

# Infrastructure Maintenance Submission from Cardno

## Purpose

At the request of the Parliamentary Secretary for International Development Assistance, to explore options for improved sustainability of international development assistance projects through better financing and quality of infrastructure maintenance, drawing on Cardno experience.

## Summary

Donor involvement in infrastructure maintenance in developing countries will be required for many years to come. Any such involvement needs to recognise realistic time-frames (decades), rather than be tailored to project/program life-cycles. In middle-income countries a focus on the technical support to the operations and maintenance of infrastructure assets as well as further experiments on different financing models would in Cardno's view be appropriate. In Least Developed Countries (LDCs) multi-year donor financing will be necessary with incentives for partner governments to increase their proportion of financing over time, along with approaches that bring end-users closer to operations and maintenance. A much better effort is required on capacity building (technical and governance) in LDCs. In all cases proper planning is required before any investment or funding occurs: Cardno's Total Management Plan for infrastructure has proved relevant in developed and developing countries alike.

## Introduction

In order to meet most MDG targets significant investment in transport, building, water, health, sanitation and education infrastructure is required. While governments and donors are often quick to invest in new infrastructure, there is a wide divergence over who pays for the operations and maintenance of the infrastructure and how. Developed economies rarely get it right, let alone developing ones. For LDCs the challenges are particularly daunting. This short submission touches on some of the options that Cardno (and Emerging Markets Group (EMG), its recent acquisition in the USA) has developed or encountered both overseas and in Australia, predominantly in the transport and water/sanitation sectors.

## Developed v Developing Country Context

The key advantage of developed countries over most developing countries is that they have revenue streams to service infrastructure maintenance investments. Local, state or federal level revenue is used in all developed countries to maintain infrastructure that may or may not give economic returns because it is "affordable" in the context of those advanced economies. In developing countries the infrastructure investments are comparatively significantly less affordable to maintain and in many cases absolutely less affordable (e.g. extremely high costs of fuel, spare parts etc... in Africa and the Pacific due to high transport costs).

It would be dangerous to assume that developed countries are successful at infrastructure maintenance: they are not. The day-to-day operations of infrastructure assets tend to be financed and handled better than long term maintenance, while renewal or replacement of assets is the most problematic, often financed very late, in response to some crisis. This latter problem applies whatever the maintenance funding model (be it

public funding, Public Private Partnerships, franchises etc). Clearly the situation in developing countries is much worse and there is no one model or approach that can work in all, most or even many contexts. Most developing countries cannot come close to meeting all of their infrastructure investment or maintenance requirements. Donor involvement in infrastructure maintenance will remain essential, especially in Least Developed Countries (LDCs) for many more decades. The issue is how to do this most effectively.

## **The Importance of Time Frames**

In Cardno's experience the greatest problem facing infrastructure maintenance of ODA financed assets and programs is unrealistic time frames. Maintenance solutions are normally geared to project life-cycles rather than the life-cycle of an asset. Approaches change regularly as governments change, donor policies change and even development agency personnel change. Long-term planning for operations and maintenance of any infrastructure investment or asset has to be a priority. By way of one example, the PNG tax credit scheme for the resource companies has been much criticised by donors and even by the PNG government (as it tries to get its hands on all of the royalties from the resource boom). However, the scheme has provided greater consistency of approach and a higher standard of infrastructure maintenance than any other alternative model applied in PNG over the past two decades. In the Philippines there are some interesting examples of consistent, long-term approaches to town water system maintenance through Barangay Water Associations and community based organisations. Short-term approaches and funding also damages the private sector, as contractors build up capability then lose it when funding is pulled for a few years.

When working with public sector management of operations and maintenance under ODA programs, it is essential that local agency involvement must be normalised, not separated into a project involvement that ends when the project does, and support must be long-term: thinking needs to be in decades. Also much greater investment must occur in the design phases to create appropriate long term solutions. Initial costs will be much higher, but whole of life costs will be dramatically lower. This will allow for realistic programs for host government assumption of maintenance and depreciation costs over time.

