

REGIONAL PUBLIC GOODS

Incentives, Financial Frameworks and Institutional Arrangements

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The Collaborative Africa Budget Reform Initiative (CABRI) is a professional network of senior budget officials of African Ministries of Finance and/or Planning. CABRI aims to promote efficient and effective management of public finances in Africa. Specifically, the network seeks to:

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- advance the development of member states by building capacity and promoting training and research in the field of public finance management; and
- develop and promote common African positions on budget-related issues of interest to Africa.

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank	MDC	Maputo Development Corridor
APOC	African Programme for Onchocerciasis Control	MDG	Millennium Development Goal
AU	African Union	MDP	Mectizan Donation Programme
CDTs	Community-Directed Treatment	MIGA	Multilateral Investment Guarantee Agency
CDTI	Community-Directed Treatment with Ivermectin	Motraco	Mozambique Transmission Company
CFM	Mozambique Ports and Railways	NEPAD	New Partnership for Africa's Development
COMESA	Common Market for Eastern and Southern Africa	NGDO	Non-Governmental Development Organisations
CSA	Committee of Sponsoring Agencies	NOTF	National Onchocerciasis Task Force
DBSA	Development Bank of Southern Africa	NPG	National Public Good
DFI	Development Finance Institution	NTD	Neglected Tropical Diseases
EADB	East African Development Bank	OCP	Onchocerciasis Control Programme
EASSy	Eastern African Submarine Cable System	ODA	Official Development Assistance
ECA	Economic Commission for Africa	OECD	Organisation for Economic Cooperation and Development
ECCAS	Economic Community of Central African States	OSBP	One-Stop Border Post
ECEAS	Economic Community of East African States	PHC	Primary Health Care
ECOWAS	Economic Community of West African States	PIDA	Programme for Infrastructure Development in Africa
FAO	Food and Agriculture Organisation	PPP	Public-Private Partnership
FCC	Federal Communications Commission	RASCOM	Regional African Satellite Communication Organisation
GPG	Global Public Good	RASPAC	RASCOM Programme of Assistance to Countries
ICT	information and Communications Technology	REMO	Rapid Epidemiological Mapping of Onchocerciasis
IFI	international Financial Institution	RPG	Regional Public Good
ITU	International Telecommunications Union	SADC	Southern Africa Development Community
JAF	Joint Action Forum	SDI	Spatial Development Initiative
MCC	Maputo Corridor Company	STI	Sexually Transmitted Infection
MCLI	Maputo Corridor Logistics Initiative	TCC	Technical Consultative Committee

TDR	Special Programme for Research and Training in Tropical Diseases
TFR	Transnet Freight Rail
TRAC	Trans African Concessions
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNHCR	United Nations High Commissioner for Refugees
WADB	West African Development Bank
WHO	World Health Organisation
WTO	World Trade Organisation



PART 1

1. Regional Public Goods in Africa – Taz Chaponda

1 REGIONAL PUBLIC GOODS IN AFRICA

Taz Chaponda

1.1 INTRODUCTION

Increasing the supply of public goods is a central aspect of the development agenda in Africa. Regional Public Goods (RPGs) have in particular become the anchor for the economic integration agenda in Africa. RPGs are 'any good, commodity, service, system of rules or policy regime that is public in nature and that generates shared benefits for the participating countries and whose production is the result of collective action by the participating countries' (Estevadeordal et al. 2004). This concept can be applied across many sectors, and wherever two or more countries come together to supply a public good that benefits the citizenry.

RPGs play an important role in the growth and development strategy of developing countries. In Africa, the artificial boundaries that emerged from the colonial era resulted in a high level of social and economic fragmentation. While countries and regions work towards greater economic and political integration, investing in RPGs can serve as an intermediate step towards larger economic units. A former senior African official at the International Monetary Fund (IMF) put it best: 'Efficient regional cooperation allows the economies of Africa to overcome the disadvantages of their relatively small size and, by opening access to larger markets, to realise economies of scale' (Alassane D. Ouattara IN Senghor's et al, 2009).

Africa's policymakers and leaders have long recognised that 'regional public goods provision must be a critical part of the strategy for Africa's growth and development' (Botchwey 1998). In fact, a recent study on RPGs across Africa has concluded that understanding the role of RPGs in fostering development is important for meaningful poverty reduction in Africa. The Organisation for Economic Cooperation and Development (OECD) has similarly placed great weight on the supply of RPGs, stating that enhanced provision of such goods will be critical to achieving the millennium development goals (Reisen, Soto & Weithöner 2004).

The increase in cross-border flows, both within Africa and between the continent and other regions, has heightened

the importance of providing adequate levels of RPGs. The increased movement of people and goods across borders is closely related to the push for greater economic and political integration across Africa. In June 2011, three regional economic communities – the Southern African Development Community (SADC), the Common Market for Eastern and Southern Africa (COMESA) and the Economic Commission for Africa (EAC) – announced their intention to form a large Free Trade Area encompassing 23 countries. Such ambitious reforms will need to be accompanied by the increased supply of cross-country public goods; including common trading standards, rules governing the movement of trucks across borders and improved network infrastructure.

Multicountry infrastructure projects are considered a special category of RPGs because of their close association with the growth agenda. Increased investment in the right kind of infrastructure contributes to economic growth. Network infrastructure that facilitates the flow of goods and services between African countries offers significant cross-country externalities.

This paper presents a framework for analysing RPGs. The characteristics of the main categories of RPGs are presented, together with a prognosis of what may be required to adequately supply a given RPG category. The theoretical framework is applied in several African case studies in sectors as varied as telecommunications, transport infrastructure, and disease prevention (public health). The paper ends with some lessons drawn from several case studies.

1.2 BENEFITS OF REGIONAL PUBLIC GOODS

The concept of externalities as understood in economics is central to understanding why governments have taken a special interest in providing public goods. An externality is an impact or effect that arises from an economic activity; externalities can thus be positive or negative. Notably, the

way a private entity values a public good such as clean air or national security, markedly differs from how society as a whole values the same good. For the private entity, only private benefits are taken into consideration. This leads to underinvestment in that public good and ignores the wider social benefits. Because of the failure of private entities to factor in the value of positive externalities in their investment decisions, the public sector has to step in to ensure that such goods are supplied in adequate quantities, commensurate with maximum social welfare. Another example of a public good is immunisation of babies which prevents certain diseases and creates a healthy and more productive population. The social benefits are so large that it makes sense for governments to offer free national immunisation to the public.

From a policy perspective, there are several reasons why RPGs should be a focal point of national and regional development plans. Firstly, by pooling their resources to supply a shared good, individual countries can access public goods at a reduced cost due to economies of scale. Secondly, providing RPGs creates the foundation for future cooperation among countries by creating trust and establishing formal and informal ties among different national agencies. Thirdly, individual countries may more easily achieve national objectives by contributing to the supply of a RPG rather than trying to do it alone. Fostering national peace and security through regional peacekeeping efforts is a good example of the latter as seen in the Eastern Congo region bordering Rwanda and Burundi. As discussed later, certain national public goods have regional spill-over effects that might justify a bilateral or regional strategy for provision of that good.

In spite of the seemingly broad consensus on the importance of RPGs to fostering regional integration and alleviating poverty, there is still an insufficient supply of public goods arising from successful regional collaborations (Reisen et al. 2004). As long as some countries can benefit from the existence of RPGs without having to invest in them, it is easier to leave the investment burden to more developed countries in the region. As a result, it is a challenge to convince governments to invest real resources into regional initiatives; especially when they already face pressing domestic budgetary needs. This paper seeks to understand the different types of public goods by analysing their characteristics. Thereafter, the incentives inherent in the different RPG categories are linked to various institutional and financing options for the supply of RPGs. Faced with multiple demands on scarce resources, countries may be reluctant to participate in regional projects unless presented with the right incentives.

1.3 DEFINING REGIONAL PUBLIC GOODS

The definition of public goods is well established in public finance. These are goods that display characteristics of being both non-rival and non-excludable with respect to the benefits they offer. Non-excludability means that when a pure public good is created or supplied, it is not possible to exclude additional users (consumers) from the benefits/services it generates. Non-rivalry means that the additional user or beneficiary of the service does not reduce the benefit enjoyed by existing users. This classical definition applies to 'pure public goods' such as clean air, world peace or international financial stability. Other examples of pure public goods include limiting the spread of contagious diseases and publicising basic research findings.

INDIVIDUAL COUNTRIES MAY MORE EASILY ACHIEVE NATIONAL OBJECTIVES BY CONTRIBUTING TO THE SUPPLY OF A RPG RATHER THAN TRYING TO DO IT ALONE.

The examples cited above point to the inherent cross-country externalities that characterise public goods. By their very nature, there is a spatial dimension to the benefits that these goods generate. The benefits spill over from a single focal point to a much wider region; perhaps a neighbouring country, surrounding region, or indeed the entire globe. This extent of 'spill-over' is what leads to different types of public goods; ranging from a national public good (NPG), to a regional public good (RPG), and ending with a global public good (GPG) where the benefits are felt globally. Whatever the geographic reach, it is difficult to exclude people from consuming the public good within the geographic boundary that applies.

When it comes to provision of public goods, the question of who pays for it becomes important. 'When an IPG is purely public, payers and non-payers receive its benefits, and one person's consumption does not necessarily reduce the benefits still available to others from the same unit of the good' (Sandler 2002). However, 'most public goods are not purely public and permit either some exclusion or else some rivalry of benefits'.

Where a pure public good exists, the classic 'free-rider' problem emerges. As the name suggests, a free-rider is a person or entity seeking to take advantage of a situation

by reaping the benefits of other people's labour; without making a measurable contribution to generate those benefits. This kind of behaviour is possible because of the non-excludable nature of public goods. Since the free-rider cannot be excluded, it is easy to enjoy the benefits for free. The problem becomes even more acute when it is not possible to distinguish who has made a contribution and who has merely come along for the ride. The net effect of the free-rider problem is an undersupply of the public good.

THE PROBLEM BECOMES EVEN MORE ACUTE WHEN IT IS NOT POSSIBLE TO DISTINGUISH WHO HAS MADE A CONTRIBUTION AND WHO HAS MERELY COME ALONG FOR THE RIDE.

In reality, there are many impure public goods where the benefits generated are available to two or more countries, but where the good displays either partial non-rivalry or partial-excludability, or both. Club goods are an example of RPGs whose benefits are fully excludable and partially rival. Examples of these goods include transnational parks, power grids and regional transportation infrastructure. The Great Limpopo Transfrontier Park is an example of such a good, encompassing South Africa, Mozambique and Zimbabwe.

Infrastructure networks are generally associated with club goods. For these club goods, it is possible to exclude potential users without incurring excessive costs. Usage can also be tracked quite easily, allowing the suppliers of the good to charge a toll per unit of utilisation (Rufin 2004). A cross-country toll road is a good example of a club RPG. Users not prepared to pay the toll fee will automatically exclude themselves. The Maputo Development Corridor provides insights into the successful development of club goods.

Another class of impure public goods is 'joint products'. In this class, a single activity gives rise to two or more outputs with differing spill-over reach. Examples of this class include preserving a rainforest, preventing natural disasters, supplying internet connectivity and providing peacekeeping forces. In each case, two or more goods are produced. As an illustration, preventing a natural disaster creates a regional public good by fostering regional stability; while limiting country-specific damage in those countries that are directly affected.

The preceding discussion allows us to identify four classes of regional public goods – pure public goods, club goods, joint products, and other impure public goods. These classes can be further distinguished by identifying the manner in which the good is supplied by various countries.

1.4 DIFFERENT APPROACHES TO PUBLIC SUPPLY

Apart from the classical properties of non-rivalry and non-excludability, a third property relates to the manner in which the regional public good is produced in aggregate. This is termed the 'aggregation technology' and refers to how individual contributions combine to form the overall level of the public good available for consumption. Six aggregation technologies have been identified:

- *Summation*: The overall level of public good supplied equals the sum of countries' contributions. Each unit contributed by a country has identical impact from other country contributions; individual contributions are therefore perfect substitutes. A summation technology, when combined with non-rival and non-excludable benefits, results in financing challenges for RPGs and the need for transnational public sector coordination. As an example, cleansing a polluted lake consists of the cumulative action of different agents, where the total level of clean-up consists of the sum of individual efforts.
- *Weighted sum*: The overall level of public good equals a differentially weighted sum of the participating countries' contributions. This supply arrangement results in a differentiated spread in the benefits from the good. Those countries receiving the highest share of benefits will have stronger incentives to contribute to supplying the good. Curbing the spread of an infectious disease in a region falls in this category because a country's efforts may have a greater impact, depending on the disease prevalence in that country's population relative to its neighbours.
- *Weakest link*: The smallest contribution determines the good's aggregate level. For example, where network infrastructure is found, the least reliable section of the network determines the reliability of the network as a whole. The weakest-link aggregator creates incentives for other countries/institutions to supply the public good to avoid negative spill-overs to the entire region or network. Richer nations are more inclined to augment the contribution of the weakest nation to limit negative externalities.
- *Weaker link*: The smallest contribution has the greatest influence on the good's aggregate level, followed by

Box 1.1: The Maputo Development Corridor

The Maputo Development Corridor (MDC) is a transport corridor comprising road, rail, border posts, port and terminal facilities connecting three provinces in South Africa with the Port of Maputo in Mozambique. Active, committed support from political leaders was instrumental to the success of the MDC. The involvement of the transport ministers of Mozambique and South Africa was a key success driver in the early years of the project.

The policy thrust saw a move towards the development on a joint basis of integrated and efficient transport routes. The aim was to reduce transport costs and transit times, which in turn would make products more competitive and increase the attractiveness of Mozambique and South Africa for inward investment. The key elements of the infrastructure targeted for expansion – road, rail, port – sought to increase the provision of RPGs in the form of these critical transport links. These RPGs were developed as club goods where externalities were internalised by recognising the excludable nature of transport infrastructure. Partial rivalry would clearly emerge over time as traffic volumes grew as expected.

In terms of the financing aspects of the MDC RPGs, private sector financing was found to be viable due to the ability to apply user charges on a ‘pay as you go’ basis. As a result of robust market demand for the various elements of RPG infrastructure, combined with high levels of excludability, the main projects were commercially attractive to private sector financing and development. The commercial attractiveness of the MDC infrastructure RPGs allowed the Mozambican and South African governments to structure the concessions in a manner that would ensure a specific set of ‘operations and maintenance terms and conditions’ in the concession agreements. In terms of the revenue collection, the private party was highly incentivised to collect levies/charges so that they could recoup the debt and equity invested in the projects. Indeed, financing provided on strict commercial terms brought real discipline to the execution of the projects on tight deadlines.

With regard to institutional issues and supporting legal reforms, it is noteworthy that the MDC planning and development process was characterised by the following:

- The project design and implementation process was kept as simple and focused as possible. Both countries were convinced of the need for and feasibility of the concept, and the approach was pragmatic in introducing reforms as and when required in order to support the successful development and implementation of the project.
- The project was pursued as a bilateral development initiative rather than a SADC initiative. This approach simplified the required decision-making processes.
- The MDC planning and development process was ‘championed’ by the two national transport ministers from both countries, who both played an active role in the planning and investor mobilisation process. This gave the initiative the required political backing.
- The planning and development emphasis was focused on relatively few priority projects, and it was agreed that required legal and institutional reforms would be identified and acted upon by both countries as and when the need arose.

A similar approach was adopted for the institutional arrangements by focusing on support for a limited suite of vitally strategic project elements. In order to support the initiative and manage the key policy shifts, the political leadership in each country undertook to put in place inter-sectoral coordinating bodies at the ministerial and technical levels. These were effective in facilitating work within each country as well as coordinating activities binationally.

A key lesson learned from this case study, however, is that the initiation of a development corridor does not always require formal legal and regulatory reform. Development corridor initiatives can arise from the development of relatively simple bilateral agreements (or tri/multilateral agreements where a corridor involves more than two countries) that do not inherently require the countries to initiate formal legal or institutional reform. As projects are implemented, the legal and institutional reforms necessary for this implementation can be identified and acted upon by the countries concerned.

the second smallest contribution, and so on. Under this category, countries have the incentive to contribute beyond the smallest contribution as additional benefits continue to accrue as other participants increase their effort level. However, coordinating which country will contribute more effort is a challenge. Distributing anti-malaria drugs is an example of the weaker link, since incremental actions beyond the minimum level of effort can achieve additional gains (up to a certain limit).

- *Best shot*: The largest contribution solely determines the overall level of a regional public good. Once a country finds

a solution to a given problem, all other countries benefit from the RPG created and further efforts add no value. Health and scientific research breakthroughs fall into this category. Coordinating efforts among countries to avoid redundancy is the main challenge as it makes sense to back the efforts of a well-resourced nation, rather than duplicating efforts.

- *Better shot*: This is a less extreme form of the best-shot aggregator. Contributions lower than the largest may still add to the total amount of the good; as even second-best efforts may further the overall level supplied. Unlike

best-shot RPGs, where a single supplier renders other suppliers irrelevant, better-shot RPGs may arise from multiple suppliers. Discovering an effective vaccine is a good example since a less effective vaccine could still play a role (for example due to price differences).

The three essential properties of RPGs have been presented as non-rivalry, non-excludability and the manner of aggregate supply resulting in a taxonomy of regional public goods made up of 24 categories, as shown below. The provisioning category is particularly important in understanding the prognosis for supply since each provisioning model contains a different set of incentives for contributing to overall supply, whereas the type of RPG (that is, impure versus pure goods) is more relevant for understanding the different financing options. The sections that follow examine separately the issues of provisioning and financing, with respect to the main determinants in each case.

There are ready examples of African RPGs that fall within the categories above. The Mano River Basin STI/HIV/AIDS initiative includes Guinea, Liberia and Sierra Leone. This pure public good is characterised by the weighted-sum aggregator. The Southern African Power Pool encompasses 12 countries and is a good example of a club RPG with a weighted-sum aggregation technology.

Similarly, new technological advances sweeping the continent offer numerous examples. The successful launch of a number of undersea cables such as the Eastern African Submarine Cable System (EASSy) is set to revolutionise broadband connectivity across Africa. While the technology

is excludable, it is partially non-rival and has been developed by a public-private partnership (PPP) involving government and telecommunications operators.

1.5 INSTITUTIONAL ISSUES

The provision of public goods is characterised by collective action problems rooted in the free-rider phenomenon. While it is in the interest of countries to have an increased supply of RPGs, they each wait for another country to take action because of the dispersed nature of the benefits. This problem becomes particularly acute when dealing with pure public goods where it is impossible to exclude any country in the region from reaping the benefits. In such cases, the likelihood of free-riders increases dramatically. Some form of collective agreement may be formulated among the member countries in the region, but this too may not be effective without a credible enforcement mechanism. This would include a common legal framework governing the relationship among participating countries.

The legal framework will be different depending on the number of countries involved and the type of RPG being jointly provided. The framework should be based on harmonised policies and standards on the technical and financial management of the RPG. The legal framework provides a mechanism for financial transfers between the countries and for settling any disputes that may arise. The case of the Lake Victoria River Basin, (see Box 4) highlights the immense challenges that can arise when the legal framework is not acceptable to affected countries in the region.

Table 1.1 Taxonomy of regional public goods

Aggregation technology	Pure public good	Impure public good	Club	Joint products
Summation	Cleansing a lake	Treatment of disease-infected patients	Transnational park	Preserving the rainforest
Weighted sum	Curbing the spread of an infectious disease	Reducing acid rain	Power grid	Eliminating transnational terrorist threat
Weakest link	Implementation of standards for financial practices	Surveillance of regional disease outbreaks	Air traffic control	Prevention and mitigation of natural disasters
Weaker link	Applying prophylactic measures against a regional disease	Inhibiting the spread of an agricultural pest	Transportation infrastructure	Internet connectivity
Best shot	Curing a region-specific disease	Agricultural research findings	Satellite launch facility	Remote sensing of hurricanes
Better shot	Discovering an effective treatment	Cleaning up an oil spill	Biohazard facility	Bio-prospecting

Source: Sandler (2005)

Institutional framework for RPG provisioning

Given that most RPGs are not pure public goods, it is important to consider what type of institutional form may offer the right incentives for collective action under different settings. Here, the supply approach (as described earlier) plays a role in determining the most appropriate institutions for encouraging robust collective action among countries.

Summation

When supply of a public good is characterised by the summation technology, there is need for a multilateral organisation or leader nation to take the lead in increasing supply of the public good. This is largely because the summation technology generates strong incentives for free-riders. However, the richest nations are more likely to act before the negative externalities trigger a worst-case scenario. For example, when there were major floods in Mozambique in 2001, South Africa sent helicopters and relief and rescue teams at its own cost. In the absence of a leader nation that can take decisive leadership, a multilateral organisation like the African Union can fill the gap.

Weakest link

Under the weakest-link aggregator, the smallest contribution determines the quantity supplied for the entire region. The incentive is therefore created for countries to match each other's contribution levels because failing to do so makes the defaulting country worse off. The opportunity to free ride is not present and contracts are self-enforcing as each individual country must raise its own contribution to improve individual country welfare (as well as the overall regional welfare).

In addition, rich nations are inclined to form partnerships with poorer countries in the region so that the level of supply is raised to a more acceptable standard. For example, where regional peace and stability is concerned, richer nations will subsidise poorer nations to ensure that no single country becomes a centre for terrorist threats. In the Horn of Africa, Somalia is clearly the weakest link and is a growing centre for piracy. Given the negative impact on the entire region, a regional solution led by a multilateral is urgently needed in the Horn of Africa.

Box 1.2: Combating river blindness – African Programme for Onchocerciasis Control (APOC)

River blindness is a parasitic disease transmitted by flies along fast-flowing rivers.

Countries are increasingly cognisant of the fact that communicable diseases do not respect boundaries. As such, countries must find ways of cooperating where an endemic area extends across the borders of two or more adjacent states. The disease is also transmitted by onchocerca-infected persons migrating from one country to another. In 2008, the Joint Action Fund urged countries vulnerable to onchocerciasis to strengthen cross-border cooperation for effective surveillance and elimination of the disease.

The River Blindness Control Programme is defined as an impure public good with the aggregation technology being that of weakest link. Before the control programmes began, tens of millions were infected and hundreds of thousands suffered from the worst symptom: total blindness. In total, 30 African countries were affected. The control programme began in 1974 through a coalition of African governments, local communities, international organisations, bilateral donors, the business sector, foundations and NGOs. It included the training of hundreds of epidemiologists and entomologists and the enlisting of tens of thousands of community health workers. The success of the coalition over 30 years lies in a strong sense of purpose shared by participants - and a systematic approach with defined objectives.

At the heart of the programme's success was the emergence of a genuine PPP. The programme's leadership includes the health ministers of the participating countries, who fully participate in the policy and decision-making processes. The partnership of APOC at country level is guided by a memorandum of agreement in which the Ministry of Health (MOH) and its partners agree to establish a National Task Force which formulates and implements a national plan for onchocerciasis control. The MOH and its partners agree to meet at least 25% of the programme costs. The APOC partnership is completed by the strong contribution of Merck & Company through the Mectizan Donation Programme.

