⇆ It is in the interest of all concerned parties (national and local contacting authorities, professional associations, construction sector development agencies, workers' organizations, involved government departments, e.g. finance, labour, public works, local government) to cooperate in the development and standardization of contract documents for local infrastructure works.
- ⇆ Standard contract documents are generally voluminous and too complex for local infrastructure works. Therefore, there may be a need to develop or adopt appropriate documentation that is commensurate with the risks involved.
- ⇆ Contract documentation suitable for local-resource based works has been developed in some countries through various development projects. In some cases contracting authorities have adopted these as their standard contract documents while in other cases they remain 'project specific' documents.
- ⇆ 'Project designed' contract documentation is often assembled from various sources. These documents may lack the necessary legal, technical and administrative consistency. Especially the particular conditions of contract are at times added without the necessary linkages with and references to the existing legal framework and procurement regulations.
- ⇆ Standard specifications and drawings for construction work are generally drawn up for conventional capital-intensive construction technology. Where consultants are used, these also tend to recommend designs which do not give consideration to the use of locally available resources and labour-based work methods.
- ⇆ Simplified contract documentation for maintenance works has proved to be workable and well understood by micro entrepreneurs and local communities, although such documentation has generally not been tested for legal validity.

Box 40
Indonesia: Bilingual contract document

The FIDIC Short Form of Contract was introduced in the Rural Access and Capacity Building Project (RACBP) on Nias Island in Indonesia. The FIDIC documents were at that time not available in the local language. With the permission of FIDIC, this standard contract was translated into Bahasa Indonesia. All other parts of the tender and contract documents were also translated and presented together with the English version.

Sample extract from specifications

E-3. Pekerjaan Jalan / *Road Works*

Dalam Sub Bagian "Pekerjaan Jalan" ini, Spesifikasi menjelaskan item pekerjaan utama, garis besar pelaksanaan pekerjaan dan menentukan material bahan dasar.

Jumlah item yang digunakan dalam Sub Bagian ini mungkin akan tidak sesuai dengan yang digunakan dalam Bagian Daftar Kuantitas dan Harga.

Under the Sub-section of "Road Works" these Specifications describe the key work items, outline the execution of works and specify the basic construction materials.

The item numbers used under this Sub-section may not correspond to those used in the Section G Bill of Quantities.

1. Pekerjaan Tanah / *Earthworks*

1.1 Pembongkaran Permukaan Badan Jalan

Penjelasan Pekerjaan

Pekerjaan ini meliputi pekerjaan pembongkaran permukaan yang lama dan pembuangan lapis permukaan aspal lama yang yang harus dilakukan sebelum menempatkan material lapis pondasi atas atau lapis aspal yang baru. Semua bahan yang mengganggu harus dihilangkan dan dibuang dengan cara yang diterima oleh Direksi Pekerjaan.

1.1 Removal of Existing Surface

Description of work

Removal of existing surface consists of the scraping and removal of badly damaged old asphalt pavement which need to be removed prior to placing new base course materials or new asphalt layers. All spoil materials shall be removed and disposed of in a manner acceptable to the Supervising Engineer.

Sample of appropriate work specifications – side drain excavation

Standard:

The Contractor shall excavate side drains to the profiles and levels shown in the drawings or as directed by the Engineer.

Locations of the side drains shall be as shown in the drawings or as directed by the Engineer. The Contractor shall use the appropriate templates to control the levels and excavations.

Approved material from the side drains shall be used for widening fills and to build the subgrade formation of the road. Excess materials or any materials found to be unsuitable for filling shall be spoiled and spread within 50m of the excavated area as specified under (Code) as directed by the Engineer.

Work method:

The contractor shall apply labour-based work methods to carry out this item and shall also supply and use in adequate numbers all required control and measuring tools.

Quality control:

- The templates and measuring aids must conform to the given standards and used as stipulated in the Quality Control Guideline.
- The dimensions of side drains shall be checked at 50m intervals and shall have a tolerance of +/- 50mm.
- The longitudinal profile of side drains shall be checked at 30m intervals and have a tolerance of +/-50mm.

Measurement:

Unit of measurement: = m^3

The measurement shall be the volume of material excavated to from the side drains.

The measurement for this item shall be taken before the work is being carried out as 'Measurement before Work' as determined by the prescribed dimensions and levels or as directed by the Engineer.

Payment:

The unit rate shall be the full compensation for labour, tools and incidental costs required to performing this work item.

- Dispute resolution is usually regulated in contract documents. In practice, arbitration processes are often too difficult for local contractors, while modern adjudication mechanisms have specifically been designed to resolve disputes in smaller contracts.
- Standard contract documents for consultant services usually cater for conventional works methods and therefore the terms of references rarely take cognisance of the particular requirements of local resource-based work methods.
- Work contracts with community groups are widely in use and are usually kept simple. To ensure a recognized form of legality, it is important to register community groups, e.g. as non-profit organizations.

Some guidelines

- The degree of complexity of contract documentation should reflect the nature of works and risks involved, such as large infrastructure works, smaller works, labour-only contracts by community groups, maintenance operations, etc. To allow for effective and open tendering the use of short and simple documents, preferably in local language, is encouraged.
- Contract documentation should as much as possible be appropriate to allow local contractors to grow and diversify. There are internationally accepted and tested contract documents that are suitable for local infrastructure works, such as the FIDIC 'Short Form of Contract' and the WB's 'Standard Bidding Document for Procurement of Small Works'.
- Specific clauses relating to local resource-based work methods can be included in the conditions of contract, specifying labour recruitment and employment conditions, safety and health, rates of pay and other labour issues as indicated in box 41.[23]
- Particular attention must be given to the presentation of bills of quantities and work specifications to avoid discrimination of labour-based work methods. Such works have to be carried out through a logical sequence of activities, which is reflected in the BoQ and work specifications.
- Activity specifications should ideally be comprehensively described consisting of: (i) standards and norms to be achieved; (ii) work methods to be applied and the extent of the works; (iii) performance and quality requirements of work outputs; (iv) quality control measures to be applied; (v) method of measurement; (vi) method of payment; and (vii) possible productivity range.
- The descriptions of the work methods should specifically state when to use (i) locally employed labour; (ii) appropriate equipment (approved by the Engineer); and (iii) a combination of labour and equipment (approved by the Engineer).
- Drawings should not only include standard designs of structures but also special works or site arrangements that are otherwise difficult to describe, e.g. arrangements for traffic control and site safety, details of templates, setting-out and control tools to be used for construction works, and special tools required for specific activities. Contract documents presented in this format are also ideal for training.
- When preparing community contracts it is important to ensure: (i) simple language with as little technical terms as possible, preferably using common local terms; (ii) comprehensive and self-explanatory content with summary of norms and standards which does not require reference to other documents; (iii) inclusion of easy to interpret drawings or diagrams, preferably three-dimensional; and (iv) compatibility with local work methods.

[23] Sample clauses are shown in *Annex II*.

Box 41

Composition of conventional civil works contracts

Typical sections that are included in tender and contract documents respectively are shown below.

The sections marked in *italics* are those usually modified to reflect the works to be carried out by local resource-based work methods in a specific contract.

	Contract sections	
These sections form the **tender document**	Notice of invitation	These sections form the **contract document**
	Instructions to bidders	
	Addenda	
	Bid forms	
	General conditions of contract	
	*Special / particular conditions of contract **	
	Appendix to conditions of contract	
	Agreement	
	Basic wage and equipment rates	
	*Works description and technical drawings **	
	*Bill of quantities (or activity schedule) **	
	Work specifications	

** The specific sections of tender documents and contract documents that are usually modified to reflect the works to be carried out by local resource-based work methods in a specific contract.*

5.2.2 Securities and insurances

Key issue

How can contract risks be mitigated in relatively small works executed at local level?

Useful information

- ✓ Applicable risk management systems, securities and insurances required for small work contracts in accordance with the prevailing procurement regulations.
- ✓ Financing and guarantee requirements by local banks and insurance providers, e.g. for collateral (immobile and mobile assets, interest rates and repayment requirements).
- ✓ Employer's and Contractor's risk levels for contracts of small works using mainly locally available resources. Can performance security, third party and works insurances be relaxed? What are the requirements for accident insurance, especially when employing a large labour force?
- ✓ Current regulation on the practice of advance payment. Does the employer require security on advances paid to small-scale service providers? Is there a need for the contractor to obtain a mobilization advance? What is the cost percentage of materials to be acquired (depending on the nature of works) and workers to be paid for the period before the first payment is made? Are there alternative arrangements for assisting local contractors during the mobilization stage of a civil works contract?
- ✓ Professional indemnity insurance requirements where consultants are contracted to carry out design work for local infrastructure works, applying standardized designs.

Experience

- ⇆ Access to finance is one of the most severe barriers for small-scale construction firms to operate their businesses. High interest rates and limited acceptance or lack of collateral are common reasons why small firms have difficulties to finance their business and obtain bonds from banks and insurance companies.
- ⇆ Procurement regulations in terms of securities and insurances are in many cases not favourable for the development of local contractors. They seldom make any distinction between requirements for large and smaller, locally implemented works contracts.
- ⇆ Local contractors find it tedious and difficult to negotiate bonds. Often bonds are issued on a full cash deposit basis since the contractors fail to issue collateral acceptable to the banks. This ties up scarce working capital and puts smaller firms at a serious disadvantage in competing for works.
- ⇆ Some contracting agencies have locked a portion of the contract sum with the financial institution to be used as a collateral in order to improve local contractors' access to finance. All payments due to the contractor will then be channelled through this same financial institution making recovery smoother and easier.
- ⇆ Performance bonds are in certain instances ineffective and therefore unnecessary since the financial risk to the contracting authority is minimal for small works. Delays and defaults by the contractors do not result in substantial additional costs and the economic impacts are often negligible.
- ⇆ Performance bonds are often not demanded when small and emerging contractors carry out works as part of a training and capacity building programme.
- ⇆ Workers' compensation is an essential requirement when employing labour.

Box 42
Insurance (extract from FIDIC Short Form of Contract)

Extent of cover

The Contractor shall, prior to commencing Works, effect and thereafter maintain insurances in the joint names of the Parties:

- for loss and damage to the Works, Materials, Plant and the Contractor's Equipment.
- for liability of both Parties for loss, damage, death or injury to third parties or their property arising out of the Contractor's performance of the Contract, including the Contractor's liability for damage to the Employer's property other that the Works, and
- for liability of both parties and of any Employer's representative for death or injury to the Contractor's personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their employees.

Definition: Workers' compensation

The basic principle of this insurance is to provide compensation regardless of fault for disability and medical treatment for injuries resulting from accidents as a result of employment.

The strength of this arrangement is the disregard of who is as fault. For this reason compensation can be paid out immediately and when it is needed instead of waiting for decisions at the end of lengthy procedures of determining the faulty party, i.e. through court proceedings or other forms of negotiations.

The issue of whether the parties in addition have the right to sue for tort or negligence varies from one country to another, but this is not at the core of the workmen's compensation. The main purpose of this insurance is to provide compensation for the immediate consequences of an accident in the workplace in terms of (i) the inability to continue work and the loss of income and (ii) to cover medical expenses.

Trained and equipped workers and supervisors maintain safety on site, Central African Republic

Some guidelines

- A useful improvement of the business environment for small-scale contractors is to relax or abandon performance security requirements when the risk for the employer is minimal. The Employer can minimise the risk anyway through close and timely supervision of works.
- Advance payments may be avoided for very small works where procurement of material is minimal or provided by the contracting authority. During training programmes, emerging contractors may be assisted with the procurement of hand tools and essential small equipment through a loan or lease arrangement.
- Bargaining for all-inclusive project/programme deals with selected banks and insurances may assist in obtaining favourable bond conditions, particularly for providing collateral.
- Performance bonds and payment retention are normally not applied to community contracts. Workers compensation insurance should be considered for community contracts, if not already mandatory. It is common practice that the contracting authority takes responsibility for providing such insurance.

5.2.3 Competitive bidding

Key issue

How can competitive bidding be ensured for local infrastructure works and at what point can developing small-scale contractors be expected to enter the local and/or national competitive environment?

Useful information

- ✓ The existing capacity of the private sector to cope with the workload in the construction industry. What is the starting point? Are there already sufficient established contractors but that require support and training to enter a competitive market? Is there a need to develop new contractors?
- ✓ The capacity at local level to efficiently manage procurement of works and services in a fair and transparent manner, e.g. overloading the administration, collusion, cartels.
- ✓ Existing procurement regulations. Should all types of contracts be awarded through full competitive terms or are less competitive methods appropriate for smaller works? How does alternative methods impact on risk management?
- ✓ Should contractors be exposed to competitive bidding before or after participating in a capacity development programme?

Experience

- ⇆ Most, if not all, contractors want to grow, diversify, be able to compete in the open market and make a profit.
- ⇆ Capacity development programmes are often short and centred to one construction subsector only, and do not allow for a continuous and market oriented development process.
- ⇆ Contracting authorities generally insist on competitive bidding for contracts, although the accepted procedures often relate more to the form than to a genuine competitive bidding process. Exceptions can be negotiated for a development phase, allowing direct contracting or restricted bidding (bidding within trainee contractors only) of the selected contractors.
- ⇆ Standard procedures for competitive bidding may at times be too complex and time consuming for both the employer and contractor to fully implement and enforce. In addition, the cost of the entire bidding process including all required documentation, advertisements, staff costs (including consultants) and the cost for the bidders for preparing complex bid proposals, providing bid securities, etc. may become un-proportionally high in comparison to the estimated cost of the works.

- Smaller repair works are best provided by local firms. Such jobs are often too small to achieve any significant cost savings through a full competitive bidding process. Therefore works up to a certain limit can be procured through obtaining quotations from a minimum of three independent firms.
- Works carried out by micro-enterprises or community groups are usually awarded through direct selection and based on established work norms and unit rates.
- There is often the temptation to bundle works into large contracts to reduce supervision of works rather than to split works into smaller contract packages that match the capacity of local contractors.
- Limited numbers of available contractors can manipulate competitive bidding to their advantage by operating a cartel. High participation in tenders, both in terms of numbers of bidders and participation from a larger geographical area is usually a good indicator of non-collusive practices and tend to produce more competitive prices.
- Standard unit and performance rates published by some governments can be out of date and unrealistic.

Some guidelines

- To become truly competitive in a diversified market, local contractors should be developed through a continuous and steady process. This implies that contractors should be guided through a well-supported and managed learning and enabling growth path that leads them gradually from a protected environment to the open market.
- For any contractor development programme to succeed, it is necessary to build a strong partnership among (i) the employers (contracting agencies) and their staff; (ii) programme management; (iii) training providers; (iv) private sector development agencies, e.g. construction development board, contractor registration board; and (v) contractors' association(s). Fair and open competitive bidding may only be achieved if all parties genuinely play their role.
- Most tenders in competitive bidding are based on a bill of quantity in which the bidder needs to provide unit cost rates of each of the work activities. Few local contractors know how to build up a unit rate on the basis of the component costs of labour, equipment and materials. Contractors, who are unfamiliar with the works or prescribed work methods, tend to provide very high or too low prices in comparison with a reliable engineer's estimate. In order for competitive bidding to have its intended effect, it is important that firms are given adequate training in cost estimating and bidding through contractors' training programmes to enable them to offer reasonable prices for works and services.
- The client needs to look out for too low tenders. With the participation of unscrupulous or inexperienced bidders, there is a fair risk that someone offers an unrealistically low bid. It is often believed that the client is obliged to accept the lowest offer. The procurement regulations, however, in most cases prescribe that the lowest qualified bid should be preferred. Too low bids often lead to a situation in which the contractor abandons the site at some stage during the course of the contract. For this reason, adequate training in cost estimating is very useful for both parties. Equally, it is important that only qualified bidders are allowed to participate in a tender. Qualification of contractors for tendering can be linked to available contractor training programmes.
- A basic principle in competitive bidding is that any *qualified* contractor is allowed to participate in the tender. A qualified contractor needs to hold the required technical and financial certifications and classification that matches the size and nature of the works. When applying labour-based work methods, it is equally important that the contractor employ staff with such skills.

- To ensure that firms competing for labour-based works possess these skills, staff and contractors are provided with recognized skills certificates when having completed training in this subject. The completion of such training can be used as a precondition for being considered qualified to compete for contracts to be executed using labour-based work methods.

5.2.4 Tendering works

Key issue

What are appropriate tendering procedures for local level procurement? What does it take to develop a procurement capacity in which local contractors can compete and build viable businesses?

Useful information

- ✓ General applicable national and local procurement policies and procedures.
- ✓ Relevant national and local procurement regulations for local infrastructure works in terms of classification of contracts, contractors, tender boards (including their composition) and actual tendering arrangements:
  - which types of tendering are suitable, e.g. open tendering, restricted tendering, direct procurement, request for quotations or request for proposal and others;
  - what are the advertisement procedures and means of communication;
  - how can tender documents be obtained (hard copies, electronically);
  - what is the time allowed for the preparation of tenders?
- ✓ Local procuring entities and tender management arrangements, such as tender committees for tender opening, evaluation and acceptance. The devolution of central government functions to local authorities and therefore the transfer of procurement and contractual records may also result in a number of significant changes in tendering procedures.
- ✓ Preference to small enterprises and inclusion of local targeted groups. To what extent can targeted procurement be introduced, i.e. if tender documents can reflect socio-economic objectives in national policies and priorities such as employment creation, youth development, gender participation, use of local resources, etc.
- ✓ Applicable contractor classification system and criteria that may encourage local contractors to participate in government-funded construction works participate in local tenders and improve their skills and capacity.
- ✓ Applicable tender procedures for consultancy services, e.g. quality and cost-based selection, least-cost selection, selection based on consultants' qualifications, fixed-budget selection, individual consultant selection.
- ✓ Availability of e-procurement arrangements and competencies for effective local tendering.
- ✓ The extent to which the public and local communities are involved in the procurement and tendering process.

Experience

- ⇆ The capacity to effectively and transparently manage tendering processes at local level is in many cases not sufficiently developed. Local government officials and tender committee members often possess limited skills and experience in this field.
- ⇆ Effective tendering is not easy and requires well-developed skills, experience, continuous training and mentorship of all involved parties. Tailored training on tendering procedures for local government authorities, consultants and contractors has shown good results in many countries.
- ⇆ Tendering procedures are often lengthy and complex, and are not always suitable for local contractors and their development.

Box 43
Tendering works

Details to be specified when advertising tenders

The following details are normally specified in advertisements of tenders:

- The name and address of the contracting authority
- The general nature and size of the works including the time allowed for implementation
- The procurement method that will be used
- Eligibility criteria to be allowed to bid
- How to obtain more information including qualification requirements, contact details and/or details of responsible staff members
- Where to obtain tender documents, including place, time and the department or responsible staff member
- Cost of tender documents, if any
- Details of pre-tender meeting (place and date)
- Tender validity
- Time and place for submission of tenders
- Amount of bid security, if required.

Targeted procurement – the South African model

Targeted procurement is a type of procurement that is also called affirmative procurement, preferential procurement or positive procurement. It is commonly used as a means to implement an Affirmative Procurement Policy aimed at addressing inequalities resulting from skewed economic policies, inefficiencies and under-developed resources and markets.

Targeted procurement is a mechanism through which socio-economic components can be specified, monitored and audited within the contractual environment set by public sector procurement regimes. Construction essentially consists of four elements: construction management, materials and equipment management, materials supply and physical work.

Targeted procurement enables public bodies to address inequitable distribution of employment and business opportunities for the marginalised individuals and communities through a fair, transparent, equitable and cost effective procurement procedure for the acquisition of services for these four elements.

Governments use a significant proportion of their annual budget on capital assets (public infrastructure development) and as a result have a great deal of influence on the behaviour and performance of the construction industry. This presents a possible vehicle for applying targeted procurement and through it addressing teething socio-economic challenges by securing the participation of targeted groups (communities, small-scale contractors, local suppliers, etc.).

Targeted procurement is used in the construction industry to increase the participation of certain groups (youth, women, local contractors, etc.) when procuring goods and services. The targeted groups may benefit from certain capacity development and training programmes furnished by the government agency or a prime contractor.

In order to comply with these procurement requirements which are defined in the resource specifications, a prime contractor may manage all construction works and supply of materials while the participating targeted groups may carry out the actual work. However, targeted procurement is not always accessed through a third party. Targeted beneficiaries themselves may in other cases directly compete for contract work.

- Targeted procurement can be a powerful instrument to encourage the construction sector to use local resources in their work. Contractors and consultants can respond to socio-economic targets specified in tenders through various measures, e.g. subcontracting local firms, increased community participation and offering skills training.
- Fixed-rate contracts are often successfully used for trial contracts during the initial training phase for the development of local contractors. However, consultations with relevant parties (clients, trainee contractors, consultants, professional associations) are useful in order to arrive at acceptable rates and to clarify the need for such a process.
- Procurement of professional services, mainly consultancies for the design and supervision of works, is mostly done through Quality and Cost Based Selection.
- Given their responsibility to provide certain types of infrastructure, different technical units within the local administration mostly handle public procurement at local level (public works section, irrigation department, water supply unit, etc.). The mandate for providing such services is usually defined in national legislations. Tender committees are appointed at local level to coordinate and oversee procurement of works, goods and services. In addition, contracting authorities appoint evaluation committees to carry out the detailed review of tenders. The committee composition depends on the nature of the works and services to be procured. A tender for civil works requires the inputs from qualified technical staff.

Installing a water gate, Battambang, Cambodia

Box 44

Quality and Cost Based Selection of Professional Services

Quality and Cost Based Selection (QCBS) is the default method of selecting consulting firms under WB and other international development bank rules. In this method, the first step is to place an advertisement known as a Request for Expressions of Interest. At this stage, firms submit details of their qualifications to undertake the contract. The Expressions of Interest are evaluated and a shortlist of qualified firms is prepared (i.e. this step is similar to pre-qualification for a works contract).

The bid document, known as a Request for Proposals, is sent to the shortlisted bidders. The bidder submits their bid in two envelopes: The first contains a Technical Proposal, the second a Financial Proposal. The Technical Proposal is opened and evaluated while the Financial Proposal remains sealed. The Technical Proposal is scored against a set of criteria, which are pre-defined and should be as objective as possible. There is a minimum qualifying score. The only financial proposals that are opened are those that have been submitted by a firm that has achieved the minimum qualifying score. A "financial score" is then calculated and is combined with the technical score using a weighting system. Usually, the maximum possible financial score will comprise no more than 20 per cent of the maximum possible combined score. The contract is then awarded to the firm with the highest combined score. Because the financial proposal is a factor in the selection, no further negotiation of price is permitted.

Source: UNCDF, 2013.

Kenya: Example of a typical qualification data sheet for the selection of small-scale road contractors for training

The essential information below indicate financial and works capacity of contractors that can be used when compiling a shortlist of companies most suitable to participate in a training programme.

- Full name of company
- Postal and physical address
- Legal form of the company (sole trader, partnership or limited company – enclose certificates and business license)
- Name of director(s) and owner(s) – Name and percentage of ownership (enclose certified articles of memorandum of association)
- Registration with Ministry (Road Authority) – if yes, enclose certified copy of registration certificate)
- Name of managing director or manager (if not same as managing director)
- Current bankers: name and address, no. of years with, account title
- Staff list: permanent or on contract – name and designation (enclose full CV and copies of education and training certificates for proposed supervisors and managing director)
- Office facilities: total area, no. of rooms, owned or rented (if owned enclose copies of title deeds, if rented copies of lease agreements)
- Other facilities (workshops, stores): total area, no. of rooms, owned or rented (if owned enclose copies of title deeds, if rented copies of lease agreements)
- Contracts undertaken in the last three years including on-going works: Client, type of work, duration (months and dates), value (attach copies of completion certificates)
- Current workload if any: Client, type of work, value, expected completion date
- Schedule of assets: vehicles and construction equipment (description, model, year of manufacture, value – attach copies of proof of ownership)
- Annual turnover for last two years (attach copies of audited accounts)
- Liquid assets (attach letters of credits from bank)

Some guidelines

- The roles and functions of a tender board needs to be clear and established as part of the management system. In a contracting capacity development programme, it is important to keep all parties involved fully informed on the objectives and implementation strategies of the planned works. All parties involved in preparing and managing contracts would benefit from contracts management training. See "Contracting local infrastructure works" for more detailed guidance on tendering procedures (Johannessen, B., 2009).
- In the case where contractors are screened for their eligibility to tender as well as participate in a training programme, it may be necessary to go beyond the normal (conventional) assessment of the contractor's facilities, resources and financial standing.
- For a contractor to qualify for certain works, he/she is expected to employ the necessary technical and managerial staff relevant to the nature of the works. For instance, when carrying out labour-based works, it is reasonable to demand that the consultant and contractors employ technical staff with this competence. Evidence of such competence can be linked to having completed certain accredited courses supported by experience from any other employer.
- In capacity development programmes, pre-tender meetings can be coupled with joint preparatory training for all bidders and officials from the client body. The objective of the training is to help the trainee contractors to: (i) effectively interpret the content and use of the tender documents; (ii) gain a full understanding of the prescribed work and approach, e.g. applying labour-based methods; (iii) prepare realistic work and resource plans; (iv) calculate realistic rates; and (v) submit correct and complete tenders.
- It is advisable to expose contractors who are participating in a contractor development programme to the prevailing procurement system to enable them to compete fairly. As part of the initial training programme, contractors may be given trial contracts. In these cases it may be necessary to negotiate with the local procurement authority an acceptance of the principle and level of fixed rates.

5.2.5 Tender evaluation and award of contracts

Key issue

How can transparent, fair and appropriate evaluation procedures be established for local infrastructure works?

Useful information

- ✓ Current national and local procedures for evaluating tenders including the role of the tender boards, applicable evaluation criteria and evaluation reporting.
- ✓ Responsible authorities and contact persons for review of recommendations and award of contract, e.g. chief executive officer (within local authority), procurement review committee, higher level authority (where required, e.g. national road agency, ministry of public works) and financing agencies (with 'prior review' competence).

Experience

- ⇆ The Engineer's estimate often plays an essential role in eliminating excessively low or high bids when evaluating tenders. However, it is often the case that the engineer's estimates have been prepared by inexperienced technical staff or consultants based on unrealistic cost and performance rates. They can also be inflated or based on out-dated standard work norms or scheduled unit rates. It is necessary to have such estimates counter-checked by experienced professionals in order to ensure accountability and value for money.

Box 45

Example: Bid opening process

A. First open any withdrawal notices and put respective tenders aside un-opened.

B. Each bid is opened and the following information is noted on a display board to be seen by everybody present:

Name of tenderer	*Sunshine Constr.*	*Building the Future*	*Road Specialists*	*Linda's Building Co.*	*Diamond Constr.*
Bid envelope properly sealed?	Yes	Yes	Yes	Yes	Yes
Bid price	50 487	73 511	49 050	48 997	89 655
Amount of bid security (if required)	1 009	700	981	980	1 793
Bid acceptance	Yes	No	Yes	Yes	Yes

In some cases it has been found useful to also check obvious requirements during the opening process to ensure that all tenderers are already informed about major compliance requirements. Such requirements may include:

- Is the tender submission letter signed?
- Is the authorization letter for signing the bid proposal included?
- The validity of the tender against the requirements in the bid documents
- Correct number of copies of submitted tender
- Contractor qualifications
- Provision of bid security
- Completeness of tender

All other information needs to be checked during the tender evaluation exercise and only made known when the contract is awarded.

- Local tender boards and committees often lack the experience to effectively evaluate tenders. It is important to have competent technical staff to review and evaluate bids combined with proper guidelines for the selection of the lowest qualified bid. This includes practical criteria for accepting or rejecting bid proposals.

Some guidelines

- A key requirement for fair and effective tender evaluation and award of contract is a competent tender evaluation committee. It is also important to have predetermined evaluation criteria that are clear, measurable and communicated to contractors presenting tenders well in advance. Guidelines (code of conduct, terms of reference) and training are additional measures that ensure transparency and tender boards and committees have sufficient capacity. *Annex III describes common procedures for evaluating tenders.*
- Receiving and evaluating tenders follow a pre-defined process and needs to be properly documented. Appropriate checklists and formats are essential tools during tender opening and evaluation (see Annex III for common procedures for evaluating tenders). Minutes may include: (i) bids received; (ii) attendance at bid opening; (iii) details of bids opened; (iv) findings of initial tender examination; (v) records of tender evaluation; and (vii) records of post-qualification (if applicable).
- The tender evaluation committee reviews in detail all qualified bids and forwards their recommendations to the tender board. The tender board receives the recommendations from the tender evaluation committee and makes a final decision on the ranking of the tenders.
- Notification of award of the contract to the winning tenderer should be made promptly. After the contractor has accepted and the contract has been signed, it is good practice to notify unsuccessful tenderers and return their bid securities. At the same time, the public is informed of the award of contract, e.g. through media, Internet, public notice boards and community meetings.

5.3 Managing contracts

Key issue

How can local authorities and contractors be supported to be able to effectively implement local infrastructure works?

5.3.1 Contract start-up and mobilization

Key issue

What are the necessary arrangements to secure timely mobilization and start-up of works contracts?

Useful information

- ✓ The contract management arrangements and responsibilities among the involved parties, e.g. respective roles and function of local council, technical and administrative officials, consultants and community representatives.
- ✓ The capacity of the contracting agencies to manage the contracts, especially in a situation where there are increasing numbers of works contracts.
- ✓ The necessary contract provisions to allow works to commence unhindered and on time, e.g. advance payment, submission of securities, mobilization of contractors, reviewed and approved work programmes, access to site, recruitment of labour, information and involvement of community work committees.

Box 46

Capacitating partners for contracting in Mauritania

Enterprise Academy

Local economic development does not happen without strengthening the private sector, particularly local micro, small and medium enterprises. With support from the ILO, the establishment of the Enterprise Academy programme in Mauritania offers capacity building to local enterprises.

The Enterprise Academy provides capacity building of SMEs working in the field of construction. Its course programme is unique, covering a comprehensive skills-set including both technology and business management.

The Academy has developed a set of 13 modules, ranging from national regulations, construction standards and technologies to surveying methods, climate resilience and financial management.

With support from EU and ILO, the Government also promotes skills development for youth in construction works using local resource-based approaches – in which the Enterprise Academy is tasked with the provision of training. In 2017, 25 local enterprises were provided training for a duration of eight weeks.

Training material and lessons learnt from this trial were shared with both national and international partners.

Technical support documents describing the approach and strategy were published in order to document the approach and its outputs.

Source: ILO, 2018.

Practical training in concrete works and supervision in Mauritania

Experience

- Appropriate mentorship and support mechanisms are useful in order to build the capacity of local authorities and contractors during mobilization, start-up and implementation of work.
- Allowing the contractor early access to the work site and at the same time mobilizing and informing the concerned public are essential prerequisites for a problem-free commencement of work. Particular attention also needs to be given to the labour recruitment process.
- The provision of quality tools and equipment at the start of the work programme is a challenge for many small-scale contractors, but particularly among emerging contractors, and therefore requires early attention from the contract supervisors.
- Hand tools provided by contractors are often unsuitable for construction works, issued to labourers without any demonstration or training and are not adequately maintained.
- Equipment required in labour-based works is mainly for compaction and haulage purposes. Acquiring appropriate compaction equipment can be a challenge for local contractors.
- Informing communities already at the design stage about work opportunities and their expected involvement is important for the successful implementation of the works.

Some guidelines

- Small and particularly emerging contractors require assistance in developing realistic work and resource plans coupled with cash flow forecasts. It is advisable to invite contractors to a 'mobilization training workshop' to provide guidance in the preparation of their work plans, this often proves to be a worthwhile investment.
- The issue of advance payment is normally critical for ensuring that contractors have the required financial basis to provide necessary inputs and start works. It reduces the risk of contractors defaulting already at the start of the contract.
- For smaller works, it may be advisable to discourage advance payments. This lowers the risk for both the client and the contractor. Interim payment arrangements can be scheduled so that the contractor receives some working capital at an early stage of the work programme, e.g. payment as soon as possible for some preliminary cost items, such as materials and camp facilities.
- It is often difficult for local contractors to obtain credit and bonds and securities. It is therefore important to put an efficient payment regime in place, which enables the client to pay on time and at regular intervals for completed works. For small and low-risk works involving community contractors, the client may provide the essential tools and materials.
- As part of the mobilization phase, contractors need to establish a site camp in a suitable location with sufficient capacity for accommodation and office space for their supervisory and skilled staff as well as for the storage of materials, tools and equipment. Emerging contractors need to be supported to make early arrangements and agreements with local communities to identify an appropriate location and set up for safe site camps.
- Fair and open recruitment of the local labour force is a key factor for the effective implementation of labour-based works. Particular emphasis may be given to reach women, youth and people with disabilities. When recruiting the labour force, it is important to provide clear information on the conditions of employment.
- Provision of adequate and timely information about works activities including the recruitment process to the entire target groups is crucial in achieving ownership and full participation.
- Recommendations on managing and implementing contracts for local infrastructure works have been synthesized in several ILO guidelines (see bibliography).

Box 47

Roles of parties involved in implementing works contracts

Local infrastructure works are normally under the responsibility of a local government authority, managed by their public works unit. The local authority may take charge of work supervision themselves or engage an engineering consultant to take on the role of supervising works contracts, while the contractor carries out the works. The local community should be involved at all stages and with all parties throughout the development and implementation of the works.

Client (Local government)

- Award contracts
- Engages and monitors supervising engineers
- Informs and collaborates with concerned communities
- Makes sites available to contractors
- Approves changes
- Approves costs for additional work
- Pays for completed works and services
- Secures adequate cash flow
- Takes possession of completed works

Engineer (Local authority or consultant)

- Instructs contractors and/or community work groups
- Inspects, approves and measures works
- Issues instructions
- Verifies compliance with conditions of contract and requirements concerning cross-cutting issues
- Issues payment certificates
- Liaises with community development and user committees
- Monitors progress and reports to client
- Issues completion certificates

Contractor

- Carries out works according to contract conditions and specifications
- Provides staff, materials, tools and equipment
- Recruits and employs local workers
- Liaises with community committees as required
- Awards sub-contracts
- Implements/ensures cross-cutting issues
- Follows agreed work plan
- Implements instructions
- Initiates and executes quality control
- Remedies defects
- Presents payment claims
- Completes work and maintains as contracted

Community

- Represents interest of local community in the selection, prioritisation and design of infrastructure works
- Liaises with local government, engineer and contractor
- Facilitates and coordinates community support
- Takes on contract works
- Provides labourers
- Follows agreed work plan
- Implements instructions
- Monitors implementation and progress of works

5.3.2 Works implementation and supervision

Key issue

How can the management and supervision of contracts be optimized to ensure efficient implementation of work by local contractors?

Useful information

- ✓ The capacity of the contracting agency to manage present and future volumes of works contracts.
- ✓ Procedures for quality and progress monitoring: Are these fully established within the contracting agency, including appropriate supervision arrangements with alignment to the overall civil works programme of the local authority?
- ✓ Applicable environmental and social safeguards (employment and other cross-cutting issues): Are there formal monitoring systems in place? Which data to collect and process?
- ✓ Occupational safety and health requirements: Are there sector policy and regulatory frameworks, e.g. occupational safety and health (OSH) management plans, detailed safety norms, workers insurance, inspection and reporting requirements? Is approval required and from whom, department of labour, national construction authority, etc.?