## **Middle Income Countries**

In Middle Income Countries (MICs) there tend to be more options for the financing and implementation of infrastructure maintenance and in some countries Public Private Partnerships (PPPs) are proving increasingly popular (e.g. China, India, Malaysia, Brazil). A major problem with PPPs is that the private sector is understandably unwilling to assume the unmanageable financial risks associated with the projects, particularly in terms major maintenance and renewal. The private sector has a great deal to offer but will always look for manageable risks and a reasonable return (principles that apply across all types of projects in all countries).

Cardno has experience with various mechanisms of funding maintenance, for example:

- including provisions in loan or project agreements to require maintenance reserve funds;
- procuring spares in advance as part of project financing (water and electricity sectors);
- PPP contracts (which are particularly problematic if it involves taking on existing, often deteriorating infrastructure);
- public sector management through user charges (easiest with water systems);
- some sort of local community management through user charges in the water sector;
- privatisation of utilities;
- concessions; and
- vehicle user charges through various funding recycling mechanisms for roads and bridges.

In addition to the time-frame factor mentioned above, the two most important observations that can be made from all of Cardno's experience in infrastructure maintenance in MICs are: i) different contexts require different approaches and solutions; and ii) it is rare for any operations and maintenance model to deliver the necessary technical competence and support required. It is necessary for government and arguably donors to

provide additional investments in ensuring adequate capacity building and support for more complex technical issues as well as the development and operation of management and financial systems.

It is worth noting that in Cardno's experience it is extremely difficult (to the extent that there are no examples we can provide) to effect an effective tariff system/internal maintenance financing system for sewerage and sanitation. Solid waste is easier. However, for sewerage and sanitation this poses a major problem in the achievement of MDGs four, five and seven. Some sort of additional surcharge on water fees (where affordable) plus public subsidy appear the best option to address the problem.

### **Least Developed Countries (LDCs)**

In LDCs, it is entirely appropriate for donors to provide some financing of infrastructure maintenance: the challenge is to do so effectively without creating dependency and perverse incentives. The options of PPPs and other private sector engagement tend to be far fewer and the dependence on government delivery is greater. But in LDCs the government capacity is weakest (be it central or local). Transfer of knowledge and expertise from aid projects has been minimal and to be brutally honest there has been very little real capacity building. In addition the end-users tend to be even further removed from the decision making/financing/accountability of the operations and maintenance.

The Cardno Group is working on a number of programs where we are trying to do things a bit differently. In Afghanistan the focus of a large irrigation rehabilitation project has been to shift the control of the infrastructure and its maintenance to the local communities themselves. Initial progress has been good and outcomes are exceeding both the client's and our expectations. Local management of small water supply systems in Uganda is also proving successful. In both cases however, providing the necessary technical back-up through donor financing for many years will probably be necessary until private sector technical supply can evolve. In Africa in the water sector EMG is exploring the use of a pooled infrastructure insurance fund as well as a regional franchise arrangement involving the establishment of a private sector regional service operator (to be trialled in Tanzania). As mentioned before, the PNG tax credit system has much to commend it: rather than throw it out it would be much better to make some small adjustments to improve it.

Donors have embraced the importance of improving service delivery in health and education, including supporting (over extended time periods) some recurrent costs in these sectors. Support for improved service delivery in the provision of transport, energy, water etc... has lagged behind.

### **Total Management Plan**

Current IFI practice has moved away from covenants under infrastructure loans whereby host governments were required to allocate a portion of their public works budget for maintenance: this approach was very rarely enforced and so had no teeth. Now the IFIs are financing maintenance training and the establishment of the maintenance systems, and insist that a maintenance component go into all Project Preparation TAs and Project Implementation Loans. For example, Cardno is currently undertaking work in Tajikistan setting in place a system to establish performance road maintenance contracts to take care of the Dushanbe-Kyrgyz border road as construction is finished.