This private sector contribution ensured that resources were not a limitation by substituting drugs in poor countries that would otherwise have become the weak links in the prevention drive.

With the programme's success in West Africa, productive labour has increased, 600 000 cases of blindness have been prevented and 25 million hectares of formerly evacuated arable lands have been made safe for settlement and agriculture. These lands have the potential to feed an additional 17 million people per year using indigenous technologies and methods.

Best shot

The best-shot aggregator stands in direct opposition to the weakest link. Here the largest contribution from a single country sets the overall level of the RPG available to the region. The biggest challenge relates to coordination among those countries that could provide the requisite level of effort. The potential for coordination failure is significant and could lead to a waste of resources as multiple countries seek the same solution to a regional problem. To avoid redundant efforts, it is better to support the efforts of the country with the greatest likelihood of success; or to form a partnership among those countries with similar probabilities of success. Such a partnership can also involve contributions from the private sector as seen in the health sector where groups of countries have joined efforts with drug companies, foundations and non-governmental organisations (NGOs) to find effective prevention measures against malaria and other communicable diseases.

Weighted sum

Under this scenario, the benefits of the public good are not shared evenly across the region. Instead, some countries receive disproportionately greater benefits and thus possess a large incentive to support the RPG. As a result, those countries that stand to reap the greatest benefits from the public good are more likely to dedicate more resources towards provision of the RPG. However, the specific weights may not be evident to all countries in the region due to information asymmetry. Multilaterals can strengthen the incentives of individual and collective action by demonstrating the breakdown of benefits within the region.

THERE IS CLEARLY AN IMPORTANT ROLE TO BE PLAYED BY INTERNATIONAL AND REGIONAL ORGANISATIONS TO OVERCOME PROBLEMS AROUND COORDINATION.

There is clearly an important role to be played by international and regional organisations to overcome problems around coordination. However, such organisations can also create further obstacles by their country-focused approaches. Instead of supporting regional initiatives, many donor agencies have a country focus which takes away from solving regional public good problems.

‘Three additional sets of problems afflict regional public goods, leading to their underfunding in developing country regions: lack of national and regional capacity to coordinate, the traditional country focus of the current foreign aid system, and the absence of both the strong recipient-country demand from which national public goods benefit and the donor self-interest from which global public goods often benefit’ (Birdsal 2006).

The reform programme for increasing the supply of RPGs will have to involve a shift in focus among donor agencies and multilateral organisations in favour of regional approaches.

Regional versus global institutions

The above discussion points to the important role that can be played by supranational structures in resolving coordination problems and in raising finance for the provision of RPGs. Development finance institutions (DFIs) are particularly suited to this role. A further advantage of DFIs is that they face economies of scope as they are able to provide multiple public goods using the same administrative infrastructure. Providing two or more RPGs from one institution is more cost-effective than providing each good from a different institution.

While the case for DFIs is clear, there is need to differentiate between the roles played by regional institutions versus global financial institutions. The principle of subsidiarity is relevant in making the distinction. Subsidiarity seeks to align the range of spill-overs from public goods with the appropriate geographic or political jurisdiction. Subsidiarity places the RPG supply problem on the most appropriate participants; in so doing reducing transaction costs. Kanbur (2002) argues that regional issues are best addressed by regional institutions. A cross-border spill-over is better handled by the agency whose geographical mandate is closest to the underlying RPG's range of spill-overs. He further argues that the World Bank should progressively devolve certain responsibilities to regional financial institutions such as the African Development Bank (AfDB). Clearly, such devolution of responsibilities should be accompanied by appropriate capacity building at regional level.

The same argument can be extended to regional DFIs and their relationship with sub-regional institutions as there is a limit to the number of new activities an institution can take on without expanding its operations. The choice is then between enlarging the institutional footprint and assigning responsibilities to specialised institutions created for the RPG in question. Over time, the AfDB would be able to devolve activities to regional institutions such as the Development Bank of Southern Africa (DBSA) and the East African Development Bank (EADB) in areas where the latter has

developed appropriate capacity. But even sub-regional DFI will have a limit in terms of their reach and scope. Ultimately, a dedicated institution may be required for the implementation and daily activities of RPG provision. The regional development corridors are good examples of institutions that have been set up for the sole purpose of meeting the objectives of the countries involved in promoting the corridor.

1.6 FINANCING ISSUES

Financing prognosis for RPGs

The characteristics of a public good strongly influence the likelihood of member countries to make voluntary contributions to financing adequate levels of supply. To understand the financing options, we focus on the non-excludability and non-rivalry nature of the good. Where consumption can be limited to certain users, charging such users becomes relatively straightforward. But few goods are sharply characterised by one or another property. Instead, most public goods lie along a continuum of excludability and rivalry and therefore require more creative financing solutions.

If an RPG is a pure public good, free riding by some countries is likely to be pervasive and financing most problematic. To raise funds under this scenario, there needs to be a leader nation that will encourage others to follow its contribution example. Alternatively, a supranational structure should take the lead and institute an ability-to-pay approach. An example at global level would be the United Nation's contributory system where countries contribute according to their economic strength. The African Union also operates along similar principles when it comes to raising funds for its various programmes.

When an RPG is impurely public with some rivalry but no exclusion, the same challenges arise as per the pure public good. Once again, a supranational organisation such as the African Union needs to play a role in establishing a regional collection arrangement. However, the element of rivalry is likely to translate into more independent behaviour as some countries will choose to make a contribution in spite of what other countries do; particularly when the RPG is characterised by the weakest-link and weaker-link aggregator forms.

Another category of impure public goods is characterised by exclusion where potential beneficiaries can be prevented from enjoying the benefits of the RPG. Exclusion promotes voluntary financing from individual countries and club-like structures where users can be monitored and charged a fee. Nonetheless, since exclusion is only partial, the public sector may have a role to play in encouraging private sector

provision by perhaps providing some initial grant funding to counter the perceived risks.

For club goods, non-payers can readily be excluded. Users of the good can be charged a toll each time they access the good/service. This allows users to reflect their preference for the good/service by either paying more often to access it regularly (high demand) or by paying a minimal amount and choosing alternative services (low demand). Due to the effectiveness of excludability, pure private sector financing is possible although the public sector may want to retain some ultimate ownership through a partnership structure. A transnational park is a good example since access to the park can be strictly monitored through fencing and controlled access. Transnational toll roads would also fall into this category.

For joint products, there is a more diverse range of financing mechanisms, depending on the share of excludable benefits. The larger the share of such benefits, the easier it is to apply market and club-like structures to raise funds. Conversely, where exclusion is partial there will be greater need for a public sector push from a supranational agency. As seen earlier, the agency that is so mandated should be selected through the subsidiarity principle.

FINANCING POSSIBILITIES DEPEND ON THE EXTENT OF 'PUBLICNESS' INHERENT IN A PARTICULAR RPG.

Table 1.2 provides examples of how the type of RPG influences the financing options available to project promoters. The key determinant in financing appears to be the extent of excludability of the good. Whenever there is a large share of excludable benefits, it is easier to finance a regional good. Table 1.2 focuses mainly on the type of good rather than its provision. The aggregation technology would possibly have an impact on how readily funding can be raised as it gives financiers an indication of how reliable the project sponsor(s) will be and whether other beneficiaries of the project are likely to assist in retiring the debt. The greater the country-specific benefits derived from the commodity or service, the greater the likelihood the country will contribute to or finance it.

In summary, financing possibilities depend on the extent of 'publicness' inherent in a particular RPG. Public provision and financing is most applicable in those situations where

Table 1.2 Financing prognosis for different RPG categories

Good type	Examples	Financing possibilities
Pure public	Curbing global warming Basic research Limiting spread of disease Augmenting ozone shield	Usually must rely on some kind of public sector push based on an ability-to-pay charge. Financing coordinated by a supranational organisation using some international taxation or fee arrangement. A leader nation or nations might exist if sufficient net benefits can be derived.
Impurely public with some rivalry but no exclusion	Ocean fisheries Controlling pests Curbing organised crime Alleviating acid rain	Must again rely on supranational organisation and some international collection arrangement. Rivalry may motivate more independent behaviour in contrast to purely public goods.
Impurely public with some exclusion	Missile defence system Disaster relief aid Extension services Information dissemination	Exclusion promotes voluntary financing and club-like structures. For these goods, the public sector may be needed for coaxing and facilitating eventual private sector provision. There may exist an entrepreneurial or leader nation to market the good.
Club good	Transnational parks INTELSAT Remote-sensing services Canals, waterways	Charge each user according to crowding that results. Non-payers are excluded. Toll per use is equal to marginal crowding costs so as to internalise the congestion externality. Taste differences can be reflected by tolls paid on total visits. Nations with a greater demand visit more often and pay more than those with a smaller demand.
Joint products	Foreign aid Tropical forests Peacekeeping Defence spending among allies	As nation-specific private benefits and club good benefits become more prevalent among the joint products, markets and club arrangements can be used to finance the good with greater efficiency. As the share of excludable benefits increases, payments can be based increasingly on benefits received.

Source: Sandler (2001)

exclusion is inadequate and private provision is not feasible. When trying to prioritise their funding to RPGs with low financing options, donors and multilaterals should focus on non-excludable RPGs that are characterised by a summation technology and possess few nation-specific benefits (Rufin 2004). For regional club goods, external assistance should focus on the costs of setting up an effective club that will be able to collect user fees from member countries. However, where the RPG has weakest-link and weaker-link aspects, donors will need to focus on capacity building so that poor nations can meet acceptable provision standards.

The various regional trading blocs in sub-Saharan Africa provide a useful illustration (e.g. SADC, COMESA and ECA). By introducing common standards and rules across a group of countries, trading blocs help to reduce the transaction costs

for engaging in fruitful exchange among member countries. Through an executive function, trading blocs are able to address coordination problems and are also able to channel resources towards developing infrastructure nodes that benefit two or more member countries. Moreover, regional development banks are able to channel resources to regional trading blocs and customs unions for the development of joint products. This model has received a further boost by the announcement in June 2011 that SADC, COMESA and ECA would merge to form a free trade zone spanning 26 countries and 500 million people.

Financing mechanisms for RPGs

The previous section established that there are different financing possibilities for an RPG depending on its

characteristics; meaning where it lies on the continuum between a pure public good and a private good. Once the financing prognosis has been established, a range of financing mechanisms can be considered. There are essentially four broad financing mechanisms; namely internalising externalities, private resources, public resources, and partnerships.

Internalising externalities

Externalities are internalised when the benefits or costs associated with a RPG are assigned or confined to the agents responsible for its production or consumption. By identifying the producers and consumers of a RPG, market mechanisms can be used to raise the required funding. This might involve the imposition of taxes, user charges, fees and levies; possibly through supranational entities. Imposition of such charges provides incentives to deter depletion, congestion, instability or other negative outcomes, and also generates revenue to finance the provision of RPGs or development in general (Binger 2003). In practice, national tax agencies would need to levy the charges within their national boundaries and then later remit the funds thus collected to a central authority or central RPG fund.

International public sources

International financial institutions such as the World Bank and IMF have long been involved in the provision of international public goods and RPGs. Some of their income is derived from their operations but most is due to member country contributions. International organisations such as the various UN agencies are also involved in providing multiple RPGs. The UN is funded through membership fees and donated trust funds. Although the international institutions have a global mandate in relation to their particular agency role, they often play an important role at country and regional level. For example, the UNHCR is a specialised agency dealing with refugee migration. This agency has on numerous occasions played a crucial role across Africa resolving post-conflict situations and ensuring that displaced persons are well cared for and ultimately repatriated to their home countries. Other UN agencies that play important regional roles include UNEP (environment protection), WHO (public health) and FAO (food security).

National public sources

National funding plays a role where a national public good produces benefits that extend beyond its borders. As long as there is a high proportion of country-specific benefits, it will be in the interest of the host country to expend some of its national budget on the provision of the good; whether or not neighbouring countries contribute. However the subsidiarity

principle discussed earlier suggests that neighbouring countries are likely to contribute additional funds to ensure that the level of supply is sufficient to cover them as well. The Lesotho Highlands Water Project is a good example of a major infrastructure project in Lesotho that benefits both Lesotho and South Africa. To ensure a sufficient level of supply of this RPG, the South African government has contributed both financially and technically to the project.

AS LONG AS THERE IS A HIGH PROPORTION OF COUNTRY-SPECIFIC BENEFITS, IT WILL BE IN THE INTEREST OF THE HOST COUNTRY TO EXPEND SOME OF ITS NATIONAL BUDGET ON THE PROVISION OF THE GOOD; WHETHER OR NOT NEIGHBOURING COUNTRIES CONTRIBUTE.

Another form of national funding comes in the form of official development assistance (ODA) from developed countries to the developing world. Bilateral assistance comes in various forms including outright grants for social programmes, as well as technical assistance for specific projects and debt relief. While bilateral donor aid has been significant in Africa, it has been beset with problems such as unpredictable flows and misalignment with national priorities. Moreover, ODA flows to the developing world have been slowing in recent years; particularly after the 2008 global financial crisis.

Private sector resources and partnerships

The private sector has become a major source of financing for RPGs in Africa, particularly in the development of infrastructure. For example, the explosion of mobile telecommunication services across the continent has been primarily driven by the private sector. Transnational infrastructure has also brought development through PPPs where the private sector brings skills and finance in exchange for commercial rights to collect toll revenues over a period of time. The N4 toll road connecting South Africa and Mozambique is a good example of how two countries were able to jointly develop a transport corridor by leveraging both public funds and private finance.

Beyond infrastructure PPPs, the OCP, which has successfully eliminated river blindness, is an example of a PPP involving multilateral organisations, pharmaceutical companies and national governments.

Apart from private financiers seeking returns for their investments, there are many non-profit corporations that have played a central role in funding development programmes in sub-Saharan Africa; particularly in the health sector. For example, the International AIDS Vaccine Initiative has benefited from the Rockefeller Foundation, while the Bill and Melinda Gates Foundation has contributed to the fight against malaria in a number of African countries.

Investment appraisal

From a practical perspective, the most important consideration for a country or a region would be whether it should invest in the provision of an RPG which may divert scarce resources away from well-defined national projects (where all the benefits accrue to the nationals of that country). Citizens of a country might rightly ask why a regional project benefitting other countries should be prioritised over a local flagship project. In a democracy, political principals need to have ready answers for their constituents.

ONE WAY OF RATIONALISING RPG INVESTMENT DECISIONS IS TO EXTEND THE CONVENTIONAL COST-BENEFIT ANALYSIS FROM A SINGLE COUNTRY FRAMEWORK TO A MULTICOUNTRY FRAMEWORK.

One way of rationalising RPG investment decisions is to extend the conventional cost-benefit analysis from a single country (i.e. national economy) framework to a multicountry (i.e. sub-regional economy) framework (Adhikari & Weiss 2002). Economic analysis of multicountry projects needs to look at the financial and economic net impact as well as the distributional effects. The objective of the analysis is to estimate the project's net economic benefit for the sub-region as a whole, which is equivalent to the sum of national economic net present values (NPVs) for the countries in the region.

The key feature of sub-regional cooperation is that it aims to generate benefits for the participating countries that would not

be available were they to act independently, investing the same funds in national projects. As with standard single-country project analysis, the process begins with demand studies to determine the extent of need among the participating countries. Such studies should inform the project concept paper. Once a project concept has been developed and its market quantified, it is essential to establish that the project is the least-cost means of achieving the particular objectives desired by the group of countries. For example, if the objective is to reduce freight times from the copper mines of Zambia to the coast, there would be several possible routes and modes of transport of doing so. If Zambia wanted to undertake a project jointly with the DRC, the two countries would have to weigh the costs and benefits of road versus rail, as well as considering which port to choose (Lobito, Dar es Salaam or Durban).

For many years, due to the civil war in Angola and the unreliability of the port in Dar es Salaam, the longer route via road to Durban was the most cost-effective. With recent improvements in Dar es Salaam, and planned upgrades of the road from Eastern Zambia to Dar es Salaam, the route through East Africa will now offer better economics; at least for Zambia.

To be considered acceptable, a sub-regional project requires a higher economic NPV than that obtainable from its alternatives; such as separate national investments in the same field, as well as a positive economic NPV at an economic discount rate. To apply sub-regional economic analysis, Adhikari & Weiss (2002) recommend a set of steps to calculate the NPV and IRR for specific regional projects showing how the financial and economic benefits are distributed among participating countries. Their approach allocates the economic NPV between participating countries and shows the gainers and losers allowing policymakers to introduce compensation arrangements to offset any loss to any of the participating countries.

Once the net project benefits have been estimated, the distribution of project benefits can be carried out. Project beneficiaries would include governments, the private sector, and project financiers. The expected financial return should be calculated for each country individually as well as for the region as a whole. The return on total capital can be further disaggregated into returns to investors, lenders and the government. The location of these groups allows one to identify country effects within the sub-region.

1.7 CONCLUSION

The review of RPG characteristics in this paper points to the need for close cooperation among countries and the

Box 1.3: Regional African Satellite Communication Organisation (RASCOM)

RASCOM is an intergovernmental treaty-based organisation which was established in 1993 and has as its prime objective the provision, on a commercial basis, of the satellite capacity required for national and international public telecommunications services, including sound and television broadcasting in Africa. Currently the organisation operates by pooling and optimising satellite resources leased mainly from the private sector. The ultimate aim is to have a dedicated Africa-owned regional satellite system. The RASCOM system is a club good centred around the management of shared satellite resources.

The system is partially 'rival' in nature as there would be a limit to the number of new beneficiary countries; until such time as the satellite capacity is expanded. It is possible to exclude countries/users due to the membership-based nature of the organisation. However, once a country has joined RASCOM, the benefits to the citizens of that country would be widespread as long as the government provides local infrastructure and access points.

Since its establishment, RASCOM has been plagued by financial and technical problems. As a result, it has underperformed on both fronts. It took 14 years for the organisation to launch its first satellite, which proved to be a false start. It is therefore not surprising that many of the original ambitious targets have not been met. It is noteworthy that the extent of private participation in the project has been limited to ALCATEL's 12% shareholder participation. In practice, this has meant that ALCATEL has taken limited financial risk compared to the very substantial contract it secured from the project. The initial contract it signed with RASCOM was valued at \$150 million for the launching of RASCOM-QAF1. This figure is

approximately seven times larger than the company's initial shareholding.

The Government of Libya controls approximately 60% of the share capital of RASCOM. The other shareholders, RASCOM and ALCATEL, hold the remaining 40%. Sources indicate that Libya had to rescue RASCOM in 2003 when the agency was having some difficulty putting together a financing plan for the launch of the first satellite.

Going forward, RASCOM must focus on getting the second satellite working well so that it can generate sufficient revenues to continue its operations. Thereafter it can see how to enhance the development of cross-border backbone network connectivity in the regions. Such cross-border development must not be confined to urban areas. It must extend its reach beyond these areas and hopefully bring the benefits of improved connectivity to remote or rural communities.

One way to improve the operational and financial performance of RASCOM is to inject greater private sector participation and leverage the skills and finances of the more developed African countries. This would help re-position it as an organisation combining cutting-edge technology with a sound financial plan. To effectively deliver and supply telecommunications services to the entire African continent, a best-shot aggregator approach may be more effective than the current model, which depends on the entire membership body to act. Another lesson from the RASCOM experience is the need to better align the interests of different parties with the project objectives and timelines. Revamping the capital structure to introduce more commercial sources of finance would encourage greater private sector participation.

formation of partnerships with diverse players to implement regional projects and programmes. Successful supply of RPGs depends on whether cooperation results in financing arrangements, incentive structures and institutional settings that ensure sustainability and evolution of the supply agreement between participating countries. Importantly, the institutional arrangements should be reflected in an enforceable legal framework that codifies the political and economic commitment of each member country joining the group.

Several case studies were reviewed to demonstrate the practical issues that arise when countries get together to supply a public good based on shared objectives and a joint delivery model. The case studies on river blindness, RASCOM and the MDC are presented in more detail in Part 2 of this publication. The case studies vary significantly in terms of the experiences of the member states and the results of their collaboration. The most successful RPG studied is the case of combating river blindness in West Africa which led to

dramatic improvements in the lives of many who had been previously vulnerable to the disease. Although characterised by weakest-link properties, and ample scope for free riding, the shared sense of purpose supported by multilateral and private sector resourcing meant that even the poorest countries were able to reap the benefits of the APOC.

The cases of RASCOM and the MDC are both examples of club goods where countries could be excluded from membership of the club. However, the ability to exclude countries is not a sufficient condition to drive adequate funding and provisioning levels. The institutional arrangements were decisive in both cases. Most RPGs require some form of partnership between various stakeholders; including government, private companies, NGOs and financial institutions (both regional and international). The partnership framework that brings these parties together influences their levels of commitment and their willingness to contribute financial resources to the process.

As an intergovernmental organisation, the RASCOM framework seems to be a relatively weak framework for partnership such that the strongest countries (financially and technically) have not stepped forward to anchor the initiative. Instead, a political rather than commercial imperative underpins the financing structure, as seen by the dominance of Libya in the funding model. RASCOM points to the importance of aligning the financial incentives of key players with the overall project objectives. An inappropriate institutional structure led to an overbearing role of the public partners and failure to fully integrate private players.

On the other hand, the case of the MDC shows how a strong PPP can fundamentally transform an entire region through the development of complimentary cross-border transport projects. The PPP model was used to ensure that both the public and private partners were well incentivised to play an ongoing and sustainable role, particularly in the N4 toll road project and Maputo port concession. Initially, political leadership was important to create the enabling conditions, but thereafter the commercial imperative ensured that the right technical and financial partners were brought on board. This was necessary in the MDC due to the weaker-link nature of transportation infrastructure. In spite of the asymmetry between the two countries involved, there was a strong enough economic case to draw common interests together and thus enlarge the overall economic pie.

Figure 1.1: Example of Copperbelt import/export options



Source: TradeMarkSA

Key lessons

Shared purpose and long-term commitment

Perhaps the most important lesson that emerges from the case studies is that a strong sense of shared purpose and long-term commitment is required on the part of those involved. All large cross-border projects by their very nature present difficult technical, social and political challenges. The member countries and other parties involved should therefore be committed to what is typically a long-term development initiative. The success in combating river blindness under the OCP was predicated on the enduring commitment of a diverse set of actors - including an international drug company, African governments, multilateral agencies, NGOs and the affected communities. The concerned governments played a key role in providing the enabling policies and environment. Agreement with the countries required that upon entering the programme, they commit to a common treatment strategy and immediately be on a sustainability track. Under the OCP, it was found that without trust, transparency and genuine commitment, the PPP would fail. All parties to the partnership must be committed to a common goal.

UNDER THE OCP, IT WAS FOUND THAT WITHOUT TRUST, TRANSPARENCY AND GENUINE COMMITMENT, THE PPP WOULD FAIL. ALL PARTIES TO THE PARTNERSHIP MUST BE COMMITTED TO A COMMON GOAL.

Robust and flexible institutional arrangements

It is essential to have very clear institutional arrangements that support the objectives of the project and help to align the political, social and economic interests of the parties involved. This is most dramatically demonstrated in the Lake Victoria River Basin case where the absence of a robust, basin-wide commission has led to continued conflict. The Lake Victoria Basin Commission, established in 2003, was completely independent of the establishment of the 1999 Nile Basin Initiative which favours the interests of the only two signatories to the 1959 treaty - Egypt and Sudan.

