Authors
Warren, Mr., Philip - Project Team Leader & Project Management Specialist – Maunsell Ltd.
Johnston, Mr., Dara - Rural Infrastructure Engineer - Fraser Thomas Limited
McKinnon, Dr., John - Community Development Specialist - Kinsa Associates
Tolley, Mr., Chris - Project Director - Maunsell Ltd. (Presenter)

Maunsell Ltd.
47 George Street
PO Box 4241, Auckland
New Zealand

Tel: +64 9 379 1299
Fax: +64 9 379 1220
e-mail: chris.tolley@maunsell.com

Steps Towards Sustainable Rural Development through Appropriate Technology and Participation in Northwestern Cambodia

Category: **Tools for managing sustainability**

Abstract:
The Cambodian Ministry of Rural Development's Northwestern Rural Development Project, on which Maunsell Ltd. of New Zealand is currently working, is an integrated project whose principal focus is accelerating rural development through increased accessibility to public utilities and services. The project, funded under a loan from the Asian Development Bank[1], is building the capacity of local contractors and the rural population to construct, manage and maintain rural infrastructure. The range of infrastructure being constructed under the project goes from the larger scale public utilities, including rural roads under the responsibility of the local authorities; to small scale sub-projects comprising wells, rice drying platforms and other village infrastructure, built at the request of villagers, and vested in the care of indigenous community based organisations. The greatest challenge is to introduce a qualitative change in which funding from an international lending agency is used to optimise the integrity of built structures and set up the skills base, management systems and community ownership that will ensure sustainability.

Project documentation identifies the challenge of developing a sociologically informed approach to, on one hand, build the capacity of local contractors and administrators, and on the other, of promoting village initiated placement, and maintenance of infrastructure. The overall development intervention advocates use of a gender sensitive, participatory approach that will directly address the needs of the poor. Technological innovations include optimising the use of local resources in infrastructure construction and maintenance and enhancing the capabilities of local construction companies. The principal administrative innovation is the out-sourcing of community development work to Non Government Organisations (NGOs). To achieve sustainability the project emphasises the cultivation of local skills and

[1] ADB Loan No. 1862-CAM(SF)

capabilities and a change in cultural orientation of the NGO's to one of longer term continued development.

This paper discusses work undertaken to build sustainability in three areas of project activity: the construction , management and maintenance of rural infrastructure maximising the use of local resources; enhancing participatory development approaches with project benefit monitoring and evaluation through outsourced NGO contracted services; and enabling sustainable pro poor rural development through appropriate capacity building and institutional development of government and community based organisations.

Linked capacity building of local government and community based organizations, to manage rural infrastructure is the key to sustainable rural development in Cambodia. Development of the private sectors capacity goes hand-in-hand with this approach. Maximizing the use of local resources to benefit the local economy, not deplete the countries foreign exchange resources; the development of appropriate contracting systems and specifications for quality control; and a sustained national commitment to decentralization and local empowerment, are essential ingredients for this approach to succeed..

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Authors
Philip Warren, Project Team Leader & Project Management Specialist
Dara Johnston, Rural Infrastructure Engineer
John McKinnon, Community Development specialist
Chris Tolley, Project Director

Introduction
The Cambodian Ministry of Rural Development (MRD), Northwestern Rural Development Project (NRDP) to which Maunsell, New Zealand (working with Fraser Thomas Limited, Kinsa Associates and the Cambodian consulting firm KCEC) is providing consultancy services is an integrated project that is principally focused on accelerating rural development through increased accessibility to public utilities and services. It is also committed to improving local capacity to plan, manage and maintain this public infrastructure and associated services. The project, funded under a loan from the Asian Development Bank (ADB Loan No. 1862-CAM(SF)), is building the capacity of local contractors and the rural population to construct, manage and maintain rural infrastructure. The range of construction work is relatively narrow. At the larger end of the scale are the public utilities, including rural roads, - schools and health centres under the responsibility of the local authorities; while at the small scale end are wells, rice drying platforms and other village infrastructure, built at the request and vested in the care of villagers. The greatest challenge is to introduce a qualitative change in which funding is used to optimise the integrity of built structures and set up the skills base, management systems and community ownership that will ensure sustainability.