Experience

- ⇆ Supervision of works requires a sound management capacity that is often not sufficiently present at local level. Technical staff from central government departments who are meant to support local authorities suffers from frequent staff changes, lack of motivation and missing a clear mandate for effectively supporting local government institutions. In addition there is often a lack of resources to carry out such mandates. Supervision consultants can be engaged to reduce the management burden of local authorities.
- ⇆ Work inspection is critical for all works, also when using local resource-based work methods. The supervising engineer needs a permanent work site presence of designated technical personnel for quality control, material testing, work approval, progress monitoring and daily work instructions.
- ⇆ Regular work measurement and certification allow the contractor to submit invoices and secure timely and regular payments for completed works.
- ⇆ The supervising engineer is also required to ensure that the contractor complies with the conditions of contract in regards to employment conditions, work site safety environmental concerns and other cross-cutting issues.
- ⇆ Well-designed, capacitated mentorship and coaching inputs have shown good results in developing the capacity of contracting agency staff, consultants and contractors.
- ⇆ Effective quality control for works in remote areas carried out by local contractors is often a challenge for both the contracting agency and the contractor. Adequate testing facilities are not readily accessible in such areas and in their absence “compromises” are made resulting too often in sub-standard quality of works.

Some guidelines

- ☛ In view of establishing transparent and clear supervision, it is essential to put in place a site book. The supervisor records all site visit findings, decisions and instructions in the site book. This ensures that instructions are understood and agreed to by both parties. When all decisions are recorded, they can be followed up during ensuing site inspections. In a capacity building scenario, the site book is a valuable tool for the practical training.
- ☛ An objective performance assessment system is an essential element of a contractor development programme. It is important to develop measurable and realistic performance indicators for local contractors applying labour-based work methods.

Box 48
Method of measurement

In accordance with the nature of the work items and work methods applied, it will be necessary to carry out measurements at different times. This will include measurement of the planned work, measurement before and after the actual works are performed.

A typical description regarding measurements in contracts documents states that the following methods of measurement shall apply in the specifications:

- **Measurement as planned**; based on the drawings.
- **Measurement before construction**; based on measurements taken at regular intervals. Both the Contractor and the Engineer, before the start of the works, shall sign of for these measurements.
- **Actual work done**; Quantities measured on site during and after completion of the Works and approved by the Engineer.

Source: Uganda, District Road Works, Standard Contract Document.

Regular supervision and inspection of culvert works, Timor-Leste

- There may be a need to install support measures for emerging contractors to cope with cash-flow requirements, particularly relating to labour wage payments. This may include:
  - making an advance payment at contract award;
  - paying labour wages against certified muster rolls promptly at each month end, in advance of interim payment certificates (involves additional administration for the contracting agency); or
  - issuing partial payments based on estimates of completed works at the end of each month, adjusted retrospectively based on actual measurements (needs careful auditing).
- To the maximum extent possible, contracts should be managed locally in order to:
  - ensure close and regular supervision and mentoring services on site;
  - streamline administrative procedures;
  - liaise closely with local communities to ensure ownership;
  - build and utilize local capacity for both construction and maintenance works.
- The approval process needs to be streamlined to secure the timely release of payments for completed works. This implies that the number of approvers and signatures needs to be kept to a strict minimum. Contractually no other party than the designated supervising engineer certifies the completed works. The payment certificate forms the supporting document for issuing payment. No other documents are required.
- An integrated and adaptive quality management system is an essential prerequisite to ensure: (i) value for money; (ii) responsive training/mentorship inputs; (iii) effective work supervision; and (iv) continuous performance assessment of local infrastructure works.
- The contractor should regularly collect, collate and report employment data disaggregated according to gender, educational background, youth, caste, minorities or other agreed inclusiveness criteria.

5.3.3 Inspection and payment of works

Key issue

What are appropriate payment procedures for local contractors with a limited capital base?

Useful information

- ✓ Prevailing standard payment procedures and regulations as well as their applicability for small-scale contractors working with labour-based methods and community groups.
- ✓ Local government capacity to manage numerous and frequent payments of works contracts without delays.
- ✓ Assessment of the ability of work supervisors and contractors to carry out measurements of work and to prepare payment certificates on time. Is additional training required? Can procedural improvements be made?
- ✓ Availability of secure methods for paying wages to labourers, e.g. bank transfers and mobile-phone transfers.

Experience

- ⇆ The implications of payment delays are serious for small-scale contractors. Contractors depend on a healthy cash flow in order to pay the workforce on a timely basis and to avoid labour problems. Particular attention is necessary to ensure that payment arrangements allow local contractors to pay the monthly wage bill on time.
- ⇆ The timescale for payments is also critical for small-scale contractors with loan commitments on equipment and limited access to a credit line.
- ⇆ Large numbers of contracts can create an additional burden for the local contracting agency's administration that may result in delays or errors in payments.

Box 49
Payment systems

India: Employment and payment of labourers – a comprehensive and transparent e-based system in the public domain

In May 2008, the Government of India declared that wage payments under the National Rural Employment Guarantee Act, the world's largest rural public employment programme, would be made through banks.

A web-enabled Management Information System was developed that makes data transparent and available in the public domain to be equally accessed by all. The village level household database has internal checks for ensuring consistency and conformity to normative processes.

It includes separate pages for approximately 250,000 Gram Panchayats, 6465 Blocks, 619 Districts and 34 States and Union Territories. The portal places complete transaction level data into the public domain, for example - Job Cards, Demand for Work and Muster Rolls (attendance and payment sheet for workers).

All critical parameters can be monitored using the website, including:

- workers' entitlement data and documents such as registration, job cards, muster rolls, and payment made, e.g. bank transfer details;
- work selection and execution data including, shelf of approved and sanctioned works, work estimates, works under execution, measurement;
- employment demanded and provided;
- financial indicators such as funds available, funds used, and the disaggregated structure of fund utilization to assess the amount paid as wages, materials and administrative expenses.

Source: www.nrega.nic.in

Kenya: M-PESA - payment to labourers via mobile phone service

Paying for a taxi using your mobile phone is easier in Nairobi than in London. Kenya's world-leading mobile-money transfer system, M-PESA, allows two thirds of the adult population to send and receive money without the hassle of travelling and carrying around cash. Most if not all construction contractors use this system to pay their labourers daily, weekly or monthly. The records for each and every transaction can be downloaded and allows the contractor and the labourers to check the transaction. The contractor can also compare the payment details with the muster-roll that is kept on site and can attach the transaction record to the payment certificate to show proof of correct payment.

Source: www.safaricom.co.ke/personal/m-pesa

- It is common that contracting agencies fail to comply with their contractual obligations regarding payments. In general, contractors are reluctant to exercise their legal rights against the client, even when there is a compensation clause for late payments in the conditions of contract. It is therefore necessary to support both contracting authorities and contractors in managing payments.
- Since local authorities often rely on disbursements from central government, their cash flow can be erratic. With the introduction of labour-based work methods, adequate cash flow must be secured through timely and regular disbursement and payment procedures.
- Procedures for payments to contractors and wage payments to labourers must be transparent to avoid collusion and corrupt practices.
- Approval of completed works and subsequent payments often involve numerous officials with no direct legal responsibility under the contract. This can unnecessarily delay payments to contractors and labourers, slow down progress, increase overall costs and create a situation with less transparency and hence increase the risk of corruption.

Some guidelines

- Frequent and timely payment certificates should be issued to ensure a steady cash flow for the contractor. The approval of works should be based on a milestone work programme that reflects the particular work approach (e.g. labour-based work activities) and thus allows the preparation of frequent interim payment certificates. Apart from the approval of works issued through certificates no further justification is required before effecting payments.
- The particular challenge of cash flow control for new inexperienced contractors could be addressed, among others, through:
  - boosting the cash flow through e.g. bank loans, credit from material suppliers, regular submission of payment certificates, swift processing of payment certificates, prompt payment by the contracting agency;
  - adjusting the workplan and operations to balance work outputs with payment milestones;
  - training and mentoring contractors on cash flow control.
- It is advisable to clearly regulate the measurement method in the specifications and to ensure that all measurements are properly recorded and witnessed. Measurement of works is a critical payment related activity on every construction site and it can be prone to corruption. It is quite common to have disputes about correct measurements. Often the reason is the uncertainty when to carry out measurements. For example, foundations of a structure can only be measured before backfilling is done.

5.3.4 Dispute resolution

Key issue

Is dispute resolution a realistic contractual feature in local infrastructure work contracts?

Useful information

- ✓ Existing mechanisms and procedures for conflict resolution relevant to the type and size of work involving local contractors.
- ✓ Applicable conditions of contract with regard to dispute resolution. Usually the conditions of contract stipulate the dispute resolution mechanism and an independent arbitrator or adjudicator is appointed (Adjudicator's Agreement).
- ✓ Availability of dispute resolution mechanisms at local levels. The procedure and potential cost of dispute resolution.

Box 50
Kenya: Dispute resolution

Minor disputes are usually resolved by discussion and agreement between the project manager and the contractor. Any formal written complaint filed by a contractor needs to be fully investigated and referred to the head of the contracting authority to authorize any formal negotiations with the contractor. The general advice is to try to resolve disputes in an amicable way during the regular meetings held at site. The procurement guidelines also caution that when a dispute requires formal adjudication or arbitration, the final outcome may not necessarily be as expected and should therefore be treated as a last resort once all other means of reaching an agreement are exhausted.

In the case of a dispute, contract managers are therefore advised to:

- examine the contract carefully to be aware of the contract conditions relating to the resolution of disputes;
- determine if the contracting authority is at fault or partly at fault, and if so, take appropriate action to rectify the problem;
- invite the contractor to a formal meeting, within 7 days of the complaint, to discuss the issues and try to agree a compromise acceptable to both parties. Ensure that accurate written minutes are kept of any such meeting. If an agreement is reached which changes any of the conditions of the contract, approval of the tender committee is required before the agreement can be implemented;
- if no initial agreement is reached and negotiations conducted by the head of the contracting authority also fail, consider the use of any adjudication or arbitration services as specified in the contract. Prepare any necessary addendum to the contract for signature.

Source: Procurement Manual for Works, Kenya.

Creating jobs through road improvement works, Kenya

Experience

- Good civil works contracts contain provisions for resolution of disputes between the contract parties without recourse to a court of law. However, in practice most small-scale and locally based firms are hesitant to enter into dispute resolution because for fear of repercussions and discontinuity of work opportunities.
- The enforcement of contracts by sharing risks fairly is a critical factor for the development and sustenance of local contractors. This is often not the case as the judicial system is inefficient and also commonly not 'accessible' to and affordable for local contractors.
- The role of professional associations, such as contractors and engineers associations, includes, among others, lobbying for work and render other essential services such as contractual and legal advice to their members. Unfortunately, in many cases associations are weak, under-resourced and thus not able to provide such services.
- Where a community group acts as a contractor, it is common for the group leader to sign the contract on behalf of the group. The role of a "community contractor" is usually rather different from that of a private sector contractor. It is not common for community contracts to lead to legal disputes.

Some guidelines

- An appropriate dispute settlement mechanism needs to ensure that (i) contractors can exercise their contractual rights without fear of future discrimination; and (ii) that allows the client to protect its interests. Legal and technical advice should be available and used by both parties to ensure that contractual obligations are fairly established. The usual practice is to appoint an adjudicator so disputes can be resolved without having to involve the courts.
- Tender and contract documents should use a clear and simple language and include practical work specifications and comprehensive drawings to avoid misinterpretation of contract provisions such as conditions, specifications and drawings. All parties in a capacity development programme need to be carefully briefed to be sure that the contract provisions are fully understood. Holding regular site meetings and conducting frequent site inspections can avoid potential conflicts. Comprehensive training and mentorship services for all parties to a contract may also reduce the frequency of disputes.

5.3.5 Effective use of consultancy services

Key issue

How can design and supervision consultants be effectively utilized to ensure that local infrastructure works are successfully implemented?

Useful information

- ✓ The arrangements for the engagement and supervision of consultants by the contracting authority.
- ✓ The terms of references by which consultants are to operate, particularly the reporting requirements and list of deliverables.
- ✓ Code of conduct for consultants issued by professional bodies.

Experience

- Design and work supervision are increasingly outsourced to consultants, yet local authorities still have to prepare contracts and supervise consultants. The necessary professional capacity to develop suitable terms of references that addresses the requirements of designs and implementation of infrastructure works using local resource-based methods is rarely existent at local level.

Supervision consultant on site in Pakistan

- Most consultants operating at local level are not actually established in the local area but are operating out of major cities and commercial centres. Their representation at local level is sub-optimal and their engineers and technical supervisors are often not motivated to work in rural and remote areas.

Some guidelines

- Terms of references for design and supervision consultants need to be carefully drafted to ensure full coverage of the required services and thereby addressing all the particular conditions and requirements of the envisaged infrastructure works.
- For design consultancies, it is important to prepare a clear description and schedule of deliverables. It is particularly important to make sure that the consultant considers the specific requirements of local resource-based work methods and the inclusion of social and environmental safeguards.
- It is important to insist on capable site supervisory staff when hiring consultants for work supervision. For local resource-based works executed by local contractors, it is essential to have a full-time presence on site. Site supervisors should be fully conversant in the application of local resource-based work methods, taking measurements and checking quality and workmanship. To ensure this, it is usually necessary to provide training of consultants' supervisors in labour-based construction methods.

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DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 6

Management of resources

Jetty construction in Myanmar

EIIP

Employment Intensive Investment Programme

CHAPTER 6

Key issue

How can the required resources be purposefully acquired and managed for successful implementation of local infrastructure works?

6. MANAGEMENT OF RESOURCES

Overview

Operational productivity in civil works depends on the efficient utilization of labour, tools, equipment and materials. Procuring equipment constitutes the largest capital investment for any contractor although hiring can sometimes be an alternative. While smaller firms involved in local infrastructure works require less equipment, they still face challenges in acquiring equipment. Using mainly labour as the production unit means less dependency on expensive imported heavy equipment. Smaller (intermediate) equipment types are more appropriate, e.g. small or medium size compactors, concrete mixers, vibrators, water pumps. Such equipment require modest capital investments and do not present the same challenges as heavy equipment when operating in resource constrained and costly loan environments. Managing tools and equipment effectively and economically is essential for survival in the industry.

Contractors, contracting authorities and engineering consultants need skilled personnel to be able to cope with the technical and managerial demands of infrastructure works using mainly locally available resources. Targeted capacity building can create a professional cadre of qualified construction personnel.

Structure of Chapter 6

Section 6.1 Access to capital and financial services	Examines the financial barriers for local contractors to maintain and improve their businesses; discusses their financial requirements to remain competitive in the market; suggests possible financial support and service options.
Section 6.2 Qualified personnel	Describes the demand for qualified personnel among local contractors, consultants and contracting authorities for the effective implementation of local infrastructure works; discusses general human resource development challenges and suggests possible approaches.
Section 6.3 Tools, equipment and materials	Discusses common challenges for local contractors in obtaining tools, materials and particularly equipment and suggests possible financing and support arrangements. Highlights the importance of good quality tools and appropriate equipment including their maintenance and replacement as well as skills training for their effective use.

6.1 Access to capital and financial services

Key issue

How do local contractors access capital and financial services required to start, develop and sustain a viable enterprise?

Useful information

- ✓ Financial barriers for small and medium sized contractors to maintain their business, such as access to finance.
- ✓ Government policies, strategies, legal framework and programmes/incubators in regard to providing financial support services for the development of the private construction industry.
- ✓ Financial institutions available, willing and able to provide services to local contractors and their terms and conditions.
- ✓ The requirements for contract bonds and insurances and their relevance to local infrastructure works; and the risks to the contracting agency and ways to minimise these risks.

Experience

- ⇆ To start and operate a business, construction firms require a significant capital basis and access to financial services, in order to (i) register the company; (ii) establish the business in terms of facilities, personnel, insurances, administration, transport, taxes and services; (iii) purchase or hire tools and equipment; (iv) obtain bonds and insurances when tendering for works; and (v) purchase building materials and employ workers.
- ⇆ The challenge for local contractors is to access reliable and affordable financial services. A contractor tracer study carried out by the ILO confirmed that the most limiting factors for small and medium sized enterprises not only in the construction sector but in general, are: (i) difficulties in obtaining bank finance; (ii) high interest rates; (iii) delays in receiving payments; (iv) insufficient or lack of work continuity; and (v) corruption.
- ⇆ There have been cases where contracting agencies play an active role in taking some of the financial risks and guaranteeing credits to banks and suppliers.
- ⇆ The failure of contracting agencies to meet their obligations of making prompt payments of works compromises the financial situation of any contractor. It may not only jeopardise the survival of contractors, it also impacts negatively on the creation of sustainable employment opportunities in local communities.
- ⇆ Traditional systems of bonds and sureties for civil works contracts are not always appropriate for smaller works contracts where the contracting agency's actual risks are relatively small.
- ⇆ SME development and micro-finance institutions in many countries often do not provide financial support to small-scale contractors in the construction industry.

Some guidelines

- ☛ Commercial banks are generally reluctant to offer credit and other financial services to local contractors without collateral or sureties (which small-scale contractors often do not possess). Therefore, the contracting agency can play a role in minimising some of the financial risks. This could be in the form of:
  - o providing advance payments for minor work contracts without bonds;
  - o waiving performance bonds for smaller works, which do not contain technically demanding work components;
  - o fast-tracking interim payments, particularly for labour wages to ensure sufficient cash flow (payments for labour wages can be made unconditional of technical quality control and audit approvals);

Box 51

Access to capital and investments

Contractors need to invest to establish the business in terms of facilities, personnel, permits, insurances, administration, transport, taxes and services. They need to obtain bonds and insurances when tendering for works, and before starting the works, they need to mobilize tools and equipment through purchase or hire, and order building materials and employ workers.

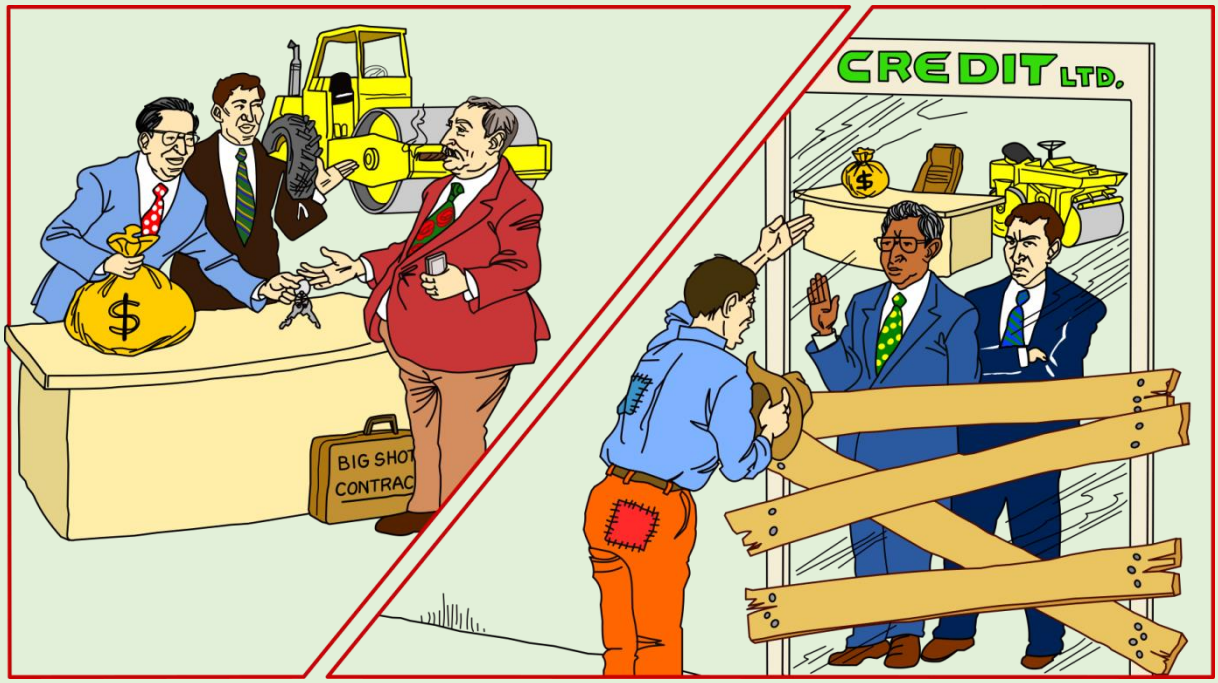
Small and medium-sized contractors often face a shortage of capital for investing in their businesses as well as in maintaining an adequate cash-flow for day to day operations. It is important to recognize such challenges when working with and promoting the use of local contractors.

Small-scale contractors often do not possess collateral or sureties which commercial banks require to offer credit and other financial services.

The contracting agency can play a role in minimizing some of the financial risks in order to facilitate the involvement of local contractors. A common intervention is to provide advance payments for their mobilization for smaller works contracts without asking for bonds. Works without demanding technical elements can also be exempted from performance bonds.

A most important issue is the fast-tracking of interim payments to ensure an adequate cash-flow for small-scale contractors.

Facilitating agreements with selected banks, financial institutions and insurance companies can be another valuable support mechanism for emerging contractors. Providing access to banking services can also be used to introduce good accounting practices and may in the long run also improve access to credit, securities and other financial services.



Experience and a good track record facilitates a contractor's access to finance for his or her company operations

- negotiating all-inclusive programme deals with selected banks, and insurance companies may assist in obtaining favourable bond conditions, particularly for providing collateral;
- agreeing to lock part of the contract sum at the borrowing institutions to be used as collateral.

- Credit agencies targeting small businesses should be considered for providing financial services to local contractors. Also micro credit schemes for small enterprises may be explored, e.g. for routine maintenance contracts.
- Suppliers and agents can be encouraged to operate hire-purchase arrangements for equipment, particularly during a development phase, if they are given suitable guarantees by contracting agencies.
- Favourable arrangements and conditions for bonds and sureties for local infrastructure works may be negotiated through collaborative efforts by contractor associations together with relevant government institutions.

6.2 Qualified personnel

Key issue

What are the measures required to ensure there is sufficient qualified personnel available for local infrastructure works?

Useful information

- ✓ General human resource development policies and strategies for the construction industry. Do contractor and consultant associations have human resource development strategies and programmes? Do government authorities, such as industry development councils, have human resources development programmes?
- ✓ Availability of technical, managerial and support personnel in order for local contractors to qualify and successfully participate in local infrastructure works.
- ✓ Existing learning programmes for and qualifications of technical construction personnel. Do the existing qualifications meet the requirements of local infrastructure works? Is such qualified personnel available and what are the consequences if not?
- ✓ Existing learning programmes and qualifications for equipment operators, mechanics and construction artisans available in local areas and general availability and conditions for employing them.

Experience

- ⇆ In many countries local contractors and contracting agencies have difficulties in finding qualified technical personnel.
- ⇆ Local contractors often do not have a continuous flow of work and are thus forced to hire and fire staff depending on the workload. Employment continuity for their supervisory and skilled staff can therefore be difficult. Many entrepreneurs consider construction work as a good business opportunity, however they are not prepared to invest in the establishment of an own permanent construction firm, but instead hire and fire personnel as required by the works contracts they acquire. As such the demand for qualified personnel becomes very unstable. This can also discourage youth from entering the industry.
- ⇆ The performance at construction sites depends to a large extent on the skills of the site supervisors. Targeted programmes to train and develop qualified construction supervisors have shown excellent results as most, if not all, learners usually find good employment opportunities in the industry.

Box 52
Qualified staff for contractors engaged in local infrastructure works

Typical administrative and technical staff requirements for local contractors

Type of personnel	Required qualifications
Managing engineer / site agent *Only for larger sites with several parallel operations, one site in-charge*	Overall technical and managerial competencies plus sound contract management knowledge for combined equipment and labour operations at larger construction sites
Site supervisor(s) *For smaller sites one supervisor, for larger sites with different operations up to 3 supervisors required*	Site management, setting out, work organization and supervision competencies for labour-based construction and maintenance work
Foremen / workgroup leaders *For each individual work-group, one foremen with up to 20 labourers*	Knowledge and practical skills to supervise a group of workers on labour-based construction or maintenance works
Equipment operators / drivers *Depending on types and numbers of equipment in use, e.g. compactors, trucks, tractors with attachments*	Knowledge and practical skill competencies to operate equipment and vehicles as commonly used on labour-based work sites
Plant and vehicle mechanics *Own mechanics may be required if services and repairs are not or cannot be outsourced. Number and specialization depend on types and size of equipment and vehicles*	Certified plant and vehicle mechanics competent in servicing and repairing the equipment and vehicles at hand
Construction artisans (masons, carpenters, builders, plumbers, joiners, electricians, fitters and specialized trades) *Number and specialization depending on nature of works*	Certified artisans with practical experience
Semi-skilled labourers (chisellers, gabion weavers, dry-stone masons, simple timber works, etc.) *Number and specialization depending on nature of works*	Trade area certificate or similar, e.g. on-the-job skill training

Practical training of local consultants in rural road maintenance works in India

- Access to qualified equipment operators, mechanics and artisans is often limited. While many may have a plant operator certificate, only few have sufficient practical experience. Similarly, artisans are often poorly trained and good workmanship can hardly be expected without close supervision. Special training programmes to enhance their skills show also good results.
- There is generally a lack of locally operating consultants who are proficient in the design and supervision of infrastructure works applying local resource-based approaches. It is often necessary to provide them with tailor-made training.
- Local authorities and communities often have a limited technical and managerial capacity to cope with the challenges of local infrastructure works.
- Professional associations have an important role and responsibility in developing qualified technical and managerial personnel in their respective sectors through continuous occupational education and training. Unfortunately, they often do not possess sufficient capacity to deliver such services.

Some guidelines

- Training programmes for construction supervisors should aim at offering a wide range of construction competencies thereby diversifying their job opportunities. This also enables contracting firms to recruit staff with skills that meet a wider range of work requirements.
- It is advantageous to have decent wage levels for qualified construction personnel negotiated and agreed among the construction sector representatives, the government and unions. In any case, contracting development programmes should anticipate working closely with the professional associations and construction industry development agencies to harmonise employment conditions. At the same time, contractor associations should be enabled to take the lead in the development of a pool of qualified construction technicians, artisans and skilled workers.
- The local labour force and community work groups often lack qualified artisans necessary for the works. In community driven infrastructure works it is therefore necessary to include a strong vocational skills training component, where particularly young men and women can acquire certified qualifications as artisans. This should be aligned with national occupational qualification standards and designed to allow for career path development.

6.3 Tools, equipment and materials

Key issue

How to ensure the effective utilization tools, equipment and materials by local contractors engaged in employment-intensive infrastructure works?

6.3.1 Appropriate tools and their effective use

Key issue

How to ensure the correct selection and effective use of hand tools for labour-based construction and maintenance works?

Useful information

- ✓ National and international quality standards for construction hand tools, particularly for earth works under various conditions.
- ✓ Reliable indicative productivity rates (norms) for labour-based work activities and their applicability under the specific local conditions.
- ✓ Local tool manufacturers, suppliers and repair workshops.

Box 53

Chantier Ecole – Mauritania

The Government of Mauritania, with ILO technical support, has developed the “Chantier Ecole” approach which is combining theoretical classroom training with on-site training and in which young people wishing to improve their employability is offered theoretical and practical training in employment-intensive construction works.

The Chantier Ecole project was kick-started in Mauritania in 2015. Young women and men were recruited to participate in a comprehensive package of practical skills training. The first phase consists of classroom training conducted by a partner technical training institute where trainees learn basic skills and theories of construction works. In the second phase, the trainees apply their acquired knowledge and receive on-the-job training on actual construction sites.

The Chantier Ecole training follows the national technical and occupational training system in collaboration with the higher learning authorities (Ministères et Direction de la Formation Professionnelle). The training has been accredited through the national certification system.

A special committee was established to examine and formulate the skills requirements for the programme. This is assuring that proper skills standards have been established and allowing trainees to document their competence to future employers. They also issue certificates of achieved competency levels, a certificate that guarantees the knowledge and vocational skills at a well-defined qualification level have been obtained.

By the end of 2017, 400 young people, including more than 40% of women, completed the Chantier Ecole training and received their certification.

Classroom training is combined with on-the-job training for employment-intensive works in Mauritania

Experience

- Good quality hand tools can be difficult to find in local markets. Available tools are often of substandard quality and meant for light agricultural work.
- In many countries there is limited capacity to produce quality hand tools. Local contractors who are not sure of a continuous workload may decide not to invest in more expensive good quality tools.
- The quality of hand tools, their proper use and maintenance is time and again not taken sufficiently seriously. Contractors and their supervisors often do not have the required skills and knowledge in the correct selection and use of hand tools.
- Worn out or poorly maintained tools hamper productivity, increase costs and can also create unfair and unsafe working conditions. Hence, training programmes should give sufficient attention to the optimal selection and use of hand tools. Practical training for supervisors and labourers on the correct use of hand tools usually results in productivity increases.
- Good results have been recorded when quality tools were procured in bulk and issued to emerging contractors e.g. on a hire-recover basis. Bulk procurement of tools can be included as a Bill of Quantities item instead of being part of the advance payments usually prescribed in civil works contracts.
- Workers have, in some instances, been asked by their employer to bring their own tools. The tools provided by the workers are in most cases of poor quality and not appropriate for construction works. This has also led to discrimination and caused discontent among the job seekers, ultimately affecting quality and productivity of the works.

Some guidelines

- A lot of good research has been carried out on the quality of hand tools and helpful guidelines on design and material specifications are available.[24]
- Since labour is the main means of production in local resource-based works, appropriate specifications for hand tools are essential. Their quality and design have a significant bearing on the productivity of the workforce. The construction industry may leverage their potential investment to encourage local manufacture of good quality hand tools with the additional objective of promoting local repair facilities.
- The selection of appropriate hand tools depends on: (i) the nature of work and materials; (ii) the general skills and strength of the labourers; and (iii) the prevailing local cultural customs and traditions. These issues need to be addressed during the preparation phase and can then be integrated into the procurement process and the training programme.
- The allocation of the correct type and number of hand tools to workers is a practical competence that supervisors need to possess. Practical training to develop this competence should be given high priority to ensure a fair work allocation to labourers and to maximise productivity.
- Maintenance of hand tools is an essential prerequisite for safe and productive work. It is therefore worthwhile for contractors to employ a skilled person, responsible for repairing worn out tools. Local blacksmiths can also provide valuable services, sharpening and pointing blunt tools. Equally important is ensuring the quality of handles including (i) correct size and length; (ii) hardness of wood and smoothness; and (iii) that they are not damaged or broken.
- Replacement of hand tools depends on the degree of wear and tear. The lifespan can be significantly extended with good maintenance and proper use. Replacement of tools should be planned ahead so that there is a sufficient stock of spares available when tools are worn out.

[24] For detailed guidelines refer to ILO's "Guide to tools and equipment for labour-based road construction".

Box 54

Typical hand tools required for labour-based civil works

The required composition and number of hand tools depend on the nature of work, local conditions and practices as well as the size of the workforce. The following list suggests tools commonly used in local infrastructure works.

Common construction tools

- Hoes
- Shovels
- Mattocks
- Pickaxes
- Mallet / lump hammers
- Claw hammers
- Sledge hammers
- Crow bars
- Chisels, pointed and flat, different sizes
- Feathers and plugs – for rock breaking
- Axes, different sizes
- Bow saws
- Heavy duty rakes
- Spreaders, for spreading gravel
- Grass cutters / slashers / sickles
- Bush knives / machetes
- Hard and soft brooms
- Earth rammers, heavy duty
- Wheelbarrows, construction type
- Hand files and grind stones for sharpening tools
- Buckets
- Watering cans
- Masonry tools
- Carpentry tools
- Special tools and traditional tools, as required

Common measuring and control tools

- Measuring tapes (3m and 30m)
- Line levels and water-tube levels
- Abney level / clinometer
- String for setting out
- Spirit levels
- Straight edges, different lengths
- A-frames
- Profile boards, ranging rods and boning rods
- Control templates, different sizes and shapes

Safety gear

- First aid kits
- Personal protective equipment
- Temporary traffic signs, cones, barriers, and fences

Appropriate tools for maintenance of a village access road in Battambang, Cambodia

- Workers should be provided protective clothing such as footwear, gloves, headgear, goggles and safety vests. It is important that supervisors are conversant with and enforce prevailing occupational safety and health regulations.

6.3.2 Access to equipment and materials

Key issue

What are the most practical and cost-effective ways in which local contractors can gain access to equipment, spare parts and materials for local infrastructure works?

Useful information

- ✓ In-country availability of appropriate equipment, in terms of models, numbers, mechanical condition, availability for purchase or hire, and local maintenance and repair services.
- ✓ Availability of qualified mechanics and operators.
- ✓ Government policy and regulations on import, local manufacture, procurement and ownership of equipment including foreign exchange controls and taxation.
- ✓ Availability of plant pools (government or private sector) or arrangements for plant hire or hire-purchase, and information on hire rates.
- ✓ Funding mechanisms available to the construction industry: direct purchase loans, hiring, hire-purchase and leasing.
- ✓ Assessment of the appropriate type and number of equipment held by contractors to balance the potential financial burden against productivity and profitability.
- ✓ Need for building materials and access to quarries that can supply good quality aggregates like sand and stone.

Concrete mixers are essential equipment for most contractors. Timor-Leste

Box 55
Sourcing locally available construction materials

The use of local resources plays a central part of EIIP approaches to local infrastructure works. When managed properly, building materials that are sourced locally can result in more cost-efficient, ecological and sustainable work arrangements while at the same time generate more jobs and stimulate local participation.

There are a number of naturally occurring materials, such as local soils, rock and wood that can be effectively utilised in local infrastructure works. In central Africa, local soils have traditionally been used for house building purposes, but can also be used in the foundation or in the pavement of local roads. Selected local soils will also perform well as a surface on low-volume roads. Local soils are also more and more used for the production of bricks, pavers and tiles.

Rock is commonly used in house construction for foundations and cladding. It is also used in pavements together with sand and gravel. When cut or polished it provides a durable and decorative surface.

Finally, central Africa also has a great variety of tropical hardwoods (Framire, Iroko, Kotibe, Moabi, Movingui, Niagon, Okoume, Sapelli, etc.). There are many high quality carpentry products made from such timber, including laths, plank, panels, wood laminates, plywood, tiles, etc.

There is no doubt about the value of locally sourced building materials, however more can be done to increase their use. Local artisans also need to be better trained and equipped to deliver competitive products to the market.

Sourcing local materials and traditional building craftsmanship for the construction of a market place. Sidi Bouzid, Tunisia

Experience

- Access to appropriate equipment can be a major challenge for local contractors due to insufficient capital at hand or limited access to financing from local banks. The availability of reliable equipment from the hire market can at times be overestimated. Especially compaction rollers are often not available on the hire market or the hire rates are too high.
- Hire rates offered by government equipment pools often do not reflect the true equipment costs. Open market hiring rates are determined based on supply and demand as well as geographical location.
- Contractors need a continuity of work for repayment of loans on new equipment and the selection of appropriate equipment is therefore essential to allow for optimal utilization.
- Local manufacture of tools and equipment should be encouraged, however, serious attention should be given to quality. Intermediate and versatile equipment usually provides better utilization opportunities. Concrete mixers, small compactors and pick-up trucks or lorries can be used for many types of local infrastructure work.
- Few equipment suppliers and government agencies offer direct hire-purchase services. Additional arrangements may be required to provide an adequate supply of appropriate equipment.
- With growing environmental concerns, access to appropriate materials is becoming more challenging, such as sourcing quality gravel and aggregate for concrete and road pavement works. These are issues that should not be solved solely by the contractors. Instead, the contracting agency should identify, test and approve suitable material sources at a reasonable distance from the work sites.
- It can be difficult for local contractors or community work groups to supply construction materials. The client may need to adopt appropriate measures such as engaging material suppliers through separate contracts. For smaller volumes, communities can also be involved in producing construction material.