The misalignment in the institutional mandates failed to mediate the divergent political and economic interests of the member countries, so much so that management of water resources in the region remains a controversial and contentious issue. In the absence of robust institutional structures and dispute resolving mechanisms, conflicts around the rights of upstream countries will continue. This is in contrast to the South African experience where the existence of functioning structures at sub-basin levels of management, such as those found in the Orange/Senqu River, has fostered the subsequent evolution of a basin-wide structure.

In the telecommunications sector, the long and somewhat chequered history of the RASCOM system also demonstrates the need to have an institution that is appropriate for the specific challenges of the project. RASCOM is dominated by African governments and has been criticised for being too bureaucratic and lethargic, relative to the commercial imperatives of a fast-paced sector where technologies and business models are changing rapidly. RASCOM as an organisation should have adapted over the past decade to allow for stronger private sector participation in its management structure.

Strong private sector participation can improve execution

Regional public goods require strong government leadership due to the cross-border nature of the initiatives and the sometimes large, lumpy investments required up front. This is certainly the case with network infrastructure projects such as those discussed in the MDC (toll roads, rail, port, energy). Literally billions of dollars were required within a short period due to the complementary nature of these investments. Such a large financial outlay would not have been possible without a strong push from private sector banks and multilateral financial institutions. Indeed, for the N4 toll road alone, more than a dozen banks were involved due to the complex risk profile and the uncertainty around future traffic volumes.

However, the private sector contribution to the MDC went far beyond assuming financial risks in the transport developments. Private sector operators were contracted to execute large parts of the transport network under concession agreements, bringing valuable technical and management skills to bear on the strategic vision of the two governments. Such concession agreements drove the rapid expansion of both the road and ports projects. Furthermore, the Maputo Corridor Logistics Initiative (MCLI), which has strong private sector representation, replaced the public-

Box 1.4: Legal conundrum in the Lake Victoria River Basin

The management of water resources in a river basin is a regional public good characterised by partial rivalry since reduced water availability and water quality constrain economic development in a region, creating tension and possible conflict. Exclusion of benefits from shared river systems is virtually impossible unless imposed through some physical barrier or legal mechanism.

The attempt of two downstream countries to exclude beneficiary countries in East Africa has resulted in a long-standing, intractable situation. Lake Victoria contributes about 20% of the total volume of water to the lower Nile, with the remaining 80% coming from the Blue Nile. Egypt and Sudan lay claim to the total flow of the waters of the Nile by virtue of two historic treaties (the 1929 colonial era treaty, superseded in 1959 by a bilateral treaty between Egypt and Sudan). This led to the two countries developing a system of dams within their borders, effectively denying the legal right of upstream states to develop the waters of Lake Victoria. The 1999 Nile Basin Initiative (NBI) was therefore designed to establish a basin-wide management plan for the whole Nile region, by seeking to assert the 1959 treaty.

In 1961, President Julius Nyerere stated that, 'former colonial countries [that] had no role in the formulation and conclusion of treaties made during the colonial era ... [cannot] be assumed to automatically succeed to those treaties'. This laid the basis for a legal challenge from the five riparian states (Uganda, Kenya, Tanzania, Rwanda and Burundi). In 2003, the East African Community created the Lake Victoria Basin Commission which challenged the core assumptions upheld in the water-sharing agreement between Egypt and Sudan.

Successful management of water resources in the region will require the formation of a robust basin-wide commission; possibly under the auspices of a supranational structure that transcends the competing national interests. 'International law in the area of shared waters provides some guidance, but no universally accepted standards are available for the utilisation and management of shared waters. Riparian countries must search for cooperative solutions unique to their circumstances' (Ferroni 2002). In other parts of the Nile River Basin where supranational structures exist, effective river basin management arrangements have evolved.

sector driven MCC and helped to ensure that the interests of its members received attention. This helped to drive the growth of traffic across the corridor, which in turn supported new commercial investments. RPG provision can certainly proceed with little or no private sector involvement. But in countries where public sector capacity is weak, the private sector can dramatically increase the chances of successful implementation.

Right combination of leadership and management support

The success of the MDC was also built on a foundation of inspired political leadership with appropriate management structures. Although the private sector played a decisive role in ensuring efficient project execution, bold political leadership from both countries was essential. The MDC planning and development process was 'championed' by the two national transport ministers from both countries, who both played a very active role in the planning and investor mobilisation process.

Furthermore, in both countries, political leaders at both a national and provincial level took steps to publicly 'champion' and drive the initiative; even participating in the planning and development processes, and expediting speedy decision-making as required. This in turn gave confidence to the private sector to dedicate the necessary financial and human resources, often at risk.

For large cross-border initiatives, it is therefore essential to have political leaders and senior government officials on board from an early stage. Having a committed project champion can do much to clear administrative and technical challenges, such as amending laws and securing financial support. However, good leadership should be complemented by strong management support either from the public or private sectors.

The importance of financial structures and financing strategies

As stated earlier, supplying adequate levels of RPGs will usually require an increase in the amount of funding available to roll out a new system or network, or to set up a regional organisation. The financing section of this paper outlined four broad financing mechanisms; namely internalising externalities, private resources, public resources, and partnerships. It was also shown that financing possibilities depend on the extent of 'publicness' inherent in a particular RPG. Public provision and financing is most applicable in those situations where exclusion is inadequate and private provision is not feasible. Conversely, the viability of user fees makes private financing an option for club goods.

The case studies showed that for most RPGs, a mix of public and private funding sources is required. Even where private financing is viable, as in the MDC, private operators have sought some form of public support either in the form of outright capital grants or financial guarantees. Cross-border initiatives are usually too large for private agents to fully undertake financial risk without some form of risk-sharing with the beneficiary governments. The extent of financial support a government should provide will be influenced by the relative size of private and public benefits generated by the project. Where the externalities are very large (such as in the prevention of river blindness), governments should get involved in the financing strategy either through direct grants or incentives; or by leveraging funds from regional development banks. However, the capital structure should also ensure that incentives of private players are well aligned to the project objectives.

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PART 2

2. The Maputo Development Corridor – Geoffrey de Beer
3. The Regional African Satellite Communication Organisation (RASCOM) – St George A Joiner
4. River blindness (onchocerciasis) – Orvill Adams

2 THE MAPUTO DEVELOPMENT CORRIDOR

Geoffrey de Beer

2.1 STRATEGIC CONTEXT

The Maputo Development Corridor (MDC) was the first of the regional spatial development initiatives (SDIs) to be implemented in 1995, following the peace agreement in Mozambique and South Africa's first democratic elections in 1994.

THE UNDERLYING OBJECTIVE WAS THE FUNCTIONAL INTEGRATION OF THE ECONOMIES OF THE TWO PREVIOUSLY WARRING COUNTRIES FOR THE SAKE OF PEACE, AND REGIONAL ECONOMIC GROWTH AND DEVELOPMENT.

The historical transport links between South Africa's industrial heartland (Gauteng Province) and its closest port – the Port of Maputo – had been disrupted by apartheid South Africa's international economic isolation, and by the war in Mozambique. It was the intention of the two governments to re-establish this proven transport link, through the rehabilitation and upgrading of existing infrastructure and the stimulation of trade and investment along the corridor.

At a conceptual level, the vision was that the implementation of the MDC would be characterised by a combination of public and private finance that would leverage capital improvements to an initial set of infrastructure projects (road, rail, port and border-post infrastructure) so as to create an integrated transport network allowing for competitive (cost,

time and security) transportation of imports and exports along the corridor and access to domestic and international markets. It was also envisaged that the upgraded/new infrastructure networks would result in improved access within the corridor, which would lead to ease of interaction among firms, the more efficient movement of intermediate goods, economies of scale due to aggregation, and vertical integration of upstream/downstream production and primary and secondary sectors – thereby creating further opportunities for economic growth and development, including the attraction of new industries and expansion of existing industries.

2.2 POLICY INTERVENTION (AND OPTIONS)

The key interventions from a policy perspective are outlined below.

- *In terms of economic policy*, the underlying objective was the functional integration of the economies of the two previously warring countries for the sake of peace, and regional economic growth and development. The alternative (in essence, the nature of the relationship between South Africa and Mozambique prior to the 'post-apartheid era') would have been one where the functional integration of the two economies was not a priority, and where collaboration between the two economies was at best sub-optimal (not to mention being characterised by destabilisation of the Mozambique socio-political economy by the apartheid state). From a transport perspective, the pre-MDC era was one where the Gauteng, Mpumalanga and Limpopo Provinces had to use the second-best options of the South African ports of Durban, Richards Bay or Cape Town for exports/imports. The latter approach was clearly inconsistent with broader Southern African Development Community (SADC) objectives of regional integration and cooperation, and was inherently inefficient and contrary to enhanced competitiveness.

- *In terms of transportation infrastructure development and operation policy*, the resultant shift was towards the joint development of integrated and efficient transport routes (key targets being to reduce ‘costs’ and ‘time’, which, in turn, would make products more competitive and would increase the attractiveness of Mozambique and South Africa for inward investment) based on selected key elements of infrastructure (e.g. road, rail, port and border posts). These key elements of infrastructure were the regional public goods (RPGs). The alternative option (which was the historical reality) was that South Africa continue to use less time/cost-efficient routes, which would reduce the competitiveness of its goods and hamper regional integration. Similarly, as a result of the previously non-cooperative approach, Mozambique would remain substantially excluded from participation in South African economies in terms of both Mozambican investment/spending in South Africa and South African investment/spending in Mozambique.
- *In terms of promoting the mobilisation of regional and international private sector investment* (in respect of which South Africa and Mozambique had been experiencing severe difficulties, largely as a result of the hostile investment environment), a high policy and strategy priority was afforded to the promotion of investment in a diverse range of sectors as a spin-off of the properly functioning *transport corridor* – i.e. the establishment of an integrated *development* (as opposed to purely transport) corridor, in general, and a selected number of economic development projects, in particular (e.g. the Mozal aluminium smelter). The identification and promotion of economic development projects was seen to be part of the spin-off benefits from the establishment of the infrastructure-based RPGs. This integrated policy stance resulted in a change in strategic focus by the public sector from sole emphasis on the transport infrastructure elements (the market simply being allowed to respond to the economic investment opportunities as, when and if they were identified) to the active promotion of a set of integrated infrastructure and economic development opportunities/projects.
- *In terms of infrastructure financing and operations policy*, there were also very important policy shifts. The most critical of these was that whereas in the past the public sector was seen to be responsible for the development, operation, financing and maintenance of strategic infrastructure, in the case of the MDC the key strategy was to make use of private sector investment and expertise as the key financing and management mechanisms for the key elements of transport infrastructure (i.e. the application of public-private partnerships (PPPs) as the development financing

and operating mechanism for key elements of strategic infrastructure). The primary responsibility of the public sector would be to determine the necessary bilateral arrangements, policies, regulations and incentives that would support economic development. From an RPG typology perspective, the infrastructure RPGs were to be developed as club goods, where key externalities (development and operational costs, as well as benefit flows) are internalised (with related financing and cost-recovery implications) on an excludable but (initially) non-rivalry basis.¹ The alternative would have been to rely on South African and/or Mozambican public funding for the financing, investment, operation, management and maintenance costs. Since both countries were under considerable financial and technical capacity pressures this would inevitably have slowed down the practical development and investment process greatly. In all likelihood, it would also have reduced the operational, maintenance and cost-recovery efficiencies of the created infrastructures.

2.3 KEY OBJECTIVES AND STRATEGIES THAT UNDERPINNED THE MDC

The MDC was founded on four key objectives:

- to rehabilitate the core infrastructure along the corridor (road, rail, port, border post and energy) with minimum impact on the fiscus;
- to maximise related economic investment opportunities in the corridor area;
- to ensure that the development impact of this investment is maximised, particularly for disadvantaged communities; and
- to ensure sustainability by developing policy, strategy and frameworks that encompass a holistic, participatory and integrated approach to development.

The key strategies were as follows:

- The initial key strategies targeted the rehabilitation of core transport infrastructure through PPPs. Focus areas for infrastructure rehabilitation were the upgrading/ construction of the toll road linking Johannesburg in South Africa to Maputo in Mozambique and the improvement of rail and port operations in Mozambique to re-establish the competitiveness of the transport route.

¹ Up to the point where supply exceeds demand, the situation is one of non-rivalry. With time, and once infrastructures (such as access to bulk electricity supply or to a port) are operating at full capacity, the situation can become increasingly one of rivalry.

- The planning process adopted reflected the transnational nature of the initiative, and was characterised by deliberate ‘quick step’ planning and decision-making processes, and a project-driven approach.
- In order to support the initiative and to manage the key policy shifts, the political leadership in each country undertook to put in place inter-sectoral coordinating bodies at the ministerial and technical levels. These were intended to facilitate work within each country as well as to coordinate activities binationally. The political leaders also took steps publically to champion and drive the initiative.
- Further, it was agreed to create a binational promotional entity, the Maputo Corridor Company (MCC), which although not constituted legally was intended to be an important promotional and facilitating entity. (De Beer, Mmatli & Arkwright 2003)

2.4 INSTITUTIONAL ISSUES AND STRUCTURES

The MDC has been characterised by distinct phases in its institutional development. These can be summarised as follows (see SADC 2007).

1995–1997: Conceptualisation, planning and launch of the MDC

In response to the decision by the ministers of transport of South Africa and Mozambique (in August 1995) to pursue the MDC initiative, an interim coordinating committee, comprising senior officials from South Africa and Mozambique, was established. Both countries also established interdepartmental technical teams.² In May 1996, the MDC was launched at an investor conference in Maputo. In July 1996, various protocols relating to transport coordination, the core infrastructure projects of the MDC and the establishment of the MCC were signed. In the period August 1996 to mid-1997, the MDC was marketed internationally at numerous events and progress was made with the core infrastructure projects, specifically the launching of the tender process for the N4/EN4 road concession, preparation work towards the concessioning of the Port of Maputo, preparation of the concept of the one-stop border post (OSBP), and implementation of the telecommunications upgrade between South Africa and Mozambique.

² To look at transport and development issues; an initial corridor concept; to further develop the socio-economic analysis of the corridor “region”; assess broad institutional options; and to plan for an investors conference to launch the corridor.

1997–2001: The Maputo Corridor Company (MCC) and supporting work programme

In terms of the agreement signed by the respective ministers of transport in 1996, the MCC was to be established ‘to support government, non-government and private sectors through the provision of strategic information on socio-economic issues, planning, infrastructure, social, institutional and financial matters, as well as to facilitate investment for trade, industry and development within the corridor. In addition, the company will be tasked with the identification of constraints to the development of the corridor, and lobbying the relevant authorities to remedy such constraints.’

IN ORDER TO SUPPORT THE INITIATIVE AND TO MANAGE THE KEY POLICY SHIFTS, THE POLITICAL LEADERSHIP IN EACH COUNTRY TOOK STEPS PUBLICALLY TO CHAMPION AND DRIVE THE INITIATIVE.

It was intended that the MCC would be structured as a ‘not-for-profit company with shareholding by the public and private sectors. To start this process, a Nelspruit office was opened in mid-1997 after the appointment of the deputy chief executive officer by South Africa. A one-year budget was provided for this office by the South African Department of Transport. The process to conclude the formation of the not-for-profit company, as originally envisaged in the bilateral agreement, proved difficult and a decision was taken in mid-1998 to restrict the MCC to a public sector driven ‘facilitating’ initiative with one project manager in Maputo and another in Nelspruit, both supported with budgets from their respective departments of transport. During this period, the MCC established a work programme to support the implementation of the MDC.

2001–2003: Closure of the MCC

In 1999, the overall management responsibility for the Maputo Development Corridor Initiative in South Africa was passed from the Department of Transport to the Department of Trade and Industry. In 2000, the Department of Trade and Industry gave notice of its intentions to exit the MDC and, in 2001, the MCC closed its offices in Nelspruit

and remaining budgets were handed to the Mpumalanga provincial government, which was to continue to support the implementation of the MDC.

2003–2011: The Maputo Corridor Logistics Initiative (MCLI)

In 2003, various private sector entities, particularly those concerned with freight and logistics operations in the MDC, grew concerned about the lack of progress with key elements of the MDC and decided to form a multilateral, multi-stakeholder institutional structure to integrate, coordinate, communicate and facilitate activities in the MDC. The private sector players agreed on the formation of a Section 21 (non-profit) company allowing for organisations with an interest in the corridor to become 'cooperative partner' members, and private sector companies/individuals to become corporate members. As part of funding the organisation, annual membership fees were structured on a graduated scale relating to the nature and size of the members' businesses.

In early 2004, the Maputo Corridor Logistics Initiative (MCLI) was formed, an office opened in Nelspruit and a board of directors put in place, with eight founding members represented and an additional eight persons representing Mozambican and South African organised business. The MCLI organised its interventions into four key areas, namely rail, the border post, shipping and institutional/marketing development. Considerable progress was made in the period 2004–2011, including the removal of visa (short stay) requirements between South Africa and Mozambique, extension of the operating hours of the Ressano Garcia border post, agreement on an OSBP, facilitating resolution of the rail stand-off, securing shipping-line interest and successfully continuing with the marketing of the MDC.

2.5 KEY INFRASTRUCTURE ELEMENTS AND THE IMPACTS OF THE SELECTED RPG PROJECTS

Key infrastructure projects (the RPGs)

Concessioning of the N4/EN4 toll road

The upgrading of the 630 km road from Witbank to Maputo was the first major infrastructure project completed as part of the MDC. A private sector consortium, Trans African Concessions (TRAC) was contracted to finance, design, construct, rehabilitate, operate, maintain and secure future expansion of, and ultimately transfer back, a toll road over

a 30-year concession period.³ TRAC spent approximately R2 billion between the start of construction in mid-1998 and 2007, and is expected to spend at least a further R3 billion over the balance of the concession period.⁴

Upgrading of the Ressano Garcia to Maputo rail line

In 1995, the ministers of transport of South Africa and Mozambique agreed to the re-establishment of the rail link between the countries through a concession to the private sector to finance, rehabilitate, operate and maintain the rail infrastructure from Maputo to Ressano Garcia. Following two unsuccessful attempts to concession the rail, a meeting of the heads of state of Mozambique and South Africa in late 2006, mandated CFM (Mozambique Ports and Railways) and Transnet Freight Rail (TFR, the South African state-owned freight rail company) to develop a short-, medium- and long-term strategy for the rehabilitation of the Maputo–Ressano Garcia railway line. In terms of this strategy, CFM assumed responsibility for the US\$70 million rehabilitation of the line and for operation of the line from Ressano Garcia to Maputo (completed in 2008), and TFR agreed to provide rolling stock and to facilitate trade volumes.

Upgrading and expansion of the Port of Maputo (including the adjacent Matola Port)

The government of Mozambique decided to introduce private sector participation in the financing, rehabilitation, development, operation and maintenance of the Port of Maputo. In April 2003, the Port of Maputo (and Matola Port) was concessioned to the Maputo Port Development Company. To date, about US\$225 million has been invested in the Maputo and Matola ports. It is expected that a further US\$750 million will be invested over the next 20 years (Mommen 2011).

³ In a construction period lasting only 30 months (ending in 2000), the initial rehabilitation of the existing road and the construction of the new road portion in Mozambique was completed, with toll plazas operating at Middelburg, Machado, Nkomazi, Moamba and Maputo. By March 2001, the link into the Port of Maputo had also been completed. In mid-2002, weighbridges were constructed in South Africa, followed by weighbridges in Mozambique in 2004, in order to control loading and to ensure appropriate revenue collection. In 2004, an additional contract was signed, adding the road from Witbank to Pretoria – including an additional toll plaza. This has lengthened the toll road to a total of 630 km.

⁴ TRAC employs over 400 full-time staff and supports over 60 local small enterprises as subcontractors in its core activities. In excess of 700 contracts have been given to small contractors (since 1998) valued at over R300 million and creating over 6 000 permanent, temporary and casual employment opportunities. (SADC 2007)

Upgrading of the Ressano Garcia border post

At the start of the MDC, it was agreed between the ministers of transport of South Africa and Mozambique that an OSBP should be developed at Ressano Garcia. It proved difficult to achieve consensus on the concept, design and related systems of a new border post between the relatively large number of stakeholders within and across the two countries. Consequently, a 'steering committee for border control' decided to implement a phased set of improvements to the border post, starting in late-1997. These included commercial processing facilities away from the congested border-crossing point on both sides of the border and upgrading of facilities at the border post itself. Since 2000, there have been various additional 'gap-filler' upgrades to the facilities, but these have generally not been able to cope with the

IT PROVED DIFFICULT TO ACHIEVE CONSENSUS ON THE CONCEPT, DESIGN AND RELATED SYSTEMS OF A NEW BORDER POST BETWEEN THE RELATIVELY LARGE NUMBER OF STAKEHOLDERS WITHIN AND ACROSS THE TWO COUNTRIES.

rapid growth in cross-border traffic. In the intervening period, both countries have dropped their short-stay visa requirements, and hours of operation at the border have been extended. A bilateral meeting between the presidents of Mozambique and South Africa in June 2006 confirmed agreement to move to the development of an OSBP, and the revenue services of both countries were mandated to proceed with the concept. The initial plans for an OSBP with relevant infrastructure upgrades were to have cost in the region of R1.9 billion, but due to the economic downturn and funding challenges, a phased implementation approach was taken. Phase One included upgrading the Lebombo border post, and focused on the separation of freight traffic, busses, passengers and pedestrians, with the design allowing for later incorporation into the OSBP. On 11 June 2010, the freight bypass road was opened, which enabled freight traffic travelling to Mozambique to be cleared at KM7 (the old airport at Komatipoort) on the South African side, and freight traffic travelling to South Africa to be cleared at KM4

on the Mozambican frontier, effectively providing a one-stop option for freight traffic, significantly reducing travelling times. A recent time and motion study by MCLI indicates that the turnaround time for freight vehicles travelling from the border to the port (offloading cargo at the port) and back was 5 hours and 15 minutes (Mommen 2011). Phase Two included an upgrade of the Ressano Garcia border post, which involved the completion of a separate pedestrian clearing facility that was completed in the last quarter of 2010. The pedestrian clearing facility on the South African side has been completed and is due to open for operation in 2011. Phase Three will finalise the design and construction of the OSBP, including the freight facility and main border post.⁵

New electricity supply infrastructure to southern Mozambique

The Mozambique Transmission Company (Motraco) was formed by Eskom (South Africa), Electricidade de Moçambique (EDM) and the Swaziland Electricity Board (SEB) to coordinate the supply of electricity from South Africa to Swaziland and southern Mozambique. Motraco, financed initially with US\$130 million, undertook the construction of two new 400 kV lines from Mpumalanga to Maputo and the construction of a new substation in Maputo near the Mozal aluminium smelter. This enabled a secure power source both for the Mozal project and for rural, urban and industrial use in southern Mozambique and Swaziland.