Project documentation identifies the challenge of developing a sociologically informed approach to, on one hand building the capacity of local contractors and administrators, and on the other, of promoting village initiated placement, and maintenance of infrastructure. The overall development intervention advocates use of a gender sensitive, participatory approach that will directly address the needs of the poor. Technological innovations include optimising the use of local resources in infrastructure construction and maintenance to minimise lifetime costs and enhance the capabilities of local construction companies. The principal administrative innovation is the out-sourcing of community development work to Non Government Organisations (NGOs) to achieve sustainability the project emphasises the cultivation of local skills and capabilities and a change in cultural orientation to long term, continued development.

This paper discusses steps undertaken to build sustainability under three headings:

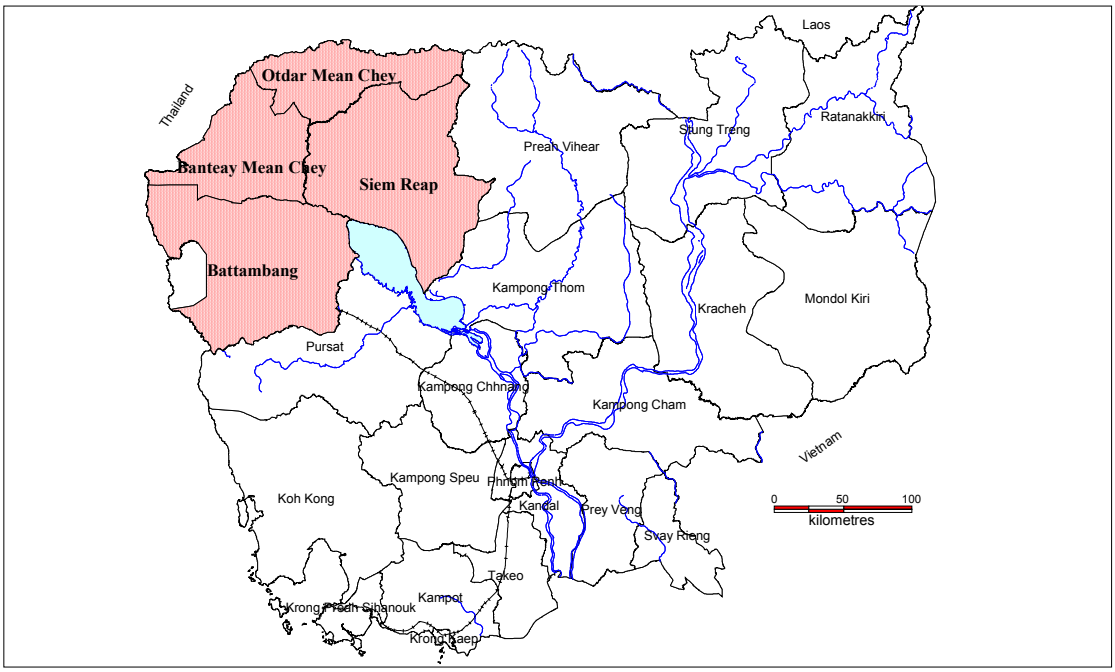
- enhancing participatory development approaches with project benefit monitoring and evaluation through out-sourced NGO contracted services;
- the construction, management and maintenance of rural infrastructure maximising the use of local resources; and,
- enabling sustainable pro-poor rural development through appropriate capacity building and institutional development of government and community based organisations.

Linked capacity building of local government and community based organizations, to manage rural infrastructure and enhance local ownership is the key to sustainable rural development in Cambodia. Development of private sector capacity goes hand-in-hand with this approach. Maximizing the use of local resources to benefit the local economy, not deplete the country's foreign exchange resources, the development of appropriate contracting systems and specifications for quality control, and a sustained national commitment to decentralization and local empowerment, are *sine qua non* for this approach to succeed.

Background

The project is working in an area that encompasses a population of over half a million people living in more than 800 villages and 50 communes. Although open warfare ceased in 1997 it took longer for law and order to be established and as life quietened down people began to move into the project areas in search of land. Because it is the most recently fought over land it is littered with mines and unexploded ordinance. The real population figure for 2004 may well be 20% to 30% higher than originally estimated.