Some guidelines

- Important points regarding equipment hire arrangements include to:
  - plan equipment hire well in advance;
  - investigate hire rates and availability already during bidding;
  - use the prevailing hire rates as a basis when pricing the bids;
  - make clear hire arrangements with the equipment owners on applicable terms, preferably in writing;
  - ensure funds are available for payment according to the agreed terms;
  - check that the equipment is in good working order before it is brought to site.
- Hire-purchase and leasing arrangements can be introduced as a means to secure adequate access to equipment when there is a shortage in the domestic market. Procuring new equipment for contractors through a government facility can however lead to a heavy financial burden on the participating contractors, which is likely to necessitate a guaranteed workload to facilitate repayment. Therefore, purchase, hire or hire-purchase options need to be balanced in terms of available infrastructure budgets, workload, access to finance and contractors' potential job prospects (see Annex IV for further guidance).
- Advance payments at the start of a contract can be used to acquire some of the required equipment. It could be stipulated that all (or part) of the advance payments would be payable to equipment suppliers on written justification by the contractor. This approach can be combined with a credit line to the contractor, giving the option to prioritize the acquisition of essential equipment (e.g. compaction rollers).
- Equipment-leasing companies can be encouraged to extend their services and provide a line of equipment that is appropriate for local infrastructure works.

Box 56

Supply of locally available materials by communities

Local communities can play a useful role in the supply of locally available building material. For example, they can excavate, process, transport and store materials such as stone, aggregate, sand and timber at locations that are accessible to trucks. Community based material extraction can be at quite a large scale, forming an integral part of the local construction industry.

Typical examples are building stone, crushed aggregate from coral materials or even sandstone façade tiles.

Fabrication of gabion boxes by community groups is another good example how manufacturing can be organized at local level.

These activities are thriving and can result in additional steady income to local communities.

Women participation can often be high in community groups. The percentage of women supplying construction material can be 75 per cent or more.

Sometimes such activities can have some less desirable features. To avoid any negative impact, it is useful to carefully monitor the supply chain, in particular in cases where materials are procured from the informal sector. The negative features may include:

- child labour, including to the extent that school attendance is neglected;
- damage to the environment, e.g. excavating sand from riverbeds and beaches, stripping vegetation and topsoil in large areas or steep slopes for the purpose of extracting building stone, abandoning quarries without reinstating the site;
- women may form a large part of the labour force extracting and processing the materials while the sale of the material may be in the hands of men;
- the quality of produced materials may vary and needs to be rigorously tested.

If any of these issues are identified, it is usually possible to introduce appropriate mitigation measures.

Weaving gabion boxes in Pemba, United Republic of Tanzania

6.3.3 Equipment performance

Key issue

What type of equipment is best suited for local infrastructure works and how can the performance be optimized?

Useful information

- ✓ Locally available equipment appropriate for infrastructure works applying local resource-based approaches.
- ✓ Availability of equipment back-up services, including supply of spare parts, and repair and maintenance services.
- ✓ Equipment performance data, particularly for operations in the prevailing environment and conditions.

Experience

- Investing in equipment constitutes a major expense for local contractors and is therefore a key management decision. The decision to invest in equipment is based on an anticipation of future work prospects that cannot necessarily be guaranteed.
- Contractors appreciate good quality equipment, but frequently have to buy or use what is available and affordable.
- Effective utilization of equipment in combination with labour-based work operations is a real management challenge for most local contractors. The optimal balance of equipment and labour is important in order to achieve high production levels. Supervisor training programmes need to give adequate emphasis to the effective organization of equipment and labour on the work sites.
- Equipment operators are often poorly trained – if at all. Competent and properly trained equipment mechanics and spare parts are rarely available in remote areas and appropriate service centres may only be found in major towns. Spares, servicing and repair manuals for equipment items may not be available. Workshops might have a limited range of tools. There are consequently high risks of damaging equipment or shortening its life through poor practices.

Soils require optimal moisture content during compaction. Rural road, Timor-Leste

- Small-scale contractors (and their technical staff) do not collect and analyse the costs of equipment operation, or understand the real costs involved in the use of their equipment.
- Contractors can be tempted to purchase cheap sub-standard equipment. Combined with a lack of daily routine maintenance and regular service, this results in non-performing equipment that jeopardises the construction process and leads to significant time and profit loss.

Box 57
Suitable hauling equipment for local resource-based works

The choice of appropriate construction equipment is to a large extent dependent on what is available in the local market. For smaller works with limited material requirements, it may not be necessary to seek the most efficient mode of transport. In some places it may be easy to hire tractors and trailers from local farmers.

Works involving larger volumes of material and involving long haulage distances would warrant the mobilization of an adequate fleet of tipper trucks. Suppliers of bulk materials are often prepared to provide delivery on site.

The table below shows some options for transporting material in past local infrastructure programmes.

Means of transport	Use
Wheelbarrows	up to 200m – firm ground / moderate gradients
Stretchers	up to 200m – firm ground / moderate gradients
Head baskets	up to 200m – all type of ground and gradients
Motorbikes	up to 4 km – for construction sites without access for cars and trucks to deliver limited quantities of items like cement, sand and concrete aggregate
Animal drawn carts	up to 2 km – flat terrain and short, low gradients – enabling conditions are: • draft animals must be available, local communities have skills in handling animal drawn carts and the approach is culturally acceptable in the area; • animal drawn carts can only be used on hauling routes with low traffic volumes; • cases of animal abuse can be ruled out.
Two-wheeled tractors (power tillers)	up to 2 km – flat terrain and short, low gradients
Tractors with trailer	up to 4-8km – all types of ground and gradients
Lorries	Any hauling distance – flat, hilly and mountainous terrain
Eatans (locally manufactured light trucks in South-East Asia)	Any hauling distance – flat terrain

Definition: Intermediate equipment

Simple or intermediate equipment is designed for low initial and operating costs, durability and ease of maintenance and repair in the conditions typical of a limited-resource environment, rather than for high theoretical efficiency. It is preferable that the equipment can also be manufactured or fabricated locally. Modern wheeled agricultural tractors are a low-cost mobile power source and with various attachments can be used to substitute heavy equipment for a proven range of tasks.

Source: Handbook of intermediate equipment for road works, Robert Petts of Intech Associates.

Two-wheeled tractors common in South-East Asia

Some guidelines

- Essential equipment for local infrastructure works include:
  - **Haulage equipment**: Most contractors prefer trucks as they can be used for short and long hauling distances and for a variety of purposes. Trucks can often be hired from urban centres. Tractors and towed trailers may be particularly suitable in agricultural high productive areas and shorter hauling distances or poor haul routes. The advantage of tractor-based equipment is that a tractor can be used as the power source for a variety of attachments in road works, agriculture and other sectors. Tractor repair services are readily available in most countries and remote regions;
  - **Compaction equipment:** Appropriate compaction equipment is generally the most difficult item to access but essential for compaction of pavements and backfill in structures. Pedestrian vibrating rollers of up to 3 tonnes are the most suitable for local infrastructure works. Vibrating plate compactors are suitable for small or confined areas. Manual or mechanised watering arrangements are required to optimize compaction and achieve the prescribed material specifications;
  - **Concrete mixers and vibrators (with power generator)** are common equipment among local contractors. The equipment is used for structural works, is inexpensive and readily available in the local market. The mixers are used for concrete and mortar as well as emulsion-based asphalt works;
  - **Supervision staff** needs adequate transport. Most contractors opt for a pickup, which is also useful for transporting supplies. Bicycles are suitable for site supervisors travelling short distances, while motorcycles are more appropriate for longer distances.
- Selecting expensive equipment suitable for only certain specific activities may limit operational versatility and potential utilization, e.g. graders, bulldozers and loaders. Contractors should therefore be advised to carefully select equipment to ensure that it is versatile enough for different work activities. Rule of thumb suggests that the simpler the equipment, usually: (i) the cheaper and easier it is to maintain; (ii) the better is its availability and utilization; and (iii) the more opportunities it provides for various uses.
- Local contractors usually do not have sufficient experience or available information to arrive at sensible decisions regarding appropriate equipment procurement.[25] This would be one very helpful service that a contractor association could provide to their members.
- Optimizing equipment performance is to a large extent a question of good management. Contractors and their site supervisors should initially be trained in managing equipment in combination with a large workforce.

Eatans are commonly found in South-East Asia

[25] Refer to *Annex IV* for a checklist when procuring equipment.

Box 58
Achieving high equipment availability and utilization

Securing high availability

- Clear responsibilities for equipment management
- The right equipment for the job
- Appropriate work specifications
- Planned service schedules
- Daily service, checks, cleaning and greasing with essential spares and lubricants available on site
- Adequate service and repair facilities
- The necessary workshop and spares manuals available
- Appropriate workshop facilities available
- Trained and motivated mechanical personnel, operators and drivers
- Equipment not dispersed and difficult to support
- Efficient procurement and storage of spare parts
- Realistic costing and replacement arrangements
- Avoid diversity of makes and models

Securing high utilization

- Adequate job market and workload for the equipment
- Careful work planning, securing the right equipment at the right place and time
- Supervisors, drivers and operators trained and motivated
- Procurement or hire of flexible rather than specialist equipment, unless a high (paid) workload is guaranteed
- Adequate supply of fuel, lubricants and spares
- Good control and reporting of usage and costs

Daily equipment and vehicle inspections

- Cleaning
- Oil (incl. hydraulic) levels
- Transmission oil level
- Greasing nipples, tracks, hitches, etc.
- Break and clutch fluid levels
- Cooling system fluid level
- Water levels
- Hydraulic hoses, couplings and connectors
- Air filter
- Exhaust system
- Breaks (dynamic and park)
- Ground engine attachments
- Hand grabs, walkways and steps
- Battery terminals and water level
- Connections from alternator
- V-belts and their tension
- Nuts, bolts and pins of buckets, tracks and other moving parts
- Tires / tracks
- Blade / boom / ripper condition
- Lights and turn/reverse signals
- Mirrors and horn
- Gauges
- Windscreen wipers and cleaning fluid
- Fire extinguisher
- First aid kit

- Timely preventive maintenance ensures a higher equipment availability rate and an extended life expectancy. It is important to train operators on how to carry out the daily and weekly maintenance checks and services and to supply them with the required tools, spares and lubricants.
- Equipment maintenance should be seen in a long-term perspective in view of the capital investment involved. Maintenance and repair services need to be arranged in a reliable manner. There are several possibilities that can be explored:
  - developing contractors' own capacity to carry out basic preventive maintenance and repairs of equipment;
  - utilizing existing maintenance facilities in the private sector;
  - negotiating maintenance contracts with suppliers of new or refurbished equipment;
  - establishing a private plant pool on a long-term basis for the construction industry;
  - reorganizing (possibly privatising) existing public sector mechanical maintenance and repair facilities or privatising publicly owned equipment fleets.
- Contractors need to investigate the local market for each equipment make and model. Numbers of each model in a country will influence spares and skills availability. Low fleet numbers and frequent model 'upgrades' will probably indicate future spares supply problems. On the other hand, large local model fleets, local manufacture and long model life usually indicate better spares availability and possibilities for rebuild. Contractors should be wary of new suppliers entering the market with low initial purchase costs, but with limited supply of spares and technical support. When programmes import equipment to address a shortage in the market, it is important to also import an adequate supply of spares.
- Use of equipment increases the risk of accidents. Adequate measures are required to protect workers, operators and private property when operating equipment. Equally, the use of equipment increases environmental risks, which should be mitigated through planning, design and implementation of works.

Maintenance and repair of equipment require skilled personnel. Timor-Leste

Box 59
Equipment costs

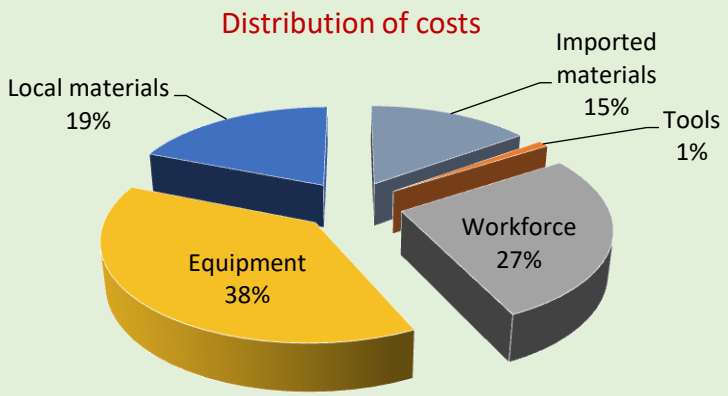
Equipment costs are either in the form of hire costs or related to operating equipment owned by the contractor. Irrespective of the ownership arrangements, the usage of equipment have a number of cost-items, all of which needs to be charged to the works. These include:

- the initial capital cost of the equipment, taking into consideration the expected lifetime and residual value at the end of its useful life;
- the interest and charges related to the finance required for its purchase;
- cost of all maintenance, repairs and overhauls made during the lifetime of the machine;
- insurances and licences;
- consumable items such as fuel and lubricants, including the labour costs involved in carrying out the servicing of the equipment;
- operator's wages and related overheads.

Madagascar: Typical cost breakdown for labour-based road works

A study on the cost composition for road rehabilitation works in Madagascar shows the importance of equipment. It demonstrates the need for a contractor to have reliable equipment, which is versatile and easy to repair in order to achieve maximum benefits and to control costs.

Work specification: Rehabilitation of roads using selected materials, including: (i) establishing vertical and horizontal alignments; (ii) restoring the drainage system with additional cross-culverts; and (iii) a base course with gravel and/or macadam (depending on terrain features).



The percentage of workforce shows the percentage that the labour wage costs of the workforce operating on site represents as a percentage of the total costs.

If the indirect labour force is included (those used for the production and supply of local materials and tools, and maintenance of equipment), the percentage increases to 45 per cent.

In comparison, the percentage of the total workforce would be only 18.5 per cent when applying equipment-intensive construction methods.

A similar study on rural road works in Cambodia found that labour wages constituted 39 per cent of total costs, equipment 15 per cent and materials 33 per cent. In mountainous terrain such as in Nepal and Lesotho, the materials component tends to increase.

Source: Comparative study of different approaches for the construction of basic infrastructure in Madagascar, Marc Van Imschoot, 2007.

6.3.4 Equipment costing and replacement

Key issue

What are the factors to be considered when costing equipment?

Useful information

- ✓ Investment and operational costs considering the environment in which the equipment will be utilized.
- ✓ What are the financial risks associated with procuring, holding and replacing equipment? What is the 'payback' potential for equipment in a high-cost-finance, low-labour-cost environment?
- ✓ Availability and cost of mechanical services and spare parts.
- ✓ Realistic equipment performance norms, assumptions and operational information.
- ✓ Realistic operational life expectations in the local environment.
- ✓ Potential replacement arrangements and access to financing.

Experience

- ⇆ Few contractors and contracting authorities understand the real costs involved in operating equipment.
- ⇆ Contractors' short-term and immediate financial commitments often take priority over longer-term planning of equipment management.
- ⇆ Government equipment pools frequently operate with plant provided or donated by aid agencies or through discounted finance agreements at less than commercial rates. These usually incorporate inadequate arrangements for realistic financing and replacement costs and thus distorts the market.
- ⇆ It is common to see unit rates offered by contractors not reflecting full equipment costs. Serious bidders who include the full cost may find their offers being too high and risk losing out in tenders.
- ⇆ In some countries, contractor associations advise and offer training to their members on equipment management and costing.

Some guidelines

- ☛ Discussions on the choice and comparative costs of equipment, as well as true costing models, should be introduced during contractor training. This is essential to create a proper understanding of true equipment costs and to enable contractors to tender realistically and compare technology options.
- ☛ It is useful to set up and maintain a good but simple cost recording system that monitors all inputs, usage and overheads related to the individual item of equipment. It is important that contractors and their supervisors are properly trained and motivated to ensure that records are as accurate as possible.
- ☛ Contracting agencies and their staff need to be conversant in realistic equipment costing to ensure full appreciation of all costs involved. This also applies for consulting engineers involved in estimating costs of works.
- ☛ Contractor associations may support their members with the establishment and regular updating of standard equipment rates.
- ☛ Full equipment costing should be based on all investment and operational costs.
- ☛ Particular attention should be given to the actual age and rate of usage when costing second-hand equipment. A careful assessment of the present value and potential repairs is essential.

Good management of equipment is essential for cost efficiency

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Water harvesting in Yemen

DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 7

Knowledge and skills development

Trained staff including technicians for setting out is a must for a successful construction contractor.
Sri Lanka

EIIP

Employment Intensive Investment Programme

CHAPTER 7

Key issue

What strategies and approaches can be introduced to ensure sustainable knowledge and skill development for successful implementation of local infrastructure works?

7. KNOWLEDGE AND SKILLS DEVELOPMENT

Overview

Effective vocational and professional education and training is a major factor in construction industry development. Only competent professionals and workers are able to compete successfully in highly contested markets. The training needs in a developing construction industry are immense, both in terms of numbers and coverage. Occupational training is often underfunded and not perceived as part of a holistic capacity development process. For these reasons, most local contractors conduct their business without sufficient access to training. This compromises their business environment, affects quality of works, costs and sustainability and increases maintenance demands. Investing in training results in more effective use of resources and contributes to a more reliable industry with additional socio-economic benefits to society. Training should not be perceived as a one-off affair for a select group of practitioners, but rather as a total capacity development programme for the entire construction sector involving all stakeholders.

Although training does not address all challenges facing local contractors, consultants and contracting agencies, it plays an important role in improving capacity and performance in the construction industry (see box 60).

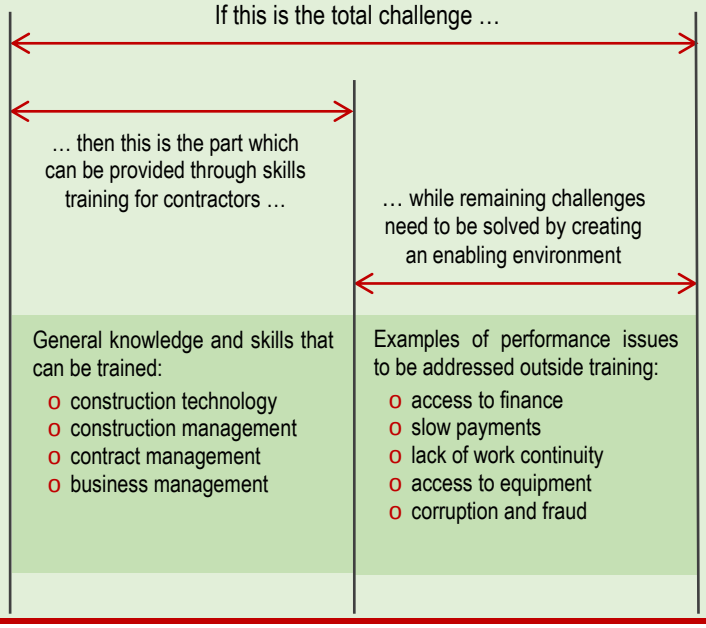
Moreover, training is essential for strengthening capacity both in the private and public sectors. It can be a demanding process but when properly designed it provides valuable upfront quality assurance and increases overall implementation capacity.

Achieving results through training requires (i) the recognition of and adherence to human resource development policy frameworks; (ii) appropriate institutional arrangements; (iii) enabling support services; (iv) effective training methodology; (v) adequate and relevant learning material; and last but not least, (vi) qualified and committed trainers.

Development of a sustainable contracting capacity is a long-term process. Policy-makers and programme managers involved in such a process, therefore, need to acknowledge this fact and design training and capacity development with a long-term and life-long perspective.

Box 60
Addressing performance gaps

Training contractors alone does not solve all contracting capacity challenges. There may be other issues not necessarily linked to technical or managerial skills that have to be addressed through other measures.



Structure of Chapter 7

Section 7.1 Principle appreciation	Identifies factors influencing capacity development; discusses educational systems and the purpose of national qualification frameworks; highlights the importance of accreditation of training programmes and products; emphasizes the importance of building strong partnerships among stakeholders involved in capacity development; suggests effective arrangements for continued support to the industry.
Section 7.2 Supply and demand	Discusses the general training demands to adequately respond to the overall industry needs; presents an overview of the target training population; discusses the general training requirements; describes the role and capacity of training providers.
Section 7.3 Preparation for training	Outlines the necessary preparations for the effective implementation of training; details the information required for assessing training needs and training implementation modalities; discusses the importance of funding and support arrangements; stresses the significance of an adequate institutional setting and capacity; outlines essential training prerequisites; highlights the importance of professional processes when planning training; lists essential resources and arrangements for effective training implementation.
Section 7.4 Design and implementation of training programmes	Lists the necessary training planning activities and their logical sequence; discusses training needs assessments and curriculum development procedures; outlines the requirements for and preparation of adequate training and reference material; Informs about the development of learning programmes for various target groups; suggests suitable training methodologies; describes how to select training candidates and the actual implementation of training programmes including the different learning phases and their organizational requirements; suggests training evaluation systems and methods.
Section 7.5 Funding for training	Highlights the need for adequate and sustainable funding arrangements; lists potential funding sources and mechanisms; explores possible funding arrangements by involving concerned parties.
Section 7.6 Training providers	Identifies potential training providers; summarizes experiences with establishing specialized institutions for training in labour-based works technology for contracting development; discusses possible ways of integrating learning programmes for contracting into existing institutions; outlines the requirements to develop the capacity of training institutions.

7.1 General appreciation

Key issue

What are the general nature, requirements and challenges for knowledge and skills development in the construction industry, particularly for the development of local contractors and consultants?

Useful information

- ✓ The existing capacity in the industry, acquiring knowledge of the strengths and weaknesses of local contractors, consultants and authorities in charge of infrastructure works, including:
  - who is out there and what and how they perform - in this context, it is important to establish quantities, qualities and trends in terms of their participation in the industry;
  - the annual workload in the sector and the potential for the participation and growth of local contractors and consultants;
  - the scope and coherence of planned or on-going capacity development programmes.
- ✓ The typical profile of local contractors and consultants and how their skills and capacity can be effectively utilized.
- ✓ Issues influencing the development and performance of contractors and consultants as well as contracting agencies, e.g. national and local development policies and strategies, works implementation strategies, institutional frameworks, procurement and contracting arrangements, business development support services, legal conditions, funding systems and procedures, and others.
- ✓ Existing national education and occupational training including the capacity for innovation, research and development. Of particular interest are:
  - the availability and capacity of technical and vocational education and training institutions, sectorial technical training centres as well as higher learning institutions;
  - national and sectorial training policies, strategies and methodologies as well as the focus, if any, on adult education and human resource development. Whether the key actors in the construction industry pursue a human resource development strategy.
- ✓ Existing National Qualification Framework (NQF) to:
  - meet with requirements, organization and procedures, particularly sections regulating vocational and occupational education and training;
  - identify implications for the envisaged contracting development training;
  - ensure linkages to regional (international) NQFs.

Box 61

What is a National Qualifications Framework?

A National Qualifications Framework (NQF) is an instrument for the development, classification and recognition of skills, knowledge and competencies along a continuum of agreed levels. It is a way of structuring existing and new qualifications, which are defined by learning outcomes, i.e. clear statements of what the learner must know or be able to do whether learned in a classroom, on-the-job or even less formally. The qualifications framework indicates the comparability of different qualifications and how one can progress from one level to another, within and across occupations or industrial sectors (and even across vocational and academic fields if the NQF is designed to include both vocational and academic qualifications in a single framework).

Source: An introductory guide to national qualification frameworks, ILO, 2007.

- ✓ Existing accreditation and certification requirements and procedures as well as responsible institutions, including quality assurance and auditing, with construction sector authorities, e.g. line ministries, construction development boards, contractor registration boards, and institutions of civil and structural engineers.

Experience

- ⇆ Training contractors alone does not solve all contracting capacity challenges. There may be other performance issues which are not necessarily linked to technical or managerial skills but have to be addressed through other measures, e.g. improved access to finance, enforcing conditions of contract, prompt payments, access to good quality hand tools and appropriate equipment, legal inadequacies, etc.
- ⇆ Providing training to a group of contractors can be a 'quick fix' to achieve specific goals in a particular project. Such training may however have limited impact in terms of developing the construction industry as a whole. Such approaches lack the appreciation of the full needs of the sector and consequently do not take into consideration all the challenges related to the development of a healthy and competitive industry.
- ⇆ Training in contracting development has been conducted in many countries. Many training programmes have yet to secure official accreditation and recognition, including qualification certificates for trainers as well as the training institutions. In some cases, successful efforts have been made to accredit learning programmes and integrating courses into existing qualification frameworks.

Trained local contractor constructing a rural road in Pemba, United Republic of Tanzania

Box 62
Partners for capacity development

Government sector

- Policy-makers and leaders
- Ministries (finance, labour, technical ministries, local government, etc.)
- Government agencies e.g. National Construction Authority, Contractor Registration Board, Construction Development Board, Chamber of Commerce, SME development institutions, tender boards, etc.
- Sector training institutions

Private sector

- Civil engineering consultants and their associations
- Construction contractors and their associations
- Suppliers of equipment, material and tools
- Financial institutions (commercial banks and micro-finance institutions)

Education and training sector

- Ministry of Education
- Industry training authorities
- Universities, polytechnics and colleges for higher technical education
- Technical colleges and institutes for occupational training

Non-state sector

- NGOs involved in community development
- Community based organizations: local level representation (village development committees, infrastructure user committees, etc.) and works implementation groups (community contractors)

Timor-Leste: Accredited training for labour-based road construction

The Enhancing Rural Access (ERA) project in Timor-Leste has since 2011 provided capacity development support to the domestic construction industry. The programme aims to develop local contractors to implement rural road works using labour-based methods.

The training courses for labour-based road rehabilitation and maintenance with the Don Bosco Training Centre and for contract and business management with IADE (National Business Development Institute) have been accredited with INDMO (accreditation authority). A recent evaluation identified the following lessons learned and good practice example:

Accredited training in labour-based works technology

For training to become fully effective and sustainable beyond a project's limited time frame, accreditation by a national education authority is paramount. The ERA project has managed to accredit labour-based road construction courses together with contract and business management courses with the Instituto Nacional de Desenvolvimento de Mão de Obra (INDMO).

These courses have been developed to a nationally accepted standard and also the capacity of the two training providers (Don Bosco and IADE) have been developed to be able to run the courses independently. Accreditation of TVET can be achieved through an integrated approach with 'embedded' experts and the commitment of the local training institutions and the national project partner (Secretariat of State for Support and Promotion of Private Sector) as well as INDMO who have been pursuing accreditation and adoption of the courses.

The approach is in compliance with the ILO employment-intensive investment programme for creating an enabling environment for small- and medium-sized enterprises and is suitable for replication elsewhere.

Source: Mid-term evaluation, Enhancing rural access, Evaluation report, ILO, 2013.

- The importance of involving and cooperating with relevant development support and regulatory institutions is often underestimated. Effective partnerships in training delivery are essential for ensuring recognition, ownership and sustainability. Typical partners are mentioned in box 57.
- Effective and continuous support is important for the industry as a whole. Contractor and consultant associations as well as commercial development agencies are major sources of advisory services in countries with developed construction industries. Unfortunately, such services are hardly provided in countries where the domestic construction industry is less organized. In some contractor development projects, advisory services are provided for a limited period of time through mentorship arrangements (on-the-job technical assistance) as an extension to the initial formal training programme.
- Local resource-based technology and work methods have been integrated into university and technical college curricula in some countries.
- Training can be provided to community groups, depending on their role and capacity to implement works, such as basic technical skills, e.g. as required for simple building and maintenance works. Communities can also be trained to carry out works as third party contributors.

Some guidelines

- It is important to be realistic about what can be achieved in regard to the development of the local construction industry. Individual projects may get involved in contractor and consultant development as a means of achieving other objectives, i.e. building rural access roads, improving agriculture, etc. Unfortunately, such initiatives often overlook the overall capacity demands of the industry.

Trained local contractor carrying out rural road construction works, Timor-Leste

Box 63
Provision of information, education and training – organizations and their roles

Government

- Establishes and funds agencies (e.g. research institutions, industry development boards) to provide standards, information and advice to policy-makers, managers, practitioners.
- Initiates and promotes work approaches and technologies through sector policies and strategies.
- Finances training.

Education and training sector

- Universities and technical colleges provide learning programmes that lead to professional accreditation by learned societies.
- Specialized public and/or private technical training institutions provide occupational education and training programmes.
- Universities and research institutions test and develop technologies, equipment, tools and materials, and provide scientific information for learning programmes.
- Initiates research and development programmes based on the needs of the construction industry.
- Provides knowledge and information to the construction industry.
- Examines and certifies engineers and technical staff.

Private construction industry

- Provides information and advisory services to their members for a range of technical, business and contract management issues.
- Provides specialized training, information and mentorship programmes for all cadres in the construction industry.
- Material, equipment and tool suppliers and manufacturers promote their products and services to clients, consultants, contractors and learning institutions.

Nepal: Training local consultants

Under the Arniko Highway Rehabilitation project in Nepal, an international consultant was engaged to support local consultants for design and supervision, and to develop the capacity of the Society of Consulting Architectural and Engineering Firms (SCAEF). A training and support programme with the following topics was developed:

- preparation of engineering/conceptual studies with comparison of technical options;
- preparation of tender documents and detailed designs (pavement design);
- tendering and contract management;
- understanding the Engineers' role under the FIDIC contract model;
- preparing construction drawings;
- work supervision and quality control;
- handling of claims and variation orders.

This programme consisted of classroom sessions, on-the-job training and seminars. The consultants engaged by the project were not the only ones that benefited from this training. Other members of SCAEF were invited on study tours to work sites and participated in the classroom sessions.

The result of this training and support package that lasted nearly six years was an increased confidence among consulting firms, clients and donors that national consultants can compete with international firms and adapt to new technology. In addition, improved contracting practices were introduced to the Nepali construction industry through the introduction of FIDIC contract documents.

- In order to take full advantage of the existing NQFs it is important to investigate the following issues:
  - How to integrate contractor training within the existing national qualification framework?
  - Can existing occupational qualifications be utilized or is there a need to develop new qualification standards?
  - What is the required process to formulate and register new learning programmes with the NQF?
  - Who are the partners to involve in the development of a learning programme?
  - What are the resources and timeframe required to develop the programme?
  - What is the scope and content of the learning programme, e.g. the package of certified training courses for all types of participants and qualification levels?
  - How to facilitate access to and progression within the learning programme (enabling a career path, especially for youth entering the programme)?
  - Are there possibilities for recognition of prior learning on non-accredited courses such as continuous professional training with learning institutions or sector institutions? Not all interventions of a planned training programme can be accredited within the NQF.
- It is important to develop a capacity for support and advisory services beyond the initial training and development programme. Such services, if not already available, could be developed with and integrated into the contractor and consultant associations.
- In the absence of functioning professional associations, additional support arrangements can be developed in collaboration with, for example, chambers of commerce, national construction development boards and national institutes of rural development.
- Training of communities is normally not linked to formal education and training. However, accredited skills training could be provided as part of the programme. If training of artisans is required, it has to be planned for and included in an overall training plan.
- It is important to ensure that training institutions, their training programmes and their trainers and instructors are accredited and that the certificates provided are officially recognized, e.g. trade certificate of competence.

Training technicians in rural road works, Pemba, United Republic of Tanzania

7.2 Supply and demand

Key issues

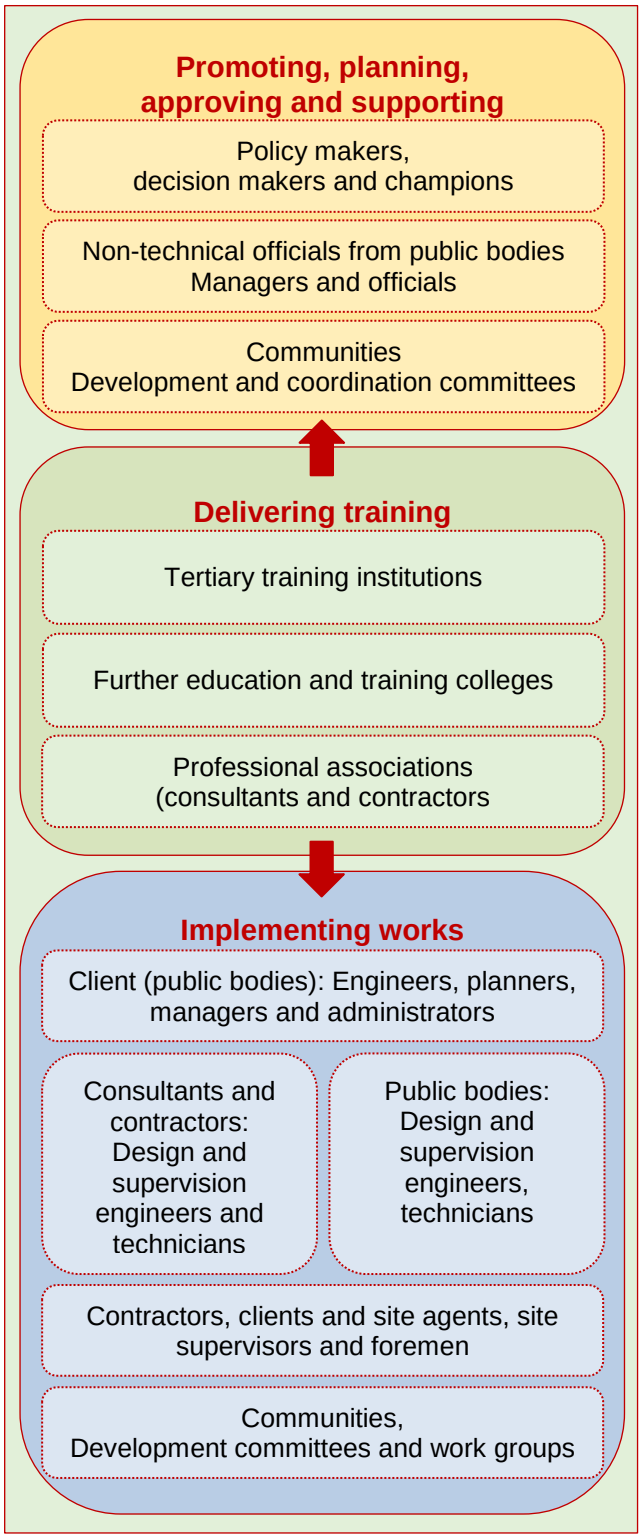
What are the factors to be considered in a comprehensive and demand driven training plan that responds to the objectives of a contractor development programme?

Useful information

- ✓ Market forecasts of workloads for contractors and consultants and the competencies required. The forecast should consider works that are funded by central and local governments, private sector, communities, as well as development partners. The forecast should also look at all potential markets and not focus on one sub-sector alone.
- ✓ The market assessment should (i) identify the categories and numbers of staff and their general capacity requirements; and (ii) suggest a capacity development strategy with a long-term perspective, covering:
  - o policy-makers, managers and planners (from government ministries, funding agencies, local authorities, etc.);
  - o engineers and technicians from contracting agencies and consultancy firms;
  - o contractors and their managing directors, site agents, work supervisors, artisans, plant operators, mechanics, and administrative support staff;
  - o community development committees, community work groups and artisans;
  - o training institutions, lecturers, trainers and instructors.

  Figure 10 presents an overview of the different target groups that should be included in this assessment.
- ✓ Existing capacity and competencies of training providers, e.g. government training institutions, universities, technical colleges, private sector providers and professional associations.
- ✓ The need for external assistance for the development and conduct of the envisaged training programme.