Additional infrastructure upgrading related to the MDC

Since the upgrading of the anchor infrastructure projects of the MDC, several other important developments have further strengthened the infrastructure network. These include the upgrading of the telecommunications system between South Africa and Mozambique, the establishment of a cellular communications system in Mozambique in 1997, and operating linkages between Mozambique and South Africa, the construction of the new Kruger Mpumalanga International Airport (KMIA) near Nelspruit in Mpumalanga and the current upgrading of urban infrastructure in Maputo.

Impacts achieved since the commencement of the MDC

The rehabilitation and upgrading of key infrastructure, as part of the MDC, has had a significant impact on re-establishing the trade links between Maputo and Johannesburg. Some of these impacts might have happened because of changes in the two countries irrespective of the MDC, but the MDC

5 The rail facility will possibly be addressed at a later stage.

focused development and clustered investment efforts to enhance results. The following impacts are significant:

Utilisation of the key elements of infrastructure

The following are important indicators of the impacts achieved to date:

- *Re-establishing the Port of Maputo as a viable regional import and export facility/route:* The rehabilitation and construction of key transport infrastructure elements has served to reinstate the geographic advantage that Maputo has over neighbouring ports, particularly Durban and Richards Bay in South Africa.
- *Comparative freight travel times and costs:* An evaluation of various routes and corridors undertaken by Consilium Legis (2003) indicated that the MDC offered the cheapest road transport and the third cheapest railway transport of all SADC corridors for containers and break-bulk cargo.⁶

CROSS-BORDER ROAD FREIGHT HAS GROWN FROM 29 000 TONNES IN 1997 TO AN ESTIMATED 1.2 MILLION TONNES IN 2006.

- *Shipping services:* In the mid-1990s, there were only limited shipping services available at Maputo. With the upgrading of the port facilities, dredging in places and the return of respectable traffic volumes, the shipping services have improved dramatically. In 2006, 670 vessels called at the Port of Maputo and this increased to 1 011 (including container and Panamax vessels, and cruise ships) in 2010. The direct and regular shipping services (liners only) are to north-west Europe, the US Gulf, the Mediterranean, and the Far East and India.
- *Cross-border people flows:* The movement of people across the border (in both directions) has shown significant

6 An indicative study by the RSA Citrus Growers Association concluded that the citrus growers located in the eastern areas of the Limpopo and Mpumalanga provinces of South Africa (producing about 0.5 million tonnes per annum) would achieve significant savings by using the Port of Maputo rather than Durban. In particular, the following savings would be made:

- approximately 5.9 million kilometres per year;
- R80 million in transport costs;
- 1 million litres of diesel; and
- 12 500 fewer trucks would use the Durban Port Citrus Terminal, already suffering from delays and congestion. (Mommen 2011)

growth, from 365 229 people in 1993, to 1 946 329 in 2000, and increasing again to 3 081 841 in 2006.

- *Cross-border road-freight growth:* Cross-border road freight has grown from 29 000 tonnes in 1997 to an estimated 1.2 million tonnes in 2006 (about 65% being goods moving from South Africa into Mozambique).⁷
- *Cross-border rail freight growth:* Freight carried by CFM-South (the Ressano Garcia line to SA, the Goba line to Swaziland and the Limpopo line to Zimbabwe) peaked in 1975 at 9.838 million tonnes. By 1995, the freight volume on CFM-South had fallen to 1.5 million tonnes, of which approximately 800 000 tonnes (55%) was on the Ressano Garcia line (to and from South Africa). Freight on the Ressano Garcia line increased from 800 000 tonnes in 1995 to approximately 2.5 million tonnes in 2006. It is forecast that rail freight on the Ressano Garcia line will reach 13 million tonnes by 2010/2011.
- *Port of Maputo throughput growth:* Historical figures show a peak of 13.7 million tonnes in 1970. By the early 1990s, throughput dropped to just over 2 million tonnes, recovering to just over 3 million tonnes by 1996. The concessioning of port operations has served to re-establish the port as a gateway for Mozambique's domestic industry and agriculture, and as a vital regional facility for large parts of South Africa, Zimbabwe and, more recently, Botswana. As a result, the port has seen a steady increase in throughput, reaching 5 million tonnes in 2003 and 12.6 million tonnes in 2011 (Mommen 2011). Current projections are that these volumes will double by 2015 and will reach 50 million tonnes by 2030.
- *Intra-regional trade:* South African exports to Mozambique grew from R1.8 billion in 1995 to R6.2 billion in 2006. Mozambican exports to South Africa grew from R120 million in 1995 to R318 million in 2006. In 2007 (January to May), Mozambican exports to South Africa jumped substantially to R600 million, reflecting the sale of natural gas to South Africa from the Pande gas fields.⁸

7 A relatively rapid growth in road freight took place between 1997 and 2000, as a result of projects such as the construction of the Mozal smelter. Since 2000, cross-border road freight growth has been relatively static because of physical congestion at the border post, restricted operating hours at the border and difficulty in securing return freight loads from Mozambique to South Africa. Forecasts suggest that currently planned improvements to the border post should see cross-border road freight increasing to approximately 3 million tonnes.

8 The predominant exports from South Africa to Mozambique are copper ores, sugar, ferro-alloys, manganese, coal and motor vehicles, many of these in transit through the Port of Maputo and destined for other markets. The key exports from Mozambique to South Africa are gas, cotton, petrol/oils, wheat, crustaceans (prawns, etc.), bananas, coconuts and cashew nuts.

Major sector investments that have taken place in the MDC

Beyond investment in core infrastructure projects, the MDC initiative has been associated with a number of high profile development and investment projects in various sectors of the economy:

- Firstly, perhaps the best known of the major investment projects in southern Mozambique, Mozal was the key anchor investment project linked to the MDC initiative. The project was concerned with the establishment of a smelter for the production of aluminium for export. At an overall cost of US\$2 billion, the first phase of the smelter (Mozal 1) was completed in 2000, producing some 250 000 tonnes of aluminium ingots. The second phase (Mozal 2) was completed in 2003, bringing total production up to just over 500 000 tonnes per annum – or 2% of the world’s annual consumption. Pending resolution of long-term energy supplies, a Mozal 3 project is under consideration. This expansion would see production increasing to about 750 000 tonnes per annum. The Mozal project (see SADC 2007) has contributed significantly to economic and social development in Mozambique.⁹
- Secondly, and related to the Mozal project, the 630-hectare Beluluane Industrial Park has been created adjacent to the Mozal smelter, and 20 separate companies with strong linkages to the Mozal project are now operating there.
- Thirdly, the Pande/Temane Natural Gas Project has seen the investment of US\$1.2 billion by South Africa’s Sasol in order to secure natural gas from the Temane/Pande gas

⁹ In respect of the following, in particular:

- 15 000 jobs during the construction phases of Mozal 1 and 2;
- over 5 500 Mozambicans trained and certificated in the construction process;
- 1 150 permanent jobs in the smelter;
- establishment of 1 600 small contractors with approximately 10 000 jobs associated with small contractors;
- Mozal 1 is estimated to have added US\$160 million to GDP, and Mozal 2 to have added US\$170 million to GDP;
- in the first five years of operation, Mozal has generated more than US\$300 million in foreign exchange earnings for Mozambique, and about US\$70 million in fiscal receipts for the Mozambican government (tax revenues and equity dividends);
- Mozambique has benefited significantly from infrastructure upgrades and projects associated with the development of the Mozal project (these include roads and bridges, telecommunications, water and sewerage systems, electricity supply and improvements in the port);
- Mozal has implemented an SME Empowerment Linkages Programme (SMEELP) and has established the Mozal Community Development Trust aimed at social development; and
- Mozal and the IFC have also implemented the MozLink initiative for SME involvement in the operational aspects of the smelter.

fields in central Mozambique. The project was completed in February 2004, with the first gas reaching Secunda in South Africa via an 865 km pipeline. This project will continue to contribute towards economic growth and development in the region.¹⁰

- Fourthly, the Province of Maputo (including the city) experienced significant growth in the period 1990–2006 (SADC 2007). Projects approved during the period are summarised in Table 2.1.

2.6 SUMMATIVE ANALYSIS OF THE MDC RPGS

From the discussion above, it is clear that the development of the key infrastructure RPGs that underpinned the MDC has had considerable economic benefit for both countries. The key indicators include:

- increased use of the transport infrastructure as confirmed by cross-border freight movements (road, rail and port throughput, cross-border people movements and increased number of shipping services);
- increased efficiencies associated with the operation of the transport infrastructure as indicated by freight travel times and costs;
- substantial private sector investment as indicated by the sheer scale of private sector investment in the key road and port infrastructure development projects;
- related economic sector investments as indicated by the scale and diversity of private sector investments (such as in Mozal, Beluluane Industrial Park and the Pande/Temane Natural Gas Project);
- related employment creation; and

¹⁰ In the following respects, in particular:

- the creation of some 1 500 temporary jobs during construction of the infrastructure;
- the creation of approximately 150 permanent jobs in the management and maintenance of the gas fields and CPF;
- during the planned 25-year lifespan of the project, the South African government is set to earn some US\$3.2 billion in taxes, and the Mozambican government some US\$2 billion in taxes and royalties;
- substantial environmental benefits and savings by providing industry and households with a cheaper and cleaner energy source;
- the establishment of a regional gas market, and the transfer of skills and technology within the region; and
- the establishment of a Social Development Fund at the start of the project in 2002, funded with an initial US\$5 million during the construction phase and, thereafter, with recurring grants through Sasol’s Corporate Social Investment Programme.

Table 2.1: Projects approved for the Province of Maputo (1990–2006)

Sector	Number of projects	Investment US\$'000	Jobs
Agriculture	143	627 005	19 760
Banking/Finance	43	409 517	650
Construction	111	438 999	14 133
Industrial	388	4 495 523	26 955
Mining/Minerals	12	204 792	1 324
Transport	144	1 723 886	9 170
Tourism	83	741 494	8 180
Other	285	732 856	22 540
Total	1 209	9 374 072	102 712

Note: Not all approved projects were necessarily implemented.

- related small, medium and micro enterprise (SMME) development.

The following characteristics are common to the usage of all the MDC RPG infrastructure elements:

- *High levels of non-rivalry*: Within the context of the operating capacity of the infrastructure elements, additional users do not reduce the benefits enjoyed by other existing or additional users.¹¹
- *High levels of excludability*: They can be operated on the basis of high levels of excludability (i.e. if users do not pay on every occasion, they cannot use the infrastructure). This avoids the negative impacts of 'free-riders' seeking to reap the benefits of the infrastructure without contributing to the development, operation and maintenance costs associated with the infrastructure.

¹¹ Two related points are also important. Firstly, while operating the infrastructure within the confines of design capacity, increased usage could/should, in fact, have the impact of reducing costs due to economies of scale. Secondly, when the point is reached where the infrastructure capacity is fully utilised, it is possible that rivalry will increase – such as would occur once available bulk electricity is fully utilised, or once port capacity is fully utilised. In the latter regard, 'the market' should respond via the development of further capacity, driven by the potential to increase profits. In reality, there may be timing problems with the development of such additional capacity related to issues such as the private sector securing the necessary development rights to make the required expansion, or delays in the generation of additional bulk energy supply (as has characterised South Africa's bulk generation capacity since 2006, and where the development of additional power stations has very long lead times), or even physical constraints that could apply, for instance, where the geography of a particular port is such that further expansion is severely physically constrained.

- *Aggregation technology*: The combination of high levels of commercial viability, excludability and non-rivalry have created a situation where the economic asymmetries between South Africa and Mozambique could impact on the provision of the required infrastructure, since it is both the private sector's responsibility and in its interests to ensure that the infrastructure networks are developed to the required standards, are operated efficiently and effectively, and are properly maintained. The consequences for the private sector of not achieving these developmental, operational and maintenance standards are that the 'corridor' becomes commercially non-competitive and, as a result, the desired commercial returns on the very substantial investments are eroded or lost. In the case of the MDC, the potential Achilles heel could have been the continued underperformance of the railway line between the Port of Maputo and the border town of Ressano Garcia. As noted above, following two unsuccessful attempts at concessioning this line, both countries agreed that CFM would operate the line, and that TFR would provide much-needed rolling stock and facilitate trade volumes. Current indications are that operational efficiencies and usage are improving steadily. The CEO of the Maputo Port Development Company has been reported as saying: 'We commend TFR on improved efficiencies...they have managed to reduce turnaround times of the trains from 200 hours to 90 hours on the Maputo Corridor' (Mommen 2011).

With regard to sovereignty issues and the need for legal reforms, it is informative that the MDC planning and development process was characterised by the following:

- At an overall level, the project design and implementation process was kept as simple and focused as possible. Both countries were convinced of the need, desirability and feasibility of the concept, and the approach appears to have been one where reforms would be made as and when required in order to support the successful development and implementation of the project. As such, there was no need or emphasis placed by either country on the other to challenge sovereignty issues or to force particular reforms.
- The project was pursued as a bilateral development initiative, rather than as a SADC initiative. This approach simplified the required decision-making processes.
- The MDC planning and development process was ‘championed’ by the national transport ministers of both countries, who played a very active role in the planning and investor-mobilisation process. This gave the initiative the required political backing.
- The planning and development emphasis was on relatively few priority projects, and it was agreed that the necessary legal and institutional reforms would be identified and acted upon by both countries as and when the need arose. Thus, the legal and institutional reforms were undertaken on the basis of practical development experience and without the risks (and resulting resistance) of trying to effect legal reform where the outcomes are unclear or untested. These reforms were then shared with other countries in the region.¹²

In terms of the related institutional arrangements, a similar approach was applied (as indicated above in terms of sovereignty), the focus being on supporting a limited suite of strategically vital project elements, and both countries were committed to providing the required political and technical capacity to support the planning, development and implementation processes. Furthermore:

- The political leaders in both countries, at national and provincial level, took steps to publically drive the initiative, and, in practice, played an exceptionally active roll, participating in the planning and development processes, and expediting speedy decision-making when required.
- In order to support the initiative and to manage the key policy shifts, the political leadership in each country undertook to put in place inter-sectoral coordinating

bodies at the ministerial and technical levels. These were effective in facilitating work within each country as well as in coordinating activities binationally.

- The planning process adopted was characterised by deliberate ‘quick-step’ planning and decision-making processes, and a project-driven approach. Related to this, the initial key strategies targeted the rehabilitation of the core transport infrastructure through PPPs.

In terms of the financing aspects of the MDC RPGs, suitability for private sector financing was fundamental to the approach pursued. As a result of good market demand for the various elements of RPG infrastructure, and combined with the high levels of excludability, these RPGs are potentially very commercially attractive to private sector financing and development. The commercial attractiveness of the MDC infrastructure RPGs also created a situation where the Mozambican and South African governments were able to structure the concessions in a manner that would ensure a very specific set of ‘operations and maintenance’ terms and conditions (i.e. a predetermined time framework for the concession period, specific maintenance obligations, market-related pricing increases, SMME-friendly construction and maintenance programmes, related capacity-building programmes, etc.) In terms of revenue collection, the private party was very well incentivised to collect levies/charges, in the sense that if this were not done effectively the private party would fail to recover the investment and operating costs, and would fail to achieve profits on a substantial investment.

2.7 LESSONS LEARNED

A number of important lessons can be derived from the southern African experience with transport and development corridor initiatives, which are also of relevance to the development of infrastructure RPGs.

Socio-economic context

Corridor initiatives cannot be pursued in the absence of a sound underlying business case. In this regard, the following are important:

- *Socio-political stability is a vital condition for broad-based investor mobilisation:* The promotion of development corridors in a context of real or perceived political unrest is very difficult and not likely to succeed. Similarly, all investors require a reasonable degree of macro-economic stability and a sound regulatory framework.
- *Focus on areas of inherent and underutilised economic development potential:* Development corridors should be

¹² A good example of this was the toll-road legislation in South Africa and Mozambique, which was enacted when the toll-road project was implemented in the MDC. The legislation allowed for private sector participation in (normally public sector) infrastructure projects and the establishment of PPPs. Subsequently, many experiences from this project were shared with other countries in the region.

pursued/chosen on the basis of the existence of very strong inherent and underutilised development potential, as was the case with the MDC. An important methodological step is the up-front assessment of the corridor region's development potential (in terms of an individual country basis and in terms of the transboundary region). This is also essential in order to establish a sound business case.

Development planning and programming issues

In cases such as the MDC, which involve many PPPs, projects must be analysed carefully for those aspects that should attract private sector investors and those aspects that should be financed by the public sector either to ensure delivery of a public good and/or because the risk is too high or the reward too low for private investors to participate.

PROJECTS MUST BE ANALYSED CAREFULLY FOR THOSE ASPECTS THAT SHOULD ATTRACT PRIVATE SECTOR INVESTORS AND THOSE ASPECTS THAT SHOULD BE FINANCED BY THE PUBLIC SECTOR.

Furthermore, the upfront identification of anchor/lead investment projects is vital for generating development momentum. It is more important to identify and implement a set of strategic anchor/lead investment projects than it is to embark upon a broad-based and comprehensive planning and development programme. Experience with the development corridors in southern Africa, as well as international experience, indicates that it is easier to get countries to agree on a few specific collaboration projects than it is to agree on comprehensive transboundary development programmes. Experience also indicates that once investors have been mobilised on the anchor projects, this achievement contributes much to the initiative in terms of demonstrating that the development opportunities are real, and that the development environment is conducive to private sector investment.

Corridor marketing and investor mobilisation

In the context of the need to mobilise new public, private and donor investment into infrastructure development, and especially the mobilisation of private sector investment and lending into various economic development projects,

practice has shown that the level of success is dependent on a number of interrelated activities, which include: firstly, project identification; secondly, a sound business case for projects individually and collectively; thirdly, project packaging; and, fourthly, the marketing of the investment opportunities to potential investors. The key lessons in this regard are as follows:

- *Success in development corridors is significantly dependent on identifying an integrated set of viable economic and infrastructure projects rather than single, disjointed projects:* In order to successfully mobilise private sector investors (be it for infrastructure or for sector investment projects), it is essential that the intended investment projects are financially viable. Related to this, financiers/investors in transportation infrastructure and sector investment projects need to see and understand the economic, financial and institutional interrelationships between the different transport infrastructural components that invariably perform key functions within development corridors. They need, also, to see and understand the relationships between the transport infrastructure projects and the sector investment projects and how they mutually support the financial viability of each other.
- *Investment projects must be properly packaged for investors:* In order to be able to identify and package sets of economically and financially viable investment projects, it is essential for participating governments to mobilise a strong technical capacity to support the project identification, conceptualisation and packaging processes.¹³ The combination of strong political commitment, inherent development potential, and availability of technical expertise all contribute to a speedier planning and decision-making process and well-prepared projects.
- *Once properly packaged, projects have to be marketed appropriately to potential investors:* The promotion of development corridor initiatives is fundamentally based on the promotion and operation of integrated sets of infrastructure and economic development projects, within a conducive regulatory environment.
- *Consistent development strategy:* One of the most important marketing documents for any development corridor initiative is a clearly and simply defined 'development corridor strategy' that specifies the overall economic rationale, the various interrelated sets of projects, the

¹³ Where these skills are not available locally, they need to be imported. When they are imported, it is important to ensure that local (permanent) capacity is built at the same time.

relative development priorities and the proposed implementation programme. Since the process of communicating this strategy is also a key marketing activity, it is essential that the key stakeholders fully understand and agree on the strategy for any development corridor initiative, and that they convey the strategy (and its rationale, priorities, programmes, etc.) in a mutual and consistent manner.

THE IMPLEMENTATION OF COMPETITIVE BIDDING PROCESSES HAS BEEN SHOWN TO DELIVER VERY GOOD RESULTS IN TERMS OF FINANCIAL AND TECHNICAL PROPOSALS.

- *Reactive and proactive marketing of investment opportunities:* Experience has highlighted the fact that projects also need to be marketed to investors in different ways. Certain investment opportunities can be successfully marketed purely on the basis of advertisements in the local and international media. This sort of reactive marketing does, however, rely on the assumption that potential investors are in the habit of reading the related media, and this may well not be the case for those potential investors who are from outside the region. Practice has shown that some high-profile international investors require a more proactive marketing strategy, since such investors generally need to consider many investment opportunities at any given time. Such investors react far more positively to those strategic investment opportunities that are brought directly to them (or their advisors, who play a key role in their decision-making systems).¹⁴
- *Transparent bidding processes:* The implementation of competitive bidding processes has been shown to deliver very good results in terms of financial and technical proposals. Such a process is also often a requirement of governments in terms of prevailing public sector procurement rules.¹⁵ Generally, investors are not opposed to competitive bidding/tendering processes, provided that the

process, the adjudication criteria and the decision-making are seen to be transparent. As such, competitive bidding processes can be adopted as part and parcel of the process leading up to the establishment of sound PPPs.

Institutional development and capacity-building issues

- *Political commitment and active support from the relevant leadership is vital:* If one hopes to be able to implement development corridor initiatives or transboundary infrastructure programmes in a regional context (especially in more than one country), it is essential that there is direct, top-level political support and involvement. (The hands-on involvement of the ministers of transport from Mozambique and South Africa in the MDC is a very good example of this level of commitment from the highest levels of government).
- *Establishment of a medium- to long-term, flexible, variable focus, multilateral and multistakeholder institutional structure:* Experience suggests that corridor development initiatives require the participation of both public sector (mainly those government departments and agencies involved with the transport infrastructure projects) and private sector (mainly the users of the corridor) stakeholders in a well-funded institutional structure that can manage transport and related logistics issues, as well as a development and related support programme.¹⁶
- *Development of local/regional technical capacity to undertake corridor initiatives:* Mention has been made in the preceding lessons learned of the need for strategies and projects that are technically, economically, environmentally, financially, institutionally and legally sound. Such aspects need to be addressed at both the project and the policy and strategy level. Often, countries in Africa do not have such skills readily available from within the government services, or even from the local private sector. In such situations, these skills inevitably have to be brought in from elsewhere within the region (the preferable option, as regional circumstances would be best understood), or even from elsewhere internationally. Initially, this approach is not only the best, but is often the only short-term solution. However, considerable care needs to be taken in ensuring

¹⁴ It is essential to note, that just because an investment opportunity has been brought to the attention of a potential investor, it does not imply that such an investment opportunity cannot be subject to a competitive bidding/tendering process.

¹⁵ This is because of the benefits they are intended to offer in terms of objective decision-making related to the allocation of resources under control of the public sector.

¹⁶ The Walvis Bay Corridor Group (WBCG) is a very good example of a highly motivated and effective PPP focusing on transport and logistics issues. The MCLI is another good example of an institution that is evolving so as to be able to manage transport and logistics issues as well as development and related support programme issues.

that opportunities to develop local, more permanent skills are attended to.¹⁷

Legal and regulatory reform

Various regional trade bodies (such as COMESA and the SADC) are involved in a significant amount of complex legal and regulatory reform associated with the move towards free trade zones. While there is an obvious need for regionally integrated and consistent regulatory frameworks, a focused and practical approach is likely to be most appropriate. In this context, the existing corridor initiatives have generated several useful lessons of experience:

- *The initiation of a development corridor does not always require formal legal and regulatory reform:* Development corridor initiatives can be founded on relatively simple bilateral (or multilateral) agreements that do not in themselves require the countries to embark on formal legal or institutional reform.
- *The implementation of the anchor infrastructure projects in development corridor initiatives provides a practical demonstration of the legal and institutional reform required to be undertaken by the participating countries:* As projects are implemented, the legal and institutional reforms necessary to allow for this implementation can be identified and acted upon by the countries participating in the corridor.
- *The implementation of investment projects in development corridor initiatives provides a practical demonstration of the establishment of a conducive investment environment and the associated legal and institutional reforms required to be undertaken by the participating countries:* Private sector decision-making around investment in projects in corridors is determined principally by the financial viability of the projects, the political stability in the corridor region and the policy clarity in the corridor region's participating countries. As the investment projects are implemented, issues around the broader investment regime (such as investment codes, customs import and export procedures, work permits and visas) generally come up for review and negotiation, and often then lead to regulatory review and reform.