The project area focuses on the following administrative areas



Map of Northwestern Cambodia showing Project Districts

The main thrust of the five year Project focuses on middle scale infrastructure especially rural roads. Funding at provincial and district level will go towards road rehabilitation and maintenance (600 km). Money will also go to building markets (14), and as approved by government line agencies health centres (14) and schools (250 classrooms).

The target population covers a considerable number of communities and the challenge of working with villages scattered over a wide geographical area presents a considerable constraint to achieving the specific pro-poor outputs. If the capacity building and livelihood enhancement objectives of the project are to be met the following will be achieved:

- 36 pro-poor investment plans generated in communes in which work is concentrated by conducting participatory village planning workshops;
- 36 commune investment plans modified to reflect the needs of the poor;
- 960 members of Community Based Organisations trained and able;
- 220 water management groups operating;
- 180 savings and credit groups established and operational.

Capacity Building, much of it conducted as on-the-job training is focused not only on rural grassroots participants and personnel holding positions on village development committees and commune councils it also encompasses government and others serving in administrative, financial, outreach and engineering roles. To this end training will be provided to:

- Upgrade the technical and managerial skills of Provincial Department of Rural Development staff so they can identify and plan projects, procure and manage contracts, supervise construction, monitor and evaluate rural infrastructure interventions as well as prepare, implement and monitor pro-poor, gender sensitive community development activities;

- Improve the professional performance of private sector contractors associated with the Project at provincial level. Local NGOs and community based organisations (CBOs') will be given training in community development skills (participatory approaches and the like). As mentioned above small-scale contractors will be trained to use Labour-Based Appropriate Technology (LBAT) which is designed to maximise employment benefit to local communities and strengthen local ownership and long term management of the roads.

Under the following three headings each of the authors outlines the principal challenges facing sustainability and how these are being met.

Enhancing Participatory Development Approaches with Project Beneficiary Monitoring and Evaluation through Out-sourced NGO Contracted Services

At the community level the biggest challenge facing sustainability of infrastructure either at village (wells, shelters, latrines etc.,) or the civil work level (clinics, schools, roads and markets) is getting people to accept a sense of ownership. Immediate past history has if anything taught people to feel they have very little control over their situation. The combined catastrophes of genocide, disease, involuntary resettlement, and forced labour have decimated the population. The human tragedy of which this was a part is forever associated with the extreme form of utopianism associated with the Khmer Rouge and this cruel perturbation profoundly disrupted Khmer society. This ceased for most of Cambodia with the Vietnamese invasion but many of the areas in which the project is working remained under the control of a chastened and diminished Khmer Rouge until 1997.

In the rehabilitation years that have followed development funding has been provided by the international community, largely coordinated by United Nation agencies. This effort concentrated on getting basic services in place under emergency conditions and was designed to meet immediate needs and rather than secure either a longer term sustainable capacity or give rural folk control over what was happening. If anything, the years of emergency assistance (floods followed the Khmer Rouge surrender) encouraged the emergence of a type of aid dependency under which beneficiaries and government alike became accustomed to a paternalistic approach: government has built an oversized civil service which relies on donor projects for its sustenance and the role of the rural poor was largely limited to that of passive beneficiaries. In more recent years development agencies such as the Asian Development Bank have come in with a much more long term view of what needs to happen and a shift from emergency assistance to development is taking place.

Over the last few years in the Northwest efforts have been made to engage and empower villagers, the question really is has it been enough? The UN set in place and

coordinated a system of infrastructure delivery (Seila and the Local Planning Process (LPP)) that allowed for and encouraged participation in planning right down to village level. A system of annual provincial, district and commune coordinated meetings are still held at which commune chiefs present their development priorities. The government has also taken up the theme of decentralisation and established a new tier of elected governance at the Commune Council (CC) level. There is a great deal of talk about development at the grassroots but few links between the aspirations and needs of the poorest members of rural society and the development plans coming out of the CC and provincial planning processes.