Figure 10. Overview of training target groups



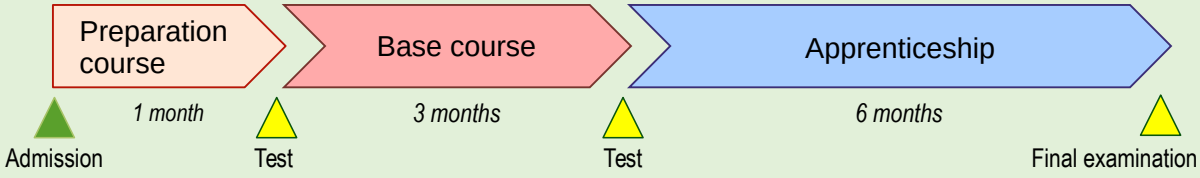
Experience

- The scope and need for training and mentorship support are often underestimated in terms of:
  - the different categories of staff to be included, particularly for field supervisors and middle cadre staff;
  - the competencies covered (technical, business management, work organization, contract management, cross-cutting issues, working conditions, etc.);
  - the duration required to prepare and implement a full-fledged capacity development programme, e.g. formal training, on-the-job training, mentorship and advisory support.
- There is often a shortage of skilled workers in the construction industry and a mismatch between the existing competencies of workers and the contractors' needs.
- Competent site supervisors and foremen are the backbone of well-managed work sites and thus key to the profitability of contractors. Creating a cadre of qualified construction supervisors is an essential and cost-effective investment for the industry.
- Long-term capacity development should promote career pathways and support training of low skilled workers to enhance their skills while, at the same time, promote the demand for intermediate works technology, e.g. using local resource-based work methods. There is often an untapped potential to engage more youth in such career pathways.
- While the immediate focus is on training contractors, there is an equal training demand among: (i) officials from contracting agencies; (ii) engineering consultants; and (iii) trainers. Developing capable trainers and instructors is a particular challenge.
- There is often a lack of institutionalized and formally accredited training providers for the construction sector. Finding trainers with the practical skills for use by local contractors is particularly difficult. Training of trainers and instructors is thus a priority.
- Some countries have developed appropriate craft training programmes, e.g. the road builder and construction supervisor craft courses with particular focus on local infrastructure works.

Stone pavements require properly trained crafts-men and -women, Zambia

Box 64
Indonesia: Creating a cadre of construction supervisors

The Rural Access and Capacity Building Project on Nias Island introduced a training programme for local youth, offering the opportunity to develop a career in the construction industry. Out of 220 applicants 42 trainees were admitted to the training programme. The training programme was divided into three main phases as in the figure below.



Preparation course

- *Objective:* to provide a theoretical knowledge base for the ensuing base course and apprenticeship stage.
- *Duration:* 3 to 4 weeks, depending on need to revise basic knowledge, e.g. numeracy, reading drawings, etc.
- *Methodology:* mainly theory in classroom with practical demonstrations, site visits and practical exercises, e.g. survey and setting out methods.
- *Evaluation* of performance through (i) intermediate assessments; and (ii) end-of-course test.

Base course

- *Objective:* to gain knowledge and skills to effectively perform as construction supervisor apprentices.
- *Duration:* 8 to 12 weeks, depending on performance level and site conditions.
- *Methodology:* practical training in all major tasks a supervisor has to master combined with intermediate theoretical inputs. Detailed instruction training and coaching by training team.
- *Evaluation* during field exercises and through end-of-course practical and written tests.

Apprenticeship

- *Objective:* on-the-job training under real working conditions to effectively apprehend all work elements required of a site supervisor.
- *Duration:* about 6 months, depending on performance level and site conditions.
- *Methodology:* structured on-the-job training by selected contractors with close coaching by the training team. Intermediate problem oriented and in-depth training sessions to review learned content and ensure full mastering of skills.
- *Evaluation:* performance evaluation carried out throughout the apprenticeship.

Final test

A final practical and written test combined with the results of the preparation and base courses as well as the performance during the apprenticeship defined the achieved competency level.

Successful candidates were issued a *Certificate of Competence as Construction Supervisor.*

The courses proved both effective and popular, in particular the apprenticeship. Most participants completed their training programme and were immediately absorbed by the industry, either as supervisors in construction firms or with the public works department.

Training in bridge works, Indonesia

- The focus of past contractor development schemes has been two-pronged, namely building the capacity of training institutions and creating competent entrepreneurs in the construction industry. In many countries, courses for local contractors are offered by sectorial institutions whose personnel could benefit from acquiring further experience in adult education as well as how to manage a private business.
- Training in business administration and finance is often outsourced to business management training institutions.
- Few civil engineers and technicians have received training in the application of local resource-based approaches during their formal (university and college) studies.

Some guidelines

- Separate courses need to be developed to address the actual training needs of each of the identified target groups.
- Realistic demand and supply relationships relating to the capacity development programme should determine the short and long-term training objectives:
  - the immediate objectives relate to improved skills levels, work and contract management capacity for efficient implementation of local infrastructure works;
  - the long-term objective is to establish sufficient national training capacity to meet future industry demands.
- A thorough assessment of the existing demand and supply situation is useful before embarking on a contractor development programme. Naturally, the focus would be on the core sectors where the services of local contractors are in demand, i.e. rural infrastructure, agriculture, buildings and the environment. The assessment should cover the demand in both public and private sectors.
- The attrition rate of trained technical staff is usually overlooked when assessing training demands. It is therefore important to develop a strategy for continuous training.

Combining theoretical sessions with practical field training on technical and managerial issues. Cameroon

Box 65

Learning institutions offering courses in labour-based works technology

A number of higher learning institutions have integrated labour-based work methods into their civil engineering programmes, some examples of which are found in the table below.

Ghana	
Kwame Nkrumah University of Science and Technology, Department of Civil Engineering	Offers a labour-based module in their civil engineering undergraduates course
Kenya	
Jomo Kenyatta University of Agriculture and Technology	Course at post graduate level: MSc in Construction Engineering and Management with a unit in Labour-based Technology in Construction
Polytechnics and Technical Colleges	Labour-based work methods are integrated in the national ordinary diploma curricula in civil engineering
South Africa	
Witwatersrand University Johannesburg, Faculty of Engineering and the Built Environment, School of Civil and Environmental Engineering	Offers a postgraduate course in employment creation in the construction and maintenance of infrastructure

There are many other learning institutions that have integrated course material on local resource-based methods in their regular training programmes without necessarily offering accreditation. Similarly, a number of sector-based technical institutions are offering labour-based training in many countries including Bangladesh, Botswana, India, Kenya, Laos, Lesotho, Madagascar, Philippines, Rwanda, Timor-Leste, Uganda, the United Republic of Tanzania and Zambia.

Kenya: Road building, an accredited craft

The Kenya Institute of Highways and Building Technology realised that project-based training without any accreditation was not sustainable for the countrywide adoption of labour-based work methods in particular and road-building skills in general. The Institute also considered the growing need within the private sector for trained and skilled personnel for road works. As a result the Institute has established a *Road Builder Craft learning programme.*

The duration of the programme is three years. It deals with materials and equipment management, design and drawing skills, public and private sector enterprises, administration and monitoring, and the utilization of labour-based and equipment-based techniques for road works. The programme is open to school-leavers and staff from government road agencies, consisting of theoretical classroom learning at accredited technical colleges and practical attachments to renowned construction companies.

At the end of the course, successful candidates receive a nationally accredited craft certificate that qualifies them as site supervisors for any type of road construction work, covering both equipment-intensive and labour-based work methods, and for either government or the private sector. After completing this course, those who wish to embark on an academic career can join a diploma course in civil engineering.

7.3 Preparation for training

Key issues

What are the requirements for an efficient and effective training programme for the development of the local construction industry?

Useful information

- ✓ Description of the country's construction sector including national policies and programmes on local contractor promotion and development.
- ✓ Technology options, relevant operational procedures (e.g. operations manual, code of conduct), technical manuals and guidelines, design standards and work specifications as well as procurement regulations, procedures and documentation.
- ✓ Profile of the training target groups including both officials of contracting agencies, contractors and their supervisory staff.
- ✓ Funding arrangements for the training: What are the estimated training costs? Where are potential funding sources and how can adequate budgets be secured?
- ✓ Any capacity development measures besides training, other support programmes for the construction sector or support services provided by associations or enterprise development agencies.
- ✓ Institutional setup and capacity of training providers.
- ✓ Courses or specialized training that cannot be provided by the identified institutions and therefore have to be delivered by other providers, e.g. contractor association, specialized consultants, NGOs, management training institutions or technical training colleges.

Training carried out at the work site, Timor-Leste

Box 66
Preparatory process for training implementation

Important preparation and planning activities for training

1. Job analysis
2. Preparation of job descriptions
3. Detailed task analysis (knowledge & skills)
4. Analysis of training prerequisites

- Clarification on training programme objectives and expected results
- Clarification on accreditation and certification requirements
- Identification of training providers
- Identification of training resource requirements and funding arrangements
- Training of trainers

5. Training needs analysis
6. Definition of learning objectives (competencies to attain)
7. Planning of detailed training programme

- Curriculum (incl. training needs, attainable competencies and indicators of achievement)
- Learning material
- Trainer and assessor guide
- Course programmes
- Course resource plans (trainers, facilities, training aids, material, transport)
- Financial and cash-flow plans
- Training administration & reporting
- Training evaluation

Practical training for technicians in surveying and setting out, Sri Lanka

- ✓ Systems and requirements for accreditation of occupational training for:
  - training suppliers (training institutions) from public and private sector;
  - trainers, instructors and mentors;
  - assessors (internal or external, for training evaluation leading to certification);
  - training material;
  - training courses and programmes.

Experience

- Although there is usually a general agreement on the importance of training, the extent of training needs and resources required to adequately address capacity development demands are often underestimated.
- The production of training material is one of the major activities in preparing a learning programme and as such is a time and resource consuming exercise. However, there are a number of other issues, which need equal attention. It is observed that:
  - training institutions have limited capacity, personnel and funding for activities such as development of technology and operational procedures;
  - expectations of the outcome and impact of the training among the involved parties may differ significantly. Therefore, it is important to define precise, realistic and agreed training objectives together with all involved parties;
  - existing training capacity can be limited, particularly to provide practice oriented occupational training, and thus most training institutions rely on specialized external support from public and private institutions, universities, etc. Training of trainers programmes are useful to improve existing capacity;
  - in many countries, the private sector is not yet in a position to take over the majority of training delivery and thus alternative public sector led initiatives have been pursued;
  - there is a vast amount of generic and country specific training material that can be adapted to local conditions.
- Training alone cannot solve organizational and managerial deficiencies. These need to be addressed through other means as a prerequisite for effective training results.
- Training in local resource-based technology has generally been successful and there is good experience with the services provided by various training centres. Practical skills training for good workmanship is an essential part of these training programmes.
- Continued capacity development support is seldom institutionalized while both public and private actors need refreshment courses, development of more capacities and acquisition of new technology after completing the offered training.

Rural road maintenance training modules for engineers and contractors respectively. ILO and Ministry of Rural Development, India

Box 67

Indonesia: Prerequisites for a successful training programme

The preparation phase for the capacity building for rural road works in Aceh in 2006 (one and a half years after the Tsunami) identified a number of issues as prerequisites for the success of its training programme:

- sufficient competent district engineers, contract administrators and mobile construction trainers recruited and trained for the job;
- the need to improve cost estimating practices to suit the requirements of rural road works using local resource-based approaches;
- identified scope of works on a district basis;
- established and agreed criteria to package contracts that suit the capacity of contractors;
- agreed criteria and procedures for qualifying contractors for works applying local resource-based approaches;
- standard tender and contract documents developed and approved;
- a comprehensive quality assurance system developed that meets the requirements of the public works departments as well as the contractors;
- subcontracting arrangements and procedures developed;
- appropriate labour recruitment and employment conditions introduced and approved;
- new pavement designs introduced with detailed work specifications;
- local resource-based road rehabilitation activities for the different conditions in the various districts identified and specified;
- planning and reporting system for site operations developed and linked to the overall planning, reporting and monitoring system.

These issues were considered not to be part of the training but still requiring attention by the concerned partners.

Lesotho: Systems and procedures for contracting

During the early stages of the training programme in the Road Maintenance and Regravelling Project, it became apparent that the systems and procedures for contracting were inadequate. The contract documentation for routine maintenance works was poorly developed, productivity guidelines were missing, unit rates were not available and the management system did not cater for work carried out by contractors.

The trainers therefore had to develop adequate procedures at the time of the training. This caused confusion among the contracting agency's staff and among the trainers and trainees. The procedures developed in this way were also untested and had not been formally approved. Subsequently, revisions had to be made and the trainees retrained.

Uganda: Participatory development of contract documents

As part of a training programme, the Ministry of Works, Transport and Communication organized a workshop attended by all district engineers during which simplified contract documents and detailed specifications were developed for road maintenance works including productivity rates, unit prices and operational guidelines. These documents and procedures were updated during a later workshop after some experience had been gained during field work.

An additional benefit of this development process was the engineers' view that the new procedures were their own products. Consequently, they considered themselves as the true owners. The trainers acted as facilitators during the workshops and now refer to the new maintenance procedures in their training programmes.

Some guidelines

- Comprehensive job descriptions are useful for assessing training needs. As these are often only available in a more general format, it may be necessary to carry out a detailed job analysis before the actual training needs can be determined. A job analysis should establish:
  (i) the detailed task components;
  (ii) the required level of competence for each job task.
  Refer to Annex V for a typical job profile for construction supervisors.
- The roles and responsibilities of all parties involved in training delivery including the external factors impacting on training have to be clarified and built into the action plan to ensure ownership and continuity of the programme.
- As part of the preparations, it is important to mobilize sufficient trainers, instructors and mentors.
- Appropriate facilities and arrangements are essential for the practical training. These include:
  - sites where practical exercises can take place during the formal training phase. Ideal are model work sites and workshops that are managed by to the training institutions;
  - trial contracts after the initial and formal training phase;
  - practical attachments or apprenticeships during longer training programmes for site supervisors and artisans.

  The type of training determines which of the above arrangements need to be considered.
- To ensure the sustainability of local resource-based work approaches, it is necessary to integrate training into existing institutions of learning. In most cases there is a need to assist in developing the capacity of the identified institutions through a dedicated support programme.

On the job instruction is essential when learning a new craft. Kenya

Box 68

Kenya: How to become a competent construction instructor

To qualify as a competent construction instructor at the Kisii Training Centre (KTC) in Kenya, candidates have to go undergo a rigorous training programme. Entry requirement is a higher diploma in civil engineering. After acceptance by KTC, the new entrants are first attached to an on-going training site to learn practically the ropes of labour-based road construction. They are also attached to senior instructors who provide guidance on practical and theoretical training.

After this first phase of practical learning, the instructor trainees attend the Kenya Technical Teachers College for a one-year course to attain a diploma in Technical Teacher Education. Alternatively there is a course at the college that combines the teacher diploma with a higher civil engineering diploma in which candidates go through a four-year learning programme. Candidates need to have both diplomas to be accepted as an instructor at KTC. Even when meeting these requirements, new instructors are first given an apprentice role to gain sufficient on-the-job experience before they are regarded as a fully qualified instructor. They will be given the full responsibility as a course guide only after some years of this practical experience. On average, it takes 3–5 years to reach this level of competence.

Nias, Indonesia: Apprenticeship arrangements for construction supervisors

Supervisor trainees had to attend a six-month apprenticeship as the final phase of the one-year construction course at this ILO supported programme in Indonesia. As a first step, the ILO identified suitable entrepreneurs already involved in construction works of the RACBP and which showed interest in entering into an apprenticeship agreement. The contractors were then informed about the nature, objective and organization of an apprenticeship as well as the responsibilities and rights of the parties involved.

The following preparations and arrangements were made to streamline and facilitate the apprenticeship scheme:

- Preparation of an implementation guideline for the conduct of the apprenticeship including all necessary formalities.
- Preparing a standard agreement for the involvement of the contractors, including terms of references.
- Defining the coaching services to be provided by the master trainers. This included preparing individual coaching plans tailored to the particular requirements of the apprentices.
- Securing a budget including cost-sharing arrangements between the client, the contractor and the ILO as the implementing agency.

The trainees were expected to work like any other regular employees of the contractors. The contractors on their part had to assure that the trainees were given the opportunity to participate in all construction activities.

The master trainers visited the work sites on dates agreed in coaching plans, providing support services not only to the trainees but also to the contractors and other site staff. During these visits the trainers identified common challenges that the trainees encountered in the execution of their daily work. This information was used to prepare short problem-oriented courses for the trainees as part of the apprenticeship scheme.

The trainees had to undergo a final examination at the end of the apprenticeship. Together with intermediate assessments the final test enabled the trainees to attain their certificate of competence as construction supervisors. All trainees found employment shortly after, either with contractors or with the regional and local works departments.

7.4 Design and implementation of training programmes

Key issues

What are the essential ingredients in the design and delivery of training programmes for local infrastructure works?

Useful information

- ✓ Overall training objectives and expected results/outcomes.

Experience

- ⇆ Life-long learning strategies are often not considered when designing training programmes in the construction sector.
- ⇆ Mastering basic technical and management concepts can be hampered by low levels of educational background and thus slow down the training process. Preparatory courses can be organized to alleviate numeracy gaps that hinder trainees from following the standard occupational training courses.
- ⇆ The training content is often determined by simply listing the job tasks to be performed without sufficiently considering the educational background and existing competencies of the trainees. Consequently, it becomes difficult to establish the actual competency gaps and on this basis design a responsive training programme.
- ⇆ The majority of trainees tends to have a certain level of work experience. Participating contractors may already be engaged in construction works or other economic activities and thus possess a business acumen and valuable management experience.
- ⇆ Established contractors and consultants may not be available to attend training for long periods of time. This implies that the training should be:
  - o focused to the extent possible on the actual competency gaps;
  - o problem-oriented that is strongly linked to the work experience and the problem-consciousness of the participants;
  - o well prepared by trainers, whose principal role is to assist the participants in facilitating the learning process.
- ⇆ Exchange of knowledge and experience through south-south collaboration has proved to be highly effective in convincing policy and decision makers as well as practitioners of the relevance of local resource-based approaches and the need to pursue a comprehensive training programme.

Some guidelines

- ☛ The actual training needs are best determined through a formal Training Needs Assessment (TNA) on the basis of a work place assessment carried out as part of the preparatory activities.
- ☛ Curriculum development is the most important element of designing a learning programme. A training curriculum refers generally to the expected knowledge and skills acquired during a learning programme. It may include learning standards and objectives, courses and lessons, assignments and projects given to the trainees, the course material and how the training is evaluated. For accredited courses, the format, content and method of developing curricula is regulated by a qualification authority. For non-accredited courses a curriculum can be prescribed according to the needs as perceived by a competent training provider.
- ☛ The principal training subjects for the different target groups have to be clearly identified.

Annex VI provides a checklist of principal learning subjects for the various target groups involved in local infrastructure works.

Box 69

What is accredited training?

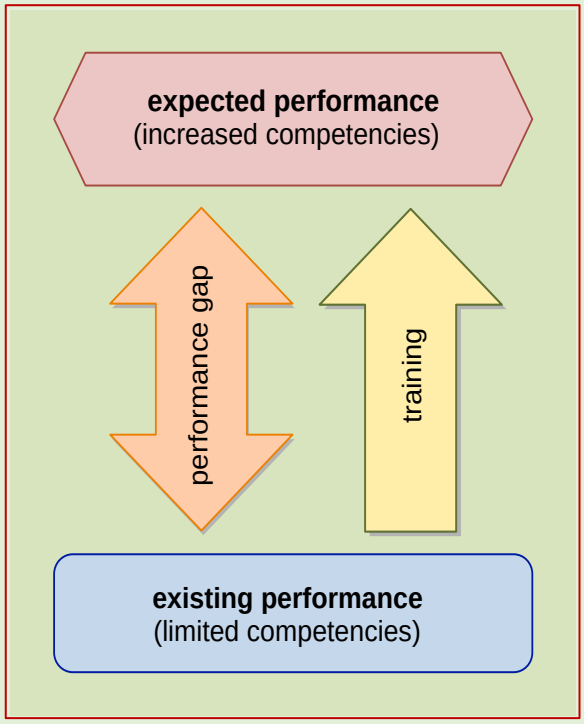
Accreditation means that a recognized professional institution or authority has approved the training that certifies clearly defined qualifications and provides certificates recognized by the entire industry following its successful completion. An accredited course:

- ideally meets industry, enterprise and/or community needs;
- provides appropriate competency outcomes and a satisfactory basis for assessment;
- meets national quality assurance requirements;
- is aligned to the appropriate level within the national qualifications framework where it leads to a qualification fully recognized by the industry.

How to carry out a training needs assessment

Training needs are the gaps between the existing and desired levels of competencies. Training needs assessments form the basis for any training, whether it is for an already existing and accredited programme or for a new course (figure 11). For existing courses it is important to identify to what extent, to what depth and with which method the individual subjects should be taught. For new courses the TNA forms the basis for developing the curriculum and determining the appropriate course methodology and programme.

Figure 11. Training needs assessment



In principle the TNA answers three questions:

- Who needs training?
- How many need training?
- What training do they need?

By analysing the training needs, it is possible to establish what the identified training audience needs to learn. In order to achieve this, it is necessary to know two things:

- What can they do now (existing level of performance)?
- What should they be able to do in the future (expected level of performance)?

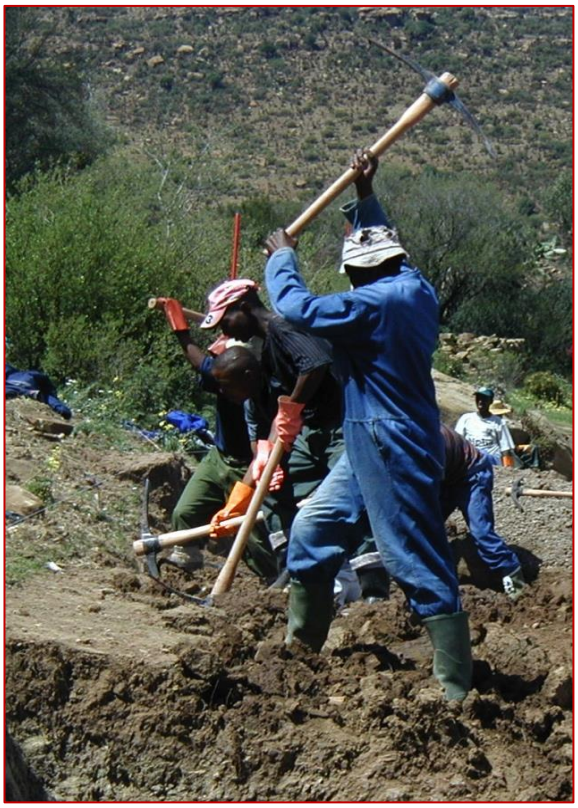
The gap between the two defines the training interventions and allows for decisions on:

- target audience
- content and method of training
- timeframe for the training process
- how to evaluate the training outcomes.

A TNA is not only a process of identifying individual performance gaps but also involves collecting information about performance shortfalls at the organizational level, as training may only be able to address part of the capacity challenge. Consequently, a TNA can also be used to determine performance gaps that need to be addressed through other means than training, e.g. missing or wrong equipment or resources, poor management, lack of standards and operational procedures, workplace conditions, etc. Addressing these issues are 'prerequisites' for achieving good training results. A well-conducted TNA forms the basis for determining the training objectives and is also the basis for training monitoring and evaluation.

- Appropriate training material needs to be assembled before commencing the learning programmes. The scope, content and presentation differ, depending on the type of courses and the accreditation requirements. For accredited courses the material has to be certified by the qualification authority and typically consists of:
  - learning materials – the materials to be used by the trainees;
  - trainer's guide, consisting of methodical and organizational guidelines on how to conduct the course and each of the training sessions;
  - assessor's guide, describing in detail the assessment methods to be applied.

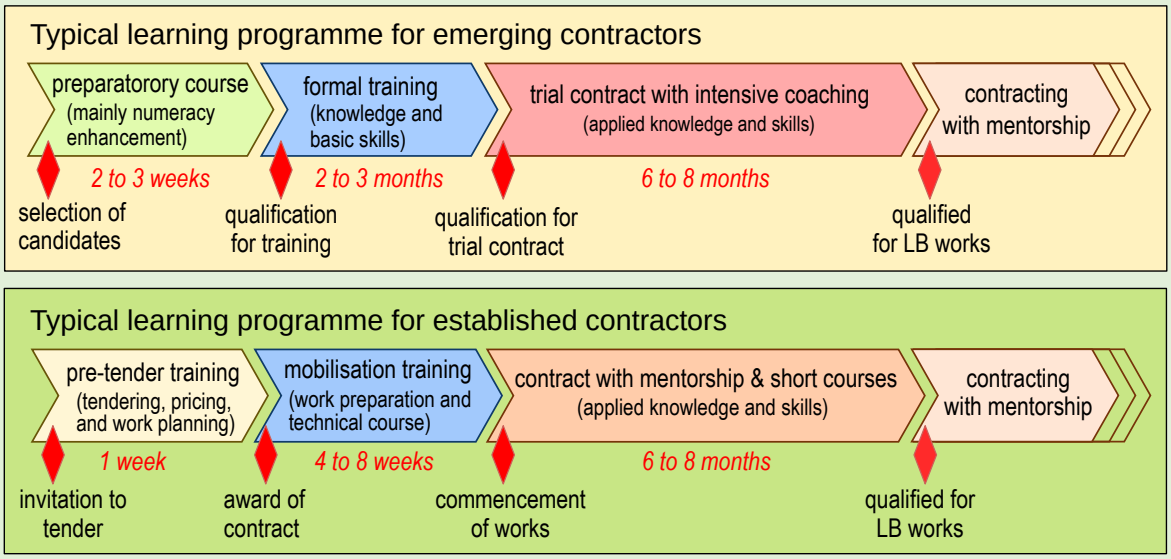
  Course material should be designed specifically for the particular level of training. It is useful to prepare learning material not only as theoretical text books but also as work process guidelines that can be used as a reference on site, e.g. checklists, process flow-charts, job and activity descriptions, practical examples and lots of explanatory graphs, photographs and drawings.
- It is advisable to develop site reference handbooks in pocket format with practical reference data that is useful during works implementation. Handbooks are well received by the trainees. Worksheets that explain work activities in detail are always useful and in particular for works to be carried out using local resource-based methods *(refer to Annex VII for a sample worksheet).*
- The learning needs for the various target groups are different and therefore capacity development programmes have to be tailored accordingly.
- The training methodology – how to train – for occupational education and training should generally consider:
  - training of adults with or without experience in construction works, contract management and business administration;
  - increased focus on skill competencies, particularly for site personnel;
  - specific management training and mentorship for contract management, particularly for contractors, consultants and government officials;
  - specific business management training and mentorship for contractors;
  - continuous development opportunities through appropriate learning programmes for all professionals in the construction industry.
- Training supervisors is essential when improving the capacity of contractors. Site supervisors are the backbone of the works on site. Clear criteria should be developed for the selection of site supervisory staff that is offered training. The selection criteria may be:
  - minimum education, particularly literacy and numeracy competencies;
  - work experience;
  - legal working age;
  - equal opportunity for women, men and people with disabilities;
  - signed declaration of commitment.
- It is the prerogative of the contractors to select their staff. However, candidates should still be screened according to pre-defined criteria before admitted to the training programme. It is advisable that the trainers participate in the screening exercise.



On-the-job training is essential for site supervisors. Lesotho

Box 70

Typical learning programmes tailored according to needs



What to consider when establishing a selection process for training

Announcement and application:

- announcement of the training (how, where, when, how long and by whom);
- information to be provided by the applicants and format(s) to be used;
- necessary copies of diplomas and certificates which the candidates must present;
- verification process for the submitted documents;

Screening and processing of application:

- responsibility for receiving and screening the application;
- ratio between received applications and available training opportunities;
- requirements for short-listing and criteria to be applied;
- notification of successful candidates (means, timing);
- reporting requirements for screening and short-listing.

Interviews, testing and notification:

- responsibility for preparing interview schedules and test papers;
- representatives for interview panels and evaluation of test papers;
- evaluation criteria for interviews and test papers;
- interview and test topics;
- duration for interviews and written tests;
- duration required for interview, test evaluation and report preparation;
- procedure and timetable for notifying successful and unsuccessful candidates.

A possible process on how to select candidates for construction site supervisor training is shown in Annex VIII.

- Candidates from government agencies are selected among the staff in charge of planning and implementation of local infrastructure works, and they should also meet certain agreed entry criteria for the training.
- As part of the preparations, there are a number of organizational and administrative activities that need to be undertaken to ensure training can be efficiently conducted *(see box 66 for details)*.
- Trial contracts often constitute an important component of the learning programme. Knowledge and skills acquired in formal training sessions are practiced in trial contracts and further developed under real conditions.
- Trial contracts are in essence similar to standard contracts except that contractors are working under closer supervision and with regular mentorship support.
- The performance during the trial contracts is regularly assessed and remedial action taken. The final certification depends to a large extent on the performance achieved during the trial contracts.
- It is important to conduct an evaluation of the performance during the trial contracts, involving all parties, i.e. client, trainers and contractors. This process allows identifying problems encountered and drawing lessons from the trial contracts. Recommendations and an action plan may also be developed to inform future training, improve performance of contractors as well as to improve contract management.
- Particular attention should be given to mentorship support for contractors and consultants after the completion of formal training.
- Internships, apprenticeships and continuous mentorship programmes for supervisors and artisans need to be equally well planned, organized and implemented.
- Training evaluation is important in any learning programme. Standard assessment procedures apply for accredited courses. The training provider has to fully abide by these procedures, which are usually detailed in an assessor's guide. It is also advisable to develop an evaluation system for non-accredited training. It is important that all parties involved in the training are fully aware of the system and its procedures.

  Setting clear performance criteria combined with a rational rating system is essential for a workable and fair evaluation system. For occupational training the evaluation should be based on the actual job competencies which are informed by the job profile and analysis.

  Training evaluation should not only be carried out at the end of the training programme but include intermittent assessments during the course. The results of the intermediate assessments (formative assessment) should be combined with the final examination (summative assessment) to determine successful candidates.

Box 71
Administrative arrangements for efficient delivery of training

Admission of trainees: formalities (trainee records, participation agreement, etc.), information about the institution's facilities and organization and services, rules and regulations, programmes and arrangements for training and leisure time, accommodation and catering, transport arrangements, medical services, communication, etc.

Course management: appointment of course leader, programming and preparation of lessons (course programme and lesson plans), course budget, orientation of trainers/instructors and guest lecturers, preparation of training aids (for classroom sessions but especially important for practical exercises), copying of training material, etc.

Administration: student records, lesson/course reports, allowances, bookkeeping, personnel management, correspondence, procurement, etc.

Reporting, monitoring and backstopping: daily/weekly course reviews, summary course reports, internal and external training monitoring and evaluation, support from external experts and/or technical assistance.

Box 72

Organizing trial contracts and mentorship services

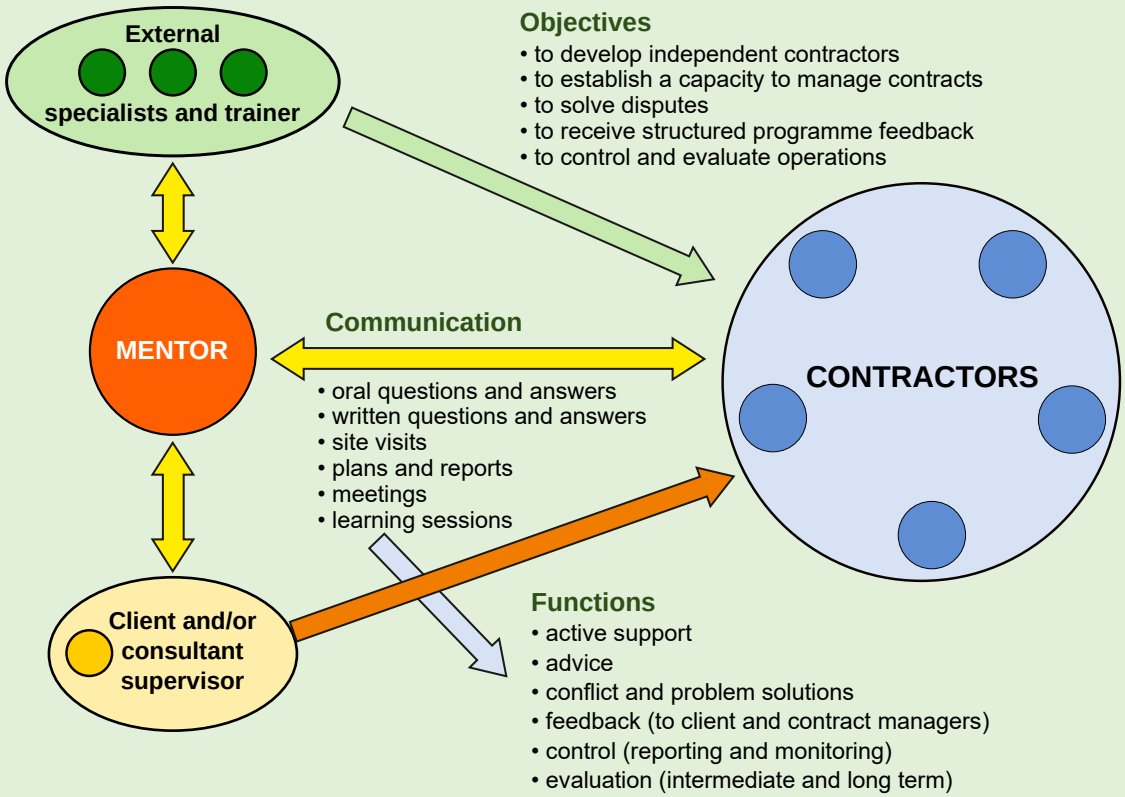
Tendering and award of contracts follow standard procedures with the exception that the bidding is limited to the trainee contractors. Where permissible, trial contracts can also be awarded on the basis of fixed and agreed rates. The mentor accompanies the contractors in the bidding process.

During mobilization, work preparation and implementation, the contractor is offered mentorship services. The contractor and the mentor agree on a coaching plan that allows for regular and critical interventions by the mentor. Problems emerging during the implementation of works may require additional attention by the mentors. To address common problems or shortcomings encountered by all or most contractors, the trainers and mentors may be required to organize short problem-oriented training sessions. These can be conducted as evening classes or on weekends in order to avoid disrupting works on site.

Mentorship services are not only important for contractors but should also be extended to the recently trained contract management staff. This is important for maintaining construction standards, achieving the required quality and workmanship, providing clear instructions, introducing appropriate work methods, securing efficient contract management, etc. (see figure 12 below).

Figure 12. Mentorship services for contractors

Mentorship arrangements



Refer to Annex IX for a detailed checklist on mentorship topics.

- A comprehensive evaluation system allows for monitoring and assessment of the courses, the trainers' performance and the institution's services in addition to the performance of the trainees.
- Monitoring of all inputs and the training performance can be achieved through an internal review process that could be structured as follows:
  - course assessments by the trainees, e.g. using a rapid assessment format;
  - intermediate and end of course discussions with trainees to obtain direct feedback;
  - daily review by the trainers (strengths, weaknesses, areas for improvement, arrangements for the next day);
  - performance records (test results) for all participants as a means to assess the effectiveness of training;
  - final course report.
- The impact of training should be assessed through a post evaluation exercise well after training has taken place. Clear indicators need to be identified to be able to assess impact issues like employability, performance on the job, quality and effectiveness of production, continuous professional training opportunities, etc.

7.5 Funding training

Key issue

What are the possible funding sources and mechanisms for building a training capacity in the construction industry?

Useful information

- ✓ The agencies and institutions involved in local infrastructure works and related education and training from both public and private sectors, as well as local authorities and development partners.
- ✓ Existing and potential funding mechanisms, e.g. by construction development agencies, professional associations, training levies, government budgets, social development programmes, employment creation schemes, poverty reduction funds, etc.
- ✓ The training and capacity development requirements in the sector, e.g. size of infrastructure budgets and works programmes, timelines, partner networks and their involvement, target groups and existing learning programmes.
- ✓ Cost estimates for formal training courses, trial contract training inputs and mentorship provision.