- *The importance of administrative and legal reform:* Notwithstanding the points above, one of the major factors the SADC Transport Protocol sought to address was harmonising the regulations and enforcement practices that affect transport costs and operations. Despite an SADC-wide effort to obtain legal and administrative agreement, lack of uniformity is still a major non-tariff barrier. Corridors are particularly well equipped to address these issues, because their membership includes the users who face the problem and the agencies that need to address it.

Project financing – RPGs developed as club goods

The key infrastructure elements that were developed as part of the MDC – toll road, rail, port and energy – were all well suited to private sector financing and operation. In this regard, the high levels of potential excludability ensure high levels of 'user pays according to usage'. Similarly, free-riders are easily excluded; they cannot use/access the infrastructure if they do not pay.

DEVELOPMENT CORRIDOR INITIATIVES CAN BE FOUNDED ON RELATIVELY SIMPLE BILATERAL (OR MULTILATERAL) AGREEMENTS THAT DO NOT IN THEMSELVES REQUIRE THE COUNTRIES TO EMBARK ON FORMAL LEGAL OR INSTITUTIONAL REFORM.

It is for this reason that the private sector is willing to fund all costs associated with the development and operation of the infrastructure. The one obvious exception to this would be in those instances where the demand to use the infrastructure is well below the minimum development/operation/maintenance costs. In such instances, it may be necessary to develop related mitigation strategies, including part contributions by the public sector.

The weakest-link principle applies, in the sense that the efficiency and effectiveness of the corridor can be significantly undermined by the weakest link in the chain (e.g. poor sections of road, inefficient border-crossing procedures and obstructive customs services).

¹⁷ For this reason, it is important that capacity-building programmes are designed to build required skills. This capacity-building may take the form of stand-alone training programmes, but in many instances there are considerable learning and capacity-building opportunities that can be achieved by involving local expertise alongside the imported expertise in the project identification, packaging, investor mobilisation, investor selection, project implementation, and project monitoring and evaluation phases. Special care should be taken by participating countries not to forego these opportunities.

The interrelationship between transport and development corridor initiatives

Questions are often asked about the differences and/or synergies between 'transport' and 'development' corridors. In this regard, it should be noted that all corridors are developed to facilitate trade between countries and sub-regions, and to support the process of economic growth, socio-economic development and regional integration. Typically, the underlying infrastructure for any trade route is a transport corridor (most commonly railway and/or road infrastructure). The key function of transport corridors is the movement of goods and people between various points.¹⁸ Development corridors utilise the improved infrastructure and logistics of the transport corridors to pursue economic development along the corridor routes. As a consequence of the improved transport infrastructure and service, new opportunities for investment in economic development projects (e.g. mining, agriculture and forestry) can be identified. Once these economic development projects are approved for implementation, they, in turn, boost the demand for the transport services and for additional infrastructure (especially electricity, telecommunications and water supply). In this way, an ongoing, reinforcing production and investment cycle is established.

2.8 FUTURE OPPORTUNITIES FOR INFRASTRUCTURE-BASED RPGS IN AFRICA – THE PROGRAMME FOR INFRASTRUCTURE DEVELOPMENT IN AFRICA¹⁹

The Programme for Infrastructure Development in Africa

¹⁸ The various transport corridor support initiatives that have been implemented within the SADC have focused on improving infrastructure and efficiency (including reliability, cost savings and time reductions) or eliminating non-tariff barriers, in order to increase the regional/international competitiveness of exports, and to facilitate the import of key production inputs. The primary business case is that of anchor customers with sufficient volumes to make the corridor efficient and transport services financially viable. Increased corridor use generates the revenue to maintain its infrastructure.

¹⁹ The source of the information in this section is <http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/programme-for-infrastructure-development-in-africa-pida/>

(PIDA), which is being implemented via the African Development Bank (AfDB),²⁰ is a continent-wide programme to develop a vision, policies, strategies and a programme for the development of priority regional and continental infrastructure in transport, energy, transboundary water and ICT.

The overall goal of PIDA is the promotion of socio-economic development and poverty reduction through improved access to integrated regional and continental infrastructure networks and services. Sector studies undertaken by PIDA will assist in developing a vision on Africa's infrastructure based on strategic objectives and sector policies, and prioritised regional and continental infrastructure investment programmes over the short, medium and long term up to the year 2030. In addition, the studies will recommend the required institutional arrangements, legal frameworks and financing mechanisms for the implementation and monitoring of the programmes.

PIDA appears to be a very good starting point in terms of accessing information that could be used as a basis for identifying potential RPG opportunities.²¹ PIDA aims to bring together various continental infrastructure initiatives (the NEPAD Infrastructure Short-term Action Plan, the NEPAD Infrastructure Medium- to Long-term Strategic Framework and the AU Infrastructure Master Plan) into one coherent programme for the entire continent, covering all four sectors of transport, energy, transboundary water and ICT. PIDA intends to develop an infrastructure investment programme built around key priorities that will include an implementation strategy and priority action plan.

²⁰ The AfDB's role as executing agency covers the responsibility for contractual, financial, technical and administrative management of the programme.

²¹ This does not detract from the need to adhere to the lessons learned (described above in this document) in terms of the need to prepare careful assessments leading to a sound business case that would determine the potential socio-economic impacts of such RPG infrastructure.

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3 THE REGIONAL AFRICAN SATELLITE COMMUNICATION ORGANISATION (RASCOM)

St George A Joiner

3.1 INTRODUCTION

Technology policies in many African countries have been changing rapidly. This has been necessitated by an expansion in the application of modern technology to the functions of government, the private sector and individual households with the capacity and ability to absorb the 'new technologies'. All this has forced African governments to rethink their information and communications technology (ICT) policies. Many now see the development of ICT as a *sine qua non* for economic growth and development. No longer is there a desire to stand aside and watch the rest of the world move into an orbit that would eventually lead them to prosperity and Africa into a state of permanent marginalisation. Changes have had to be made in almost every aspect of life – in industry, trade, agriculture, health, education and personal communication.

MANY AFRICAN GOVERNMENTS BEGAN TO REALISE THAT INDIVIDUAL COUNTRY EFFORTS IN THE ICT SECTOR MIGHT NOT YIELD AS MUCH BENEFIT AS REGIONAL OR SUB-REGIONAL ONES.

Almost all African governments now fully recognise that the so-called digital divide has to be bridged. Access to computers and computer technology must be addressed speedily, so that increasing demands for Internet and broadband connectivity may be met. During the period 1990–2000, governments in the region, through the collective action of the African Union (then the Organisation of African Unity), approached a number of

international organisations for assistance in the ICT sector. The International Telecommunications Union (ITU), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Development Programme (UNDP), the United Nations Economic Commission for Africa (UNECA), the World Bank and the African Development Bank (AfDB) were consulted. Through various studies, reports and assessments, the continent's dismal state of ICT development was set out by these agencies. The digital divide, they affirmed, was real; and it manifested itself in Africa's ratios for ICT growth. Those ratios showed low levels of fixed line penetration and broadband connectivity, an inadequate supply of backbone network infrastructure, very little development in Internet-based communications (voice and data), low-level fixed-line or broadband penetration in rural communities, declining levels of public investment in ICT and noticeably insufficient fiscal and financial incentives for private sector investment.

Since 2000, there have been some changes. Many African governments began to realise that individual country efforts in the ICT sector might not yield as much benefit as regional or sub-regional ones. The African Union (AU), through the New Partnership for Africa's Development (NEPAD), launched its African Regional Communications Infrastructure Programme (2004) with the assistance of the World Bank. The objective of the programme was to facilitate the roll-out of submarine fibre cable along the East African coast and to connect countries in the region to the global telecommunications network either directly or through terrestrial links. The Eastern African Submarine Cable System (EASSy) is now operative and is deemed by some to be a successful example of a regional public good. The development of this terrestrial link came on the heels of a decision taken by African leaders at a heads-of-state summit in Abuja, Nigeria in 1991 to undertake a study on the provision of satellite communication services for the continent. A year later, in May 1992, at a similar meeting in Abidjan, Ivory Coast, the heads of state created the Regional African Satellite Communication Organisation (RASCOM). This

facility was designed to be an intergovernmental commercial organisation with private sector participation.

THE BEST THAT CAN BE ACHIEVED WITH THE PRESENT STRUCTURE OF RASCOM WOULD BE TO FASHION IT AS AN ORGANISATION (COMMERCIAL OR GOVERNMENTAL) THAT WOULD COMBINE CUTTING-EDGE TECHNOLOGY WITH A SOUND FINANCIAL PLAN.

The above efforts by African governments must be seen in the light of the continent's own potential for ICT growth. Statistics from the ITU indicate that there are promising developments in mobile telephony. At present, the region has some 280 million telephone subscribers, of which 260 million (over 85%) are mobile phone subscribers. Between 2002 and 2007, the growth in this market was about 65% per year. Internet penetration is about 5%, whereas broadband penetration is about 1% in a limited number of countries. The ITU (2007/08) notes that Europe's Internet penetration is about 40%, while the overall broadband penetration in Organisation for Economic Cooperation and Development (OECD) countries is more than 18%. This success in mobile telephony has spurred interest in the growth of broadband, especially wireless broadband. The technology has potential for penetration into remote areas on the continent, especially in places where electricity supplies are non-existent or unreliable. The expectation is that RASCOM will further this development of wireless technology to the extent that such technology will be the primary delivery system for Internet services in Africa. Private operators are forging ahead with the development of 3-G telephony and Voice Over Internet Protocol (VOIP). Governments must now create an enabling environment for these commercial activities to grow and prosper. CABRI's own interests can justifiably be seen in this context. It intends to undertake research work that will serve as 'a framework and practical guide for African policy-makers in the area of cross-border cooperation to provide goods and services that are mutually beneficial for a region'.

It is in this context that this case study was commissioned. The study starts with a critical assessment of the mission, structure and operations of RASCOM. The following two

sections examine the policy, institutional, economic and financial issues that the organisation can embrace, while the final section considers the legal and regulatory framework in which its activities can be undertaken. The study will not undertake a technical evaluation of RASCOM, but it will suggest a scheme in which the policies of participating governments can be harmonised in order to improve the overall consumption of regional wireless technology as a dominant public good in African.

The study's theoretical underpinnings are founded on the classical definition of a 'public good' as a good that is both non-rival and non-excludable in nature. In RASCOM's case, the addition of one member country as a user or beneficiary of the organisation's products will not necessarily reduce the benefit extended to others who already 'consume' the good. In this regard, then, the satellite services provided by RASCOM would fall into the non-rival category. They would also be non-excludable in that it would not be possible to exclude future/additional consumers from the benefits or services that are generated. As will be discussed in the following section, the satellite footprint of RASCOM-QAF1 will cover the whole of the African continent and parts of Europe and the Middle East. It would, therefore, not be possible to exclude individuals from 'consuming' the public good produced by RASCOM within the geographical boundaries of the African continent and even beyond.

Perhaps, the central issue in this theoretical model is the so-called 'free-rider' problem. In economics, this problem has its place in two areas of the discipline – public finance (applied economics) and welfare economics. Section 3 discusses the economic and financial aspects of the organisation. Emphasis is placed, in that section, on the need for the revamping of the capital structure of RASCOM so as to widen the contribution net to the resources of the organisation. This is a public finance issue and can be addressed by specific budgetary measures undertaken by members of RASCOM. The welfare issues are an entirely different matter. Welfare economics will place RASCOM in the category of an imperfect public good. The benefits of RASCOM are available to many countries and the services provided are either partly non-rival or partly excludable. Coping with the free-rider problem, under these circumstances, will not be easy. The suggestion that 'club goods' might be the answer is doubtful, as technology makes it impossible for user fees to be determined throughout the consumption pattern of the free-rider's use. The free-rider's 'welfare' is no different from that of the legitimate beneficiaries.

The best that can be achieved with the present structure of RASCOM would be to fashion it as an organisation

(commercial or governmental) that would combine cutting-edge technology with a sound financial plan. Such an arrangement would enable RASCOM to aggregate all available resources in the ICT field in order to allow it to deliver and supply telecommunications services to the African continent. This technology and financial aggregation offers a 'best-shot' possibility of transforming RASCOM into a veritable regional public good.

3.2 RASCOM: MISSION, STRUCTURE AND OPERATIONS

Before the launching of RASCOM by heads of state of the African Union in Abidjan, May 1992, a feasibility study had been commissioned as far back as 1987. This was a huge study that involved 50 African countries and over 600 African experts. The lead agency was the ITU, and funding was provided by the UNDP and the AfDB. The exercise was completed in 1990 and the findings submitted to the heads-of-state meeting in Abuja, Nigeria in February 1991. Essentially, the experts recommended that a regional telecommunications satellite be built and launched for the purpose of meeting Africa's telecommunications needs and that a regional organisation be set up to manage the operations as a commercial enterprise. That organisation became RASCOM.

At the outset, the agency had six main goals (its mission), which the heads of state had agreed to in Abidjan in 1992. These were:

- to provide an affordable infrastructure on a large scale to rural areas of the continent using appropriate technology;
- to improve and/or develop inter-urban communications in each country;
- to establish direct links between all African countries;
- to provide facilities for radio and television broadcasting in each country and to enable the exchange of radio and television programmes between African countries;
- to provide support for international connectivity; and
- to provide ICT services (voice, data, multimedia, e-learning and e-medicine) for users throughout the African continent. (See www.rascom.org)

Without doubt, the above goals focus on the fundamental issues that need to be addressed on the continent. In resolving to tackle them at the regional level, African governments had come to the realisation that individual countries did not have the resources or the skills necessary

to promote ICT growth and development. African policy-makers also realised that two things had to happen for this growth and development to take place. Firstly, there had to be a large-scale development of network infrastructure in each country and, secondly, ICT services had to be affordable. Within RASCOM, it has become apparent that the current network infrastructure in most African states is primarily low-capacity wireless-based infrastructure. This has to be expanded so as to carry voice communications traffic and to make for greater usage of ICT services provided by the new technology at affordable rates. For services to be affordable, there has to be a conscious effort to develop a mass market for telecommunications services on the continent.

Accessibility and improved international connectivity will remain a constant challenge for the organisation. As telecommunications networks emerge, there seems to be a tendency for them to concentrate their activities in the most profitable geographical areas of the continent: northern and southern Africa. East Africa seems to fare better than West Africa, which remains the toughest sub-region for the development of infrastructure networks. The challenge for RASCOM would be to see how to enhance the development of cross-border backbone network connectivity in the regions. Such cross-border development must not be confined to urban areas. It must extend its reach and hopefully bring the benefits of improved connectivity to remote or rural communities.

The organisation's role in cross-border ICT activities would be enhanced immensely if, in some way, it were able to influence the production, distribution and exchange of radio and television programmes. Given the way in which national media organisations are structured in Africa, this would take a long time before it could be realised. At present, RASCOM should not get into the production of radio and television programmes. Its main focus must be to ensure that the second satellite is working well so that it can generate sufficient revenue to continue its operations.

As for its structure, the organisation's present arrangements need to be reviewed. It has three basic organs:

- the assembly of parties;
- the board of directors; and
- the executive organ.

To date, 45 African countries are members of RASCOM, and 43 of them have signed the operating agreement. The assembly is the supreme policy-making body and is made up of governments that have signed the RASCOM Convention. It meets every two years. The board of directors is responsible for the 'design,

development, construction, establishment, operation and maintenance of the RASCOM space segment and any other activity which RASCOM is authorised to undertake. It meets every three months and has a total of at least 20 members chosen from the five regions of the African continent as well as representatives of signatories or groups of signatories that have agreed to be represented as a group and each of whom holds one of the fifteen largest shares within RASCOM' (www.rascom.org). There are also representatives of non-signatory shareholders (such as the ADB Group and ALCATEL) chosen in accordance with the provisions of the Non-Signatory Shareholder Agreement. The executive organ (the secretariat) is headed by a director-general with three principals: vice-president for finance and administration, vice-president for engineering and technology and vice-president for international relations. The structure of RASCOM reflects a desire to have a manageable outfit that is not too expensive to run. Nevertheless, some changes can be made to the existing structure.

THE STRUCTURE OF RASCOM REFLECTS A DESIRE TO HAVE A MANAGEABLE OUTFIT THAT IS NOT TOO EXPENSIVE TO RUN. NEVERTHELESS, SOME CHANGES CAN BE MADE TO THE EXISTING STRUCTURE.

The first has to do with the location of RASCOM. It must move from the Ivory Coast to either Dakar, Senegal or Johannesburg, South Africa. The political situation in the Ivory Coast is just too fragile for the organisation to continue to be based there. The other two cities are relatively safer and have all the advantages of being in a strategic location. Secondly, the assembly of parties should meet once a year, alongside the July meeting of the African Union. Since it is a meeting primarily of governments, it should not be too difficult to have representatives of governments from the telecommunications sector join those from other ministries who attend the annual meetings of the African Union. Thirdly, the composition of the country delegations should change to include representatives from the private sector. This is a common practice within the European Union when it meets on subjects that clearly have a major impact on the private sector.

The present composition of the board of directors should be changed. The organisation is a commercial entity and, as such, should be organised accordingly. Membership of the

board should be limited to the largest shareholders (country or private entity). If groups of shareholders want to pool their shares and thereby gain a seat on the board, they should be allowed to do so. The distinction between signatories and non-signatories, in so far as board membership is concerned, ought to be abolished. Let those who have risked their capital in the enterprise be given the greatest opportunity to decide on the management and operations of the organisation. Finally, the executive organ needs to be strengthened, particularly in three areas:

- business growth and development;
- legal and regulatory affairs; and
- policy and institutional issues.

What these proposals point to is the need for the executive organ to function as it would in a company. It should not be another pan African initiative where the emphasis in recruitment is on governmental pedigree as opposed to commercial knowledge, experience and skill. If this were done, there would be no need for RASCOMSTAR-QAF, the Mauritius-based commercial entity of RASCOM.

While detailed coverage of operations goes beyond the scope of this study, a few operational landmarks are outlined below (further information is available on the ITU and RASCOM websites).

The RASCOM system is operated under an agreement with RASCOMSTAR-QAF, the private company based in Mauritius. The company launched its first satellite, RASCOM-QAF1, on 21 December 2007 on the Ariane 5GS rocket in Kourou, French Guyana. All technical matters relating to the launch were contracted to ALCATEL, which built the satellite in France. The expectation was that the satellite would offer RASCOMSTAR-QAF the capability to provide fixed-voice and data telecommunications, internet access and broadcast services to the whole of Africa, with an extension of the satellite's footprint beyond Africa to include parts of Europe and the Middle East. A number of problems dogged this first venture. On 29 December 2007, ALCATEL announced that a helium leak had developed aboard the spacecraft and that, as a result, activation of the satellite's systems would be delayed. A second problem emerged in January 2008; the satellite had failed to reach its geostationary orbit at 2.85° East. The problem was fixed a month later but, by then, the spacecraft had lost significant amounts of fuel. By September of 2008, ALCATEL announced that the satellite's life span would be reduced to two years from the initial period of 15 years. As a result of this setback, a decision was taken to supply RASCOM with another satellite – RASCOM-QAF1R.

RASCOM-QAF1R was successfully launched on 4 August 2010. Essentially, it followed the same technical specifications as RASCOM-QAF1. It offers increased bandwidth lease services to more than 30 African countries in order to support the Pan-African e-Network Project. Broadband connectivity between African states, as well as Africa's connection to Europe and the Middle East, will be improved. Finally, it will provide telephony services to remote areas of the continent using a dedicated terminal that will support voice, data and radio/television reception in all parts of Africa.

WHAT IS REQUIRED IS FOR LARGE STATES LIKE SOUTH AFRICA AND NIGERIA TO USE THEIR TECHNICAL AND FINANCIAL RESOURCES TO ENSURE THAT REGIONAL PROJECTS LIKE RASCOM WORK FOR THE GOOD OF THE CONTINENT AS A WHOLE.

It is perhaps too early to judge the success of RASCOM-QAF1R. Comments gleaned from various countries about the first satellite launch (RASCOM-QAF1) were not favourable. High expectations in countries like Kenya, South Africa and Uganda were not met. The promises by then Chairperson and CEO of ALCATEL, Ms Pascale Sourisse, that some 300 000 African villages would be affordably connected to the rest of the world did not materialise. The prophetic pronouncements of Mr GF Adadja, Director-General and CEO of RASCOM, at the time of the first launch, that the RASCOM satellite system would contribute to bridging the digital divide between rural and urban Africa has yet to be fully realised. After the experience with the first launch, Dr Hamadoun Touré, Secretary-General of the ITU called for a 'Marshall Plan for ICT infrastructure development in Africa'. It will take more than just satellite launches to achieve this. Radical policy, institutional and regulatory reform of the sector would be needed at both the national and regional levels.

Countries like South Africa and Nigeria have the capability of funding their own satellite programmes. Were that to happen, then such programmes would be national, not regional, public goods. Moreover, such programmes would not necessarily advance the process of regional integration on the African continent. What is required is for large states like

South Africa and Nigeria to use their technical and financial resources to ensure that regional projects like RASCOM work for the good of the continent as a whole.

3.3 POLICY AND INSTITUTIONAL ISSUES

To give effect to Dr Touré's 'Marshall Plan' proposition, concrete policies would have to be developed and adjustments made to the way the business of ICT is conducted on the continent. The role of RASCOM would have to be enhanced in that process. This section examines a selected number of policy options that could be pursued and their corresponding paradigms for change within the organisation.

Policies to promote aggregate demand for ICT services

The key to increasing ICT demand on the continent has to be the building of the requisite network infrastructure that will then attract private capital investment and involvement in the sector. The World Bank characterises this as investment in backbone network development (Williams 2010). Examples of this would be the construction and operation of earthlink stations, the building of small satellite terminals in rural areas, the setting up of equipment assembly plants for the RASCOM system and the manufacture and sale of components. For this to happen, there has to be a commitment to regional cooperation under the auspices of RASCOM. This is not going to be easy. The difficulties that organisations like the African Union experience routinely will abound. Merging disparate administrative and management systems into a cohesive, workable unit will prove to be a daunting task. French-, English-, Arabic- and Portuguese-speaking officials and specialists would have to devise ways of working with each other for the purpose of encouraging the harmonisation of policies to improve and increase demand for the services that RASCOM will provide with its present and next generation of satellites.