Despite what has been achieved local people do not feel strongly engaged by what is going on and public works carried out in their villages by government officials and outside contractors making brief visits are usually poorly used and maintained by the community and soon fall apart. Participatory work carried out at villages level under the LPP indicate that there is a very low level of correlation between what commune chiefs present at district meetings as development priorities and what most villagers, especially vulnerable people such as widows, the disabled and very poor consider is needed. Often through inertia and habit villagers are prepared to allow infrastructure promoted by commune elites and outside planners to collapse rather than undertake the necessary maintenance work.

If the work in which it is engaged is to become sustainable the NRDP faces a two pronged development challenge how to:

- decisively move away from "gifting" infrastructure, no matter how well built that leaves the impression that it belongs to outsiders who must also maintain it;
- engage villagers much more meaningfully in both the decision making process to chose their own village based action plans and in the management and maintenance of small and medium sized civil works they share with other communities.

Village based participatory work provides the most direct path to empowerment but it would be impractical to expect a provision made solely by the villagers alone. The project has been charged by the MRD under a loan agreement with the ADB to enlist the assistance necessary to:

- conduct introductory village meetings to present the overall project aim and activities;
- conduct group discussions among vulnerable village groups to screen Local Planning Programme (LPP/Seila) generated commune investment plans;
- identify a revised prioritized list of pro-poor investments eligible for project funding;
- assist in the formation of village management groups to assume responsibility for investments;
- provide leadership training to male and female village and commune leaders;
- provide support and training to women members of village development committees (VDCs) and other community-based organizations to allow full participation in village meetings;

- provide functional literacy and particularly numeric literacy training for women;
- provide training in participatory, gender-responsive approaches to village and commune leaders and on-the-job and training of trainers training for cooperating agency staff;
- provide training in maintenance procedures to government agencies and communities;
- provide awareness training in the use and management of established infrastructure such as water supply and hygiene, pump maintenance and road safety campaigns
- provide training in group dynamics and strengthening of common interest groups.
- conduct community orientation to explain concept of savings and credit groups, objectives.
- conduct follow-up meetings to confirm participation and elect office bearers;
- conduct follow-up community meetings to discuss basic operational framework and procedures, monthly deposit rates, interest rates and loan purposes;
- conduct community level training with management groups and also use community level training as on-the-job training for agency staff;
- monitor and support savings group implementation; deliver *in-situ* training for microfinance groups; and
- provide village-level support to basic livelihood system improvements (using non-project resources).

The project is seeking to elicit the support and services of NGOs to act as the MRD's field agents in rural development in order to:

- benefit from their existing close relationships of trust and community development experience;
- expand the capacity (and thereby scope and impact) of the project to directly interact with the target communities, and
- solicit meaningful participation in the development process.

To better undertake these tasks the project is working closely with a Japan Fund for Poverty Reduction funded project known as the Community Based Livelihood Enhancement project (CBLE). CBLE is already providing funds for NGOs to work with the rural poor in basic credit and health support. Both projects are promoting a Participatory Learning and Action (PLA) approach which is designed to optimise the engagement with villagers and enable specific undertakings to emerge out of the village-NGO consultation process.

It is only through working with NGOs that the Project can hope to establish affective and trusting relationships with villagers and commune administrators. As

empowerment works it will be manifest by much more confident and assertive behaviour. What will flow from this is better trust and communications which will in turn enhance the sustainability of both administrative and engineering work.

Construction, Management and Maintenance of Rural Infrastructure Maximising the Use of Local Resources

The project plans physical interventions in rural infrastructure in the areas of social services (schools and health centres), markets, water supply and rural roads. The construction of schools and health centres have been standardised through prior projects with the line ministries responsible for education and health, and no further detailed engineering intervention are foreseen, except in the design of the foundations for particular cases. Market construction will consist of developing a location where goods are traded into a more sanitary, safe and convenient environment. The road around the market falls in the rural road sector of the project.

Water supply in Cambodian villages is minimal at best. Lacking knowledge in water hygiene people typically take water from the nearest source. Hand dug wells, properly maintained, can be a clean source of potable water, however more often than not villagers end up taking water from potentially polluted sources such as rivers or unprotected ponds, especially where the well is not sufficiently deep to provide water in the dry season. The project aims to develop water points which can supply year round clean water, which is more accessible than existing unsafe sources.