However, Cardno still believes that insufficient attention is being placed on maintenance issues. Cardno has developed a Total Management Plan, initially for use on public infrastructure projects in Australia, to assist in managing infrastructure to minimise life-cycle costs. Such an approach is equally applicable in developing countries. Cardno has used this approach in some recent water projects in Sarawak. The TMP addresses the construction of the assets, operation of the assets, maintenance of the assets and perhaps most importantly of all the renewal or replacement of the assets down the track. Attached is a description of Cardno's TMP.

### **Attachments:**

Cardno Total Management Plan for Public Infrastructure

The function of a TMP is to assist agencies in managing infrastructure to minimise lifecycle costs

## Total Management Plan for Public Infrastructure

Total Management Planning is an asset management based process supported by a hierarchy of interrelated documents.

### What is a TMP?

It is a document that provides:

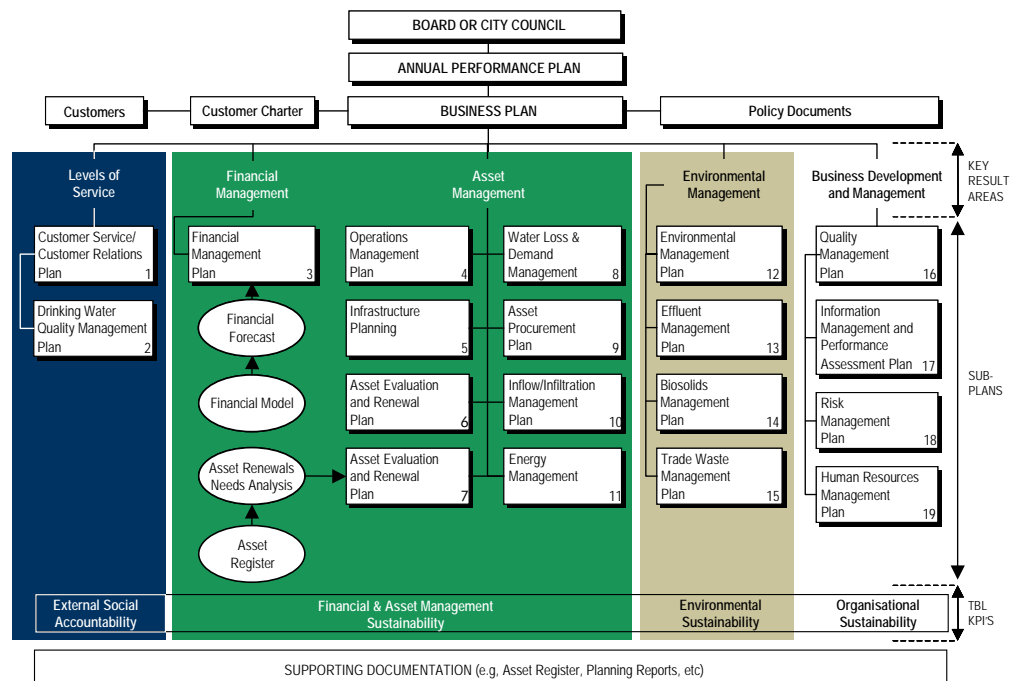
- A total picture of how services and assets are currently managed to meet agreed customer service levels;
- An outline of strategies that drive cost efficiencies and business improvement;
- An outline of major issues to be addressed in providing and maintaining assets; and
- A foundation for development of a rolling budget based on a life cycle analysis of assets.

The TMP process used by Cardno quantifies and assesses the condition of assets, prioritises expenditure, and identifies options for cost saving and improvement in ways that are ecologically and financially sustainable.

Staff from Cardno have worked with numerous water/wastewater agencies, State and local governments over the past decade to develop a range of asset management tools and methodologies for Total Management Planning that is cost effective and practical.