Policies to promote competition within and between members of RASCOM

The high cost of ICT services in Africa is a significant barrier to usage, particularly amongst the poor on the continent. In its annual publication, *Measuring the Information Society*, the ITU (2010) noted that, in 2009, while there were significant cost declines in the provision of its ICT basket of goods (i.e. average cost of fixed telephone, mobile phone and Internet services for 161 countries) in Europe, USA and Asia, the cost of these same services rose in Africa. On average, the report noted, a high-speed internet connection in Africa

represents 500% of the average monthly gross national income per capita in Africa. This is a staggering statistic but supports data published by the World Bank and others. According to the Bank, in 2006, the average broadband connection in sub-Saharan Africa cost US\$366 per month compared to US\$6–US\$44 in India (Williams 2010). Clearly, affordability is a critical issue that policy-makers have to address. The immediate solution is competition.

Competition must be fostered at two levels – entry costs into the business and operating costs once the business has been established. Regional policies with respect to the importation, manufacture or sale of computers must be devised and agreed to by states that are members of RASCOM. High connection fees for both voice and data traffic must be reviewed with the expressed intention of reducing them. The statistical tool that is available to measure affordability is the so-called expenditure analysis. Data from this exercise can be used to compare expenditure and prevailing prices amongst different population groups. Another tool would be to use cross-country tariff data and establish price benchmarks that would identify differences in the pricing policies of member countries of RASCOM.

ACCORDING TO RASCOM, ONCE THEIR SYSTEM IS FULLY FUNCTIONAL, THE AVERAGE PER MINUTE COST OF TELEPHONE COMMUNICATION OUGHT NOT TO EXCEED US\$0.10.

An institutional creation, a regional competition commission, could be set up to undertake the technical work on the household expenditure surveys on ICTs. A regional approach would be supported by agencies such as the World Bank, UNCTAD and the AfDB. In addition to providing useful data for policy-makers, the regional competition commission would be responsible for ensuring transparency in the issuing of licenses and spectrum allocation. According to RASCOM, once their system is fully functional, the average per minute cost of telephone communication ought not to exceed US\$0.10. How this figure is arrived at is not fully explained in the published material put out by the organisation. What is important is that the agency recognises the need for lowering the cost of voice, data and Internet communication. As noted above, the best way to do this is through competition, especially in the downstream market. The success of mobile money operations (M-PESA) in Kenya and the willingness in many

African countries now to license private radio and television stations is proof that with the requisite conditions in place for competition many businesses will invest in the ICT sector and thereby make use of RASCOM facilities.

Another by-product of an efficient regional competition commission would be growth in the traffic of ICT services between African countries. Much of the traffic on the continent now goes through Europe and the Middle East. As a result, African countries have less control over it and, consequently, do not take advantage of the income opportunities generated. In West Africa, significant revenue streams flow to NILESAT and other satellite providers in the Middle East when these could easily be captured by RASCOM. Operators of radio and television broadcasts, as well as mobile phone operators like Africell and Comium, make use of satellite services other than RASCOM's. While regional action should not be in the form of giving national providers protection, it should ensure effective participation by African-owned enterprises in the telecommunications sector. In many African countries, the state, through its national telecommunications authority or company, has built much of the infrastructure for telecommunications. It has also gone into the provision of services in order to recover its initial investment and to ensure, in some instances, the exclusion of downstream operators and service providers. The practice of 'rent-seeking' by governmental officials has led to corruption and mismanagement of large state enterprises, and the entry of shady operators from outside the region who wish to make quick profits from the lucrative African market, particularly from mobile telephony. Today, mobile phones account for 90% of all telephone subscribers in the region, and growing this market represents a windfall that others outside the region would gladly take advantage of (ITU n.d.). RASCOM cannot provide the backbone infrastructure at a cost to African taxpayers and then watch others profit from it.

Policies on technical cooperation, training and procurement

These policies are grouped under this heading to illustrate the point that in many African countries there is a growing trend of 'mainstreaming' ICT development into the national planning process. This is not a bad idea. Almost all interventions in various sectors of the economy require use of an ICT resource. The RASCOM Programme of Assistance to Countries (RASPAC) has been set up as RASCOM's technical support programme. RASPAC has four limbs – financial support, policy and regulatory support, technical assistance and training. Financial issues will be considered in Section 4, while regulatory matters will be dealt with in Section 5.

RASPAC 'is designed to assist operators and users of the RASCOM system in planning, improving and extending their ground networks' (www.rascom.org). This programme should be part of a regional strategy to increase the number of African providers and operators. As such, it must manifest regional elements – the penetration of remote areas across national boundaries, provision of electricity supplies across national borders, a cross-border backbone infrastructure, outsourcing and 'off-shoring' of services on the basis of sub-regional capacities and the removal of constraints in the creation of a mass market for ICT services on a continent-wide basis.

RASPAC has yet to set up a comprehensive training programme for the operation and maintenance of the ground networks. There will have to be greater use of engineering facilities at universities across Africa for this purpose. An 'institutions of higher learning project' can be devised with the assistance of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the ITU, and sub-regional training hubs can be established to provide regular training for young people in ICT-related technology as well as in the space segment of RASCOM.

WHAT MUST BE AVOIDED IS THE CREATION OF YET ANOTHER FACILITY THAT WOULD RELY ON GOVERNMENT SUBVENTION TO SURVIVE.

Basic ICT literacy training would have to be undertaken by member governments of RASCOM and not by RASCOM itself. This training has to be done on a large scale (probably via radio and television services), so that rural areas can be reached. Village kiosks, built to function as ground networking sites within the RASCOM scheme, would have to be operated by persons who have had some training in the functioning of satellite terminals and the engineering of route trunking services, gateways and related entities. All this represents a tall order for RASPAC but it can be done, as has been the case in Asia and Latin America.

With regard to procurement policies, the stated objective of RASCOM to create opportunities for joint procurement is a noble one but its establishment will require proper planning. What must be avoided is the creation of yet another facility that would rely on government subvention

to survive. If a financing facility is to be set up, then it should be lodged within the AfDB. There, hopefully, it will be safe under expert management. Such a facility can be a source of excellent technical knowledge on where to procure goods and services for the long-term operation and viability of the RASCOM project. Since governmental procurement is a well-trying and tested tool for corruption in state enterprises right across the continent, some system of oversight and inspection must be put in place. The project company in Mauritius cannot be left to make procurement decisions on its own. If the AfDB is involved, then inspection methods now common in international procurement ought to be utilised by that agency in its procurement policies and practices for RASCOM.

Policies to reduce political and commercial risks

One of the arguments advanced by private businesses outside Africa is that doing business in the region is too risky. These companies, therefore, seek to negotiate all sorts of guarantees before making investments in African states. The story is that where there is not a risk of war or civil strife, there is the greater risk of appropriation by the government of the foreign investor's assets in the country in which the investor is operating. Many governments in Europe negotiate bilateral investment treaties with a large number of African countries in order to minimise the exposure to risk of their home companies on the continent. In all fairness, it is correct to say that the political situation in many African countries is volatile. Nevertheless, it is no more volatile than the political situation in Asia or Latin America. In several studies done by UNCTAD on investment in Africa, the case was made that Africa has moved significantly, over the past 15 years, to satisfy the requirements for the stability of foreign direct investment. Also, elections are now routinely held in many countries. Several African states have started to embrace democracy fully, while a few are leaning strongly in that direction. As a result of this, the requirement of political risk guarantees as a pre-condition for foreign investment in the ICT sector is obsolete.

Commercial risk guarantees, however, are another matter entirely. What companies really want is a guarantee that they will make money in Africa. Companies take a commercial risk every time they venture into a new location or engage in the production of a new product. The high costs of broadband connectivity in Africa are prompted not by the economics of the industry but by a decision on the part of the operators to place a premium on their operations in what to them is a commercially profitable venture that only happens to be located in a part of the world that they are wary of. Many of the large investments in the procurement of satellite

and microwave transmission equipment are reversible. The owner of the equipment can decide to dismantle it, sell it or re-use it elsewhere if necessary. Such investments do not warrant government guarantees.

Sometimes, operators want an African government to offer guarantees by way of a wholesale purchase of its services on behalf of public institutions in the country. While this looks neat, it only benefits the ICT operator. Rather than deal with small customers, it now has only one large customer that has to pay for all the services that the ICT company provides (to schools, health facilities, agricultural stations, etc.). It is not unusual for the ICT company to ask for a prepayment by the government for its services. In other instances, the ICT company may request subsidisation, especially if there is a need to roll out services to rural areas. All this obscures the growth and development of ICT services on the continent. What governments should do is not offer special treatment for outside operators but guarantee a level playing field that allows both state operators and private ones from anywhere to invest and operate in the ICT sector in Africa, taking advantage of the upgraded facilities offered by RASCOM.

If political or commercial risks are absolutely unavoidable, then foreign investors ought to approach their export credit facilities such as export-import banks and negotiate the requisite insurance cover that they seek. Many donor governments, keen on promoting their country's exports to Africa, have for quite some time provided risk insurance for war and civil disturbance, expropriation and confiscation, and currency volatility. Another source of political risk coverage is the World Bank's Multilateral Investment Guarantee Agency (MIGA). MIGA's services cost African governments money, but some countries that have experience with the outfit would urge RASCOM to make use of it, since MIGA might be the only agency willing to offer insurance on cross-border investments. In 2010, the agency supplied about US\$700 million to the ICT sector through private investment guarantees.

3.4 ECONOMIC AND FINANCIAL ISSUES

This section deals with three main issues – the capital structure of RASCOM, its revenue profile and alternative financing services that it can explore to ensure the sustainability and profitability of its operations.

Capital structure

Details of RASCOM's current financial position are difficult to come by. It is a private company and can restrict sensitive financial information to its shareholders if it chooses to do so. Nevertheless, it is possible to get some important data that helps in making general propositions as to what the organisation should do to improve its present financial position. The initial equity structure of RASCOM is shown in Table 3.1.

From this table, it can be seen that the government of Libya controls approximately 60% of the share capital of RASCOM. The other shareholders, RASCOM and ALCATEL, hold the remaining 40%. From the enquiries made, it seems that Libya had to come to the rescue of RASCOM in 2003 when the agency was having some difficulty putting together a financing plan for the launch of its first satellite, RASCOM-QAF. The Libyan government, therefore, holds the key to the ownership structure of RASCOM. With the present civil strife in that country and its consequences on effective decision-making, it would be safe to assume that there is concern for the future financial viability and sustainability of the RASCOM project. It is likely that the board of directors has already found a solution to this problem. If they have, then this certainly would be good news, which ought to boost confidence in the project. After all, the expenses involved in the project have been massive. It is estimated that total financing for RASCOM-QAF1 was about US\$375 million. The drastic reduction in the satellite's lifespan was a huge setback for RASCOM. It is estimated that RASCOM received an insurance pay-out of US\$230 million as compensation (www.spacenews.com).

Table 3.1: RASCOM's initial equity structure

Shareholder	Total equity (US\$)	Total shares	Voting rights
RASCOM	46 056 346	46 056 346	26.92%
GPTC*	50 095 775	50 095 775	29.28%
ALCATEL	20 991 685	20 991 685	12.22%
LAIP**	54 000 000	54 000 000	31.57%
	171 063 806	171 063 806	100.00%

Source: www.rascom.org

Note: *Libyan General Post and Telecommunications Company; **Libyan Africa Investment Portfolio Company

The apparent failure of RASCOM-QAF1 did not generate much enthusiasm among prospective ICT investors. As a result, the company would now have to revamp its capital structure so as to increase its authorised capital and reduce its dependency on the Libyan government. African states such as Nigeria, Egypt, South Africa, Gabon, Algeria, Angola and Botswana should take up shareholdings in RASCOM. If the Libyan government could make the initial sacrifice, other African states that have the resources can sustain the project for the future. The AfDB, the West African Development Bank (WADB), Ecobank, the Development Bank of Southern Africa (DBSA) and a host of other home-grown financial institutions should take up shares in the company, independently of their support through member governments. ALCATEL's present shareholding is too small. The initial contract that it signed with RASCOM was valued at US\$150 million for the launching of RASCOM-QAF1. This figure is approximately seven times larger than the company's initial shareholding. ALCATEL is a big company. Over several decades, it has provided communications services to both public and private enterprises worldwide. Its well-known expertise in building network equipment is matched by its experience in designing telecommunications applications and network services. It operates in 130 countries and has posted yearly sales in excess of €17 billion since 2002. It has the resources to invest more in RASCOM.

THERE IS NO DOUBT THAT LARGE POOLS OF PRIVATE CAPITAL ARE AVAILABLE. THESE CAN BE HARNESSSED TO INVEST IN AFRICA'S ICT UNDER THE RIGHT CONDITIONS.

The above proposals concerning ALCATEL's shareholding should be considered within the general framework of a re-examination of the project implementation agreement signed by RASCOM and the company. Three issues should be taken up for negotiation. Firstly, ALCATEL must do more to bring in private capital than it has done so far. Its arrangement with RASCOMSTAR-QAF must include a renewed commitment to market the satellite's prospects, especially in Europe and in the United States of America. In July 2009, RASCOM signed a US\$53 million contract with Carlsbad, a California-based company to provide gateway earth stations and an initial fleet of 15 000 RASCOM terminals. If contacts can be made for procurement at this level, they can also be made to encourage US investors to

consider investing in the RASCOM project. The much talked-about untapped capacity for ICT growth in Africa should be supported by concrete measures for attracting capital to the region for ICT development. Secondly, the company must encourage joint procurement by RASCOM members of ICT equipment and components necessary to provide backbone network support for the operators and service providers that will utilise the services offered by the RASCOM-QAF1R satellite. Thirdly, significant training opportunities at facilities owned or operated by ALCATEL should be incorporated into the project implementation agreement. This can be effected under the auspices of RASCOM.

Any significant ICT development on the continent must, nonetheless, be the responsibility of African governments themselves. The jury is still out as to whether large-scale privatisation is the answer to the problem. Each country must devise its own privatisation scheme, but there has to be an understanding that large-scale private capital for ICT development will not flow into state-run enterprises. The World Bank has advanced the notion that 'large monopolistic state-controlled enterprises must give way to dynamic market led private sector structures if significant strides are to be made by African countries in ICT development' (Guislain et al. 2005). There is no doubt that large pools of private capital are available. These can be harnessed to invest in Africa's ICT under the right conditions. It has been reported that, since 2006, huge corporations like Intel have developed strategic plans to invest in ICT in Africa and elsewhere where profit margins are good. The company's 'World Ahead Program' has earmarked US\$1 billion over a five-year period to bridge the digital divide and bring full access to technology to developing countries. RASCOM can explore this option.

The organisation can also devise plans to encourage the development of public-private partnerships (PPPs) as a means of raising capital for its satellite ventures. At a projected internal rate of return of 35%, the RASCOM project could be lucrative to partnerships that involve foreign investors. PPPs are not new. Many countries, both developed and developing, have used them as strategic business tools to fund major infrastructural projects. RASCOM should take a close look at the example of Singapore. In that country, the government decided to increase the broadband penetration rate from 10.35% of households in 2001 to 45.5% in 2005. The investment required for this was over US\$730 million at the time. No private company wanted to take it on, so the government made the initial investment but retained two companies in a partnership deal to build the backbone infrastructure and operate the basic internet protocol service (Williams 2010). The partnership deal set out the terms under which the companies could sell their services wholesale, as

well as the regulatory process that they would have to comply with. It all worked very well.

RASCOM could do the same, but it would have to find the right companies to deal with and would need to make use of the negotiating skills of experienced commercial lawyers familiar with the sector. The company can also gain from the experience of the EASSy project, where PPP principles have been operationalised. That project has 20 corporations in a consortium with five development finance institutions – the IFC of the World Bank, the European Investment Bank, the AfDB, France's Agence Française de Développement and Germany's Kreditanstalt für Weideraufbau. These two examples show that PPPs, properly set up, do work. Private companies own and operate the backbone network, thereby guaranteeing efficiency. Governments are able to state the terms of the type of network they want and the services that are to be sold. The companies receive tax breaks rather than transfer monies to the state, and governments are assured of some minimum income through normal corporate tax receipts.

Revenue issues

Revenues are the mainstay of any business. The present state of RASCOM's consolidated income position is not publicly available; hence, the difficulty in making detailed proposals as to how they can be augmented. Nevertheless, a key proposal on income-generation can be made. A newly created office of business opportunity should immediately undertake the task of marketing the products now offered by RASCOM.

THE COMPANY CAN ALSO GAIN FROM THE EXPERIENCE OF THE EASSY PROJECT, WHERE PPP PRINCIPLES HAVE BEEN OPERATIONALISED.

Bandwidth lease services

The commercial sale of these should extend beyond the 30 countries so far covered and should, apart from e-learning and e-medicine, cover a broader range of subjects such as agriculture. This issue has been of interest to NEPAD, African governments and NGOs such as Connect Africa. Their involvement is perfectly in line with the United Nations Millennium Development Goals designed to tackle poverty and raise living standards in developing countries. Proper pricing policies for the broadband spectrum and licenses have to be formulated in response to the need to

reduce the current high tariffs in Africa and to ensure that a sizeable portion of the African population has access to ICT facilities.

Broadband connectivity services

Revenues from this source ought not to pose any serious problems. The aim is to ensure connectivity, especially between urban centres in Africa, with further connections to Europe and the Middle East. RASCOM would need to work out the real cost of providing this service and then set up competitive tariffs for national telecommunications operators to charge. A system of payments should facilitate transfers to RASCOM. All signatories to the RASCOM protocol would be required to account fully to RASCOM for such revenues; failure to do so could result in the disconnection of services.

Telephony services

This will be the largest source of revenue for RASCOM. Fixed-line penetration on the continent has declined over the years. In 2009, it was just 1 per 100 inhabitants. The growth in mobile telephony, on the other hand, has been phenomenal. The poor in Africa might be living on only US\$1 a day but that does not stop them from owning a mobile phone. In many African countries (e.g. Ghana, Uganda, Ivory Coast and Equatorial Guinea), cost-effective wireless technologies have reduced subscription prices for mobile phones to affordable levels. These levels are now lower than those for fixed lines. This expansion has also been fuelled by the availability of prepaid services. Through the prepaid scheme, remote areas have now been penetrated. In addition, many operators have removed roaming charges. One such operator is Celtel in East Africa. The company is registered in the Netherlands and was able, in 2006, to link six countries – Congo, Democratic Republic of Congo, Gabon, Kenya, Uganda and Tanzania – into the world's first borderless mobile network.

The business model of Celtel is a good basis for establishing inter-country tariffs for mobile usage. In general, meaningful comparisons are difficult to achieve for mobile telephony as plans differ between operators. Also, there is the relentless advertising of each provider, ranging from insipid beauty pageants to the ubiquitous car promotion. The result in growth has been exponential. The ITU (n.d.) estimates that in Africa, the poorest individuals spend 16% or more of their income on mobile services. The underlying message is that there is a mass market out there. That market has attracted providers from Europe, the Middle East and now Asia (India and China). If RASCOM wishes to survive, it will have to profit from this market.

Radio and television broadcasts

It is expected that once fully operational RASCOM-QAF1R will improve radio and television broadcasts on the continent. Revenues from media companies could enhance the bottom-line for RASCOM. The evidence for this is purely anecdotal, as data on radio and television diffusion in Africa is hard to come by. Many developed countries, likewise, do not compile such data except where it is needed for advertising purposes. The recorded evidence compiled by the ITU is limited in scope but it does show an increase for 2000–2008 of 63% in the share of African households with a radio. In many African countries, community radios have sprung up alongside national ones. They have become the primary tool for diffusing national and community news and for putting out special interest programmes that reflect the concerns of the region in which the radio facility is located. The situation for television is different. The diffusion of television programmes is still under state control in many African countries, although a few (Kenya, Senegal, Ghana, Nigeria and South Africa) have begun to license private operators. How all this will look in 10–20 years is anybody's guess. However, if the trend continues, it would be safe to say that there will be significant growth in both radio and television services in the future. Revenues from media-related services can sustain RASCOM well into the future, provided they are managed efficiently.

Alternative financing

The fiscal and financial incentives that participating governments would offer prospective investors is crucial to RASCOM's future. The organisation recently acknowledged that it had received loans and credits from the Libyan Foreign Bank and the WADB. Loans and credits are vital financing tools, but so are fiscal and financial incentives. Low taxes and termination rates for mobile operators, subsidies for the development of network infrastructure, tax holidays and tax credits, unrestricted repatriation of dividends and profits, tax depreciation allowances on components, bulk purchasing by state companies of equipment – all of these are well-known incentive packages that national governments offer to enterprises to encourage investment. What a facility like RASCOM can do is to package them into a regional product, in the form of either a regional investment treaty or a regional double-taxation treaty. Bilateral investment treaties are common. The European Union uses them the most in negotiating investment arrangements with many developing countries. These agreements establish binding obligations on contracting parties concerning the admission and protection of foreign investments in host countries. Double-taxation treaties set out ways in which investment companies can lower their tax

obligations in their home and host countries for essentially the same business activity. The fiscal and financial incentive package that RASCOM might want to develop could be fully integrated into either of these two treaty types and be acceded to by all contracting parties. The negotiating process is not going to be easy, but the end product will be a useful fiscal/financial tool designed to encourage foreign direct investment in the ICT sector in Africa.

RASCOM'S PRESENT POLICY OF FINANCING ITS OPERATIONS THROUGH BORROWING AND CAPITAL SUBSCRIPTIONS IS NOT A PRUDENT FINANCIAL MODEL.

RASCOM's present policy of financing its operations through borrowing and capital subscriptions is not a prudent financial model. It has to change. Change would entail diversifying RASCOM's financing sources, both bilateral and international. One major source would be the World Bank. Accessing World Bank resources is vital. The institution is in the business of offering ICT-related loans and grants. Many of these are for advice on policy. However, the agency also finances projects, such as the building of information kiosks in rural areas, e-procurement by state enterprises, e-learning and internet usage at tertiary institutions. A loan should not be taken to finance advice to RASCOM. That can be provided through agencies like the UNDP as technical assistance. The bank should be approached for credits or grants for specific projects. The 'infoDev' programme is a good example. This is a multi-donor facility within the bank dedicated to supporting ICT education in Africa. The bank's private sector wing, the IFC, has supported telecommunications companies in Africa, and might not be averse to taking an equity interest in RASCOM if the requisite financial arrangements can be worked out. By 2012, the World Bank hopes to have doubled its ICT commitment to Africa to US\$2 billion.

Bilateral sources of funding would be primarily the European Development Fund, the United States' Overseas Private Investment Corporation and the Kuwait Fund, together with similar funds in Saudi Arabia, Bahrain, Qatar, Abu Dhabi and Dubai. In Asia, the governments of Singapore, Malaysia, China, India and Taiwan have demonstrated strong interest in the ICT sector, and are known to have developed well-thought-out strategies for investment in Africa. China and India have quickened their pace of trade and investment

on the continent. China's trade reached US\$120 million in 2010, while India's was about US\$1 billion. India has made some strong moves in the ICT sector. Last year, its telecommunications giant, Bharti Airtel Ltd, acquired the interest of the Kuwaiti-based mobile phone operator, Zain Group, in Africa for US\$10 billion. Meanwhile, the Indian government put forward a 'partnership with Africa plan' in May 2011 to start skills-transfer and capacity-building projects, such as the India-Africa Institute of Information Technology in Ghana and the India-Africa Institute of Foreign Trade in Uganda. In addition, India has been investing in electricity plants, which are needed to power ICT equipment. Zambia has been one of the main beneficiaries, with a US\$50 million loan facility to develop a 120-megawatt hydro power station. This joint venture involves ZESCO, the Zambian power company, and Tata Africa Holdings, the Indian conglomerate.