Where hand dug wells fail, deep water well drilling is used. Before the project began the siting of wells was haphazard and the results were unpredictable. Deep wells will be sited using geo-electric surveying (resistivity) to maximise the probability of success. If it is established that water is not attainable using this method then the more expensive, complicated and difficult to sustain surface water treatment methods will have to be chosen.

While the later solution will require extensive intervention from the Livelihood Enhancement component of the project, none of the solutions to water supply pose a particular technological challenge to the project engineers.

The same can be said for the other construction interventions planned, except for the construction and maintenance of the rural roads. The responsibility for rural road construction and maintenance is vested in the Ministry of Rural Development. The MRDs policy (Policy for Rural Roads, MRD, Phnom Penh, Cambodia, October 1999, Updated April 2001) makes clear the governments' commitment to both the development of the private sector to implement these works and the desire to put the maintenance of existing assets a priority over construction of new roads.

The project will consider whole life costs to determine technology choice and materials used in construction. Technology choice in the method of construction of a road has effect on many factors of not just the road, but the people living in the vicinity of the infrastructure. Over the past decade rural roads in Cambodia have been rehabilitated using lateritic gravels (laterite), which are only suitable for very low volume roads. Laterite in Cambodia is not good in quality, creates health problems (dust), is becoming scarce, and is environmentally destructive in its extraction. The

laterite that is available generally contains too much clay and not enough gravel. The material can initially produce a reasonable road surface, but with a combination of heavy traffic and tropical weather (hot dry conditions or monsoon rains) the laterite becomes powdery and is blown away, or turns to an easily damaged sticky mud.

Hence constant regular maintenance is required, with a stock of laterite available for patching. In addition it has been found that in Cambodia the wearing surface will deteriorate at a rate of 3 to 4 centimetres per year, leaving a surface, which was 20 centimetres thick after construction, at the minimum structural thickness after only three years. At this point re-surfacing is required. The cost of maintenance of laterite roads in Cambodia is therefore astronomically high. It is most acute when the laterite source is far from the road. The life cycle cost of this type of surface was not a consideration while the country was in the transition from reconstruction to development.

To this end the project aims to take the lead in Cambodia in the development of the use of low-cost sustainable road surfacings, which were piloted by the ILOs Upstream project (CMB/98/M02/SID) with the MRD, completed in 2002. This will involve the introduction of technological innovations including the optimising the use of local resources and enhancing the capabilities of the local construction companies, as well as training local government staff in the design, tendering, construction supervision, monitoring and maintenance planning of these types of road surfaces. The project will trial the most promising alternative surfacing option on a selection of lengthy trial road, before expanding their use throughout the project area.

The major cost of this maintenance is the recurring cost of the easily wasted laterite. A bituminous surfaced road would cost less than US$ 200 per annum per kilometre to maintain, and periodic maintenance would be required after ten to fifteen years. This type of improvement of the road surface is an alternative to regravelling with laterite, which has been found to cost upwards of US$1,500 per annum per kilometre (inclusive of routine and periodic maintenance).

The design of the type of surface will depend upon the local resources; labour, stone, gravel, laterite, sand, etc. The surface type will therefore vary with the location. The decision to use an alternative surface should be carefully analysed to ensure that the future maintenance costs would be less than the maintenance of the existing road surface, over the whole life of the road.

The first step in the process will be to develop a rolling maintenance plan. This will begin with a transport infrastructure inventory. This inventory will identify the roads which are in a maintainable condition. These are the roads that must first be maintained, before any road rehabilitation occurs. As more roads are rehabilitated they must be added to the rolling plan. It is important that the local government and the MRD realise that the addition of new roads each year increases the maintenance budget requirements. To prepare this plan the responsible authority will require training in the appropriate planning methodology.

In parallel to this the management and financing of maintenance needs to be institutionalised. Without a maintenance management system established, there is little prospect that the rehabilitated roads will be maintained in the future. The

provincial authority responsible for rural roads must list all of the infrastructure assets in each province and prepare a maintenance strategy and plan. They can then establish a rolling road maintenance work-plan for the districts. In the long term this will be the first step towards developing a road maintenance management system. The next step will be to train the local government and MRD staff to update and extract plans and budgets, and monitor construction.