Experience

- ⇆ Capacity development and training is the most valuable investment that ensures quality of works, value for money and long-term sustainability of infrastructure assets. Decision makers and partners involved in infrastructure works need to give priority to and make adequate provisions for training and capacity development.
- ⇆ Investing in capacity development and training is investing in people, including increasing employability of youth, rural and urban poor, people living with disabilities and other disadvantaged groups.
- ⇆ Training should not be treated as an additional cost to infrastructure works. When organized in a proper manner, capacity building results in more effective management of works, improved quality and contributes to the enabling environment in which contractors operate. Over time, improved skills lead to more qualified contractors, which eventually may result in a more competitive business environment and reduced costs of works.
- ⇆ Training costs are often underestimated. Costs related to preparation and design of training, model training sites and trial contracts are often left out.

Box 73

Industrial training funding – country examples

The Zimbabwe Manpower Development Fund (ZIMDEF) is, at least formally, typical of classic funding arrangements: a uniform, centrally administered payroll levy being the sole income source. More recently, ZIMDEF has benefited from considerable investment income derived from levy surpluses and real estate investments, an aberration from accepted practice.

The former Industrial Training Fund in Malawi (currently being replaced by a broader-based funding scheme) financed the national apprenticeship scheme through reimbursement of apprenticeship wages and grants to technical colleges. Training levies, again, were the sole funding source. they were in the form of a differentiated head tax on skilled workers, by skills category rather than a payroll levy.

In Côte d'Ivoire and in Tanzania, levy income is supplemented by donor contributions and, in Côte d'Ivoire, by government funding. Formally, the National Training Fund in Togo is also financed by a payroll levy, the government and donors. It is however not clear how much of the proceeds are transferred to the fund. The new funding system being established in South Africa is financed by a uniform one per cent payroll levy. Eighty per cent of proceeds are allocated to new sectorial training bodies (SETAs) for disbursement within their sectors. In Kenya, the Industrial Training Fund is funded by eleven separate sector-based training levies; separate sectorial accounts are kept with no cross-subsidisation across sectors. The government and the WB finance the training fund in Madagascar. While a payroll levy is planned, Madagascar now provides an example of a fund that is not financed by an earmarked training levy, whether based on payrolls or otherwise.

Source: World Bank.

South Africa: Financing training in the Expanded Public Works Programme

The government, through various public bodies within the national, provincial and local spheres, funds most of the training. It is apparent that capacity building is capital-intensive requiring the allocation of dedicated budgets and effective engagement and involvement of the various government agencies. For this to be realised there is need for training policies to be in place, training programmes prepared, budgets set aside, monitoring, existence of dedicated training teams and the training effectively implemented and evaluated to ensure its desired outcome.

Financing of skills training is sourced from the related Sector Education Training Authorities (SETAs) such as Construction Education Training Authority (CETA) and government departments including the Department of Labour. SETAs fund the classroom training for learnerships and skills development in infrastructure works using labour-based work methods. Reorientation training is financed through the respective public bodies funding the venue, meals and related logistics, whilst Expanded Public Works Programme provides the resource persons.

Source: Expanded Public Works Programme.

- While substantial financial contributions cannot be expected from the trainees (site supervisors and emerging contractors), minimal contributions and/or training bonds can still be considered as a means to secure commitment. Established contractors may be in a position to contribute a higher percentage.
- In some countries the construction industry pays a levy dedicated to training and capacity development of contractors and consultants.

Some guidelines

- Training inputs are often tied to individual projects, which eventually come to an end. Capacity development demands, however, go beyond the confines of a project. In order to address the full capacity demands in the industry there is a need to institutionalize training and capacity building as a long-term human resource development strategy. Continuous funding arrangements are therefore required for a longer period of time.
- Training is more effective when coordinated into one programme rather than implemented in an ad-hoc manner in individual projects. A common training programme with qualified training providers results in more effective use of budgets and available human resources. It also contributes to the sustainability and institutionalization of training.
- Funding for training has to be carefully estimated and needs to include all training-related activities.
- Ideally, all major partners involved in the construction sector should participate in the funding of occupational education and training. This would include contributions by the government, professional organizations and the contractors and consultants who benefit from the training.
- Training institutions, as service providers for local infrastructure works programmes, will in most cases have difficulty in becoming self-financing and are likely to remain dependent on external support. Financial contributions from the contractors and consultants themselves are likely to be minimal. The government should provide long-term financial and other support arrangements in order to promote capacity development in the construction industry. Despite their limited means, beneficiary contractors should to some extent contribute towards the training costs. A common arrangement has been to offer the training free of charge while the contracting firms are expected to provide an allowance and accommodation for their staff during training.
- In order to rationalize training costs and efforts, it is useful to explore potential synergies between different private and public sector development programmes.
- Several countries raise a levy from civil works contracts for training. Mechanisms for channelling such levies can be improved to ensure that the proceeds are used for the actual capacity development needs in the industry.

Training can be an effective way of introducing new technology, in this case the use of bitumen emulsion in Zanzibar, United Republic of Tanzania

Box 74
Switzerland: A participative financing formula

Funding Swiss vocational and professional education and training (VPET)

The vocational training sector is funded by the Confederation, the cantons and professional organizations, each to their own degree. Most of the costs of professional education and training and job-related continuing education and training programmes are borne by companies and private individuals.

Public funding

Public expenditure for Switzerland's VPET system stood at around 3.4 billion Swiss francs (CHF) ($3.7 billion) in 2013. The cantons are responsible for implementing VPET. As such, they cover at least three-fourths of associated costs.

The Confederation's share of public funding of the VPET system corresponds to one-fourth of the total costs. A total of 10 per cent of federal funding is used to promote VPET development projects as well as specific activities that serve the public interest.

Professional organizations

Professional organizations provide both services and funding for the Swiss VPET system: they do the groundwork, run their own training centres and promote specific occupations (vocational education training sector) and professions (professional education and training sector).

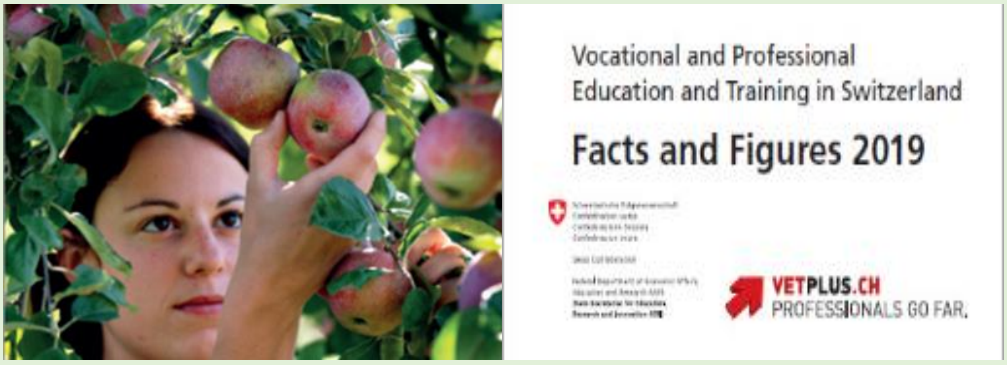
Generally speaking, host companies stand to benefit from taking part in vocational education training programmes. According to a cost benefit study conducted in 2009, gross costs of involvement in vocational education training amounted to CHF5.3 billion ($5.76 billion). This figure was outweighed by the productive output generated by learners, which amounted to CHF5.8 billion ($6.3 billion).

VPET funds

All companies within a given sector are required to contribute to a corresponding VPET fund, which is used to cover the cost of vocational training and professional education activities (e.g. development of training programmes, organizing courses and qualification procedures, promotion of specific occupations). The Confederation may declare some VPET funds to be of general interest and therefore mandatory for all companies within a given sector.

Source: State Secretariat for Education, Research and Innovation (SERI), Switzerland: Vocational and professional education and training in Switzerland.

The Swiss Vocational and Professional Education and Training (VPET) report is linked below.



7.6 Training providers

Key issue

Who are the potential training providers? What is the required capacity and what will it take to mainstream these services into the established education system?

Useful information

- ✓ Details and location of learning institutions already providing training relevant to the construction sector.
- ✓ Training provided by professional associations or construction industry councils.
- ✓ The potential of local consultants and established contractors to develop a training capacity and participate in the provision of learning programmes, as well as mentorship services.
- ✓ Available local NGOs that can be involved in the delivery of specialized training as well as implementing elements of capacity building for community contracting.

Experience

- ⇆ Established vocational training institutions and polytechnics can develop into training providers for contractors and technical staff, if they are given the necessary support.
- ⇆ Specialized business development institutions can provide contract and business management training.
- ⇆ There are a number of institutions that offer specialized training in infrastructure works applying local resource-based technologies, mainly targeting local contractors and local government and agency staff. These institutions conduct large training programmes, which have a significant impact on infrastructure works programmes.
- ⇆ Many training providers struggle with mobilizing sufficient capacity to deliver the training required in the construction industry due to challenges such as:
  - shortage of experienced and well-trained instructors;
  - their training programmes are not sufficiently developed and coordinated with current training needs and the specific nature of prevailing infrastructure works;
  - training materials and facilities not well developed to cover specific training needs in the industry;
  - insufficient funding to cover training needs;
  - lack of synergy and coordination with other sectors or institutions with relevant services and expertise.

Box 75
Capacity of training providers

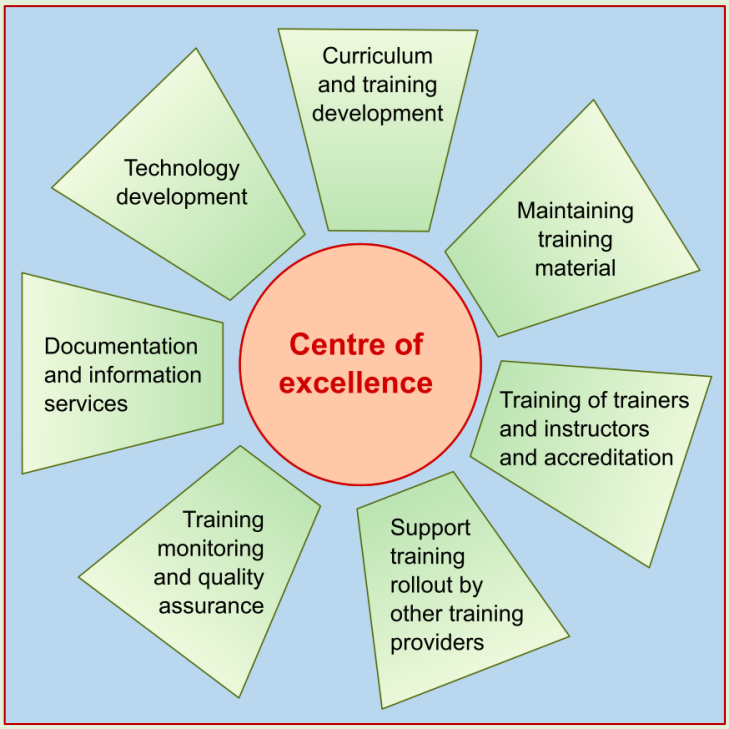
Training providers need to be equipped with the right human resources, facilities and logistical support. When involving new training providers, it is important to assess their capacity to deliver all facets of a training programme:

- institutional setup and management structure;
- cadre of trainers, instructors and mentors and their qualifications;
- facilities for theoretical class-room training, seminar facilities, and sites for practical exercises and on-the-job training;
- workshop, laboratory, library and information technology facilities;
- accommodation, catering and recreation facilities;
- transport facilities;
- administration and support facilities;
- existing learning programmes:
  - curricula;
  - course plans;
  - training material (trainer guides, learning material, assessors' guidelines, etc.).

Box 76
Centre of excellence: Training, technology development and information services

A centre of excellence is essential for construction industry development. The purpose of this centre would be to establish a lead institution for learning and technology innovations. The typical functions of such a centre are shown in the figure 13. Training institutions can be developed to become such *centres of excellence*. The following attributes would qualify a centre of excellence:

Figure 13. Typical functions of a Centre of Excellence



- possesses the necessary accreditation for training all levels of operational personnel in local resource-based works technology;
- is able to sustain itself through market oriented and financially viable services;
- employs sufficient numbers of competent trainers, instructors and mentors for both theoretical and practical training including workplace coaching for all levels of technical personnel;
- has permanent access to model construction sites for practical training;
- maintains a functioning network of collaborating partners in the construction industry;
- runs an effective technology development unit conducting research and development in appropriate works technology, providing practical training facilities (material laboratory for essential tests and access to construction sites), and collating and disseminating local resource-based technology and training relevant information;
- is able to support the development of similar training programmes within other institutions in the country.

Timor-Leste: Integrated training programmes

In the ILO implemented Enhancing Rural Access (ERA) project, local contractors were given capacity development support to carry out road construction and maintenance works using labour-based work methods. The project ensured the sustainability of its capacity building activities by partnering with national training institutions and developing their capacities to deliver comprehensive training courses for small domestic contractors. The Don Bosco Training Centre undertook the technical training of contractors, and IADE, a local business management support institution, trained contractors in contracts and business management.

The capacity building efforts were also extended to the Directorate of Roads, Bridges and Flood Control in the Ministry of Public Works, whose supervisors and contract managers were trained in the planning, design, implementation and management of labour-based rural road construction and maintenance works. ERA supported these training institutions to achieve accreditation in compliance with national competency qualification standards.

- Job positions and remuneration of trainers in public institutions are frequently below the required level and the status of trainers is generally low and demotivating. Therefore, it is difficult to attract candidates with good training qualifications.
- Trial contracts and continuing mentorship support are generally indispensable to secure the necessary skills development among local contractors. Training institutions with the required support and funding can provide these services.

Some guidelines

- In order to ensure sustainability in the delivery of training services for the local construction industry, it is advisable to integrate training programmes for contractors into existing accredited institutions and learning programmes. In most cases there is a need for a dedicated support programme to develop the capacity of the identified institution(s). Depending on the prevailing capacity and situation a number of specific development issues need be addressed:
  - preparing new course curricula or reviewing existing curricula to incorporate new or revised subjects;
  - securing accreditation of the new or revised courses;
  - development of a cadre of trainers with attractive employment conditions to deliver the learning programmes;
  - preparing new training material or integrating new subjects into existing courses;
  - securing appropriate work sites for practical training. Many existing institutions, especially those involved in technical vocational education and training, may already have premises that allow for some of the practical exercises, but do not have access to on-going real construction sites for all types of works., The institution either needs to run their own model construction site or gain access to on-going work sites where they can conduct practical skills training;
  - developing a network of education and training institutions for information exchange and creating channels for integration of new technology and work methods into other similar or related learning programmes, e.g. with universities and technical colleges.
- The existing training capacity in the private sector (e.g., contractor and consultant associations, banking and credit institutions, management institutions, other private sector development programmes) needs to be explored and utilized. Questions to be answered in assessing these institutions may include:
  - Is the institution officially recognized and accredited?
  - What kind of training is provided? Would these courses fit with the on-going or planned training programmes? Can adjustments be made to such courses, e.g. inclusion of labour-based technology? Can new courses be introduced?
  - Are the training courses accredited? Are certificates issued that are recognized by the industry and contracting agencies?
  - Does the institution have a cadre of capable trainers and instructors?
  - Does the institution have access to construction sites for practical training and attachments, or apprenticeship arrangements?
  - What are the funding arrangements?
- It is also important to verify the presence of labour-based training centres and their capacity to deliver the required training. These training centres, public, parastatal or private institutions, are to some extent financially independent and therefore have many advantages for the training of local contractors and contracting authorities:
  - they are responsible for training local contractors and the promotion of labour-based work methods and the optimal use of local resources for local infrastructure works (ILO supports the development of these centres within the framework of its technical cooperation programme);

Box 77

Madagascar: The labour-based training centre

The ILO has for several years assisted the Government of Madagascar in applying local resource-based work approaches in their infrastructure investment programmes. This support entered into a new phase when the Government decided to mainstream employment-intensive methods in their main infrastructure investment programmes.

A training centre was established in 2000 to improve the capacity in labour-based infrastructure works programmes, catering for the capacity development needs both in the private and public sectors. The Centre is organized as an autonomous non-profit institution, managed by a board of directors with representatives from the technical ministries, municipalities, private sector (contractors and consulting firms) and other partners.

The training centre employs qualified and committed trainers specialized in road and building works that participate in course preparation, conduct classroom training and organize on-site practical skills development. The Centre is equipped with adequate training material and equipment to perform all types of work (roads, buildings, and agricultural and environmental infrastructure). It houses a full laboratory for soil and material testing.

The courses are accredited and meet classification and registration requirements for contractors and consultants, but are adjusted to specific needs of various client organizations. Training is provided in labour-based works technology, conditions of employment and occupational safety and health for job creation and decent work.

Since the major infrastructure investment programmes pay for the training services, the Centre managed to become financially self-sufficient already in 2005. Clients include line ministries in charge of public works, education, agriculture, environment and spatial planning, rural and urban municipalities, international organizations (EU, ILO, UNICEF and WB), technical agencies of bilateral partners (Norway, France and Sweden) and also trainees from other African countries. The services to other African countries consist of hosting and training participants in Madagascar or conducting the courses in the countries concerned.

A wide range of professionals have been trained, including: (i) sectorial ministries and funding agencies (engineers, technicians and supervisors from central and regional levels); (ii) engineers and technicians from municipalities and local government authorities; (iii) engineers and technicians in consulting firms; (iv) managing directors, site supervisors, team leaders, plant operators and mechanics from local contractors; and (v) community support staff, local artisans, NGOs, local communities, maintenance committees, and neighbourhood and parents associations.

Labour-based training centre, Madagascar

- they are generally recognized by the construction industry, the contracting authorities as well as development partners;
- the training personnel is usually from the area and thus informed about the existing conditions and challenges in which local contractors and contracting authorities operate;
- they usually operate equipment and use materials identical to that of the contractors and thus provide realistic practice-oriented training;
- they are responsive and meet the specific needs of training sponsors by adapting or creating customized training programmes.

- The institutional setup and operational portfolio required for establishing a specialized training institution needs to be clearly defined. Key questions to be answered include:
  - Where is the institutional home/setting? Is there already an existing recognized institution that can be utilized by expanding their service range or is it necessary to introduce a new institution?
  - What are the expected service operations of the institution, e.g. serving as a centre of excellence for technology development and training, or only for the provision of specialized training courses?
  - What are the legal, operational and financial requirements and what are their likely short and long-term impacts?
  - What are the requirements to ensure sustainability within a long-term timeframe?
- Efforts should be made to integrate appropriate technology for local infrastructure works into tertiary education curricula. Any contractor development programme should therefore consider tertiary education institutions as important partners in the establishment of an overall human resource development strategy for the construction sector.
- It is also advisable to offer students from universities and colleges practical attachments to on-going training programmes, particularly during the trial contracts. Civil engineering students in post-graduate programmes may also be considered as assistant trainers.
- NGOs are valuable partners for community-based works. NGOs can take part in conducting training on social issues including community mobilization and participatory approaches as well as limited technical and business training.

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DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Chapter 8

Labour regulations and social safeguards

People with disabilities can also be employed in employment programmes.
The Philippines

EIIP
Employment Intensive Investment Programme

Chapter 8

Key issue

What are the labour regulations and social safeguards that are relevant to local infrastructure works?

8. LABOUR REGULATIONS AND SOCIAL SAFEGUARDS

Overview

A large productive workforce is the hallmark of infrastructure works applying local resource-based approaches. How these workers are engaged, i.e. how they are, mobilized, recruited, organized, remunerated and protected are important indicators of its success. Persons employed in infrastructure works applying local resource-based methods need to be treated the same way as workers in any sector. All are in fact workers and labour regulations apply to them just as it does to all other workers. They should have:

- opportunities for work that are productive and provide a fair income;
- security in the workplace and social protection for families;
- good prospects for personal development and social integration;
- freedom to express their concerns, organize and participate in the decisions that affect their lives;
- equality of opportunity and treatment for all women and men.

These provisions are essential to ILO's Decent Work Agenda. Thus, the work carried out by local resource-based method should be productive like any other in the construction industry and should be regulated and remunerated in a proper manner. Workers should be offered a living wage that provides sufficient income to sustain a household's basic needs such as food, housing, education and health. It should also provide a surplus to cover unexpected expenses in times of crisis and allow for savings that can eventually be used to improve workers' livelihoods.

At the same time, it is important to acknowledge the temporary nature of some construction works. This needs to be reflected in the terms of employment similar to other temporary jobs in construction and other sectors. Nevertheless, there is scope for skills, career and livelihood development if the appropriate regulatory measures are introduced.

At the same time, it is important to acknowledge that an effective maintenance of local infrastructure is a continuous process and can provide significant numbers of long-term employment opportunities for men and women in rural areas.

Construction works are considered dangerous jobs and hence appropriate measures need to be put in place to protect the workers. Due to the large workforce involved when applying labour-based methods, the risk of accidents may increase if appropriate measures are not taken. Again, the enforcement of standard industry safeguard measures also applies to local infrastructure works.

Structure of Chapter 8

Section 8.1 Labour standards	Identifies the applicable labour standards and how these should be implemented in the delivery of local infrastructure works.
Section 8.2 Wages and productivity	Discusses how wage rates and productivity of workers influence the application of employment-intensive work methods; highlights how the concerns of the contract parties and the workers are recognized in wage setting and how they are set to be aligned with existing regulations and market rates; and suggests measures that secure high levels of productivity.
Section 8.3 Working conditions	Describes decent working conditions for local infrastructure works, outlining the relevant legal framework and regulations.
Section 8.4 Social safeguards	Outlines social safeguards that need to be put in place and observed when carrying out local infrastructure works.
Section 8.5 The role of workers' and employers' organizations	Discusses the role of workers' and employers' organizations in strengthening labour regulations and social safeguards for productive local contracting capacity development.

8.1 Labour standards

Key issue

What are the applicable labour standards and how should they be promoted?

Useful information

- ✓ National labour legislation related to construction workers
- ✓ Labour-related clauses in existing contract documentation
- ✓ Relevant international obligations of the country concerned
- ✓ Relevant private undertakings related to labour standards.

Experience

- ⇆ It is possible to introduce appropriate clauses in contract documents to implement social safeguards, labour regulations and basic labour standards.
- ⇆ Labour clauses in works contracts are effective instruments for promoting a healthy and sustainable working environment in local infrastructure works. They should oblige the contractor to:
  - o respect relevant labour legislation (including collectively bargained agreements);
  - o establish good safety practices and conditions of work;
  - o pay wages that are at least equal to the going rate in the work area.
- ⇆ Relevant labour standards for the construction industry relate among others to minimum wage, minimum age, non-discrimination (including affirmative action in favour of women), elimination of forced labour, compensation for work accidents, safety and health, and conditions of work for temporary labour.
- ⇆ Specific clauses relating to labour standards and conditions of work can be included in the contract documents. At the same time, the contract system and documentation can be adjusted to specify the use of labour-based methods and giving preference to trained and qualified local contractors.

Box 78
Fundamental principles and rights at work

Basic labour standards also apply to workers employed in the construction industry. Local contractors are expected to observe national labour legislation and its related regulations.

Four categories of principles are universally echoed and reaffirmed in international declarations, international trade agreements, business-to-business terms of engagement and contract, collective agreements, national and international financing agreements, as well as national laws and any sector specific codes of conduct. These are:

- freedom of association and the effective recognition of the right to collective bargaining;
- freedom from all forms of forced or compulsory labour;
- freedom from work as a child;
- freedom from discrimination in respect of employment and occupation (which may include discrimination based on sex, race and ethnicity, nationality and the case of migrant workers, religion, political opinion, social origin, disability, etc.).

In addition, there are particular concerns related to local resource-based works in respect of:

- minimum wages;
- protection of wages;
- safety and health.

Hard hats and safety vests are essential at work sites, but fundamental principles and rights at work include more than that. Afghanistan

Workers' compensation in cases of injury at work

Accidents also occur in local infrastructure works. In case of minor injuries, first aid and appropriate medical care need to be provided freely to workers. However, where injury results in longer-term harm by, for example, limiting the workers' capacity to work temporarily or permanently, compensation needs to be provided for lost income. Workers' compensation systems should be put in place to handle these matters. Pension systems can also come into play for longer-term employment.

If social security compensation for work-related injury does not exist, consideration may be given to providing cover through private insurance, cooperative or contractors' self-insurance. Provisions need to comply with relevant legislation. Under normal circumstances these costs would be borne by the responsible contractor. In turn, the cost of such insurance can be passed on to the client through specific pay items in the contracts.

- Mechanisms for enforcement of labour clauses include temporary work stoppage, termination of contract, exclusion from future bidding and penalties.
- Social and economic factors and weak enforcement mechanisms may limit the effectiveness of labour clauses. Where possible, measures to overcome these limitations should be developed in consultation with the relevant government authorities.

Some guidelines

- Dialogue on enforcement mechanisms and the collaboration between the ministry of labour, contractors' and workers' representatives should be initiated at an early stages of project implementation.
- Major social issues at the national level may need to be considered in designing the relevant approaches. For example, a country may wish to prioritize community participation or increase female participation.
- When relevant labour standards have been determined and agreed upon, it is useful to insert appropriate clauses into the standard contract documentation.

8.2 Wages and productivity

Key issue

How can wage rates and productivity of workers influence the sustainability of local infrastructure works using labour-based methods? How can the concerns of the contracting agencies, contractors and workers be effectively taken into account in the wage setting process? How to set wages that are in line with existing regulations and market rates? What measures can be taken to assure and appropriately increase productivity?

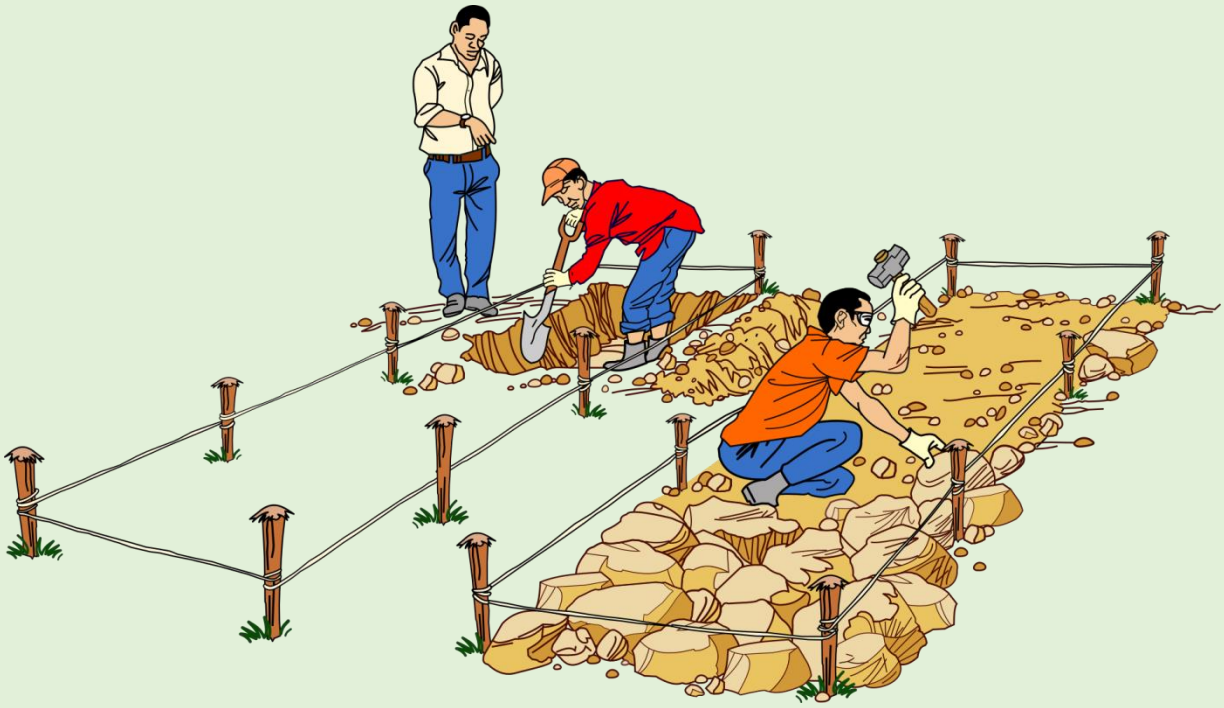
Useful information

- ✓ Applicable labour law.
- ✓ Current wage regulations, including those applicable to unskilled, temporary workers.
- ✓ Minimum wage rates for public works, if they exist.
- ✓ Current going market wage rates for workers in the areas concerned, e.g. construction industry and agriculture.
- ✓ Cost of living in the region where the jobs are located.
- ✓ Prevailing practice and policy regarding productivity-based remuneration.
- ✓ Attitudes of workers' and workers' representatives toward productivity-based remuneration.
- ✓ Established work norms and range of productivity levels in task or piecework systems.
- ✓ Existing cultural practices (barriers and enablers).
- ✓ Guiding questions in respect of setting wage rates and productivity:
  - Will wage payments be output- or time-based?
  - What is considered an attractive wage for the type of works envisaged?
  - What will be the role of the social partners in defining, approving and applying relevant labour regulations, including wage setting?
  - How can gender discriminating practices be avoided (female and male workers should be paid equally for work of equal value)?
  - What incentive schemes (e.g. task work, piecework, bonus systems) are acceptable within the prevailing legislation?

Box 79

Task work motivates the individual workers

A productivity-based remuneration system that sets a reasonable task and remuneration – a "task-based" system – is the best way to prevent exploitation and provide a decent income. When tasks are set in a clear and reasonable manner, it is generally perceived as a fair and attractive incentive scheme.



The quantities of work in a task rate are established through time studies, taking into consideration all factors that may influence the productivity of the workers. Countries with a long tradition in using labour-based work methods in construction have developed extensive guidelines on appropriate work norms. Equally, the ILO has established typical task rates for common work activities in local infrastructure works.

It is useful to brief the workers on the use of incentive schemes such as task work at the time of recruitment as part of the information given on the conditions of employment. Acquiring a good understanding of the system is essential, and after experience with reasonable task rates and remuneration, workers find this system fair and a good basis for decent work in construction. It provides benefits to the worker beyond those in a time-based system in the form of possibly higher incomes, more flexible working hours and normally a shorter day.

The use of task work is important for contractors engaged in works applying labour-based methods since a significant part of the cost of works consists of labour wages. It is therefore essential that contractors employ skilled supervisors that can organize the workforce in an efficient manner, thereby achieving the high productivity gains that can be reached with this incentive scheme.

Experience

- Proper site management and supervision is essential for maintaining a good working environment and achieving high productivity levels. A well-organized workforce is essential for reaching desired productivity and progress when applying labour-based methods.
- Productivity can only be maintained where payments are perceived to be fair, timely, regular, and documented for all concerned.
- Late payment of wages has a detrimental effect on the motivation of the workforce and severely affects work productivity. It is useful to build in appropriate safeguards against untimely payment of contractors that may in turn cause delays in wage payments. Management must take necessary measures to prevent untimely payment and assure that it is correct and calculated in a transparent manner.
- Acceptable attendance levels can be maintained by using well-designed mechanisms that address the reasons for worker turnover and absenteeism. Regular attendance can be stimulated through bonus schemes.
- High labour turnover and unreliable attendance may be caused by insufficient pay for the type of work, concerns about the timeliness and fullness of payment or other work priorities of particular groups of workers. Adequate attendance records can help identify causes for high absenteeism. Worker representatives often know the reasons and can be consulted.
- Workers' other seasonal livelihoods can result in a sudden fall in their participation. Women and men may have many different demands on their time, some of which are non-remunerated (e.g. labour requirements in the peak agricultural work periods, time off after pay day). An adapted implementation schedule may help to minimise absenteeism and to secure progress and a reliable works completion date.
- When contractors resort to migrant labour in cases of local labour shortages, this results in additional costs for accommodation, food and transport.
- Real care needs to be taken to prevent exploitation, while at the same time securing the productivity that is critical for employment-intensive construction works. These operational concerns require a preference for some type of non-exploitative, productivity-based remuneration system, within the framework of national wage regulations.
- Productivity-based remuneration has a reputation for being exploitative. Depending on the way a productivity-based remuneration system is set up, workers may be tempted to work very long hours so they can earn more money – this is the problem of self-exploitation.
- Where time limits are placed on the number of hours a person can work, self-exploitation is somewhat reduced. Even then, the rate at which workers exert themselves may lead to exploitation in the form of physical harm. The problem may not exist even where there is no limit on hours. Workers may have obligations elsewhere like tending their agricultural holdings. In these situations, the workers will naturally stop work when they feel it is necessary to move to their other activities. The risk of self-exploitation increases when the income from piecework is set too low and there is little or no other wage employment (or subsistence farming) opportunity.
- The risk of exploitation is less when using task work as compared to piecework due to the specific nature of the incentives. Task work is usually organized on the basis of work norms established over time and based on extensive time studies. The main incentive in task work is the possibility to leave work earlier while still earning a full day's pay. As opposed to piecework, there is an inbuilt limitation to the amount of work that each worker is expected to perform.
- Workers usually perceive task work as an attractive working arrangement. Clients and contractors generally consider task work an effective incentive scheme resulting in significant increases in work output. The use of task work is also the preferred incentive scheme since it is much easier to organize and supervise.

Box 80

Definition of day work, task work and piecework

Day work (time-based)

This is the conventional arrangement in which workers are paid on the basis of attendance. Workers are paid a fixed sum in return for working a fixed number of hours each day, and the following characterises the work contract:

- the number of hours, number of breaks, start and finish time are established;
- production is assured by supervision and by disciplinary measures for workers who do not produce;
- no assurance of quantity to be achieved;
- close supervision is required to maintain reasonable outputs;
- the rate of progress can be unpredictable.

For labour-based works the time-based arrangement is applied for activities where task rates may be difficult to establish, e.g. rock breaking, stump removal.

Task work (output-based)

The worker is paid a fixed wage in return for a clearly defined quantity of work, or task. This work arrangement is characterised by:

- the size of the task is usually set so it can be accomplished in six to eight hours;
- production is assured as payment is made only upon completion of the task;
- workers are usually given one task per day. Where the task is larger, it can be given for several days. Group tasks are also possible;
- where the task is set properly, it allows the worker to finish the task and go home before the end of the workday;
- requires well-planned site organization and close supervision for the allocation and approval of tasks;
- predictable rates of progress.

Task work is an effective incentive for employment-intensive works and when properly organized produces high work outputs. It is usually perceived as fair to both the worker and the employer; it enables the labourer to work towards an achievable daily goal and allows the employer to effectively plan and control the work operations.

Piecework (output-based)

Workers are paid on the basis of the quantity of work, normally performed within the established working hours. The characteristics of piecework include:

- the worker is paid on the basis of smaller quantities or pieces of output. There may be no reference to the amount of time it takes to accomplish one piece;
- production is assured as payment is based on volumes of performed work;
- the daily work output may consist of many pieces – can be unlimited;
- pay relates to output and output can be maximized each day;
- there is a risk of exploitation, both by the contractor and by self-exploitation if no limit is placed on the amount of work a worker can perform in a day. More difficult to organize and supervise;
- rate of progress is not as predictable as when using task work.

Piecework is not recommended for many work activities as it may lead to exploitation and unequal remuneration. In addition, the organization and control of construction activities become more complicated.

Some guidelines

Wage setting

- An assessment of relevant minimum wage regulations applicable to construction work (or if non-existent, work of a comparable nature in the region/vicinity of the project sites) is essential in order to ensure the sustainability of local resource-based approaches.
- Wage rates need to be set at a level to which workers perceive as a reasonable remuneration for the amount and duration of the works carried out. Too low wages may result in a lowering of quality and work productivity.
- Any construction programme should provide for decent work. This means offering a living wage that give sufficient income to provide for a household as well as safety and protection at the work place. Wages maintaining workers in poverty is not decent work.
- A decent wage would be a wage at which rate covers the costs of running a household, including food, housing, education of kids, medical expenses and a reserve to cater for eventual crisis situations.[26]
- Local contractors are also at the liberty of offering higher wages for reasons such as competing for the labour with other economic activities or providing incentives to strengthen the motivation of the workforce.