Cardno's TMP processes uses strategic planning processes to identify the most appropriate best practice to suit each client.

The typical outputs of the total management planning process consist of a Summary, Business Management Plan, Operational Sub- Plans (including action plans) and identification of supporting documentation such as infrastructure planning studies, asset registers, endorsed policies and situation status reports arranged to deliver outcomes in Key Result Areas.



## Total Management Plan for Public Infrastructure cont.

### What does a TMP provide?

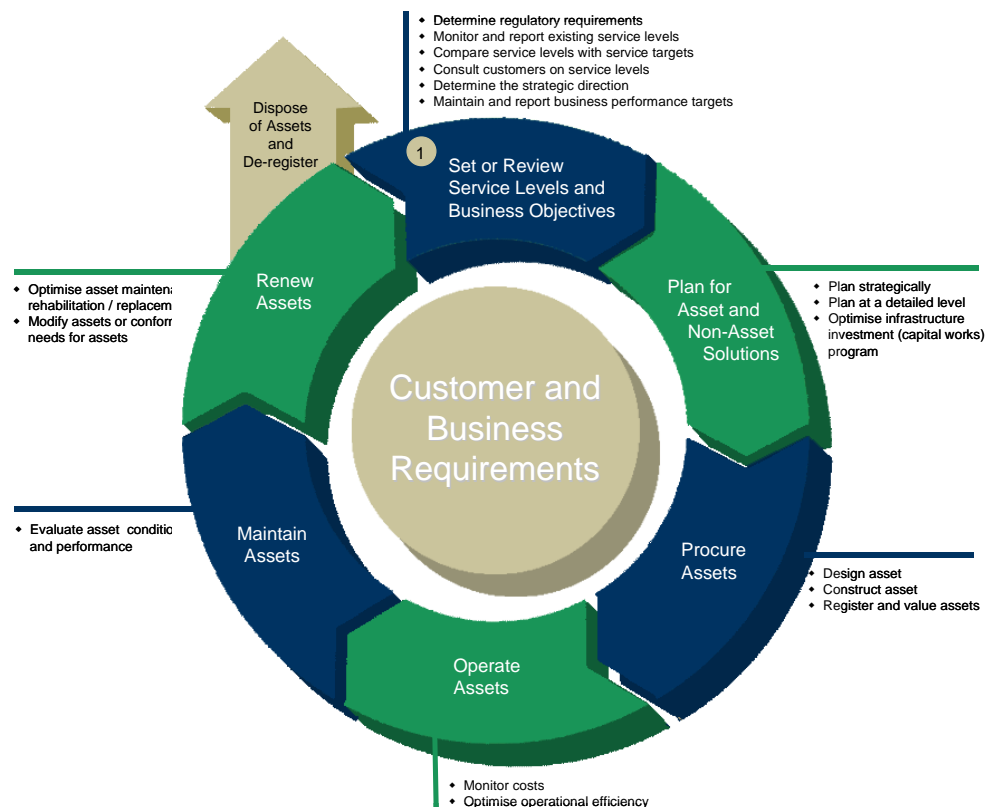
- presents a comprehensive picture of service objectives and policies;
- balances the organisation's objectives with its financial capabilities;
- identifies major management issues;
- presents planning and management strategies for maintaining or improving services;
- sets out performance measures for monitoring the cost-effectiveness of the services;
- possession of a systematic blueprint for future planning and management;

- agreed strategies for managing potential risks and liabilities, such as ageing infrastructure and its financial and service level impacts;
- a core tool for sustained and improved service delivery; and
- continuous improvement in strategic management processes.

### How can a TMP help you?

- The TMP provides the strategic basis for implementation of an effective Asset Management Program.
- A Gap Analysis that identifies appropriate, implementable asset management improvements.

The best way to implement an effective asset management program that totally integrates with your business



A TMP will assist your organisation to:

- Meet Customer Expectations
- Justify Funding Needs
- Meet Regulatory and Environmental Objectives