IN 2008, ABOUT 100 000 AFRICANS HAD A NET WORTH OF US\$800 BILLION (OR 60% OF AFRICA'S GDP). THIS IS A LUCRATIVE SOURCE AND MUST BE TAPPED THROUGH STRUCTURED FINANCIAL ARRANGEMENTS WITH EXPERIENCED FINANCIAL INSTITUTIONS ON THE CONTINENT.

Finally, RASCOM should consider using a reputable investment bank like the DBSA to prepare a comprehensive strategy to secure private funding for its future operations. The instruments available are wide-ranging and have been used in countries such as the United States to finance ICT grants. This paper cannot go into all the options that are available. The investment bank should be in a position to do so. It should also take the lead in raising private sector capital for RASCOM by underwriting some of it. Private African capital is readily available on the continent. In a recent study entitled *The Middle of the Pyramid: Dynamics of the Middle Class in Africa*, the AfDB (2011) noted that the African middle class has tripled over the past 30 years. It now stands at 313 million, about one-third of the total population of the continent. In 2008, about 100 000 Africans had a net worth of US\$800 billion (or 60% of Africa's GDP). This is a lucrative source and must be tapped through structured financial arrangements with experienced financial institutions on the continent.

3.5 LEGAL AND REGULATORY ISSUES

The telecommunications sector is ever-changing. Designing specific rules and regulatory instruments to deal with this is problematic. In Europe, the regulatory framework that was finally agreed to by all parties took almost ten years (2002–2011) to put in place. In the United States, the principal regulatory authority, the Federal Communications Commission (FCC) has the daunting task of compiling changes to Title 47 of the Code of Federal Regulations (CFR) on 1 October every year. The additions and deletions have to be published by that date. Title 47 deals with every conceivable matter that could be the subject of any rule or regulatory instrument on ICT. The document is detailed and voluminous and requires patient study in order to understand the full import of the regulations and their impact on the ICT sector in that country.

Many governments in developing countries, wishing to regulate the ICT sector, are faced with the same problems as their counterparts in Europe and the United States. The majority of them simply do not have the expertise to devise a workable regulatory framework and, consequently, have had to seek help from agencies such as the World Bank and the ITU. These two agencies jointly produce the *ICT Regulation Toolkit*, a web-based facility intended for use by regulators around the world (see <http://www.ictregulationtoolkit.org/en/index.html>). It has several modules that cover key subjects like competition and price regulation, radio spectrum management and authorisation of telecommunications/ICT services. It would be impossible, in this report, to consider all the regulatory issues that RASCOM would have to work on over the many years that it would take the organisation to produce a regional product acceptable to its membership. The following narrative is merely illustrative of what can be done in respect of key regulatory issues.

The sections above on policy, economic and financial issues have already outlined the substantive matters that would have to be confronted by RASCOM and its members to create an enabling environment for the promotion of ICT development in Africa. Here, the corresponding rules are set out. A primary rule has to be one that removes restrictions on the type of network infrastructure that can be built in each country. This would encourage regional businesses to engage in cross-border investments in the sector in order to build networks. The idea of an open-access facility in ICT would be very much akin to the World Trade Organisation (WTO) most-favoured-nation principle, which underpins global trade as regulated by the WTO. Once this principle has been agreed to as a regional instrument, there could be further harmonisation between RASCOM members.

Harmonisation could take the form of setting up regional benchmarks for the sale of licenses and the allocation of broadband spectrum. Furthermore, there could be harmonisation of the terms and conditions for the sale of licenses, on interconnection modalities between African states and on the purchase and sale terms for the transfer of ownership of backbone infrastructure services by operators in the sector.

In addition to the above, there would have to be rules encouraging competition throughout the region. Reference has been made already to the policy aspects of this. In terms of rule-making, what would be needed are clear regulations on the limits that each country can impose on the issuance of licenses and the allocation of spectrum. Experience from Asia (Singapore, Malaysia, Thailand and the United Arab Emirates) indicates that ICT operators would invest substantially in a market that offers multiple licenses. This is a fundamental rule of competition, which many African countries would have to accept. An important element of any new competitive rules would be enforceability. RASCOM cannot condone a situation where state monopolies are given free rein simply because they are government-owned entities, and then are allowed to stifle others. Enforceability is the best guarantee to the foreign investor that the terms and conditions under which it had decided to invest in the ICT sector will be upheld in a court of law either regionally (such as in the ECOWAS Court of Justice) or nationally.

AN IMPORTANT ELEMENT OF ANY NEW COMPETITIVE RULES WOULD BE ENFORCEABILITY. RASCOM CANNOT CONDONE A SITUATION WHERE STATE MONOPOLIES ARE GIVEN FREE REIN.

Competition will foster growth in cross-border ICT business, such as internet-based communications, cross-border radio and television services and cross-border equipment manufacturing and assembling. In all these allied businesses, there will be the need to set quality control standards. Best practices in one African country can be replicated elsewhere. Most state regulatory bodies are genuinely concerned that competition would open the floodgates to shadowy companies with little capital and no experience in the businesses that they want to set up. Such companies come to Africa because they perceive the continent to be easy

prey that ought to be devoured in a hurry. Such fly-by-night operators have caused havoc in many African countries. They end up leaving governments with huge problems – non-payment of wages, salaries and other obligations to their employees, uncompleted projects, which must be scrapped or resuscitated at great cost to national treasuries, and uncollected social security entitlements that have the effect of endangering the provision of safety nets for workers laid off from such businesses. A fine balance, therefore, would have to be struck between the full-scale liberalisation of ICT market opportunities that RASCOM would provide and the need for national governments to protect their citizens from rogue operators.

Rules to protect citizens from the providers of services, especially in radio and telecommunications are necessary. This is a major issue for both the FCC in the United States and the European Union. The problem is greater in Africa where the rules would have to reflect the particular culture of each country. What is permissible to show on South African television is not necessarily permissible in Niger or Mali. Clear, transparent and enforceable rules, grounded in law, are important in reducing the risk of reckless and risky conduct by service providers and operators of ICT. ICT providers have to abide by minimum standards of decency and propriety. Open access that results in the criminal dissemination of pornography, unregulated Internet gaming and widespread publication of hate speech and terrorist propaganda cannot be countenanced anywhere, including in African countries.

The legal and regulatory framework must also define the rights and obligations of operators. As noted above, operators have a right to the enforceability of contracts. This enables them to know ahead of time how their investments will be treated in the region. Such contracts would normally draw the attention of investors to relevant statutes that set out penalties for misconduct and a regime for appropriation or seizure by the state should circumstances warrant such action. These 'rules of the game' would not be unlike those found in other national regulatory schemes on the continent and elsewhere. It must be understood that because of the socially sensitive nature of ICT development and the huge costs involved in the business, governmental interest cannot be marginal. Governments cannot, for instance, fail to pay attention to security issues. In many countries today, including those in Africa, there is always a provision in the regulations on ICT allowing the state to have ultimate domestic control over an ICT service such as the Internet, for security reasons. If a provider is legitimate and does not engage in prohibited acts, then it should be allowed to function under a 'national security exception' clause. What the provider requires is fair and equitable treatment. It must not be subjected to 'bad-

faith actions' and it must not be bullied into engaging in acts that would ultimately ruin the business. In Africa, we have to be mindful about this, perhaps more so than in other regions. In promulgating rules about safety and security, we must create conditions that do not trample on the legitimate expectations of *bone fide* investors.

Arbitration and alternative dispute resolution (ADR) procedures are now common features in national regulatory systems. Such procedures could work very well at the regional level for RASCOM. Rules for arbitration are normally quite simple. The other ADR methods, such as mediation and conciliation, have also proven effective in resolving investment disputes at the national level. The choice of forum for arbitration and the applicable laws would be identified in any regional regulatory framework developed for RASCOM. African countries should move away from conducting arbitration under the aegis of the International Chamber of Commerce. In a number of Asian countries (e.g. Bahrain, Singapore and Malaysia), arbitration or mediation is provided for locally in the event of a dispute between operators and the government. The logic of this is quite understandable. If political and commercial risk guarantees are provided to investors by the state then surely those that benefit from this cannot turn their backs on the country's own dispute resolution procedures and look to some other arrangement for a fair resolution of their case. They ought to trust the hand that feeds them.

A final matter to consider is the institutional set-up under which the rules that would regulate RASCOM's services would be established. Consideration might be given to the two models that have already been referred to, i.e. the European Union model and the FCC model. The European Union model is made up of seven legal instruments (Directives 19, 20, 21, 22, 58, 77 and 2887, all of the year 2002). As stated above, these were ten years in the making, and it was not until May 2011 that they were incorporated into the national laws of the 27 member states of the European Union. The experience gained from this could be very helpful to any regional initiative that RASCOM might come up with. The FCC is an independent agency with a mandate to regulate all non-federal use of radio spectrum (including television), all interstate telecommunications (wire, cable and satellite) and all international communications that terminate or originate in the United States. Its mission is to ensure that ICT services are made available to Americans at reasonable charges. It can issue fines, revoke licenses and adjudicate complaints brought within the ambit of its jurisdiction. There is a lot to learn from both the European Union model and the FCC model, but there are others. Countries such as Bahrain, Singapore, Egypt, Brazil, Chile, South Africa and Nigeria have developed

excellent regulatory regimes. Designing a regional one for RASCOM will take time but it can be done. There is a vast pool of African talent that is available on the continent and in the diaspora for this undertaking. The task of providing affordable ICT services and products to Africans on the continent under regulatory conditions that are fair, just and equitable is a noble objective that is worth striving for. There is widespread expectation on the continent that RASCOM will be able to live up to this challenge.

3.6 CONCLUSION

This report has been about RASCOM as an RPG. The organisation's brief history was sketched against the background of the changing face of telecommunications globally and on the African continent in particular. The rapid changes in ICT throughout the world have altered the landscape in international commercial and development activity. Entrepreneurs everywhere are taking advantage of ICT tools to forge into new areas of business or to expand existing ones. Safaricom's booming enterprise in Kenya and elsewhere is an excellent example of this. Now, fishermen and farmers (as well as accountants and government officials) in that country, can make use of M-PESA. This clearly demonstrates that the continent is a good place for ICT business. African policy-makers must exploit this trend to the fullest.

THE TASK OF PROVIDING AFFORDABLE ICT SERVICES AND PRODUCTS TO AFRICANS ON THE CONTINENT UNDER REGULATORY CONDITIONS THAT ARE FAIR, JUST AND EQUITABLE IS A NOBLE OBJECTIVE THAT IS WORTH STRIVING FOR.

The use of ICTs in poverty reduction is itself a major development on the continent. African governments, as well as their development partners, have seen the need to maximise the opportunities for growth and development. Their efforts have been supplemented by NGOs, some of which, like Connect Africa, have been instrumental in bringing together policy-makers and entrepreneurs to craft strategies for the use of ICT tools in the fields of science and education, medicine and agriculture. This type of advocacy by NGOs

has compelled African governments to consider the specific needs of the poor in their design of ICT strategies. The rush of governmental activity in the sector between 1990 and 2000, as well as the major strides taken in the last ten years, has resulted in the formulation of multicountry infrastructure projects that are destined to contribute to overall economic growth on the continent. RASCUM is one such project.

The organisation's goals are intended to address the urgent matter of the consequences of the digital divide between Africa and the rest of the world. This mission is a positive one and ought not to be lost sight of. However, for success to be achieved, several issues have to be tackled. Changes need to be made to the institutional structure of RASCUM, with greater emphasis placed on its commercial nature. It must not be another inter-governmental subsidiary of the African Union staffed primarily by government officials. ICT is a business and, therefore, persons with proven business backgrounds should be in charge of RASCUM. Government interest can be secured by the promulgation of a regulatory framework that is fair and equitable, and by its own investment in the sector.

RASCUM's operations, handled by a private company in Mauritius, have to be scrutinised. Were the organisational changes suggested in this report to be made, there would be no need for this company. RASCUM can and ought to be able to handle all its operations if the right personnel are brought into it. This institutional adjustment will be decisive in the future as the organisation expands its programme of satellite launches and undertakes to avoid some of the pitfalls of the international submarine cable systems in both West (SAT-3) and East (EASSy) Africa. Institutional changes are not sufficient by themselves to make RASCUM a profitable venture. The right environment must exist for investment and growth to take place. The economic and financial policies that will be agreed to at the regional level to attract foreign as well as cross-border investments must be at the heart of any transformation process of RASCUM. There could be, for instance, better measurement of the use and impact of ICTs at enterprise level across sub-regions in Africa. Such measurements should

yield excellent data on prices, tariffs, modalities of ICT devices and their usage, penetration rates for mobile telephony and broadband, and the granting of downstream services at the national and inter-country level. A revamped capital structure, together with aggressive policies to enhance revenues and a strategic plan to secure alternative financing sources, can help sustain RASCUM into the future.

Some stakeholders might feel that RASCUM has not accomplished much after 20 years, given the extent of the resources already expended on it. This is not a fair assessment and it is a conclusion that cannot easily be made. For that to happen, it would be necessary to do a proper evaluation of RASCUM. Such an evaluation would, *inter alia*, look at all aspects of the organisation, especially its operational and technical capabilities over two decades. In this process, those who manage RASCUM would be given the opportunity to respond to the concerns and queries of legitimate stakeholders as to their stewardship of the organisation since 1991/2.

Governments, as stated earlier, will have a stake in RASCUM. However, they would have to devise proper policies to enhance ICT access. This would entail developing regional policies to attract investment in building backbone networks to provide high-speed international connectivity, which is badly needed everywhere on the continent. It might also require individual country investments in backbone networks, especially if penetration into rural areas is to be secured. In addition to making critical investments, governments would have to strengthen the rule of law in their countries, ensure the protection of property rights and develop transparent regulations that are enforceable, fair and just. With this overall governance framework in place, African governments could then be assured that the desired private sector investment in ICTs will happen. Such private sector involvement can, in fact, come from a burgeoning African middle-class as well as from outside the continent. It will take the right people in the right places in Africa's regional institutions to accomplish this.

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4 RIVER BLINDNESS (ONCHOCERCIASIS)

Orvill Adams

4.1 INTRODUCTION

This section describes the epidemiological situation, the scope of the disease and the number of people and communities affected. It describes the Onchocerciasis Control Programme (OCP) in West Africa and the African Programme for Onchocerciasis Control (APOC). APOC was launched in 1995 to eliminate human onchocerciasis in the 30 counties in sub-Saharan Africa where the disease was endemic. Before OCP, as a large scale coordination effort, blindness affected up to 50% of adults in some areas. Onchocerciasis has been a burden not only to health and education but also to economic development.

APOC WAS LAUNCHED IN 1995 TO ELIMINATE HUMAN ONCHOCERCIASIS IN THE 30 COUNTIES IN SUB-SAHARAN AFRICA WHERE THE DISEASE WAS ENDEMIC.

The initial efforts to control the disease were through vector control – aerial spraying of larvicides and hand spraying of breeding grounds over a period of 14 years. In 1995, the programme was expanded to countries outside the OCP zone, and in 1997 a community-based strategy was adopted by APOC. The Community Directed Treatment with Ivermectin (CDTI) strategy relies on the active participation of communities and promotes community ownership and empowerment. Control is accomplished through the targeted distribution of Ivermectin.

This section of the case study deals with the countries that are part of the APOC partnership: Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, Gabon, Kenya,

Liberia, Malawi, Mozambique, Nigeria, Rwanda, Senegal, Sudan, Uganda and United Republic of Tanzania. In addition, four ex-OCP countries, Côte d'Ivoire, Ghana, Guinea Bissau and Sierra Leone, participate.

The disease

Onchocerciasis, commonly called 'river blindness', is a parasitic disease caused by the filarial worm *Onchocerca volvulus* transmitted through the bites of black flies. It is the leading cause of blindness in the developing world. The WHO estimates that approximately 120 million people are at risk of the disease and 18 million are already infected with the parasites. The greater the number of black flies relative to the population, the greater the intensity of transmission and the higher the endemicity level (i.e. the prevalence and intensity of infection in the human population). It is reported that about half a million people are blind or visually impaired due to the disease. The disease causes itching and various skin ailments, which often lead to disfigurement. This affects the social and economic conditions of especially poor communities. Self-esteem and concentration suffer so that is difficult for children in school. Marriage prospects are reduced for both men and women. Many people have abandoned fertile land because of the fear of infection. It is estimated that more than 250 000 km² of the best arable land in West Africa have been abandoned (Seymour, Kinder & Benton n.d.). APOC (2011) reports that in the 1970s economic losses were estimated at US\$30 million, and onchocerciasis became a major obstacle to socio-economic development (Lusamba-Dikassa, Akiwumi & Leak 2010).

Onchocerciasis is a communicable disease that has the potential to affect a larger number of countries if it is not controlled effectively. The advantages of tackling the disease extend across country boundaries; all countries in the region have a stake in ensuring that the disease is brought under control (AfDB 2008).

4.2 POLICIES AND STRATEGIES

This section discusses the APOC policies within the context of other global and national policy initiatives such as: pro-poor policy initiatives; strengthening of health systems; building local capacity; learning from research; the integration of research within the framework of activities; integration of intervention strategies into education and training in medical and nursing curricula; integration of other health interventions; building the strength of the partnership to develop human resources and support member countries towards achieving agreed targets.

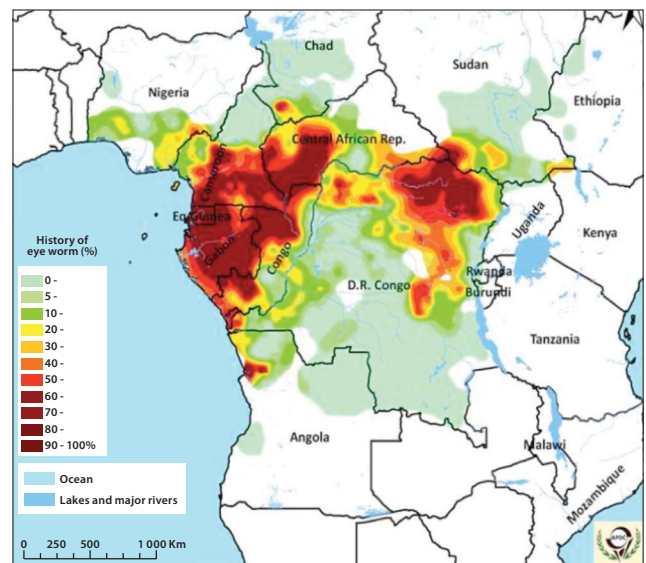
Onchocerciasis Control Programme (OCP)

The first coordinated approach to tackle onchocerciasis was launched in 1974 as the Onchocerciasis Control Programme, led by the WHO, the World Bank, the Food and Agriculture Organization (FAO) and the United Nations Development Programme (UNDP). Initially, the OCP's objective was to eliminate the disease in seven West African countries; this has been increased to 11 countries. The goal was to stop the transmission of the disease, and the strategy focused on vector control of the disease-spreading black flies. Helicopters were used weekly to spray larvicide during the rainy seasons in the areas most heavily populated with black flies. This was supplemented by hand spraying of breeding grounds. The vector control programme included:

- training nationals in technical entomological evaluations (capture, morphological identification, dissection of female blackflies, prospecting of larval breeding sites);
- training nationals in ground spraying;
- sensitisation of political, administrative and traditional authorities, the media and the people;
- data entry of capture and dissection of female blackflies;
- extraction and processing of data for the vector control; and
- development of entomological maps. (Lusamba-Dikassa et al. 2010)

Up-to-date information was a key element in the OCP and APOC strategies. The strategies were also grounded in operational research, which informed policy and implementation decisions. A critical element of the programme was a commitment to continue implementing it during political unrest and conflict. The OCP formally ended in 2002.

Figure 4.1: Estimated prevalence of eye worm history in Africa



Source: <http://www.who.int/apoc/raploa/en/index.html>

African Programme for Onchocerciasis Control (APOC)

APOC was established in 1995 and started operations in 1996, building on the experiences of the OCP. Its mandate was to effect sustainable control in the remaining 19 African countries where the disease was still a public health problem. Figure 4.1 shows the APOC onchocerciasis prevalence areas in 2010.

Table 4.1 shows that seven countries are 100% geographically covered by treatment for onchocerciasis. The programme is progressing well, with another nine countries having geographic coverage rates of more than 75%. Similarly, therapeutic coverage is relatively high, with 13 countries reported at more than 70%.

APOC's mandate is to establish a regional programme that builds sustainability, increases community involvement and develops partnerships with non-governmental development organisations (NGDOs). In 1987, Merck & Co. Inc. donated Mectizan (Ivermectin) to the OCP and promised to provide it for all who needed it for as long as needed. After conducting a multicountry study and working with African scientists, the Special Programme for Research and Training in Tropical Diseases (TDR/WHO) concluded in 1995 that a strategy of community-directed treatment, involving the empowerment and participation of each targeted community, was feasible. Further, this method achieved higher treatment coverage and was more effective than the traditional public health systems. The approach is based on engaging the targeted communities by encouraging them to take responsibility for organising the distribution of the drugs. The community is

Table 4.1: APOC – geographic and therapeutic coverage (2011)

Country	Geographic (%)	Therapeutic (%)
Angola	76.2	66.1
Burundi	100.0	74.2
Cameroon	98.9	75.5
Central African Republic	82.4	77.2
Chad	100.0	80.0
Congo	100.0	80.7
Côte d'Ivoire	20.3	17.2
Democratic Republic of Congo	86.0	65.5
Equatorial Guinea	41.9	70.9
Ethiopia	100.0	80.1
Gabon	NA	NA
Ghana	97.7	75.8
Guinea Bissau	47.0	29.0
Liberia	41.1	62.1
Malawi	100.0	82.8
Nigeria	97.4	80.1
Sierra Leone	100.0	74.9
Sudan	87.7	53.7
Tanzania	95.4	73.3
Uganda	100.0	76.4

Source: APOC (2011)

responsible for making decisions about who should be the distributors and when to distribute the drug. The strategy is called Community-Directed Treatment with Ivermectin (CDTI). It was adopted in 1997 by APOC as the central strategy and principal method for controlling onchocerciasis in Africa. Amazigo (2008) reports that in 2000 an external evaluation of APOC concluded: 'APOC's strategy of CDTI has been a timely and innovative strategy for fighting a widespread scourge. Communities have been deeply involved in their own health care on a massive scale, which raises hopes of sustainability.' The communities are trained by the external partners.

The strategy is designed to have all partners agree on developing effective, self-sustainable, community-directed Ivermectin treatment, which will continue beyond the

duration of APOC, in order to eliminate onchocerciasis in all areas where it is a disease of public health and socio-economic importance (APOC 1999).