Wage payment

- Wage payments should be made in full without any deduction, unless stipulated in national laws or regulations or fixed by collective agreement or arbitration award.
- For legal and practical reasons, the payment of wages partially in-kind, in the form of food for example, should be very carefully considered. International standards require that any payment of wages in kind must be authorized in national laws or regulations, collective agreements or arbitration awards. If it is not so authorized, wages should be paid in money and in the form of legal tender.

Productivity

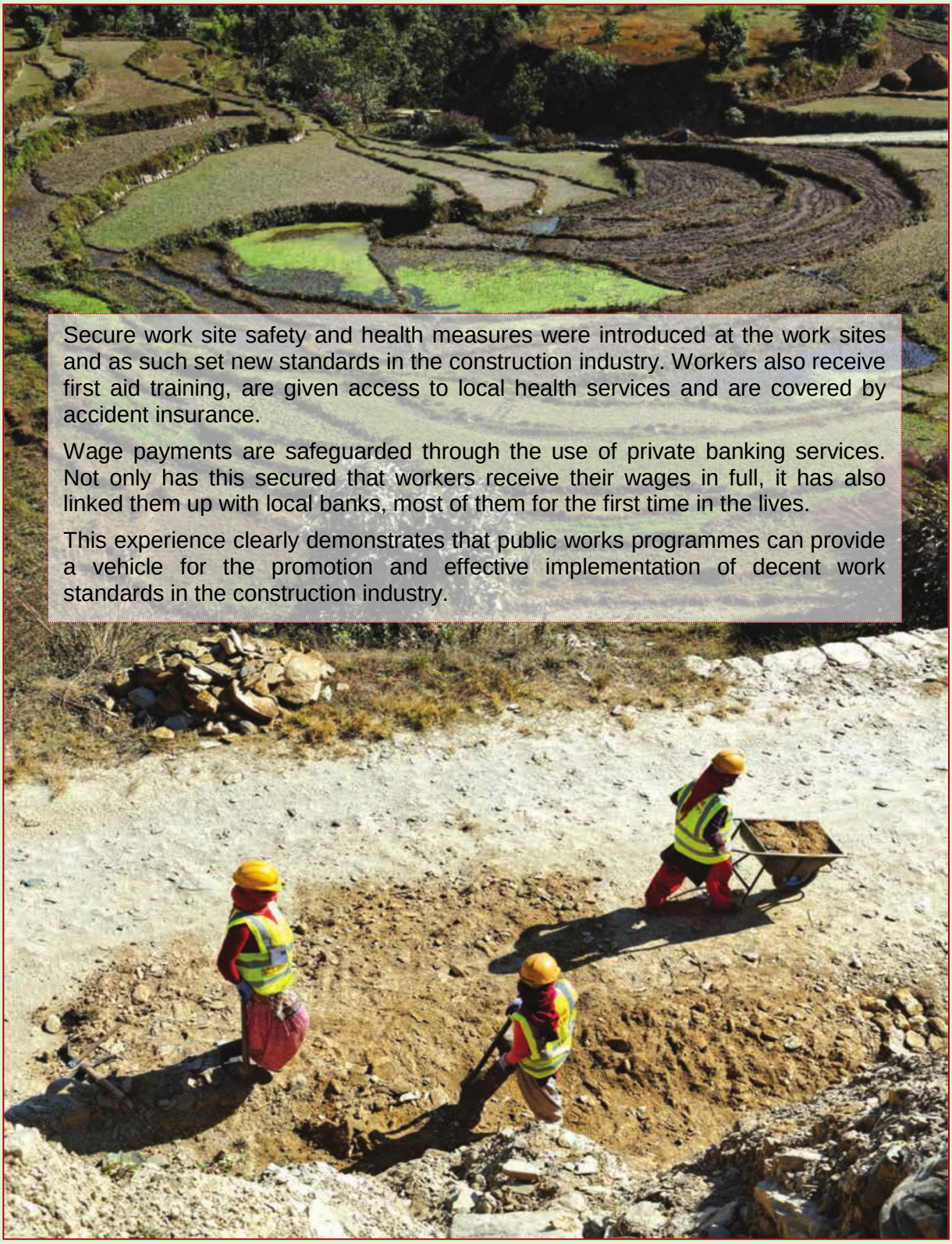
- Payment of wages related to productivity is preferable to time-based payment. From an employer's perspective, this method ensures the predictability of production and costs, it is easier to supervise and increases productivity. For workers, the correct application of productivity rates reduces exploitation, fosters transparency and is flexible.
- Where task work or piecework is used, measures should be taken to avoid abuse. The rule of thumb for task rates:
  - a reasonable task allows the average worker to complete the set task in 5 to 6 hours of moderately hard work;
  - measures to avoid abuse include the introduction of a simple, well-understood payment system and the setting and publication of productivity rates for different activities;
  - a muster roll should be used to record the attendance of all workers – indicating their start time – and signing off each worker in the afternoon once they have completed their work;
  - workers' representatives should gain an understanding of employment-intensive methods and systems of work organization so that they appreciate the benefits of incentive schemes, such as task and piecework.

[26] ILO Convention 131 states that when fixing minimum wages consideration should be given to "the needs of workers and their families, taking into account the general level of wages in the country, the cost of living, social security benefits, and the relative living standards of other social groups". This is further elaborated in the related ILO Recommendation 135, which states that "The fundamental purpose of minimum wage fixing should be to give wage earners necessary social protection as regards minimum permissible levels of wages".

Box 81
Promoting inclusiveness and decent work

Routine road maintenance can be carried out relying to a high degree on local resources including labour recruited from nearby villages. This builds local ownership and also allows for a high degree of inclusiveness when recruiting workers.

In Nepal, effective recruitment procedures made it possible to reach high participation rates of women, "*Dalits*", disabled persons and vulnerable households in the workforce.



Secure work site safety and health measures were introduced at the work sites and as such set new standards in the construction industry. Workers also receive first aid training, are given access to local health services and are covered by accident insurance.

Wage payments are safeguarded through the use of private banking services. Not only has this secured that workers receive their wages in full, it has also linked them up with local banks, most of them for the first time in the lives.

This experience clearly demonstrates that public works programmes can provide a vehicle for the promotion and effective implementation of decent work standards in the construction industry.

8.3 Working conditions

Key issue

What conditions of work are appropriate for infrastructure works applying local resource-based approaches? How should they be introduced? What legislation applies for temporary workers employed on such works?

Useful information

- ✓ Existing labour laws, regulations or binding collective agreements for the construction industry concerning minimum wages, social security provisions, conditions of work and employment contracts.
- ✓ Knowledge of common health and safety risks associated with work activities and appropriate measures that can eliminate or reduce such risks.
- ✓ Expected average duration of employment.
- ✓ Relevant international obligations in respect of conditions of work.

Experience

- ⇆ Labour regulations should be reviewed in consultation with relevant authorities to determine their applicability to workers engaged in employment-intensive construction work.
- ⇆ Appropriate procedures need to be established for (i) the recruitment of workers, so that they have a clear understanding of the conditions of employment and the expected duration of their work; and (ii) employment termination, both for disciplinary reasons and at the end of the contract or work period. The terms of employment and its duration should be communicated clearly.
- ⇆ Employers typically offer different conditions of employment to different categories of workers (drivers, clerical staff and temporary unskilled workers). The differences may have a bearing on a range of aspects including rest days, paid or unpaid leave, severance pay and social security provisions. It is important to clearly describe the conditions of employment for each category of workers.
- ⇆ Disabled persons can also participate in construction works. Major national programmes show that many tasks can be productively executed with appropriate, and sometimes modified, tools and equipment. This has been particularly relevant in situations after conflicts and disasters for an integration of those that have been left with disabilities. Dialogue with disabled people or their representatives has been very useful for describing appropriate measures at the workplace and in contract documentation, and for setting targets for their participation in construction programmes.
- ⇆ Many jobs in the construction industry are of a temporary nature or are linked to work sites with activities only for a limited duration. Routine maintenance of local infrastructure may on the other hand create long-term job opportunities.
- ⇆ Improving working conditions increase productivity also in infrastructure works using local resource-based approaches.
- ⇆ Establishing appropriate methods for protecting workers' safety and health is essential and leads both to a better employer/worker relationship and improved productivity. In this vein, a proper account should be taken of the risks associated with the work, the worksite, and the environment. Common risks include collapsing slopes, trenches and formworks, traffic and working at height. In conflict areas, there may be a need to clear the area for potential land mines, before any work is allowed to proceed.

Box 82

OSH arrangements at labour-based work sites

Appropriate OSH arrangements for construction work applying employment-intensive methods include:

- providing the workforce with drinking water;
- installing appropriate sanitary facilities;
- possibility for workers to obtain food or snacks at the site;
- provision of childcare arrangements (on- or off-site);
- use of well-designed, good quality hand tools (workers should be trained how to use and maintain tools correctly in order to avoid injury and maintain productivity);
- availability of well-equipped first aid kits and trained first aiders;
- access to nearby medical facilities (hospital, clinic) and medical personnel;
- trained and informed site supervisors with regard to OSH regulations and the necessary arrangements on site;
- organization and management of safety on site in such a way that workers can maintain high outputs with the least effort;
- site protection measures, such as traffic control, signalling, barriers, safe scaffolding and ladders, precautions to prevent collapse of excavations and falls, protection from moving and non-moving equipment on site, etc.;
- availability of personal protection gear for workers and enforcement of its usage:
  - head protection (hard hat) for sites where there is a risk of falling objects;
  - gloves, boots, goggles and sun hats;
  - safety vests.

Identifying OSH risks specific to localities

Occupational safety and health measures are required for all types of civil works. Specific measures depend on the nature of the work and its location, for example:

- rock falls occasionally cause injury to road construction workers in Nepal. Safety helmets are now being provided to workers in hazardous areas;
- unexploded ordnance poses a serious threat to workers in countries like Cambodia, Colombia, Laos and Mozambique. Mine clearing, training in mine identification, and measures to compensate for the implications of work-related accidents are all needed;
- road maintenance workers should use protective clothing with bright colours, so they are easily spotted by traffic;
- eye and ear protection are mandatory for certain work activities.

Some guidelines

- Prevailing labour regulations should be examined for its relevance and applicability to labour-based operations and a temporary workforce. Subjects may vary, but often include:
  - prohibitions of discrimination, child labour and forced labour;
  - daily and weekly maximum hours of work and rest;
  - the availability of and conditions for annual and maternity leave, with or without pay as well as severance pay or gratuity upon separation with or without cause;
  - operational requirements, including physical working conditions;
  - minimum wage, the way wages are paid, record keeping and labour inspection;
  - social security coverage including pensions;
  - provisions for dealing with occupational safety and health.
- Appropriate levels and types of social protection (listed above) should be defined, agreed and introduced to cover the entire workforce. For this purpose, social security protection should be understood and made relevant in the context of construction work applying employment-intensive methods.
- In order to secure inclusiveness in line with national legislation, priority participation can be given to target groups in greater need for employment like widows, female heads of households and rural poor as well as disabled persons.
- Ensuring fair working conditions is multidimensional, involves a number of players and requires measures at various levels. In general, there is a need to:
  - adapt relevant national labour legislation to secure decent working conditions;
  - introduce new concepts that combine effective employment-intensive approaches with improved working conditions into training and education of both public and private sector actors;
  - promote dialogue among the social partners to obtain the widest possible consensus on the development and application of policies and approaches in this field;
  - ensure that appropriate labour clauses are included in contract documents (see *Annex II* for sample contract clauses).

Women building gabions for canalisation of river in Mozambique

Box 83

Cambodia: Well-documented progress on working conditions and equality

Labour-based works technology was promoted and applied in Cambodia in the period from 1990 to 2000, evolving through phases from emergency rehabilitation to development, ultimately becoming a mainstay of the government's rural development programme. Labour aspects of the work have been documented in retrospective reports. From the very beginning, important policies were adopted:

- equal opportunity of employment and payment to be promoted for men and women and where practical for disabled persons;
- no child labour;
- no employment without pay;
- production oriented employment;
- employment of local people (with no transport to work sites).

Priority for participation was given to target groups in greater need for employment (widows, disabled persons, female heads of households and rural poor). Women accounted for over 60 per cent of the workforce on certain work sites. Priority was given to women in the selection of trainees for road supervisor and gang leader positions.

Participation by women, who were conventionally deprived of equal access to education, was promoted through a literacy scheme delivered by a local contractor and an NGO. The programme also engaged people with disabilities (mainly victims of landmines and unexploded ordnance) in all work activities.

Ghana: Labour clauses in public contracts

The Government of Ghana recognized that employment creation and local enterprise promotion by themselves were not sufficient for alleviating poverty. Fair wages, good conditions of work and equal opportunity of waged employment for men and women were considered necessary to ensure the strategic aim. In 2000, the Department of Feeder Roads undertook the Social Aspects of Construction Project, emphasising the application of Ghanaian labour standards for all those involved in LRB works.

Procurement procedures stated that Ghanaian laws – including labour laws – were fully applicable in the road sector. The project showed that necessary health and safety measures were not taken, correct benefits were not provided to locally recruited temporary workers and non-local casual workers engaged by contractors continued to attract benefits distinct from local workers.

The situation was improved by including appropriate labour clauses, specifications and bill items in the works contracts. Similar labour clauses were eventually included in other public works contracts, also where equipment-based methods were used, in order to harmonise and ensure consistent documentation in all public works. Innovations included allowances for labour related provisions (e.g. safety equipment and toilets at sites) in contracts and tender documents and improved enforcement of labour regulations by supervising engineers as a substitute for lax official labour inspection.

8.4 Social safeguards

Key issue

What common social safeguards need to be observed when planning and implementing local infrastructure works?

Useful information

- ✓ The social development context of local infrastructure works and assessments relevant to the sectors under consideration.
- ✓ National policies and attitudes towards particular social development challenges.
- ✓ National legislation that regulate how local infrastructure works are carried out including labour regulations.
- ✓ National policies on the scope of social development objectives that are broader than the provision of physical infrastructure, such as raising workers' awareness of HIV/AIDS, or providing literacy training to workers, and the related feasibility for such objectives within infrastructure works programmes.
- ✓ Whether sector programming and financing, and contracting obligations include specifics in respect of social safeguards.
- ✓ Existing social safeguards framework for the sectors.

Experience

- ⇆ Infrastructure works can address critical public goods and service deficits while creating jobs through local resource-based approaches. It can also address broader social development objectives.[27]
- ⇆ There is a risk of negative impacts from infrastructure investments in the form of: (i) injuries during the works or increased accidents associated with the improved infrastructure; (ii) spread of diseases during the construction period or as a consequence of the infrastructure improvement; (iii) damage to the environment; (iv) people losing land or property without adequate compensation, and (v) disruption to the lives of indigenous people. These impacts may also have a gender dimension. Safeguards policies have thus been developed specifically for mitigating common risks associated with infrastructure works.
- ⇆ Establishing a social safeguards framework with clear reporting requirements on its compliance can facilitate its implementation during the planning and works implementation stages.
- ⇆ Compared to conventional construction methods using heavy construction equipment, labour-based work methods tend to have a lighter impact on the surrounding environment. Most infrastructure works require the permanent use of land and will temporarily open quarries to source building materials. Acquiring land for these purposes will in many cases encroach on private property and have an impact on local households. Involving local communities from an early stage in the planning and design process can result in amicable solutions and avoid grievances.

[27] Examples of such objectives include virtually anything that would improve people's well-being, such as improving general levels of health or awareness of health risks such as water borne illnesses or from particular food preparation practices; improving literacy; promoting education of children and youth; improving mechanisms for self-determination and so on. Relevance to context is critical if social development objectives are to be promoted in a programme or policy.

Box 84

Social safeguards framework

Social safeguards are meant to prevent and mitigate a wide variety of possible negative impacts of infrastructure works. The function of a social safeguards framework (SSF) is to establish practices that reduce or mitigate such risks during the planning, design and implementation of the infrastructure works. The SSF may also include specific measures to remove barriers against disadvantaged groups thereby serving to increase economic, social and environmental benefits among all stakeholders. Social safeguards are essentially guided by universal values promoting sustainable development, upholding basic human rights as well as seeking compliance with ILO labour standards.

The basis for the social safeguards is the legal framework found in national legislation that regulate how construction works is planned and carried out, and how natural and human resources are managed. This may range from basic constitutional rights, labour regulations and health and safety regulations to building codes, road and traffic safety acts, pollution legislation, national heritage acts, exploitation of natural resources, local land use regulations and other legal provisions relevant to the specific works undertaken.

The social safeguards framework provides detailed instructions on measures to be implemented to make sure that risks of negative impacts are reduced to a minimum. This process start already at the planning stage, assessing potential risks, selecting appropriate designs and work methods to avoid negative impacts, and introducing mitigating measures into the work plan.

An effective SSF also includes a stakeholder engagement process including components such as identifying all parties involved or impacted by the works, how to engage and consult stakeholders, disclosure of information, installing a grievance mechanism and reporting.

The SSF will in detail prescribe how the necessary safeguards that need to be taken during works implementation in order to minimise any negative impact of the works. The extent and nature of the safeguard measures are directed by detailed guidelines pertaining to the type of works involved and the potential negative impacts. The reporting system will identify potential risks and relevant safeguard measures and document how these are carried out and maintained during the planning and work stages.

The implementation of social safeguards is a shared responsibility among the key stakeholders. During works implementation, compliance to these measures is in the first place the responsibility of the contractor in charge of the works. Secondly, the client and its representative have a responsibility to ensure and verify compliance with the SSF. Finally, the regulating bodies in charge of implementing the different types of legislation need to monitor its relevance and effectiveness. It is important that the individual staff members of these organizations have the necessary capacity to implement the social safeguards pertaining to their work.

- As the private entrepreneurs carrying out infrastructure works employ the workforce, compliance with prevailing labour regulations in the construction industry is needed. The same regulations would apply when engaging workers through community contracts for infrastructure works activities.
- Working for gender equity has significant payoffs and should always be an active part of social safeguard strategies.
- Female-headed households make up a large proportion of the population where local infrastructure works take place. They are often among the poorest and routinely excluded from decision-making and employment opportunities. Special efforts can effectively and efficiently be taken to achieve a desired gender mix when recruiting labour for such works.
- When women are employed, the income is often better used for entire family matters (e.g. offering basic child care facilities so women can be employed, improving children's education and nutrition, improved housing).

Women constitute a major portion of the workforce in rural road maintenance in Nepal

- Traditional customs and cultural taboos are common reasons to deny women access to certain professions and type of works. With adequate community facilitation, it is possible to mobilize women to work in construction despite local traditions indicating that this is “men’s work”.
- Work productivity studies clearly show that women are equally capable of carrying out all work activities found in local infrastructure works and are also able to deliver the expected quantities of work as defined in work norms and task rates.
- Deficits in public services and basic amenities in poor communities are typically compensated for by increased unpaid work performed by women and children. Where safe drinking water is scarce, women are often burdened with finding and fetching it. Positive social development oriented initiatives such as improved access to water can free women from some domestic burdens.
- The construction industry poses a multitude of safety and health risks to its workers as well as users of the infrastructure and the people and property in its vicinity. Work sites with a large labour force pose a larger challenge in terms of keeping workers safe and healthy. Furthermore, unskilled labour will have limited knowledge of precautionary safety practices. While an appropriate safeguards framework may be available, the implementation of the necessary safeguards will only take place when responsible parties: (i) insist on their compliance and (ii) ensure that all workers are given adequate training in their application.
- The management of surface water is important in many types of infrastructure works to avoid soil erosion, polluting and silting of existing water bodies and increased risks of water-borne diseases.
- There has been a clear link between HIV transmission rates and infrastructure development programmes or projects.
- Improved transport infrastructure gives greater mobility and women and men along these transport corridors, particularly young people and those whose livelihoods are affected by infrastructure works, are at risk of HIV transmission.
- Safeguards established to address HIV transmission risks associated with infrastructure works have shown to have positive effects.

Some guidelines

Recruitment and conditions of employment

- When applying employment-intensive work methods, unskilled labour is usually recruited from nearby villages. It is good practice to inform communities about the job opportunities well in advance of commencing works.
- It is important to spell out how the recruitment will take place and the conditions of employment. This should include any inclusiveness concerns such as equal access to jobs for poor households, women, youth, veterans, disabled or any other targeted groups.

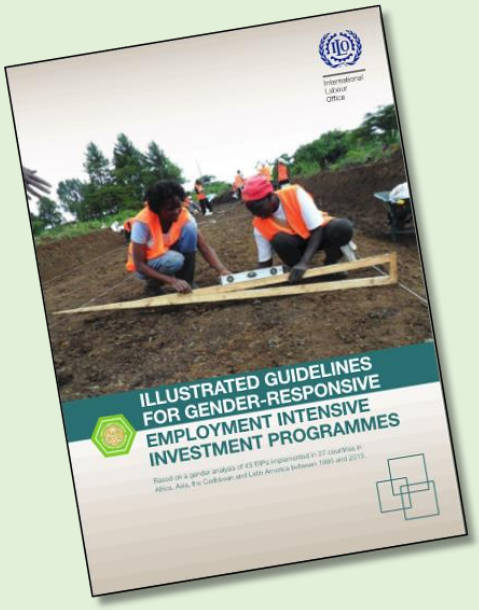
Gender-equitable participation and outcomes

- Men and women working together, doing the same tasks or tasks of equal value, should be paid equally. Active measures may be necessary to ensure that women are given equal access to work. It may useful to establish clear targets of female participation in works in order to secure gender equity.
- The provision of childcare and other facilities at work sites can reduce unpaid care work by women and allow for more equitable participation in paid infrastructure works.
- All skills development opportunities should be made equally available, regardless of the gender of the participants. Specific measures may be necessary to secure desired women participation.

Box 85
Illustrated guidelines for gender-responsive employment intensive investment programmes

The ILO illustrated guide for gender responsiveness provides guidance with illustrations for good practice in:

- identifying gender differences in preferences and needs in relation to employment in infrastructure works;
- setting explicit objectives for achieving gender equality in access and participation;
- overcoming barriers to female participation;
- monitoring and evaluating the fulfilment of gender equality objectives.



Protection of wages

- Workers should be paid in full for the work performed and not through intermediaries. Workers attendance should be recorded on a daily basis through the use of muster rolls. Payment systems using local banking facilities or mobile phone payment services increases transparency and avoids rent seeking and other corrupt practices.

Safety and health

- The design and construction of infrastructure should be carried out in a manner that does not increase safety and health risks for future users. Particular attention should be given to infrastructure close to sensitive locations such as schools and hospitals, heritage or religious sites. Traffic safety is a particular concern that needs careful attention during the design phase as well as during works implementation.

- Workers welfare is in the interest of both the contractor and the client of the works. The contractor is responsible for ensuring a safe work place and that workers are trained in appropriate OSH practices for each activity undertaken on site. Materials and fuel need to be handled and stored in a safe manner and any effluents resulting from the works or the site camp need to be safely managed in accordance with prevailing regulations.

Supervisor with appropriate personal protective equipment, Timor-Leste

- While most OSH measures including personal protective gear is not a significant cost item even when engaging a large labour force, an effective upfront measure is to include some provisions for OSH related equipment in the works contracts. The biggest challenge is usually related to changing old habits, remaining alert to potential risks and raising awareness through adequate training.
- There is extensive literature on OSH regulations for the construction industry. It is however important that attention is given to the OSH measures relevant to the works being carried out and that these regulations are made readily available to contractors, supervisors and workers.
- The contractor also has an obligation to ensure that the work site does not pose any danger to the public. This may imply that the work site needs to be closed off to the public during the construction period. Temporary detours, deep excavations and obstructions limiting the use of existing infrastructure need to be protected with barriers and clearly sign-posted.

HIV-related safeguards

- Recognize the relationships, in particular its various dimensions and gender-related implications, between infrastructure works and HIV-related risks.
- Understand the institutional requirements associated with HIV-related safeguards. These include agreements with financial institutions; relations between ministries responsible for health, social policy and infrastructure works; consultations and interfaces with business alliances and non-governmental organizations working with HIV/AIDS prevention and treatment.

Damage to and loss of property

- Loss of land or damage to property needs to be addressed in a consistent and transparent manner in close consultation with the communities. The permanent or temporary use of land may need to be compensated to avoid loss of income or livelihoods. Compensation can be in the form of cash or access to land at other locations. While amicable solutions including voluntary contributions of land are common practice when planning and implementing local infrastructure works, local authorities need to ensure that it is arranged in a manner ensuring that no significant portion of livelihoods are lost. These arrangements need to take place within a clear regulatory framework and require skilled staff to facilitate the community interactions.

Heritage sites

- Due consideration and respect for heritage sites and religious facilities are important in all infrastructure works. Local infrastructure works would usually allow more flexibility in the interaction with such concerns. The use of local resource-based work methods are also more effective when carrying out restoration works at such facilities. Again, it is useful to engage with local communities in order to arrive at the best solutions.

Box 86

Addressing the link between HIV and other sexually transmitted diseases and infrastructure development

The connection between infrastructure development and heightened risks of HIV infection are often overlooked. The Asian Development Bank as a major funder of infrastructure development recognizes these risks. It also recognizes that infrastructure investments create opportunities for conducting HIV prevention activities and mitigating the adverse HIV impacts associated with improved infrastructure. All large-scale ADB infrastructure financing agreements have clauses that require contractors to carry out HIV risk mitigation as a condition for the loans.

Different types of interventions are required for different target groups. Adjustment is needed to accommodate different genders and risk vectors. Strong policy direction specifying the roles of public and the private sectors, the latter to include the role of SME contractors.

The main recommended *preconstruction* actions are:

- including HIV interventions in bidding documents;
- ensuring that community consultations include persons who could be affected (for example women, sex workers and people living with HIV);
- assessing during the feasibility phase, the risks of sexually transmitted infections and HIV, and assess vulnerability through the application of a gender analysis;
- establishing a forum that enables strong collaboration between all relevant sectors, including health, transport infrastructure, law enforcement, women, and NGOs;
- strengthening the capacity of infrastructure sector stakeholders to undertake gender sensitive HIV interventions;
- encouraging substantial engagement of local experts;
- developing gender-sensitive targets and indicators to measure progress
- encouraging governments and NGOs to engage people living with HIV to carry out HIV interventions in order to reduce stigma and discrimination, dispel myths about HIV and assist people to realize their own vulnerability to HIV;
- incorporating appropriate facilities and safe working conditions into the project design, as well as procedures for sexual harassment complaints;
- encouraging contractors to provide adequate, secure housing for workers in order to reduce the likelihood of workers engaging in risky behaviour with multiple sex partners;
- engaging HIV expertise including gender and GIPA (Greater Involvement of People Living with HIV) experts for independent monitoring and evaluation interventions.

During the *construction* phase, recommended actions include:

- implementing HIV proliferation control interventions that change behaviour and increase condom use among construction workers, sex workers, villagers, men who have sex with men and drug users;
- engaging people living with HIV in the implementation of interventions;
- encouraging the use of male and female condoms and lubrication gel, and increase social marketing of these items;
- ensuring that the employment of women is monitored;
- encouraging families to live together by improving the living conditions of workers;
- ensuring that workers and villagers have access to voluntary counselling and testing and treatment services for sexually transmitted infections;
- training and engaging HIV-positive people as counsellors and encouraging couples counselling.

Source: Intersections - gender, HIV, and infrastructure operations – Lessons from selected ADB-financed transport projects, ADB Manila, 2009.

8.5 The role of workers' and employers' organizations

Key issue

How can the involvement of workers' organizations and employers' associations contribute to the strengthening of labour regulations and social safeguards for productive contracting capacity development?

Useful information

- ✓ National laws and related international obligations concerning the rights of workers and employers to form organizations or associations.
- ✓ National policies and attitudes toward employers' and workers' organizations.
- ✓ Practical constraints on the exercise of associational rights, e.g. the lack of worker organizations in rural areas, need for awareness creation and education, lack of means to organize.
- ✓ Capacity and position of the government agency responsible for implementing working conditions, labour standards and social security and how they relate to unskilled temporary workers employed in local infrastructure works.
- ✓ Experience, capacity and sensitivities of existing organizations and associations with regard to organizing temporary workers in the construction industry, particularly those involved in works applying employment-intensive methods.

Experience

- ⇆ Representative employers' and workers' organizations are essential for negotiating and clarifying roles and responsibilities, rights and obligations at both the enterprise and sectorial levels.
- ⇆ Government institutions including the ministries of labour, social affairs, health, education, etc., together with relevant technical departments at central and local level have an important role in establishing and implementing labour laws and employment regulations.
- ⇆ Workers' and employers' organizations, and the social partners, play an important role in negotiating wages, work norms, social security benefits, promoting equal treatment of female and male workers, communicating grievances, facilitating capacity development and improving conditions of work and – as an associated consequence – improving productivity and sustainability of the construction industry.

Some guidelines

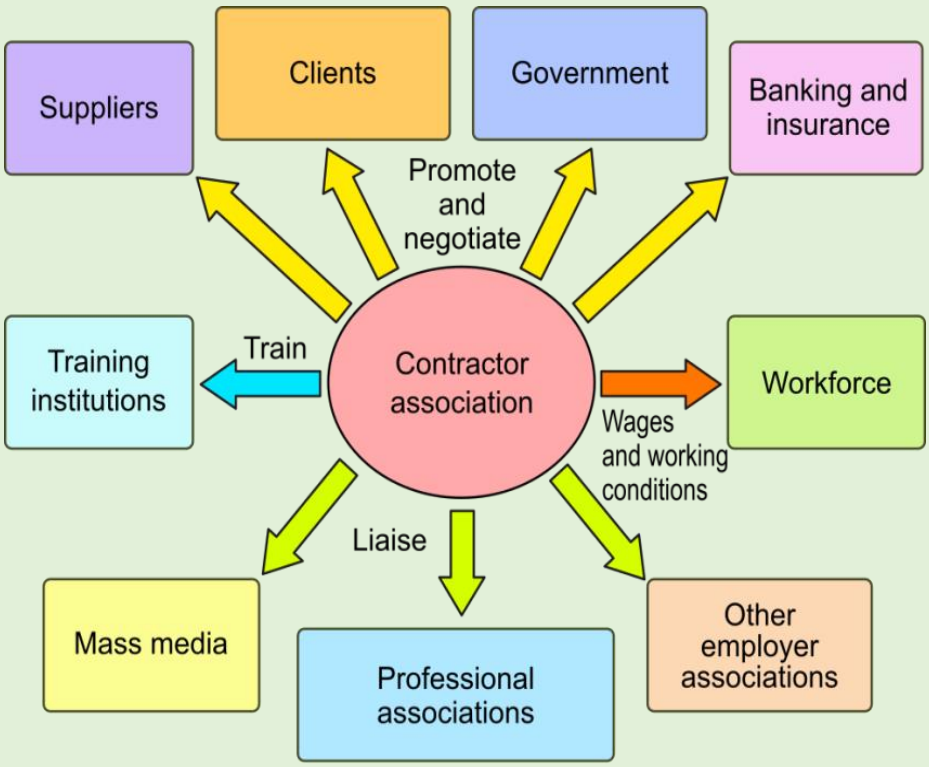
- ☛ Employers and workers should be free to organize themselves and join organizations of their own choice.[28]
- ☛ Programmes aiming to develop local contractors can help to promote and develop the organization of contractors or create links with an existing contractor association to represent their interests. Such initiatives may include:
  - o supporting the creation of a specialized labour-based contractor association;
  - o creating contacts through meetings and workshops held with the membership and leadership of existing contractors' and employers' organizations;
  - o encouraging local contractors to seek membership in existing contractors' associations.

[28] International representation of employers and workers can be reached through:
International Organisation of Employers (IOE)
International Trade Union Confederation (ITUC) and its Building and Wood Workers' International (BWI)

Box 87
Structure and functions of a contractors' association

A well-established contractor association has many functions that help governments, development partners and workers to be a great partner to programme development and implementation through a variety of support and advisory services to its members. The structure and functions of a contractors' association may include those mentioned in the figure 14 below.

Figure 14. Structure and functions of a contractors' association



Zambia: Creating a contractors' association

An association of labour-based contractors was formed as a result of discussions between participants on a training programme for road contractors in Eastern Province, Zambia in the late 1990-ies. The training programme on technical, business and financial management had prompted them to take charge of their destiny in a joint manner.

Initial initiatives to be taken up by the association included:

- bulk buying of materials to avoid price exploitation;
- engaging an accountant to be available to individual contractors;
- tendering for larger contracts in the name of the association with work to be subcontracted to the members;
- negotiation of matters of common concern with clients (usually the government);
- establishment of local construction services (e.g., culvert pipe manufacture);
- lobbying for a fair share of the construction market for labour-based contractors.

- A well-established contractor association can prove to be a great partner to programme development and implementation through a variety of support and advisory services to its members, such as:
  - membership and professional recognition;
  - advice on contract documentation, norms, standards, rates and construction statistics;
  - legal advice;
  - business and contract management support;
  - continuous professional development (training);
  - occupational health and safety advice;
  - environmental protection advice;
  - information on economic, media and political issues;
  - experience exchange.
- Established construction workers' organizations may view temporary workers in employment-intensive infrastructure works as being outside their field of interest and may perceive them as receiving substandard wage rates and therefore undermining the acquired rights of construction workers. This must be addressed through securing enabling and sustainable employment conditions for all construction industry workers.
- Existing labour laws and regulations are likely to relate to construction workers in long-term employment. They may not be applicable or relevant for temporary construction workers or one-person contractors. This should be reviewed with the ministry of labour. The social partners should be involved in drawing up more relevant regulations if necessary.
- Socio-economic councils in which social partners are represented can be an efficient means to facilitate policies, strategies and regulations for infrastructure investments towards a more systematic and intensive use of local resources. By assessing the employment potential of infrastructure works with different degrees of local construction industry involvement, recommending strategies for capacitating local actors and outlining necessary employment regulations for a shift towards more employment-intensive methods. Representative workers' and employers' organizations can in this way be instrumental in influencing national investment policies for public infrastructure works.

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  - *Don Bosco Training Engineer Andre Silbino Faria*;
  - *Aurea Company Engineer, Felisberto Exposto*;
  - *ILO Field Instructor Evangelino Carmona*.

Box 88

Consultation structure for technical agencies involved in local infrastructure works

Strategy and assistance at central level:

- Design appropriate labour regulations adapted to the sector and the context of construction works;
- Engage with workers' and employers' associations as a channel for dialogue to develop an enabling environment to the benefit of both workers and contractors;
- Develop labour regulations, standards and norms that also cater for local infrastructure works;
- Together with social partners, develop training programmes for contractors, supervisors and workers.

Initiatives at local level:

- Promote and explain local resource-based approaches in infrastructure works;
- Conduct training of contractors, local authorities and workers in labour regulations;
- Monitor and improve conditions of work.

Key technical agencies in charge of infrastructure works need to liaise with the government authorities responsible for labour regulations.

There is a need for providing clear and comprehensive guidance by the centre on the standards and norms to be pursued at works implementation level. A proper toolkit on conditions of employment, wages, OSH, inclusiveness, targeting, etc. is essential for the implementation of decent work standards at local level.

Ministry of Labour is typically the custodian for labour regulations and their applications. They are best placed to establish the necessary dialogue with employers' and workers' organizations in development of regulations in consultation with technical agencies for the concerned sectors.

National Economic Development and Labour Council (NEDLAC)

Established through an act of Parliament in 1994, NEDLAC plays an important part in the policy and law-making processes in South Africa. Through social dialogue, NEDLAC brings together representatives from government, trade unions, employers and community organizations, to seek cooperation on economic, labour and development issues and related challenges.