Fundamental to the projects success will be the development of the capacity of the provincial authorities and the local private sector to be able to procure, design, implement and maintain civil works, especially roads. A key step will be to identify the persons who require training, and their training needs. Prior to this it will be necessary to identify the skills required to perform these tasks. An organisation chart must be defined to specify the roles for all staff. This will allow for job descriptions to be drawn up, showing the level of skills required for each position. It will be necessary to develop a clear picture of the numbers and level of education, and experience as well as previous training in appropriate technology and contracting, to estimate the training needs.

The job descriptions and organisation chart of the local authority responsible for rural roads will be the starting point for this activity. It will be necessary to survey the local government staff and potential trainee contractors in each province. By knowing the requirements, the 'shortfall' can be determined. This deficit will most likely include manpower, as well as technical capacity of individuals. The project will need to identify local engineering consultants with the potential capacity to monitor road works, to make-up for this lack of skilled personnel. These consultants will only be required when the quantity of works exceed the capacity of the local government staff.

Local contractors will need extensive training in all aspects of LBAT contracting. Contractors will most likely have experience with machine based works and will want to continue this activity, while also developing a labour-based capacity within their firm. It will be necessary to train the contractors to identify the areas where existing skills or positions can be developed to encompass the new activity, and where new skills or positions must be created.

In addition to maximising the use of local engineering skills and resources the project will seek to maximise the sustainability of the infrastructure developed under the project. Sustainability will be enhanced through the development of appropriate maintenance and management mechanisms and corresponding human resource capacity, as well as choosing the most appropriate and sustainable technical designs.

The capacity and training needs of the MRD, PDRD, districts, communes and private companies and consultants must be identified. Additionally the type of infrastructure for which agents at different levels will be responsible will determine the amount of capacity building required at each level.

Building the capacity of local government and community based organizations to manage rural infrastructure and enhance local ownership is the key to sustainable rural development in Cambodia. Developing private sector capacity goes hand-in-hand with this approach. Optimizing the use of locally available resources benefits

the economy and saves foreign exchange reserves; the development of appropriate contracting systems and specifications for quality control, and a sustained national commitment to decentralization and local empowerment, are essential if this approach is to succeed.

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Enabling Sustainable Pro-Poor Rural Development Through Appropriate Capacity Building and Institutional Development of Government and Community Based Organisations

The project recognises that it is simply not sufficient or sustainable to make a quantum leap in the manner and quantity in which technical and social services are provided without balancing this qualitative change with systemic administrative capacity and understanding improvements across the whole governance and civil society network.

Accordingly the project is not focusing its capacity building and organisational development improvements in the implementing agencies and community based organisations alone, but is aiming to improve the environment in which rural development is taking place.

The project believes that to achieve sustainable infrastructure development, all parties, systems and frameworks need to be developed in unison. Civil engineering sustainability is being maximised by improving technical standards and local resource use (material and labour) and thereby reducing life time costs and maximising local benefit, whilst the community development component is improving civil society participation and awareness of the development process and thereby enabling local ownership of the development process and empowering civil society to demand sustained infrastructure accessibility.

To complete the circle of interdependence, the project is seeking to systematically modify framework systems to recognise the interrelated roles of user and service provider as well as building the technical and managerial capacity of service providing institutions and regulatory authorities.

Cambodia, a nation recently dominated by civil war and centralised socialist government has resulted in a society that is fragmented and conditioned to collective control rather than delegated decision making and individual empowerment. Government administration was structured in a manner that followed political power; policy and resources were channelled down from central government in Phnom Penh through appointed provincial and district authorities directly to village communities. In this environment the Ministry of Rural Development (MRD) fostered an informal village based development network which is still focused on a nominated Village Development Committees (VDC).

Recently the country has taken a bold step and introduced a new tier of governance by establishing an elected Commune Councils (CC) that is charged with developing and implementing their own commune based bottom up development programs. These councils have only been in existence for just over one year and as one might expect are heavily dependent on technical and resource assistance to undertake even the most

basic governance tasks. The elected members have yet to achieve true autonomy in local decision making and resource allocation, and as a result have little real constituent support.