The CDTI approach has been introduced into traditional health systems at the primary health care (PHC) level. Poor populations in developing countries are faced with a lack of quality health care, and improved access to basic health care is the primary goal of PHC services. Homeida et al. (2002) argue that the introduction of CDTI provides an opportunity to strengthen PHC, and significant progress has been made in the structural and functional integration of CDTI in onchocerciasis countries.

A multicountry, multi-year study by the TDR (APOC/WHO 2008) has shown that the CDTI strategy is also appropriate for some other types of health intervention such as the delivery of vitamin A, treatment of fever in young children at the household level, distribution of insecticide-treated bed-nets and anti-tuberculosis treatments. Given that these health conditions primarily concern the poor, the strategies are pro-poor strategies. Communities where onchocerciasis is endemic are characteristically in remote areas with inadequate health facilities and services. Health problems common to all CDTI areas are health problems of the poor.

The multicountry study reported that much of the integration found in CDTI and PHC was a result not of health ministry planning but rather of practical decisions made at the community level. Homeida et al. (2002) suggest that 'as health workers move from the health centres to work in the communities during Ivermectin distribution and routine CDTI supervision, other health programmes manned by these individuals benefit immensely from such closer interaction with the communities' (WHO 2008: 98). Further, CDTI uses existing facilities as much as possible. The transportation used in Ivermectin distribution, for example, can also be used to support other areas of service delivery.

Operations research

APOC uses research results to inform its operations and policy decisions. Its main research partner is the TDR. APOC also collaborates with universities and research institutions in developed and developing countries. The areas of research include ways to assess the impact of CDTI, conditions of implementation and evaluation of CDTI, and the mapping of onchocerciasis. A tool called the Rapid Epidemiological Mapping of Onchocerciasis (REMO) was developed through this research. The tool allows for the identification of communities at risk from onchocerciasis. An independent evaluation reported that between 1996 and 2004 APOC contributed about US\$307 000 yearly for operational research

(WHO/APOC 2005). More recently, under a programme to search for a macrofilaricide, APOC and TDR each have contributed US\$700 000 annually.

Integration with the health care system

As discussed above, there are benefits to be derived when the APOC strategy is integrated with the PHC system. Given the nature of APOC's mandate in scope and time (until 2015), the only way to make it sustainable and to build on its successes is to integrate it with the health system. There are concerns, however, that integration into very weak or limited health systems, which suffer from low levels of funding, poor infrastructure and a crisis in human resources, may threaten APOC's achievements. Nevertheless, integration can provide benefits by reducing duplication and or the collapsing of activities. Areas for integration could include the simplification of reporting structures, the facilitation of planning and a decrease in resource demands. One plan of action, one transport system and one team of supervisors can reduce overall costs.

GIVEN THE NATURE OF APOC'S MANDATE IN SCOPE AND TIME (UNTIL 2015), THE ONLY WAY TO MAKE IT SUSTAINABLE AND TO BUILD ON ITS SUCCESSSES IS TO INTEGRATE IT WITH THE HEALTH SYSTEM.

Integration requires governments to be committed to adopting the idea of community-directed treatment (CDT) and to agree to allocate the necessary funding for CDT training and support. It is suggested that integration is most feasible when it comes to strategies that address related diseases of the same level of policy priority, such as neglected tropical diseases (e.g. dracunculiasis, leishmaniasis and schistosomiasis). The evidence collected during 12 years of experience now convincingly argues that CDT can not only successfully tackle single diseases like onchocerciasis, but can also advance health promotion and disease control, strengthen basic health system structures, facilitate better links between communities and health staff, and form a crucial step in helping countries work towards their Millennium Development Goal (MDG) commitments (WHO/APOC 2007).

The strengthening of health systems demands significant resources in terms of money, managerial capacities and competencies of health care providers to deliver services. There is much that can be learned from the meaningful involvement of communities in the organisation, management and delivery of their own health services. While the need for countries to work collectively to manage a health problem such as onchocerciasis is recognised, it is less clear that this will be the case when the same countries are faced with addressing a broad range of diseases.

Governance and management

APOC is a public-private partnership with five core operating principles:

- community ownership and empowerment;
- sustainability;
- evidence-based decision-making;
- partnership; and
- external evaluation.

The partnership consists of 20 donor countries, 15 NGOs, 19 participating African countries, Merck & Co. Inc., research organisations and institutions, and 146 000 endemic communities. All partners are represented on the Joint Action Forum (JAF), which is the main governing body of APOC. The JAF meets annually and reviews and approves all action plans and budgets. The Committee of Sponsoring Agencies (CSA) acts as an executive secretariat on behalf of the JAF. It is comprised of the WHO, World Bank, AfDB, the chair of the NGO coalition, the WHO legal adviser and APOC management. The CSA meets four times a year and organises medium-and long-term planning, approves national plans and proposals and takes interim decisions on behalf of the JAF.

The headquarters of APOC is in Ouagadougou, Burkina Faso, where core staff manage day-to-day activities in conjunction with the NGO liaison office in Geneva. APOC is supported by a Technical Consultative Committee (TCC) made up of ten members who are technical experts in the fields of onchocerciasis control, health systems and epidemiology. The TCC meets twice a year and recommends the application of APOC funding for CDTI projects.

At the individual country level, there is a National Onchocerciasis Task Force (NOTF) comprised of ministry of health officials, programme managers, partner NGOs and the WHO country office. The task force is responsible for APOC activities at the country level. The ministers of health of the

participating countries are members of the JAF and play an active role in the governance of APOC.

The executing agency of APOC is the WHO, and the WHO Regional Office for Africa directly supervises APOC management, while the WHO headquarters provides administrative and technical assistance.

The fiscal agent of APOC is the World Bank, which has set up a special APOC trust fund into which donor contributions are paid and from which the funds needed for running the programme are drawn. The trust fund is managed in accordance with World Bank rules.

4.3 REGIONAL PUBLIC GOODS AND PARTNERSHIP

This section discusses river blindness in terms of Sandler's (2003) taxonomy of RPGs. It defines the characteristics and ascribes the potential benefits to the different partners. It examines partnerships and inter-country mechanisms. The structure of the partnership, its membership, governance and management structures are discussed in the context of shared resources and decision-making. Ferroni (2001) suggests that RPGs must have the following to be effective:

- participants who have a strong sense of shared purpose;
- the right combination of leadership and support;
- mechanisms to resolve disputes;
- long-term commitment on the part of those involved;
- national measures that are aligned with and enable regional efforts;
- mechanisms that compensate those who lose as a result of the partnership; and
- contracting parties who bind themselves with treaties or agreements that are self-enforcing.

Ferroni (2001) further argues that RPGs usually pursue three kinds of activity:

- non-country-specific investment in knowledge and dialogue, and research into technologies meant to be in the public domain;
- inter-country mechanisms for managing adverse cross-border externalities or for creating beneficial ones; and
- country-specific action to take advantage of the previous two activities.

APOC is a good example of these three activities. It incorporates inter-country research involving international and national scientists. It uses inter-country REMO technology and shares the information across countries to enable more effective management of the disease.

Shared sense of purpose

In a report titled '*Victory over river blindness*', Dr Ebrahim Samba, former head of the OCP and former Africa Regional Director of the WHO, is cited as saying that the fruitful outcome of the river blindness campaign carries a number of lessons that are applicable to any programme in Africa. These include:

- A shared vision between the beneficiary African countries at the highest level and the non-African partners. Controlling the disease in the region represented a public good, and preventing the disease from crossing national boundaries required a coordinated, comprehensive regional effort.

AN EFFORT OF TWO, THREE OR FIVE YEARS IS 'A WASTE OF TIME'. THE CAMPAIGN AGAINST RIVER BLINDNESS WAS PLANNED FOR 20 YEARS BUT LASTED ALMOST 30 YEARS.

- Long-term commitment. An effort of two, three or five years is 'a waste of time'. The campaign against river blindness was planned for 20 years but lasted almost 30 years.
- Power of partnership. The effective engagement of a wide range of organisations (from private companies to multilateral institutions and local NGOs) in the control effort, allowed for cost-effective, efficient interventions rooted in improved resource allocation and a wide range of expertise.
- Local ownership and participation. Instilling ownership among the local communities was vital.
- Good technical team. A team of technical experts and managers to implement the broad vision, while also managing the human and financial resources of a complex, costly and lengthy programme, was essential (Akande 2003).

These characteristics attributed to APOC by Dr Samba, winner of the 1992 Africa Prize for his contribution to the control of onchocerciasis, are consistent with some of Ferroni's (2001) elements of a successful RPG.

The leadership of the onchocerciasis programme includes the ministers of health of participating countries, which allows for their full involvement in the policy and decision-making processes at the regional level. The partnership of APOC at the country level is guided by a memorandum of agreement in which the ministry of health and NGDO partners agree to establish an NOTF to formulate and implement a national plan for onchocerciasis control. The ministry and the NGDO partners agree to meet at least 25% of the costs of CDTIs and to provide annual operating and financial reports to APOC. The partners also agree to internal and external evaluations, including audits, and to facilitate visits and activities of APOC staff members or their representatives. To become a participating country of APOC, the NOTF must complete and submit an application for support to APOC. The NOTF must demonstrate that the disease is a public health and socio-economic problem and must commit to relying on CDTI as the main intervention tool (see Appendix A).

Countries are increasingly cognisant of the fact that communicable diseases do not respect boundaries. Where an endemic area extends across the borders of two or more adjacent states, countries must find ways of cooperating. The disease is also transmitted by onchocerciasis-infected persons migrating from one country to another. At its 14th session in Kampala, Uganda in December 2008, the JAF urged onchocerciasis-endemic countries to strengthen cross-border cooperation for effective surveillance and elimination of the disease and other neglected tropical diseases (NTDs).

Public-private partnership

The Merck & Co. Inc. partnership is characterised as unique. An evaluation of the Mectizan Donation Programme (MDP) found that the programme has been strongly aligned with the interests of the various partners (Peters & Phillips 2004). While having long-term goals, the MDP and APOC have demonstrated the effectiveness of the approach through regular professional and outcomes-oriented evaluations. It was reported that the need to secure funds was not seen as a major factor of the partnership. It is postulated that this was because resources are relatively readily available through Merck, the partner organisations and the programme. Governance and management was found to be strong. An identified weakness was the public promotion of the partnership and the achievements of the programme. It was also suggested that communication between partners could be improved.

Binger (2003) and Sandler (2003), identify river blindness as an impure public good, with the aggregation technology being that of 'weakest link'. This will be examined in order

to determine the characteristics of the fight against river blindness as an RPG.

In a review of the relationship between Merck & Co. Inc. and the WHO in the APOC partnership, Levine (2005) identified a set of principles in partnership power-sharing that have contributed to the success of the programme. The principles are presented in Box 1.

These principles of partnership are consistent with Ferroni's (2001) characteristics of successful RPGs. It is suggested that other programmes can be developed using this model of public-private partnership.

Alignment

Ferroni (2001) suggests that to have effective RPGs national measures should be aligned with and enable regional efforts. The 19 partner countries in APOC involve four economic communities: the Economic Community of West African States (ECOWAS); the Southern Africa Development Community (SADC); the Economic Community of Central African States (ECCAS); and the Economic Community of East African States (EACEAS). Each of these economic communities has communicable disease control in its strategic health plans.

Box 4.1: The Mectizan Donation Programme experience – Principles in partnership power-sharing

- Put aside individual collaborators' agendas and stay focused on the goals of the partnership.
- Whenever possible, allow those who are most affected by a decision to determine their needs and priorities.
- To resolve knotty disputes, use the individual services of an independent advisory entity of unquestioned expertise whose sole mandate is to further the partnership's goals.
- Find ways to nurture important relationships, especially in the face of disagreement.
- Insist on being convinced of a partner's proposition with the clearest evidence possible, rather than allowing decisions to be made against your better judgment. Mutual buy-in creates stronger relationships based on trust rather than power.
- Work to understand the other partner's structures, processes and requirements to avoid being blindsided by unanticipated requests.
- Deploy your most knowable and credible representatives available to balance the expertise from your strongest partners.
- Expect the unexpected. Be prepared to respond to constantly changing partner needs.

4.4 FINANCING PUBLIC GOODS AND ONCHOCERCIASIS

As a public good, onchocerciasis control is difficult to finance because collective financing may tend to crowd out voluntary national provision. Crowding out occurs when the provision by one country or actor is a perfect substitute for the contribution of others. Regional public goods (RPGs) impact on a few countries in a region. The greater the country-specific benefits derived from the commodity or service, the more likely is the country to contribute to or finance it. Binger (2003) suggests that the most reliable mechanisms for financing global public goods (GPGs) in developing countries appear to be:

- official development assistance (ODA);
- international financial institutions (IFIs);
- continued and increased support by the World Bank;
- the UN, through its assessment fees;
- debt-relief;
- freeing resources, particularly through removal or contraction in energy and water subsidies, for example;
- attracting grants from both for-profit and non-profit foundations; and
- forming public-private partnerships.

APOC receives funding through three main mechanisms:

- trust funds available through APOC;
- contributions from the national governments of APOC countries; and
- funds from NGOs.

Funding of APOC is not mandatory; it is made up entirely from the voluntary contributions of more than 25 donor countries, institutions and foundations. APOC attracts grants from for-profit and non-profit foundations and from the private sector. The World Bank and the WHO are the leading multilateral organisations, but the UNDP and the FAO have played significant roles in both the OCP and APOC. The APOC trust fund is managed by the World Bank, which seeks resources from donors, manages disbursements and reports annually to the JAF. A summary of APOC's trust fund resources is presented in Table 4.2.

Table 4.2: Summary of APOC's trust fund resources

Approved budget (1996–2010)	US\$135 million
Funds pledged (1996–2010)	US\$128 million
Expenditures (1996–2007)	US\$112.5 million
Funds pledged but not spent (1996–2010)	US\$15.5 million
Financial gap (1996–2010)	US\$7.0 million
Additional funds required to extend activities to 2015	US\$46.4 million
Total funding gap (1996–2015)	US\$56.4 million
Total resources (1996–2015)	US\$181.4 million

This table indicates that additional funds are required to complete the second phase of the river blindness programme, its eradication. The total cost of Phase II is estimated at US\$122.03 million, excluding the cost of drugs supplied free-of-charge by Merck, the long-standing pharmaceutical company partner. The African Development Fund (a facility of the AfDB) is estimated to fund 20% of the total cost, other donors 54%, NGOs 15% and participating governments 11% (AfDB 2008).

Despite the debt crisis, countries and donors have pledged to continue their funding of APOC. Nevertheless, the JAF has recognised the need to actively seek further funding. At the 24th Session of the TCC, the JAF recommended that financial planning and fundraising for onchocerciasis control should build on existing mechanisms as well as exploring new funding opportunities internationally and at the country level (APOC 2007). Hodgkin et al. (2007) call this a strategic recommendation and suggest that new opportunities include new initiatives and funding for NTDs.

It is reported that US\$60 million was raised at the aforementioned meeting, and 80% of the funds are to be spent on technical and operational activities in endemic countries (WHO 2007). Six objectives for the actives were established (see Table 4.3).

The total funding for onchocerciasis control in Africa has evidenced significant contributions by the donor community. The OCP Phase 1–4 (1974–2003) received a total contribution of US\$521 926 101 over the 28 year period. APOC Phase 1 (1996–2002) received contributions of US\$56 826 209, growing from US\$4 239 007 in 1996 to a high of US\$12 156 610 in 2000. APOC Phase II (2002–2015) grew from US\$2 630 717 in 2002 to US\$20 837 508 in 2009 (Bundy 2009).

In 2007, Merck pledged, in addition to free drugs, up to US\$25 million, which was approximately half of the estimated

Table 4.3: Technical and operational objectives (2008–2015)

Objectives for 80% of funds	Content	Estimated cost US\$ million
Objective 1	To establish sustainable national onchocerciasis programmes in all endemic African countries	24.78
Objective 2	To co-implement onchocerciasis control activities with other control interventions (such as vitamin A supplements and anti-worm medicines)	5.21
Objective 3	To determine when and where to stop Ivermectin treatment	9.96
Objective 4	To reduce the risk of transmission of onchocerciasis from ex-OCP countries	5.40
Objective 5	To ensure the governments ultimately take full responsibility for onchocerciasis	0.84
Objective 6	To cease all APOC operations without jeopardising past achievements and investments	1.81

funding required to eliminate onchocerciasis over the following eight years. The World Bank agreed to work with Merck and other partners to raise the remaining US\$25 million.

The cost of the programme, considering only the donor funding, has been estimated at US\$0.11 per person per year. Donations have kept the programme cost low. Merck donates the drugs and covers the shipping costs, and the World Bank and WHO waive all administrative fees. This results in 100% of donor funds reaching country operations.

At the country level, CDTI support is limited primarily to the provision of physical facilities and salaries of personnel. Funds are usually not provided for activities such as training, mobilisation, monitoring and supervision. Funds are rarely made available through the PHC system for CDTI projects.

APOC IS CREDITED WITH HELPING MINISTRIES OF HEALTH IN AT LEAST 14 COUNTRIES TO BUILD ADMINISTRATIVE AND TECHNICAL CAPACITY IN HEALTH CARE DELIVERY.

4.5 MEASURING SUCCESS

This section presents the successes of the OCP and APOC, and the commonly accepted measures of achievement.

Success factors

APOC and its predecessor, OCP, are generally accepted as an example of a successful RPG. Clear evidence of cross-border collaboration and the recognition by governments

that onchocerciasis control is an RPG is the fact that despite political conflicts within and between some of the affected countries, the programme continued to work across borders. This is attributed, in part, to its reputation for honesty and efficiency. Seketeli (2002) asserts that all members of the partnership 'are pulling their weight'.

APOC is credited with helping ministries of health in at least 14 countries to build administrative and technical capacity in health care delivery. Communities have also benefited from health promotion activities and health education of the population.

The following are key results attributed to APOC:

- almost 70 million people treated with Ivermectin in 2009, reaching 75% of the target population (90 million);
- a cumulative total of 447 million Ivermectin treatments administered;
- CDTI projects in 96% of target countries protecting 94 million people;
- 91% of APOC covered geographically;
- 89% therapeutic coverage;
- 146 000 communities engaged in CDTI; and
- economic rate of return estimated at 17% of funds invested.

Annual treatment with Ivermectin in APOC countries increased from 1.5 million in 1997 to 65.4 million in 2009. The projected target for 2015 is 90 million.

As indicated above, APOC's limited time frame has made the question of sustainability a central concern. Integration of APOC activities into country health systems is a strategy being promoted by APOC and a number of international partners. Consultants supported by APOC are assisting countries in

developing their thinking about devolution, and Cameroon, Uganda and Tanzania have drafted devolution plans.

APOC has used monitoring as a key approach in its programme. Quarterly progress reports are prepared by country programmes. CDTI projects are evaluated externally and nationally. At least 85 CDTI projects are evaluated each year. The results of the evaluations are used in providing feedback to the communities and as data allowing for refinement of the different projects.

APOC has also worked with a number of nursing and medical schools to increase the understanding of health care providers about the disease. The programme continues its work with TDR, universities and African scientists to conduct operational research on different dimensions of onchocerciasis control.

APOC HAS FOUND THAT WITHOUT TRUST AND TRANSPARENCY THIS TYPE OF PARTNERSHIP IS LIKELY TO FAIL. ALL MUST BE COMMITTED TO A COMMON GOAL.

There remain aspects of the programme that could be more successful. A greater integration of gender in APOC activities has been identified as an area to receive greater focus in research and implementation.

4.6 LESSONS LEARNED

Endemic countries recognise that onchocerciasis is a serious public health problem that has an impact on the socio-economic conditions of a country. They also recognise that it affects their poorest populations significantly. The disease does not stop at borders. This requires cross-border action that is well coordinated with agreements that clearly set out the roles, functions and expectations of all partners.

APOC has the characteristics of an RPG. The agreement with the countries requires that when they enter the programme they are committed to a common treatment strategy and are immediately on a sustainability track. The partnership includes many actors with very different economic philosophies

(public, for-profit, not-for-profit, volunteers) and socio-economic positions. APOC has found that without trust and transparency this type of partnership is likely to fail. All must be committed to a common goal.

While it is evident that the success of APOC has largely been a function of the long-standing and ongoing support and commitment of the donor community, APOC would not have been successful without the sustained leadership of the countries themselves. In the face of conflict and a fractured political climate in some countries, the OCP and APOC have shown that inter-country collaboration can tackle a major public health problem, even during social and political crises. APOC has coordinated regular cross-border meetings between countries such as Guinea, Sierra Leone and Liberia, Togo and Benin, and Benin and Nigeria (APOC 2006).

The Yaounde Declaration on Onchocerciasis Control in Africa (see WHO 2006) is recognition by the participating countries that they cannot independently stop onchocerciasis from crossing their borders and that they can realise benefits from working together to reduce the risk of transmission from trans-border movement of people and the disease vector. Through the declaration, countries agreed to:

- express commitment to work together to accelerate the elimination of river blindness as a public health and socio-economic development in all countries;
- affirm country leadership and recommend the establishment of national sustainable CDTI programmes in all onchocerciasis endemic countries of the region; and
- urge endemic countries to make annual budgetary commitments for onchocerciasis control activities as part of poverty reduction strategy papers (PRSPs) and in line with MDGs.

Each member country now has a functional coordinating structure known as the NOTF. The ministries of health plan, implement, monitor and evaluate all ongoing activities. APOC has worked with its partner countries to build capacity at national and local levels, by training hundreds of epidemiologists, entomologists and other specialists in the national ministries of health. This has been achieved not only by virtue of external funding but also through national policies that support capacity development within and between countries. The active participation of the countries on the JAF and other APOC bodies contributes to the programme's success.

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APPENDIX 1

National Onchocerciasis Task Force (NOTF) of _____. Application for support to the African Programme for Onchocerciasis Control (APOC).

In accordance with the memorandum of agreement for the African Programme for Onchocerciasis Control:

1. The NOTF on behalf of the Government of (.....), (a partnership of government, the NGOs and other partners) hereby expresses its wish to enter into collaboration with the APOC and the MEC with a view to conducting an onchocerciasis control project in (.....).
2. Onchocerciasis in (.....) is considered by the health authorities as a problem of sufficient importance to warrant the implementation of a control project in the endemic areas with the aim of eliminating the disease as a public health and socioeconomic problem throughout the country.
3. It is estimated that out of a total population of000 in (.....), there are (number of infected people) people with the parasite, *Onchocerca volvulus*, causing blindness, serious visual impairment and debilitating skin disease.
4. The proposed control project will rely on community-directed Ivermectin treatment as its main intervention tool.
5. The NOTF has scrutinized the criteria and conditions for application to the APOC and is satisfied that the proposed project(s) meets all the criteria and fulfills the conditions established by APOC.
6. Details of the project proposal for control of onchocerciasis in (.....) including the support requested from APOC to successfully implement the project is provided in the enclosed proposal.
7. The NOTF of (.....) pledges its full collaboration with APOC in the expectation of acceptance of the present proposal.

Signature, place and date
NOTF Rep. of Gov.

Signature, place and date
NOTF Rep. of NGOs

Name and title of signatory

Name and title of signatory

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