NEDLAC discusses different aspects of social and economic policy conducted within four chambers. These are the Labour Market Chamber, the Trade and Industry Chamber, the Development Chamber and the Public Finance and Monetary Policy Chamber. It also engages in research and information sharing to support its constituents in developing economic policy.

NEDLAC advocates for policy interventions and promotes public and private investments to address teething social challenges of unemployment, poverty, low skills base, inadequate social services as well as inequality. This includes the continuation and scaling up of public employment programmes, such as the Expanded Public Works Programme (EPWP) as a means of providing poverty and income relief through temporary works for the unemployed. The EPWP is designed to equip participants with a modicum of training and work experience that enhances their ability to earn a living in the future.

NEDLAC has also been instrumental in developing a specific set of legislated employment conditions for workers in public works programmes. These conditions were agreed upon through a social dialogue process. The result was an employment framework for public works programmes captured in a Ministerial Determination and a Code of Good Practice. The Code of Good Practice specifies the minimum working conditions to be applied on all public works in South Africa. An important change introduced in 2010 was a specified minimum wage to be adjusted annually based on the official inflation index.

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DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Annexes

The local resource-based approach is very suitable for the upgrading of informal settlements.
Arusha, United Republic of Tanzania

EIIP

Employment Intensive Investment Programme

Annex I. Community contracts

Community contracting may simplest be described as a participatory process whereby a community group negotiates with local government or a development programme and enters into a contractual agreement to undertake works that leads to an improvement in their livelihoods. This overall process consists of the stages below.

- **Initial contact and identification of target group**: preferably as a result of a socio-economic analysis at the local level. Such an analysis may include techniques to differentiate the local population in terms of the differing levels of income, access to resources, interests and priorities, and to identify the target group.
- **Mobilization**: the organization of the target group (if not already organised) by a locally based field worker around some form of common interest, which constitutes the basis of the works to be undertaken under the contract.
- **Negotiation and bargaining**: critical stages when the informal group/organization enters into direct contact with the contracting authority to negotiate the basis and conditions under which the parties to the project make available the resources needed to implement the works.
- The **preparation of a formal contract**: which involves issues relating to the form of contract, legal status, the sharing of costs and responsibilities, the risks involved, the penalties of non-fulfilment and the monitoring of the contract's performance.
- **Implementing the contract**: this involves the contract partners assuming responsibility for a range of activities and inputs and their management to fulfil the contract's requirements.
- **Monitoring the contract**: ensuring that responsibilities and obligations are being met and evaluating the outcomes of the works undertaken in the contract. A mechanism needs to be in place for the review of contract performance including quality control.

A process of negotiation and bargaining is essential to arrive at an agreement, or contract, that is satisfactory and feasible for all parties. It is perceived to be based more on a partnership rather than on “provider-recipient” relationship. These negotiations between public

Community based planning in Tanzania

administrations on the one hand, and community groups on the other, strengthen the social position of target groups in the unorganized sectors, and thus provide the basis for a more democratic and equal form of partnership. If well designed, community contracting is likely to strengthen the collective capacities of the poor to act as partners in development, and to enhance accountability of public administrations.

The approach is thus particularly relevant in the context of decentralization efforts going on in many developing countries. Negotiations also address the issue of cost-sharing, including for the labour involved in the works. As such, the approach counters the abuse of self-help as sometimes seen on public works and state-initiated community works, and is more likely to create gainful employment for both skilled and unskilled labour.

Community contracting has the potential to:

- increase the access of the communities to the benefits of infrastructure works;
- build up local confidence in the management of resources and in the planning of development initiatives;
- enhance the motivation and solidarity of communities;
- strengthen a sense of ownership of the development activity;
- encourage self-reliance by the development of organizational, technical and contract managerial skills;
- build local institutional, organization and negotiation capacities;
- improve the social position (empowerment) of disadvantaged communities;
- enhance the accountability of public administrations;
- stimulate new relations of partnership between public administrations and community organizations.

Source: 'Community contracts in urban infrastructure works; Practical lessons from experience, ILO, by Jane Tournée and Wilma van Esch.

Upgrading of unplanned settlement with drainage, water supply and accessibility in Hanna Nassif, Tanzania

Annex II. Sample contract clauses

The below sections include sample clauses regarding labour standards and regulations that can be included in contract documents.

Labour standards

During the course of works, the Contractor shall observe and take necessary action to comply with relevant national legislation and regulations in regards to conditions of recruitment and employment of workers and occupational safety and health. In particular, the Contractor shall in all circumstances respect and make appropriate arrangements to uphold basic norms and standards pertaining to:

- the freely exercised right of workers, without distinction, to organize, to further and defend their interests as well as the protection of those workers who exercise their right to organize;
- prohibition of forced or compulsory labour in all its forms;
- equal remuneration for men and women for work of equal value;
- prohibition of employment of children below 14 years of age or the minimum age for employment permitted by the law of the country where the Works are carried out or the age of the end of compulsory schooling in that country, whichever is higher;
- equality of opportunity and treatment in respect of employment and occupation without discrimination on grounds of race, colour, sex, religion, political opinion, national extraction or social origin. The Contractor shall ensure that wages are paid in legal tender in full and directly to the workers concerned.

The Contractor shall ensure that the wages of its personnel, their hours of work and the other labour conditions including social security are at least as favourable to the worker as those established for work of the same character in the trade or industry concerned in the area where the Work is carried out

Labour law

The contractor shall be thoroughly conversant with the provisions of the Labour Law and its statutory additions and amendments. The contractor shall ensure that the regulations pertaining to the employment of labour for the works are fully understood and effected during the period of the contract. In particular, he shall take note of those regulations regarding: employment of women and children; equal pay and conditions; payment of workers; recruitment procedures; right of free association.

The contractor shall be entitled to operate a task work, daily wage or other system of working, which is allowed for in the Labour Law regulations.

Recruitment of labour

All general workers employed by the Contractor or Subcontractor must be recruited from amongst the local population of the site area.

The Contractor shall notify the Employer at least one week ahead of any major recruitment. The notification shall state venue, date and time when the enrolment will take place.

Employment records

The contractor shall keep full, complete, and accurate records of the employment of labour at the site of the works. These shall include the name, age, gender, home village, identity number, labour office registration (if any), payments and deductions (if any). These records shall be available for inspection at all reasonable times.

Engineer's power to pay workers

In the event of default by the contractor in paying the labour after not more than one month of working, the Engineer shall have the power to pay the outstanding wages and allowances (if any) in accordance with the pay-sheet records and to deduct the amount from any monies due

to the contractor. Continuing default by the contractor may be a cause for suspension of work under the provisions of the contract.

Task and piecework systems

The Contractor shall observe and fulfil particularly the following conditions with respect to all persons employed by him in the execution of the Contract under a task or piecework system:

- The size of the daily task shall be that which a worker can reasonably complete during a normal working day (8 hours).
- The level of the task will vary depending upon the terrain and ground conditions. The Contractor in consultation with the Employer shall agree on the task level and payment system to be applied.
- The Employer may further stipulate a minimum labour wage rate per workday for productivity related output (task work). The applicable labour wage rate is to be at least equivalent to the basic rate as defined in Sub-Clause 'xyz'.

Reporting requirements

During the execution of the Works the Contractor shall maintain detailed muster rolls showing attendance and wages paid to all personnel employed, and shall produce at any time such records for inspection by any person authorized by the Employer.

The Contractor shall further keep daily records of all information and data related to labourers such as category of labour, numbers employed and productivity per person. Other information are gender records, wage rate, machine output etc.

The records for each calendar month during construction shall be made available to the Employer not later than the first week of the following month, together with the monthly Interim Payment Certificate submission.

Immediate payment of wages

At the request of the contractor for the immediate payment of the labour wages the Engineer may agree to certify, at intervals of not less than one month, the total amount of the contractor's labour wages and allowances (if any) in accordance with the pay-sheets, with an additional 10 per cent for administrative overheads. The Employer shall pay the certified amount to the contractor before three days after receipt of the certificate.

The contractor shall pay the amount of the wages and allowances (if any) to the workers before three days after receiving the amount from the Employer. Failure by the contractor to pay within this time may result in the withdrawal of this payment arrangement by the Engineer. The Engineer shall have power to discontinue this payment arrangement if he decides that it is no longer required for the satisfactory completion of the contract.

The amount of any payment made under this clause shall be deducted from any monies due to the contractor, for work completed, under a subsequent interim payment certificate.

Non-payment of wages by contractor

Any dispute between the Contractor and labourers, regarding delayed payment or default in payment of fair or complete wages, if not resolved immediately may force the Employer to intervene.

The Employer will, upon the Contractor defaulting payment, pay the monies due to labourers not honoured in time, out of any monies due or which may become due to the contractor under the Contract.

In such events, the Contractor is bound to co-operate with the Employer in processing the payment of the correct amounts of monies due to the labour force by submitting the relevant muster-rolls, workday reports and pay-sheets, and be represented during the payments.

Direct payment to labourers by the Employer will attract a penalty as stipulated in the Appendix, to cover expenses incurred in the administration of such wage payments.

Contractor's staff

The contractor shall employ site supervision staff that is experienced in labour-based construction technology. The Engineer shall approve all staff before being engaged on site and the Engineer shall have power to require the removal from site of any staff he considers insufficiently skilled for this type of construction.

Working hours

The Contractor shall not perform any work outside normal agreed site working hours unless authority to do so has been obtained in writing from the Employer or his Representative.

Provision of hand tools

The Contractor shall provide his labour force with hand tools of adequate quality, appropriate for each activity, sufficient in numbers and shall maintain the tools in good and safe working conditions.

Detailed minimum requirements and specifications for hand tools standards will be provided by the Engineer.

Safety and health

The Contractor shall be responsible for the safety of all activities on the Site. He shall provide all personnel on site with adequate safety protection equipment and clothing as appropriate to the work being performed.

The Employer may organize campaigns for enhancing safety awareness among the workforce on site and regarding general health issues, including the prevention of spreading of HIV/AIDS. The Contractor shall allow his personnel to attend to these campaign events during normal working hours and without deduction of pay.

Labour inspectorate

The properly designated officers of the Labour Inspectorate shall have the right to visit the site of the works at any reasonable time for the purpose of inspecting labour records and otherwise checking the contractor's compliance with labour laws and regulations. The Inspectorate shall also have the right to call for meetings of the workers for the purpose of explaining their rights and obligations under the statutory regulations.

Consultation with local population. Kesra, Tunisia

Annex III. Common procedures for evaluating tenders

Evaluation of tenders includes different agencies and actors depending on how programmes are organized and funded. The below sections describe the administrative setup and procedures for evaluation of tenders and the roles of these different agencies and actors under different programme organizational setups.

Central agencies

The practices and procedures for evaluation and award of contracts for local infrastructure works vary depending on how programmes and funding is organized. Rural development programmes, funded through centrally based agencies and departments, often retain the authority for the selection and award of contracts. These agencies usually have a permanently established tender board consisting of specialists in procurement, financial procedures and technical issues relevant to the works, and are responsible for tender opening and the selection of the most successful bidders. These agencies normally have a technical unit with competent staff that carries out the detailed evaluation of bids. Based on the evaluation the technical unit prepares recommendations to the tender board for the award of contract, usually consisting of a ranking list of the qualified bidders. The decision, however to award a contract remains with the tender board. The final decisions of the tender board are binding. The agency in charge of the works programme executes these decisions, awarding the contracts accordingly and thereafter manages the works.

Local government authorities

Local government authorities normally have an elected council or assembly, an executive and a set of administrative and technical units. The main role of the council assembly is to approve the development plan and budget and to oversee its implementation. The executive with its technical and administrative units are tasked with implementing annual work programmes within the set budget in conformity with national laws and regulations. Usually, a technical unit within the local authority is tasked with the implementation of civil works, including organizing tenders and supervising works.

The selection and award of tenders will follow a similar process as in centralised agencies however with a local tender board taking the final decisions in regards to award of contracts. In some places, the tender board consists of elected members of the local council, in other words, it is a political body put in place essentially to oversee tenders. The tender board may also consist of heads of relevant units, i.e. the technical unit, admin and finance, sector heads (i.e. education, health, etc.) and directed by the council secretary.

The detailed evaluation is carried out by technical and financial staff, however this personnel is not necessarily members of the tender board but only plays an advisory role. The final decision on award of contract is left with the tender board. Based on the tender board decisions, the council executive awards the contract(s) and implements the works under the management of the technical unit.

The technical unit can carry out specialized tasks such as work designs, drawings and specifications, quantity surveys, and assemble all parts of the tender documents.

Consultants

Consultants can be employed as ‘design consultants’ to assist in the survey and design work, preparation of contract documents and assist in the tender evaluation. Consultants are also engaged in work supervision on behalf of the council, as well as inspecting works, conducting material tests, and issuing payment certificates.

The local community

Oversight committees representing the local community can be involved in the preliminary surveys and assessment studies, review of technical designs, liaison with locals regarding

various cooperation issues (e.g. land acquisition, resettlement, environmental protection and formation of user committees and work groups, etc.).

Oversight and transparency

The public is given access to the decision making process to ensure that tenders are fair and transparent. This is done by publishing the recommendations of the tender evaluation and the decisions made by the tender board. The information is usually posted on public notice boards or on the Internet.

Equally, the public is invited to attend the tender opening session. Once works commence, key features of the contract can be presented on notice boards in the vicinity of the work site.

Local communities can also be given a monitoring role for the design and implementation of works through the creation of an oversight committee thereby ensuring the involvement of the concerned communities. This committee can also be tasked to oversee that social safeguards are properly observed when dealing with land acquisition, resettlement, conditions of employment, occupational safety and health and environmental issues.

River training reduces risk of flooding. Burkina Faso

Annex IV. Checklist for procurement of equipment

Acquisition of equipment is a heavy burden on contractors' budget and may have a serious influence on the possible success of the contractor. The selection, specification and procurement through purchase or lease are determinant factors for any contracting operation, also when it comes to employment-intensive infrastructure investments.

Below are 37 essential questions to ask before procuring any equipment.

INITIAL SELECTION OF EQUIPMENT

Question 1: Do I know the performance and all costs of the equipment?

If not, be extremely careful! If you have been owning and operating a similar machine for some time (at least 5 years) and have adequate records of utilization and costs, you will have a good basis for assessing the workload and costs of another. If not, you will be making a large number of assumptions, which may be quite incorrect or unjustifiable.

Question 2: Am I competent to decide what the equipment I need and procure? (I.e. do I need any advice? Where can I get the equipment)?

Do I really have the knowledge and experience to make procurement decisions unassisted? Have my past decisions on procurement been good? Should I talk to other contractors/authorities about their experience with this machine type? Where can I obtain objective, impartial advice? Contractor's associations, international road associations, specialist international organizations, or professional bodies may be able to put you in touch with an expert with appropriate experience with a particular type of equipment. They may be able to direct you to relevant reports, evaluations or trials.

Question 3: Do I really need the equipment or can I manage without it?

Have I looked at alternative ways of carrying out the works? Am I having the required information about technology options that are available and permitted to undertake the contract?

Question 4: What is the task? Will this type of equipment do it satisfactorily?

Define the work that the machine will do, the quantity of work, the required daily output. Consider other ways of doing the same task (other equipment types or with just labour).

Question 5: What are the total price of the equipment (including procurement and delivery to my depot)?

Include the price to be paid minus any discount. Include costs of freight, transport, insurances, taxes, duties, levies, dealer's charges, inspection fees, quality assurance fees, delivery to the depot.

Question 6: Do I have the cash resources to procure the equipment? Do I need to finance the purchase? Is finance available? At what cost?

Will it be a cash purchase or will at least part of the procurement require financing? Is financing available? What is the cost (interest, arrangement, other non-capital charges)? What security or capital will the lender require and what are the risks involved if I have difficulty in paying, or payments are late?

Question 7: How will the equipment be maintained and repaired?

Will I maintain and repair the equipment with my own mechanics and facilities; will I use the supplier's mechanics or their agents, or a local workshop? What is the quality and the price of this support? Will the maintenance support be on-site or will the equipment have to be taken to the workshop?

Question 8: What are the ownership costs?

What are the realistic costs of depreciation and finance? (see Parts 1 & 2 of this Handbook) Be particularly careful regarding these figures because important assumptions have to be made about economic life and annual utilization. Be REALISTIC in these assumptions and explore a range of assumptions.

Question 9: What are the operating costs?

What are the realistic costs of operation? Will a low loader or other vehicle be needed to transport or attend the machine?

Question 10: What are the overhead costs? What are the realistic costs of all overheads?

Question 11: What are the costs when it is not working?

What will be the costs if I do not achieve the expected rates of utilization? It is suggested that the cost calculations are also made for a 'worst case' scenario. You can then assess the costs for every hour below your target utilization that the machine is not working each year.

Question 12: Could I hire it out when I don't need to use it?

Is there a market to hire the machine out if I do not have work for it? What is the market rate of hire? Do the potential clients have a good reputation for payment in full and on time?

Question 13: Could I instead hire the equipment?

Is this type of machine available to hire-in when I need it? What condition is the available equipment in (reliable/regularly breaking down)? What are the hire costs? What are the transport costs and arrangements (low loader required)?

Question 14: Should I buy new or second-hand?

If the capital cost of a new machine is too high and the expected utilization rather low, is a second-hand purchase a possible option? What is the condition of available second-hand equipment? What are the risks? Is there any warranty? What is the expected availability and residual life?

Question 15: How many days a year will it work?

Will there be enough work to keep the equipment operating effectively throughout the year?

Question 16: Will it be profitable?

SPECIFICATION

Question 17: What is the expected workload for the machine through the year?

What is the expected quantity of this type of work?

Question 18: What size should it be to achieve adequate daily output with the overall annual workload?

Should I buy two smaller ones instead? Try to match the expected capacity of the machine to the workload, without the machine standing idle for excessive periods. Will the machine work with attachments or other equipment items? Where machines are working together on a task (e.g. tractors and trailers, or haulage and compaction) the sizes and specifications should be compatible.

Question 19: Will it only carry out one task for one client/user, or will it be flexible for various applications?

Is there a range of applications/clients that will allow high utilization of the equipment through the year?

Question 20: Is it robust enough to do the job in the local working environment? Is it sustainable?

Question 21: Is it too sophisticated for the available mechanical support?

Question 22: Do I already have one of these models in my fleet? If not are there any implications for not standardising?

It is possible to assess the costs of not standardising in terms of the additional expenses of spares stocks, storage space, tools and training.

Question 23: Will it be profitable?

PROCUREMENT

Question 24: What is the REALISTIC delivery time?

Question 25: What is the population of the manufacturer's specific model in-country?

The population in-country will influence the size and extent of spares stocks held by the local agent, resale value, local experience and risks.

Question 26: What is the likely resale or scrap value of the particular model?

Enquire about similar models.

Question 27: What training will be required for:

- me
- my supervisors
- my operators
- my mechanical support personnel? What will this training cost?

Question 28: Is there a competent local agent to support the equipment?

- workshop and stores near me?
- good reputation?
- adequate stock of spares (value?) for the particular model?

Question 29: What quality assurance arrangements can I make to ensure that what I get is what I ordered?

This is particularly important for limited run production of equipment from local workshops. It is necessary to ensure that production models are to the same quality standards as showroom or proven prototype examples. It is possible to arrange for quality assurance inspections during production and on delivery.

Question 30: What warranty is the supplier offering?

What is covered; spares and labour costs? Is it on site where the equipment will be used? Is there replacement equipment while it is being repaired? For what period is it covered?

Question 31: Are there particular requirements for the intended application?

Are for instance the tyre sizes to be specified available locally? Should I consider heavy duty tyres on availability, expected performance and cost considerations? What operator safety and protection equipment should be fitted? If there is a hitching system, what category and type is required for the application and compatibility with other equipment.

Question 32: What essential spares, fast moving parts and tools should I procure with the equipment?

If the supplier offers you a list of suggested spare parts, get this independently checked to ensure that you are not having inappropriate items 'dumped' on you. Be more specific than requesting, say, 10 per cent value of the new price in spares. For example, request a suggested list of spares necessary to support 2,000 hours or two years of operation. This will possibly include the parts necessary for 8 routine preventive maintenance services. It is advisable to obtain a current list of spare parts retail prices. This will help in later negotiations if the costs rise above the rate of inflation.

Question 33: To what extent is it likely that the equipment can be maintained or even upgraded in the future?

Many farms have working agricultural tractors that are more than 50 years' old. This is partly because of continued availability of spares and possibilities to upgrade to changing requirements.

Question 34: Can I afford it? Can I afford not to have it?

Question 35: Am I being realistic?

Question 36: What are the risks?

Question 37: Will it be profitable?

REMEMBER – The lowest initial-cost machine may not have the lowest whole-life costs.

Source: Handbook of intermediate equipment for road works, Robert Petts of Intech Associates, October 2012.

Tractor towed graders have proven efficient for some types of roads. Zimbabwe

Annex V. Job profile – site supervisors

Indonesia, Nias Island: Job profile with required competency levels for construction site supervisors

Job profile issues	Area of competence (training topics)	Required level of competence	Current level of competence
1 Implementing and supervising construction works	**1 Construction technology and works**		
1.1 General construction 1.2 Specific construction 1.2.1 Rural roads and motorcycle tracks 1.2.2 Simple bridges and culverts 1.2.3 Suspension bridges (exceptional cases)	**1.1 General construction knowledge**		
	1.1.1 Basic survey and setting out	4	
	1.1.2 Soils and earthworks	2	
	1.1.3 Construction material	3	
	1.1.4 Concrete works	2	
	1.1.5 Masonry works	3	
	1.1.6 Slope protection, bio-engineering	2	
	1.1.7 Construction methods	3	
	1.2 Specific construction knowledge		
	1.2.1 Roads and tracks		
	1.2.1.1 Setting out	4	
	1.2.1.2 Formation works (subgrade, sub-base)	3	
	1.2.1.3 Retaining walls	3	
	1.2.1.4 Drainage (including culverts)	3	
	1.2.1.5 Base and surface layers	3	
	1.2.1.6 Ancillary works	3	
	1.2.2 Bridges and culverts		
	1.2.2.1 Setting out	3	
	1.2.2.2 Earthworks, excavation	3	
	1.2.2.3 Abutments and retaining walls	3	
	1.2.2.4 Bridge / culvert deck	3	
	1.2.2.5 Approaches and ancillary works	3	
	1.2.3 Suspension bridges (exceptional cases)		
	1.2.3.1 Types, structural principles	1	
	1.2.3.2 Setting out	1	
	1.2.3.3 Earthworks, excavation	1	
	1.2.3.4 Foundation	1	
	1.2.3.5 Pylons	1	
	1.2.3.6 Walkway and materials	1	
	1.2.3.7 Approaches and ancillary works	1	
2 Managing a construction site	**2 Construction site management**		
2.1 Organizing and running a construction site 2.2 Planning, recording and reporting all site work related matters 2.3 Managing all site personnel 2.4 Managing resources at site 2.5 Quality control on site	**2.1 Organization and resources**		
	2.1.1 Organizational set-up and logistical arrangements	2	
	2.1.2 Equipment and tool requirements	3	
	2.1.3 Mobilization	3	
	2.2 Planning, reporting and communication		
	3.2.1 Daily site planning and reporting	4	
	3.2.2 Preparing weekly/monthly reports	4	
	3.2.3 Communication	4	
	2.3 Managing site personnel		
	2.3.1 Instructing, coaching and controlling staff	4	
	2.3.2 Working with casual labour and community groups	4	

Job profile issues	Area of competence (training topics)	Required level of competence	Current level of competence
	2.4 Managing resources at site		
	2.4.1 Equipment	4	
	2.4.2 Tools	4	
	2.4.3 Construction Material	4	
	2.5 Quality control on site		
	2.5.1 Quality assurance system	2	
	2.5.2 Material testing	2	
	2.5.3 Quality control measures on site	4	
3 Implementing safeguard measures	**3 Safeguard measures**		
3.1 Ensuring safety and health 3.2 Ensuring environmental protection 3.3 Ensuring gender related issues 3.4 Ensuring labour laws and regulations	**3.1 Occupational safety and health on site**		
	3.1.1 Construction safety measures	4	
	3.1.2 First aid	3	
	3.1.3 Health issues	3	
	3.2 Environmental protection measures on site		
	3.2.1 Erosion protection, slope protection during construction	3	
	3.2.2 Waste control	4	
	3.3 Gender issues		
	3.3.1 Gender equality	3	
	3.3.2 Working with men and women on site	4	
	3.4 Labour regulations		
	3.4.1 General labour laws and regulations	3	
	3.4.2 Specific labour regulations for construction work	3	
4 Managing contract issues on site	**4 Contract management**		
4.1 Applying conditions of contract 4.2 Interpreting bills of quantities 4.3 Applying works specifications 4.4 Interpreting construction drawings 4.5 Carrying out work measurements	**4.1 General**		
	4.1.1 Terminology	3	
	4.1.2 Bid preparation, contract award and implementation	2	
	4.2 Conditions of contract related to work implementation		
	4.2.1 General conditions	2	
	4.2.2 Specific conditions	3	
	4.3 Bill of quantities		
	4.3.1 Items	3	
	4.3.2 Volumes	3	
	4.3.3 Rates	3	
	4.3.4 Measurements	3	
	4.4 Works specifications		
	4.4.1 General construction standards	3	
	4.4.2 Specific specifications for road and bridge works	3	
	4.4.3 Quality assurance system	3	
	4.5 Construction drawings		
	4.5.1 Interpreting construction drawings	4	
	4.5.2 Simple sketches on site	4	

Competency levels:

1 = be informed about the subject
2 = basic understanding, no application
3 = understanding, applying with assistance
4 = full comprehension and complete mastering

Annex VI. Principal learning subjects for target groups

Target group	Principal learning subjects	Required training inputs
Policy and decision makers *and* ***planners*** *(government ministries, funding agencies, local administration, etc.)*	o Supporting policies, strategies and targets o Principles of labour-based construction methods and locally available resources for job creation o Identification of appropriate infrastructure works at national and local levels o Roles and functions of construction stakeholders: planning and contracting agencies; works implementers; community participation o Potential of local contractors, consultants and community organizations in infrastructure delivery o Good practices and tools: management structures; labour issues and productivity; social and environmental safeguards; samples of good practices	Orientation / awareness creation workshop Well organized visits to on-going work sites are effective 'eye-openers'. Approximate duration: 1 to 3 days
Contracting agencies' staff *(engineers, technicians, work supervisors) responsible for planning and implementation, including staff from works departments, technical agencies, local authorities and autonomous contract management agencies* *and* ***Consultants*** *(management, survey and design, contract preparation, specialized studies, work supervision, support services) representing the contracting agency*	o Policies, strategies and targets with the focus on the provision of public infrastructure and job creation. o Planning works using local resource-based approaches: choice of technology; identification, appraisal and selection of works; capacity of local private sector and communities to execute works; work plans and budgets. o Roles and functions of construction stakeholders: planning and contracting agencies, local contractors and communities. o Planning and design of local infrastructure works; principles for work implementation and typical work operations and activities; required resources for labour-based work methods. o Application of local resource-based work methods for infrastructure works: roads, buildings, water and sanitation, irrigation, watershed protection, etc. o Organization and management of works: supervision; skilled and unskilled labour; site organization; productivity rates and incentive schemes. o Site work and resource management: typical work activities and sequencing; tools, equipment and materials; logistics, communication and support. o Work planning, reporting, monitoring and evaluation: planning and reporting procedures for activities and resources; work-team balancing; supervision and control of works; social and environmental safeguards; contract management on site. o Quality assurance: principles of QA; appropriate quality control systems; testing and workmanship control. o Procurement process and contract documents: general and specific guidelines for procurement; preparation of tender and contract documents; tendering and award procedures. o Estimating, pricing and measuring of local infrastructure works applying local resource-based approaches:	Training workshop including practical project work and visits to on-going sites. Approximate duration: 1 to 3 weeks Continuous professional training is advisable to enhance knowledge, skills and to remain updated on new developments.

	principles; base data for estimating – production rates (labour, equipment), material costs, equipment rates, overhead costs; calculating item/unit rates; measuring works. o Managing local infrastructure works contracts: supervision; quality control; work approval; quantity surveying; instructions and variation orders; cash flow control; variations; site meetings; recording and reporting. o Labour issues: national legislation and international labour standards, wages, recruitment, conditions of work, dispute resolution, incentive schemes, OSH, etc. o Cross-cutting issues: community mobilization and participation; gender, youth and people living with disabilities; green jobs, managing waste and pollution, social and environmental safeguards, climate change adaptation and mitigation; HIV/AIDS awareness; etc.	
Contractors and their managing directors	o Principles of labour-based works technology and use of locally available resources for job creation o Roles and functions of construction stakeholders: planning and contracting agencies; project implementers; community participation. o Potential of local contractors, consultants and community organizations in infrastructure delivery o Application of labour-based and local resource-based work methods in local infrastructure works: roads, buildings, water and sanitation, irrigation, watershed management, etc. o Organization and management of labour-based works: supervision; skilled and unskilled labour; site organization; productivity rates and incentive schemes. o Procurement process and contract documents: general and specific guidelines for procurement; appropriate documents for tendering and contracting; preparing and submitting a tender; contract award procedures and requirements. o Estimating and measuring labour-based works: principles; base data for estimating – production norms (labour and equipment), material costs, equipment rates, overhead costs; calculating item/unit rates; measuring works. o Preparing for contract works: work programming and resource planning; labour recruitment procedures and employment conditions; detailed work planning; cash flow planning; access to site and commencing works. o Site work and resource management: typical work activities and sequencing; labour deployment and incentive schemes; site installations and organization; tools, equipment and material requirements; logistics, communication and support. o Work planning, reporting, monitoring and evaluation: planning and reporting procedures for activities and resources including work-team balancing; work supervision; social and environmental safeguards; worksite management. o Managing local infrastructure works contracts: managing equipment, labour and material; cost and cash flow control;	Practice oriented training courses divided into major subject stages: tendering, work preparation, work implementation, business management. Must be strongly linked to the actual operational and business requirements. Approximate duration: • Formal training (theory and practical) = 3 to 10 weeks • Trial contract = 2 to 6 months A follow-up programme of specific training inputs with mentorship support is essential during the first phase of operation as competitive contractors. Continuous training is advisable to enhance knowledge, skills and to remain updated on new developments.

	work progress and productivity; quality control; quantity surveying; variation orders; site meetings; reporting; completing a contract and handing over; dispute resolution. o Labour management: national legislation and international labour standards; wages; recruitment and conditions of work; motivation, instructing and on-the-job training; discipline on site; occupational safety and health. o Community participation: principles of community mobilization and participation; cooperation with community committees; community work groups; community contracting. o Cross-cutting issues: gender and youth; people living with disabilities; green jobs (improve energy and raw materials efficiency, limit greenhouse gas emissions, manage waste and pollution, protect and restore ecosystems, climate adaptation measures); HIV/AIDS awareness; etc. o Business management: Maintaining accounts; profit and loss account and balance sheet; managing the office; company records; workshop management; marketing. o Note: technical subjects may be added, depending on actual training needs, e.g. survey and setting out; concrete technology, masonry; earthworks; bio-engineering; road works; building works; irrigation works, etc.	
Contractors' technical staff *(site agents, site supervisors)*	o Principles of labour-based work methods and use of locally available resources for job creation o Application of labour-based and local resource-based work methods for infrastructure works: roads, buildings, water and sanitation, irrigation, watershed management, etc. o Contract documents for local infrastructure works: appropriate documents for tendering and contracting; general tendering and contract award procedures. o Costing principles: production rates (labour, equipment), material costs, equipment rates, overhead costs; item/unit rates; measuring works. o Organization and management of labour-based works: supervision arrangements; skilled and unskilled labour; site organization; work norms and incentive schemes. o Preparing for contract works: work programming and resource planning; labour recruitment procedures and employment conditions; detailed work planning; access to site and commencing works. o Site work and resource management: typical work activities and sequencing; labour deployment and incentive schemes; site installations and organization; tools, equipment and materials; logistics, communication and support. o Work planning, reporting, monitoring and evaluation: planning and reporting procedures for activities and resources; work-team balancing; work supervision; social and environmental safeguards; contract management on site. o Managing local infrastructure works: managing equipment, labour and material; cost and cash flow control; work progress and productivity control; quality control; measuring	Practice oriented training courses divided into major subject stages: contract documentation and procedures, work organization, work methods, resource management, practical application. Strongly linked to practical application. Preferably integrated into existing occupational education and training systems with recognized certification. Approximate duration: • Formal training (theory and practical) = 4 to 12 weeks • Trial contract = 2 to 6 months A follow-up programme of specific

	works; instructions and variation orders; site meetings; reporting; works completion and handing over; dispute resolution. o Labour management: national legislation and international labour standards; recruitment and conditions of employment; motivation, instructing and on-the-job training; discipline on site; payment of wages, occupational safety and health. o Community participation: principles of community involvement and social mobilization; cooperation with community committees; working with and contracting community work groups. o Cross-cutting issues: gender, youth and people living with disabilities; greenhouse gas emissions, waste and pollution; protect and restore ecosystems; climate adaptation; HIV/AIDS awareness; etc. o Technical subjects as required (i) for construction and maintenance of any type of local infrastructure, or (ii) for specific work activities, e.g. concrete technology, masonry, earthworks, bio-engineering, road pavements, structures, irrigation, etc.	training inputs with mentorship support is essential during the first phase of operation as a competitive contractor. Continuous training is advisable to enhance knowledge, skills and to remain updated on new developments.
Contractors' skilled staff *(artisans, plant operators, mechanics, and support staff)*	Standard learning programmes for certified occupational training as per national standards and qualification requirements.	Certified vocational training programmes as per national standards

Irrigation canal and terracing in Kesra, Tunisia

Annex VII. Typical worksheet

Work activity: Setting dressed stone pavements (segmental arch pattern)

Specification

The area to be paved using the segmental arch pattern shall be divided into equal fields. The width of these fields shall depend on the size of stones to be used.
Using the stone size 7/10cm the ideal chord length shall be between 120cm and 160cm.
String lines shall be fixed on earth nails to show the centrelines of the arches and thus demarcating the field width.
The height 'h' of the segment shall be calculated using the formula:

$$h = (S / 5) + 1cm \quad \text{(where S = chord length)}$$

Work method

- For the segmental arch pattern smaller stones than the standard size stones may be used on edges and to close the arch.
- The stones are set to always maintain the standard radius of the arch.
- The joints have a maximum width of 10mm.
- The height of the stone must always be minimum 10cm.
- Setting of stones shall be done using the special paving hammer to (i) loosen and levelling the bedding aggregate / sand, and (ii) to tap the stones into place.

Tools and equipment

- Paving and mason hammers, chisels
- Mason trowels
- Straight edges and spirit levels
- Rakes and brooms
- Sledgehammer
- Wheelbarrows or stone-barrows

Material

Standard cobblestones

Quality control

- The stone must be set to level by ensuring that the compacted cobblestones are about 5mm higher than the kerbstones to allow unhindered drainage of surface water. The levels are given (i) by the kerbstones on the edges, and (ii) by the specified camber.
- The allowable tolerance for cobblestone levels is +/- 10mm over a length of 3m (to be checked with a straight edge in all directions).

Safety measures

- Ensure traffic control measures are in place
- Wear protective gear such as safety vest, gloves, goggles, dust mask and heavy duty boots
- Keep the work area clean

Source: Cobblestone pavement, Training manual, ILO and Ministry of Transport and Infrastructure, Kenya.

Annex VIII. Selection of site supervisors for training

Listed below are 10 possible processes for selecting candidates for construction site supervisor training.