The project aims to strengthen this new level of governance by both improving the quality of management and decision making as well as its resource base while at the same time enabling the CC to respond to the needs of its elected constituency. As mentioned above this will be done through a participatory approach - PLA - that will enable villagers to develop their own action plans and priorities and communicate these to the leadership through a capable and informed village development network. The project is charged with improving the links of knowledge, trust and understanding between the VDC's and CC's to enable CC decision making to reflect village needs and aspirations. More responsive CC planning is expected to result in greater constituent ownership and support of the elected CC process and a general empowerment of civil society. This empowerment is essential if central and regional government is to provide sustainable access to public services.

An unfortunate outcome of decentralised and delegated planning is the localised and insular, almost introspective nature of the village and commune development plans which rarely take into account the accessibility of resources outside either the village or commune boundary or the need for infrastructure (particularly roads) to be strategically placed so as to form a network rather than a series of unlinked, scattered resources which provide little or no strategic or synergistic value. To mitigate this tendency the project is introducing a planning tool known as "Integrated Rural Accessibility Planning" (IRAP) prioritised which makes it necessary for those engaged in development work to take a holistic view of accessibility needs. The result is better informed local planners with a less political and more disinterested view of how infrastructure and public service needs can best be prioritised.

As part of this empowerment and self determination process the project is developing the capacity of the private contracting sector and enabling CCs to procure and manage works programs they themselves have chosen to undertake. The project agents (NGOs) have a dual role:

- advocacy on behalf of the VDCs and CCs to ensure the voice of the poorest is heard in the selection of CC civil works; and,
- communication and facilitation with the service providers to ensure maximum impact.

In developing the local private sector in terms of quality of workmanship, employment ethics and sustainable incomes, the project aims to empower communities with the technical skills necessary to maintain infrastructure as well as enable them to benefit directly from the employment and income generating opportunities provided during both construction and on-going maintenance. By being involved in its construction the community is also more likely to develop a sense of ownership, and will consequently take better care of it.

The project intends to match this grass roots empowerment with solid managerial and technical capacity building in line ministries. Through this work, the project aims to enable the line ministries to realign their approach to be more customer oriented and

CC focused, while at the same time enable delivery of an improved quality of public services to communities.

Finally the project aims to influence the policy making process to ensure that the legal framework and public administration reforms are harmonious with the new governance paradigm. At the same time the undertaking needs to ensure that the institutional and organisational change process is conducted in a manageable and realistic manner that matches the absorptive capacity of the organisations being advised. Of course the project has no direct authority to dictate or force change, however its multi-sectoral brief and the facilitating role of the MRD puts it in an ideal position to observe development from a wider prospective. In doing so the project is charged with improving communication and coordination between all the stakeholders in the country's development process. The project is fortunate in this regard in that its funding nature (loan rather than direct grant or gift) has helped improve Cambodian ownership of the project and therefore its credibility amongst other organs of government.

Conclusion

It must be accepted that in a development milieu such as that in which NRDP is working true sustainability in terms of cost recovery and an extended let alone unlimited life expectancy is not achievable because the focus is on building a new resource base rather than maintaining an existing one. However it is clearly a responsibility of development workers and donors to build a resource base that the recipient community has the capacity, willingness and resources to maintain in the longer term. It is this longer term aspect of sustainability that the project is striving to achieve. Human resource development lies at the heart of sustainability

Can sustainability be achieved? In the course of the NRDP enterprise project implementers have come to realise that sustainability is a function of many inter-related matters which take time to put in place before an entirely enabling environment can be created. The consultants' engagement is limited to a few years. A series of specific and significant outputs will be achieved and solid engineering structures that will last will be put in place. As to the bigger question, has enough time been allocated to create a properly enabling milieu characterised by empowered communities, confident of their skills, with on-going access to the right resources, willing to recognise and exercise good management? Unfortunately this achievement is too much to ask for over a few years. The NRDP can only claim that it is taking steps in the right direction towards sustainability.