1. **Announcement** in local media.
2. **Application**: application forms, including certified copy education certificates, copy of ID card.
3. **Screening** of applications and short-listing for interview and tests. Being an ID holder of the area/region and of age between, e.g. 22 and 32 may be preferable.
4. **Written test:** e.g. basic construction calculations, construction materials, simple sketching, construction process, etc. An overall performance rate of e.g. 60 per cent is required, whereby a pass rate of 60 per cent in construction calculations is conditional.
5. **Short-listing** for interview: candidates achieving the above performance rate qualify for oral interviews.
6. **Interview:** (i) Identification; checking particulars of interviewees and originals of certificates; (ii) oral interview; (iii) selection committee established, consisting of trainers and representatives from e.g. local contracting agencies, contractor associations or others. Candidates are interviewed on a set of standard questions.
7. **Information for admission**: candidates are provided with an information brochure outlining the conditions for admission.
8. **Final selection:** evaluating interviews, ranking and final selection of candidates with a performance rate of e.g. 60 per cent and above.
9. **Confirmation of training and job conditions**: Organizing a one-day compulsory field exercise where all candidates are introduced to their future job (use job profile to explain and demonstrate the construction site selected for the practical training where all the different job requirements can be introduced in detail to ensure that all candidates have a realistic picture of the training and job conditions).
10. **Physical health:** Carrying out a general physical health check for all qualified candidates to ensure that the candidates are fit to master the training course without negative health repercussions.

Water crossing in Madagascar

Annex IX. Possible mentorship topics

The following are topics that could be covered in a mentorship programme. However, since the mentorship provided is specific to the needs of each company, not every company requires mentoring in all the areas listed below.

Technical and site management

A. Setting up and managing a site camp

1. Office space
2. Storage
3. Equipment
4. Security
5. Facilities

B. Labour regulations and standards

1. Core principles
2. Maximizing output and motivation
3. Proactive safety management

C. Tools

1. Tools to use on site
2. Efficiency of tools for various operations
3. Tools for supervising works (templates, etc.)
4. Measuring aids
5. Innovative use, maintenance of tools

D. Equipment

1. Optimal selection
2. Characteristics
3. Management
4. Effective utilization
5. Rental
6. Operator training
7. Operator management

E. Work implementation

1. Planning works
2. Organizing works on site
3. Setting out and measurements
4. Carrying out works (all types)
5. Quality management
6. Material optimisation, handling and management
7. Environmental protection measures and management
8. Occupational safety and health arrangements

F. Technical (standards and compliance)

1. Understanding technical standards and specifications
2. Understanding how work will be measured – both volume of work and standards of final product
3. Awareness of common mistakes in processes which lead to failed outputs
4. Being able to optimize processes without compromising quality of the final outputs
5. Investment in instruments / construction aids that help contractors check standards at all levels
6. Developing quality control procedures in the processes to ensure that mistakes are quickly identified and rectified hence minimising abortive work

Business management

A. Contracts and understanding contract

1. Understanding the meaning of a contract
2. Understanding contractor obligations in a contract
3. Understanding contractor rights on current contract
4. Asserting contractor rights where favourable

B. Personnel management

1. Identify company human resource requirements
2. Assessing existing human resource capacity
3. Matching human resource requirements to company capabilities
4. Developing a staff policy
5. Recruiting new staff
6. Managing company staff
7. Developing company staff
8. Paying and rewarding company staff
9. Staff retention
10. Compliance with national labour laws, norms, etc.

C. Understanding company costs

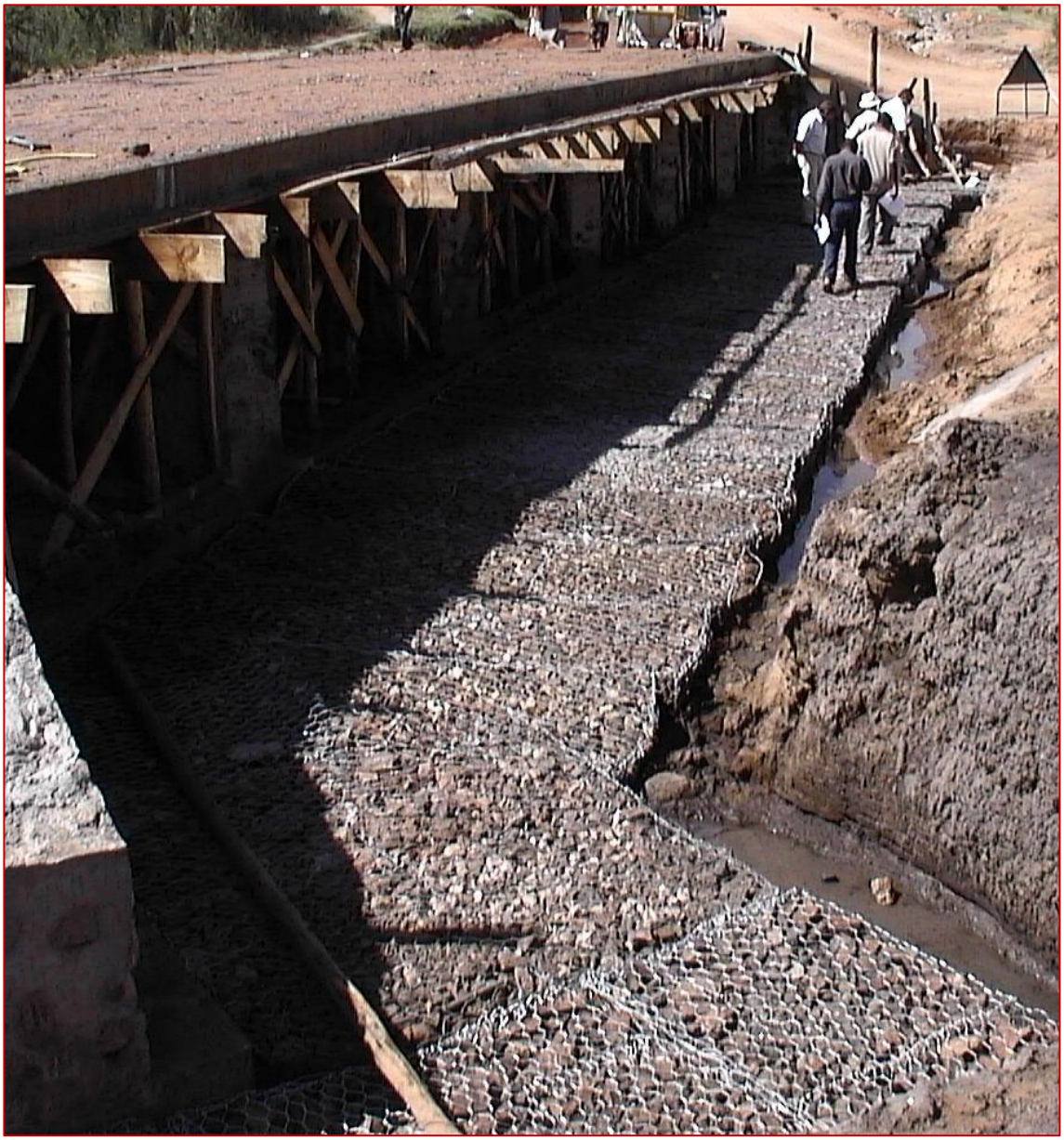
1. Record keeping as a prerequisite
2. Developing a culture of analysing costs
3. Identifying company costs
4. Resource balancing
5. Cash flow management
6. Importance of invoicing on time
7. Tailoring work rate to payment schedules and client responsiveness
8. Loans and loan management
9. Bookkeeping and managing costs

D. Company strategy

1. Understanding the value of a strategy
2. Making a strategy for the company
3. Implementing the strategy
4. Monitoring progress in implementing the strategy
5. Communicating the company strategy to key company staff
6. Getting buy-in from staff on the company strategy
7. Fine-tuning the company strategy as necessary

E. External company relations

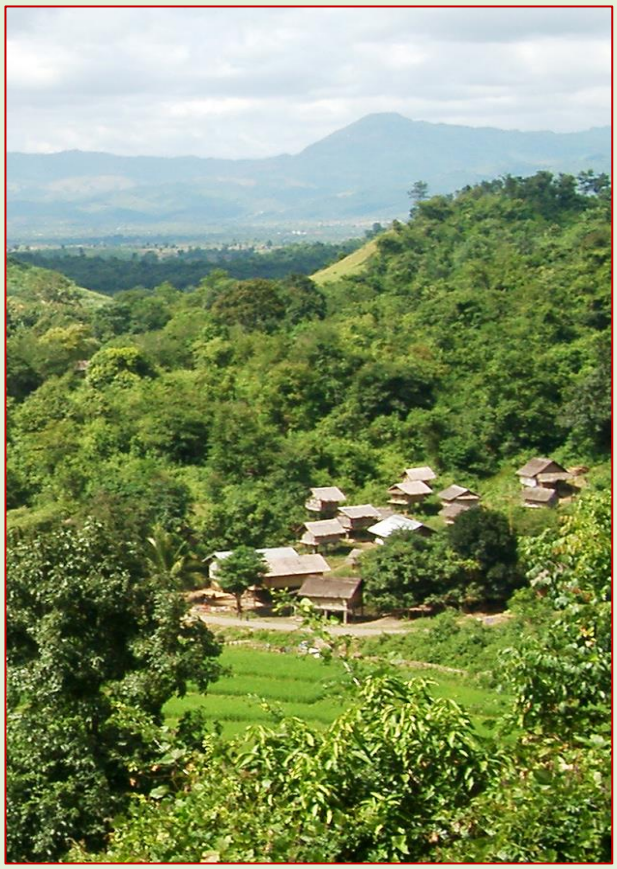
1. Client relations management
2. Construction partner relations management (suppliers, subcontractors, co-contractors, service providers)
3. Community relations management



Bridge building in Limpopo Province, South Africa

DEVELOPING THE CONSTRUCTION INDUSTRY FOR EMPLOYMENT-INTENSIVE INFRASTRUCTURE INVESTMENTS

Glossary



Road access to markets. Houne District, Laos

EIIP

Employment Intensive Investment Programme

GLOSSARY

Adjudicator	A person appointed to judge, arbitrate, determine and decide a matter in dispute between the parties to a contract.
Advance payment	Payment provided to the contractor before commencing work. Advance payments are also referred to as a mobilization advance, to cover expenses incurred before the first progress payment.
Advertisement	A public announcement inviting tenders for goods, works or other services.
Appendix to contract	Document attached to the conditions of contract, containing key information pertaining to a specific contract such as names and addresses of the contractor and client, contract duration, payment schedule, bonds, insurance, etc.
Arbitration	Established mechanism used to resolve a dispute between the client and the contractor relying on an impartial third party or panel of experts with the objective of making a final decision.
Award of contract	Informing a bidder that his/her bid proposal has been accepted. Also see Notification of Award.
Bid	Price offer in response to an invitation to bid for a specified amount of goods or services, also referred to as a tender or proposal.
Bid evaluation	Process for reviewing bids for determining the best offer, often referred to as the lowest responsive bidder, carried out according to prescribed qualification and evaluation criteria, also referred to as tender evaluation.
Bid opening	Formal and public meeting during which all the bids for a specific contract is opened, and during which prices offered are announced and recorded.
Bid prices	The total amount quoted by bidders for the services, goods or works to be procured.
Bid Period	The time allowed for the preparation of tenders. The Bid Period starts at the time of bid announcement and ends at a date and time shortly before the bid opening takes place. Procurement regulations often set a minimum period during which the contractors are allowed to prepare their bids. For local contracting, this period would normally be between 2 to 4 weeks.
Bid security	Also known under the term "bid bond", it consists of a bank guarantee, certified cheque or cash designed to provide financial assurance that the bidder will honour the price offered for the entire duration of the bid validity period. Its purpose is to protect the client against loss or damage resulting from the premature withdrawals of bids, to avoid bidders refusing to sign the contract, or failing to provide a performance bond, when required.
Bid validity period	Duration expressed in days or weeks during which a bid remains valid. Bid securities are required to be valid for the same duration.
Bidder	An individual, corporate body, agency or organization submitting a price offer.
Bid documents	A set of documents prepared by the client, containing essential information relating to bidding instructions, evaluation criteria, conditions of contract and a description of works, made available to any bidder interested in providing a price offer.
Bidding	A general reference to type of bid competition, i.e. national competitive

procedures	bidding, domestic canvassing, direct purchase, etc. Can also refer to how a specific bid competition is conducted and how bids are evaluated.
Bidding process	The line of activities from the preparation of bidding documents, invitation to bid, bid submission, opening and evaluation of bids to contract award.
Bill of quantities	An itemised list of work activities with estimated volumes of works to be performed. Contracting firms are invited to submit unit prices for each of the work items. The unit prices form the basis for the cost of each work activity as well as the total contract value. The BoQ also forms the basis for measurement and payment of completed works.
Business management	All management activities which have to be carried out by the contractors to run their businesses: business administration, insurance, accounts, financial matters, personnel matters, taxes, etc.
Capacity building, institution building	Means by which skills, experience, technical and management capacity are developed within an organization (contractors, consultants or government agencies) – often through the provision of technical support, short or long-term training and specialist inputs. The process usually involve the improvement of human, material and financial resources.
Capital-intensive technology	A work situation where most of the construction work is done by large and costly construction equipment with limited inputs of manual labour.
Client	Equivalent to employer, principal and owner - the party requesting and paying for the goods and services described in a contract.
Community-based work	Works undertaken by clearly identified groups of people (usually with the help of a facilitating agency) for the benefit of the group as a whole. The assets created are usually owned, managed, used and maintained by the beneficiaries themselves.
Community contracting	An agreement signed by a community (or a section of community) and a contracting authority, defining rights and obligations of all parties concerned, covering and promoting two types of issues: strengthening capacities of organization and negotiation in the weakly organized rural and urban sectors, and taking responsibility to implement concrete actions such as: infrastructure construction, rehabilitation or maintenance works under an appropriate contracting relationship.
Community driven development	Broadly defined, CDD is an approach that gives community groups and local governments control over planning decisions and investment resources. CDD programmes operate on the principles of local empowerment, participatory governance, demand-responsiveness, administrative autonomy, greater downward accountability and enhanced local capacity. Experience shows that – given clear rules of the game, access to information and appropriate capacity and financial support – poor men and women can effectively organize themselves in order to identify community priorities and address local problems by working in partnership with local governments and other supportive institutions.
Competitive bidding	Contractors are invited to calculate their own estimate of the cost of the works (inclusive of anticipated overheads and profit margin) and to submit a sealed proposal according to a required format in competition with other contractors.
Conditions of contract	Requirements included in a contract agreement, setting out general obligations, rights and liabilities of the parties to the contract.
Consultant	Individual, firm or organization engaged to provide professional or expert advice prepare technical designs and plans or provide supervision of

	works.
Contingencies	An amount (often 10-15 per cent of the total costs) allowing for additional work resulting from unforeseen circumstances.
Contract	A legally binding agreement signed by two parties, involving a client who agrees to pay a specified amount to a contractor for carrying out certain works or services within a certain period of time.
Contract amount	The agreed total sum of money to be paid for the works, services and goods described in the contract.
Contract documents	All documents forming part of the contract. In a civil works contract, these include general terms and conditions, specifications, drawings, volumes of work and agreed prices for the services rendered.
Contract management	All management activities which are carried out by the contracting parties with respect to the handling of contracts: tendering, tender evaluation, award of contract, contract implementation, supervision, measurement and payment, claims, variation orders, arbitration, completion, etc. For the contractor, this involves the management of the whole construction process to achieve the required result within the terms and conditions of the contract. For the client or contracting agency – where desired through delegated authority to consultants – this means the supervisory management of the construction works in accordance with the roles and responsibilities set out in the contract.
Contract procedures	An established set of activities to be undertaken by the contracting parties to ensure that the contracts are performed in an orderly manner with each party fulfilling its assigned roles and responsibilities (e.g. tendering process, tender award, contract signing, guarantees, payments, settlement of disputes).
Contractor	A person or firm undertaking a contract, e.g. to supply goods and materials or perform construction or maintenance works.
Contractor association	A formally constituted and recognized group of contractors, sharing common interests and objectives, formed for mutual support and the pursuit of those interests and objectives (e.g. promotion of industry and its interests, training, professional standards and norms, support services to members, etc.).
Contractor registration	A nationally established and recognized system of registering and categorizing contractors according to their skills and capacity – which may include financial position, staffing, equipment held, work experience – allowing them to compete for contracts of different financial size and complexity.
Cost estimates	The expected cost of carrying out a stipulated amount of works, services or purchasing certain goods.
Decentralization	Devolution by central government of administrative and financial authority and responsibility to smaller democratic units at provincial, regional, district, zone, village or community level for the purpose of more accountable local government and greater local participation in decision making.
Decent Work	'Decent Work' is defined by the ILO, and endorsed by the international community, as productive work for women and men in conditions of freedom, equity, security and human dignity. Decent work involves opportunities for work that: (i) are productive and provide a fair income

	paid on time; (ii) provide security in the workplace and social protection for workers and their families; (iii) offer prospects for personal development and encourage social integration; (iv) give people the freedom to express their concerns, to organize and to participate in decision-making that affects their lives; (v) protect against exploitation of the under-age; and (vi) guarantee equal opportunities and treatment for all.
Defects liability period	Also referred to as the Maintenance Period. Following the completion of all works specified in a contract, there might be a warranty period, during which the contractor is held responsible for remedying any substandard work.
Direct costs	Expenses related to specific work activities such as labour wages, operation of tools and equipment or purchase of materials. Indirect costs such as supervision, risks, profits and other overheads are often estimated as a percentage of the direct costs.
Dispute	Disagreement between the contractor and the client relating to the scope of services within the framework of the contract, which cannot be settled amicably. Disputes then need to be dealt with according to the appropriate clauses in the contract describing how the dispute should be resolved.
Designer	Person responsible for developing a technical proposal for the works, based on user needs and other performance requirements. Preliminary designs are further developed into detailed designs and work drawings to be used for guiding the works.
Eligible bidders	Firms and organizations adhering to the prescribed minimum requirements to qualify as a bidder.
Employer	Term commonly used in contracts referring to the owner of the infrastructure or the works described in a contract (same as the Client).
Employment-intensive	Strategies, approaches, and work methods intended to optimize the employment creation potential where labour is the dominant resource for carrying out quality works while remaining cost effective.
Enabling environment	A positively engineered situation in which firms and/or community organizations of different sizes and experience can participate and develop financially and technically in the construction sector. At times, this may require governments to review and modify legislation, regulations, systems and procedures.
Engineer	Person or party appointed by the client to act as its representative for the inspection and supervision of the works, as prescribed in the contract.
Engineer's estimate	The contracting agency estimates the cost of the works, goods or services, used as a benchmark against which to compare tenders submitted by contractors in a competitive bidding process. This engineer's estimate may be revealed to contractors prior to the bidding process as a guideline.
Equipment-based	Work method mainly – or in its entirety – is carried out using large construction machines with limited use of manual labour.
Equipment and plant	Refers to tools, apparatus, vehicles, excavators, rollers and other machines used for carrying out the works.
Evaluation criteria	The qualities against which bids are assessed and ranked, taking into consideration financial and technical capacity, equipment availability and skills requirements.

Expression of interest	A written notification to a potential client stating the interest of a company to bid for and carry out certain works. Normally, the interested firm will include information proving their competence and experience relevant to the works. Submitting an expression of interest may be required in order to participate in the bid competition.
Feasibility study	Preliminary engineering and architectural designs, cost estimates, economic and socio-economic and environmental assessments forming the basis for deciding whether and how to carry out a proposed works project.
Final payment certificate	Statement issued by the engineer instructing the client that: (i) works have been completed to satisfactory standards and all defects have been rectified by the contractor; and (ii) remaining payments and retention money can now be released.
Final payment	Payment due to the contractor according to the Final Certificate issued by the supervising engineer or client representative.
Fixed price contract	A contract in which the total amount to be paid to the contractor is fixed and cannot be altered irrespective of any changes in conditions or volumes of work. Basically, the contractor is required to guarantee a total price for the entire works. Also referred to as a lump sum contract.
Force account	In force account operations government uses its own resources including personnel, materials and equipment, and is employing labour directly to undertake infrastructure works (also referred to as works carried out by direct administration). Although some of the works may be subcontracted to private firms, it is still regarded as a force account operation as long as the client agency is directly in charge of works execution and progress.
Force majeure	Events that cannot be anticipated or controlled, which may seriously affect the works. Such events include outbreak of war, storms, floods, earthquakes, general strikes and civil unrest. In the context of a contract they are also referred to as Acts of God. Most contracts acknowledge that work delays caused by such events are beyond the control of the contractor.
General conditions of contract	Part of the contract documents, containing the general clauses related the overall obligations of the parties to a contract.
Hire purchase	Arrangement whereby contractors' regular payments for hiring equipment include capital and interest components. At the end of an agreed time, the person hiring has paid the full purchase price plus interest and ownership is transferred to him or her.
Identification stage	The initial stage dedicated to creating an overall outline and preliminary design of the works based on user requirements and available financial resources. This stage also includes the decision whether and how to proceed with the works.
Implementation stage	Period during which physical works are actually being carried out as described in the drawings and work plan.
Inspection	Verifying through visits to the work sites that works and materials conform to the agreed quantities and quality standards as prescribed in the contract.
Instructions	Orders given by the supervising engineer to the contractor during the construction works in relation to works, interpretation of drawings and specifications or change orders.

Instructions to bidders	Rules detailing the procedures to which the bidders and the client are obliged to adhere during a bid competition. These rules cover all stages of the bidding process, from announcement, how to submit a tender, bid opening and evaluation to final signing of a contract.
Interim payment certificate	A statement specifying the amount to be paid for approved work completed by a contractor. The engineer issues interim certificates at agreed intervals during the course of a contract.
Intermediate equipment	Equipment designed for low initial and operating costs, durability and ease of maintenance and repair in the conditions typical of a limited-resource environment, rather than for high theoretical efficiency. It is preferable if the equipment can be manufactured locally.
Insurance	A contract in which a company guarantees to cover any financial damages as a result of potential loss, damage or injury in return for paying a premium. Contractors are required to carry insurance for their workers, against damages to third parties and on goods and materials supplied under the contract.
International Competitive Bidding (ICB)	ICB is a procedure applied for large construction works in which eligible bidders within and outside the country are provided with timely and adequate notification of tender and given an equal opportunity to bid for works or the supply of goods and services – as opposed to national competitive bidding which targets the local construction industry. ICB is usually applied when it is considered that there is insufficient capacity in the local market or as a means to obtain more competitive prices when a few large firms dominate the private sector.
International Labour Standards	ILO standards take the form of Conventions and Recommendations. Conventions are treaties, which can be ratified by a country; when ratified, they become legally binding upon that country, which must follow their content and are subject to monitoring and review by the ILO. Recommendations supplement Conventions and are not subject to ratification; they provide detailed and varied additional information that can assist a country in giving effect to a Convention.
Invitation to bid	Announcement, requesting prospective bidders to submit prices for specific works. The invitation includes a brief description of the works, the name and address of the client, bidding rules and deadline for submitting bids.
Invoice	A claim for payment for works carried out by a contractor or for the supply of goods or services.
Joint venture	A registered partnership consisting of two or more persons, firms or organizations established for the purpose of carrying out a commercial undertaking. In bid competitions, contractors may decide to submit a joint bid, thereby improving their chances to win the tender. Normally, the client will not accept bids from joint ventures consisting of bidders already represented in other joint venture bids.
Labour-based	A structured approach and set of work methods in which the use of manual labour (preferably local) is optimized, where technically feasible, in a cost-effective and timely manner to produce quality works. Appropriate equipment is used to supplement work for reasons of cost or quality, for example, for haulage, rock crushing or soil compaction.
Labour-intensive	A work approach where labour is maximized (though not necessarily efficient) in order to create as great an employment impact as possible. It is often preferred where income-generation and job-creation are the

	principal, short-term objectives – for instance, disaster relief or cash-for-work projects.
Labour market	The system of relationships between the supply of people available for employment and the jobs available.
Liquidated damages	Amount specified in the contract to be paid by the contractor to the client for each day that completion of work is delayed. This sum, also referred to as Penalties, is intended to compensate the client for losses incurred due to late completion of the works.
Local competitive bidding	Competitive bidding among domestic firms. LCB procedures normally allow foreign bidders to participate, however, the works are only advertised locally.
Lump sum contract	See Fixed Price Contract
Lump sum	A fixed amount payment not based on a unit price and volumes of work.
Local-level planning	A locally-based planning system, implemented through local authorities and generally based upon decentralized decision-making and the use of local participation in defining community needs (such as community-based works) and priorities.
Local resource-based methods	A work approach where the use of local resources (described below) is favoured and optimized in the construction and maintenance of infrastructure assets. Local capacities and local materials are used to the greatest possible extent, but without adversely affecting the costs and quality of the specified works. Appropriate equipment is used for support activities.
Local resources	Local resources include local labour, materials, local knowledge, skills and culture, local enterprises (usually small- and medium-scale), local institutions (including local government, training institutions, non-governmental organizations and community based organizations, locally produced tools and equipment and local social capital (traditional structures, solidarity and trust).
Main contractor	A person or firm undertaking a major contract who may decide to employ one or several subcontractors to carry out specific components of the work or provide services, labour or materials.
Maintenance	To conserve, as nearly as possible, the original condition of infrastructure assets. Maintenance should be carried out in a manner most likely to minimise the total cost to society for the preservation of the assets and their utilization.
Mediation	Attempting to resolve a dispute through an informal process assisted by a neutral third party engaged to facilitate the negotiations.
Mentorship	Provision of guidance, advice and support to emerging contractors to enable them to efficiently plan and execute work and eventually establish themselves in a competitive environment.
Method specification	A construction specification in which the method of achieving the desired standard is prescribed rather than the standard itself (e.g. the number of passes of weight/type roller to achieve compaction).
Methods of procurement	Refers to the bidding procedures applied, i.e. direct contracting, domestic canvassing, national or international competitive bidding.

Negotiated Contract:	Instead of arranging a bid competition, a contract is awarded on the basis of price negotiations with one single company.
Negotiation	Price bargaining between two or more parties.
Nominated Subcontractor	Subcontractor selected by the client without the involvement of the main contractor. Nominated subcontractors are identified either before or after the award of the main contract. It is expected that the subcontractor enters into an agreement with and report to the main contractor who has the overall responsibility of coordination and progress of all parts of the works.
Obligations	Duties of the parties to a contract.
Output	Quantifiable assets created from the completion of work activities and supply of goods and materials.
Overheads	Indirect costs normally not itemised in a contract, linked to the direct costs, such as profits, supervision, risks and administrative costs.
Owner	Owner of the infrastructure - same as Client, Principal or Employer.
Payment schedule	A timetable usually included in the conditions of contract indicating when and at what intervals payments are due to the contractor.
Performance bond	Also known as performance security, consisting of a bank guarantee providing the client with financial assurance that the contractor meets all obligations in terms of completing the works described in a contract. This security can also be accepted in the form of a cashier's check, certified check or cash provided by the contractor upon signing the agreement. Normally not applied to small contracts.
Performance specifications	Work specifications emphasising the required performance or quality requirements instead of describing the materials or work methods to be applied.
Pilot (or demonstration) phase	An initial phase aimed at testing different technical, management or development approaches to a construction programme. Often used to test the adaption of experience from elsewhere to particular local conditions.
Plant pool	A commercial equipment renting or leasing firm with public, mixed or private shareholders.
Prequalification	Procedure for screening bidders to avoid receiving tenders from un-qualified firms or firms who do not have the required capacity to undertake the works. Prequalification helps to reduce the time spent on evaluation and review of offers since bids are only accepted from a pre-selected number of firms meeting certain criteria.
Price adjustment	Provisions in the contract allowing the contractor to increase prices due to increased costs of labour, equipment and materials. Appropriate clauses in the contract describe in detail how to calculate the increased price of the works, based on the higher cost of a particular input. Normally not applied in small contracts with short duration.
Procurement	Purchase of goods or services to create desired outputs. This includes the award of civil works contracts, consultancy services, supply of materials and hiring of personnel and equipment. When using public funds, this needs to be carried out according to prescribed rules and regulations with the objective of achieving full transparency in all transactions and allowing fair competition to all qualified suppliers.

Procurement plan	A plan detailing how the work is divided into separate contracts and subcontracts, the method of procurement, and when the goods and services are to be delivered. Detailed procurement plans also include key events such as dates for bid announcements, tender opening and evaluation, contract awards and completion of works or delivery of goods and services.
Project manager	Person engaged by the client to supervise all works activities. A project manager may be recruited already during the identification stage, taking the project from the initial design phase through to final completion of works. Some contract documents refer to the supervising engineer as the project manager. In public works projects, the client may recruit a project manager from a technical agency.
Provisional items	Work, which is provided for in a contract, but cannot be determined with certainty before the work commences.
Public works	Infrastructure works (such as roads, water supply, schools, hospitals) undertaken by central or local government agencies to create, operate, manage and maintain infrastructure assets for the benefit of the population in general.
Quantity surveyor	Person in charge of estimating volumes of work and quantities of materials to carry out planned construction works.
Resident Architect/Engineer	A person employed as the representative of the client on site – also referred to as the supervising engineer.
Resolution of Disputes	The process of finding solutions to disagreements between the client and the contractor. In order to limit the time spent on disputes, contract documents prescribe specific procedures to follow if an agreement cannot be found through informal negotiations. Refer to Arbitration.
Responsive bid	A bid adhering to all the instructions in the bid documents and which does not deviate from or contains any reservations to the conditions of the contract. Non-responsive bids are usually rejected during the bid evaluation.
Retention	Withholding a percentage of the payments due to the contractor as an incentive to ensure that the contractor rectifies any defects occurring during the course of the contract or during the defects liability period. It is common practice to release a portion of the retention when the Certificate of Practical Completion is issued, and the rest at the end of the defects liability period.
Scope of services	A description of activities to be carried out under a contract, a term normally used in consultancy contracts, also referred to as the Terms of Reference (ToR).
Short list	Select list of qualified firms or individuals, derived from a long list, regarded as the most qualified and suitable to submit tenders for a particular works project.
Site	Location where works take place.
Site conditions	Physical environment and working conditions prevailing at the location where the works take place.
Site investigation	Studies carried out at or in the vicinity of a work site to obtain information relevant to the execution of works, such as hydrology, soil conditions, suitable building materials, etc. The findings of these investigations may be included as part of the bidding documents. In addition, bidders are often expected to carry out a site inspection as part of the bidding process.

Site management	Normally refers to the supervisory and administrative staff employed by the contractor and stationed at the work site. May also include the organization and work methods applied by this staff in terms of dealing with management issues related to the works performed by the main contractor, suppliers and subcontractors.
Small-scale contractor	A contractor who can source and manage infrastructure works of limited size. This term usually comprises emerging and small-size local businesses that may benefit from development support as a means of improving capacity in the construction sector.
Sole-sourcing	Awarding a contract to an identified organization without inviting for competing bids, also referred to as single sourcing.
Special conditions of contract	Additional clauses to a standardised General Conditions of Contract, containing more specific details pertaining to the envisaged works or details that are specific to a particular contract.
Specifications	A comprehensive description of how works should be carried out. In a wider sense, specifications may refer to all the technical documents contained in a contract agreement, i.e. work specifications, drawings, maps, photographs, site investigations, etc.
Standard specifications	An official document produced by a government agency or professional association describing prescribed building methods and quality requirements to be applied to all public works. For example, a public road works agency will have standard specifications for road construction works. This standard document is used in all road works contracts managed by this agency.
Standard designs	Technical drawings and specifications describing a uniform practice of construction to be applied for all works of a certain nature. I.e. the Ministry of Health may have standard drawings of rural health clinics. Local government units may apply standard designs for rural road works.
Subcontract	A contract or purchase order, other than the main contract, required for the supply of certain works, materials, consultancy services or equipment hire. This contract is not entered into with the client or owner of the works. Instead, the contract is issued and supervised by the main or general contractor, who is held responsible for the quality, payments and timely provision of the subcontractors' services.
Subcontractor	A person or firm being engaged by a main contractor to carry out work or deliver services, labour or materials as part of a larger contract.
Supplier	Individual or company manufacturing, trading or shipping goods and materials required in a works project.
Submission of bid	Providing a priced proposal for the works, goods or services described in the tender documents. The bid is submitted to the client according to the procedures prescribed in the Instructions to Bidders.
Supply contract	A contract for the purchase of equipment and materials, which may include activities such as manufacturing, transport, customs handling and temporary storage until final inspection and handing over to the buyer.
Targeted procurement	Procurement that specifies socio-economic targets and standards that have to be met in the delivery process in addition to those that are purely technical or financial. For example, these may specify labour- and/or resource-based work methods to optimize employment creation potential, maximize the use of local resources, or require training and other contractor development components.

Tender	Same as bid and price offer.
Tenderer	Same as bidder, offering a price for a defined amount of works, goods or services.
Tender document	Same as bid documents.
Terms of reference	See scope of services.
Training levy	A defined percentage of the total programme or contract sum paid by the funding institutions or contractors to a training institution.
Training needs analysis	An assessment of the training requirements of different target groups in terms of numbers, educational and professional background, present job competence and the desired competence at the end of the training.
Training objective	Describes anticipated competencies at the end of a learning process in terms of knowledge, skills and behaviour.
Trial contract	An exercise contract issued to contractors who are under training. This can be a negotiated or fixed rate contract under very close supervision by the contracting agency and with close coaching from trainers.
Unit price	A price offered for a work activity based on a defined unit of measurement, i.e. per cubic metre, linear metre, etc. The total cost of the works is then calculated on the basis of completed quantities of work.
Unit price contract	Contract where the total price is based on quoted prices per unit of work or materials and estimated volumes of work and materials. The contract then includes a Bill of Quantities. Also referred to as an *ad measure* contract or simply a BoQ contract.
Variations	Changes (ordered by the engineer or client) to the agreed works during contract execution for which the contractor may be entitled additional payment and time extension.
Warranty	A statement promising that the works, goods and services delivered are in conformity with the specifications of the contract, free of any defects and delivered within a specified period of time. If the contractor does not adhere to these assurances, the client may regard this as a breach of contract or claim liquidated damages.
Working conditions	Workers' experience of the quality of their jobs, including wages, hours and duration of work, incentive schemes, secondary benefits, workplace safety, training, etc. Minimum standards are prescribed in each country and are also defined in ILO conventions. In many workplaces these conditions are in need of improvement in order to reach the intentions of the Decent Work Agenda. Workers are often deprived of effective protection because of poor enforcement. Jobs in the construction industry often involve hard work and expose workers to high risks.
Work plan	Schedule describing the sequence of work activities, by whom, appropriate timing and start and completion dates.
Worker's compensation	Insurance covering the cost of work place injuries to employees. This type of insurance would normally not be subject to any portioning of blame in order to quickly release the compensation.
Works	Reference to the services defined in a contract to be delivered by the contractor.

Employment-Intensive Investment Programme (EIIP)

Developing the construction industry for employment-intensive infrastructure investments

GUIDE

Substantial investments are made in infrastructure to provide basic services such as education, health, clean water, markets and transport that facilitate economic development and build sustainable livelihoods. Efficient building and maintenance of infrastructure depends on available skilled local builders and competent construction firms. Local governments, the usual custodian of basic public infrastructure and services, need adequate capacity to plan and manage infrastructure works and a conducive environment for the construction industry.

This guide presents effective solutions, experiences and guidelines for a development approach combining capacity building activities for private and public sectors, and a conducive business environment, effective procurement systems, and efficient institutional strengthening.

The guide also offers insights on how the use of local resource-based approaches to infrastructure works can: (i) create significant market prospects for local entrepreneurs; (ii) create additional employment and cash income for poor households; and (iii) boost local economies with important multiplier effects fostering sustained development.

This guide is the result of lessons learnt by the EIIP of the ILO and others engaged in supporting local infrastructure programmes during the past 40 years in Africa, Arab States, Asia and Latin America.

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