ZIMBABWE

INFRASTRUCTURE POLICY REVIEW

December 9, 2013
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CURRENCY EQUIVALENTS

Since 2009 Zimbabwe has a multi-currency regime where the USD is the common currency in circulation and the basis for all cost estimates.

ABBREVIATIONS AND ACRONYMS

GDP
ICT
IDBZ
IFI
IPP
LAC
MDG
MW
POTRAZ
PPP
PSIP
REA
SADC
SAPP
ZERA
ZESA
ZETDC
ZINARA
ZINWA
ZPC

Mr. Ringskog visited Zimbabwe from October 28-November 9, 2013. He wishes to acknowledge the generosity of officials of the Ministries of Energy and Power Development, Local Government and Urban and Rural Development, Transport and Infrastructure Services, Water, and Finance in sharing information on their respective sectors.

Cover photo courtesy African Development Bank
# TABLE OF CONTENTS

Executive Summary............................................................................................................4-7

General Aspects of Infrastructure.......................................................................................8-11

Infrastructure in Zimbabwe.................................................................................................12-14

The Electric Power Sector....................................................................................................15-19

The Water Sector...............................................................................................................20-28

The Transport Sector.........................................................................................................29-31

The Information and Communications Technologies Sector............................................32-33

List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Asset Requirements per Dollar of Annual Revenue</td>
</tr>
<tr>
<td>2</td>
<td>Costs of Preparation, Design, Construction, and Capitalized Operations</td>
</tr>
<tr>
<td>3</td>
<td>Annual Per Capita Water Investments Costs 2009-2013</td>
</tr>
<tr>
<td>4</td>
<td>Mobile Voice Tariffs in Selected African Countries, November 2013</td>
</tr>
</tbody>
</table>

List of Graphs

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Infrastructure Stock versus GDP per capita, LAC and non-LAC countries</td>
</tr>
<tr>
<td>2</td>
<td>Zimbabwe needs to attract more private investment, (World Bank 2011)</td>
</tr>
<tr>
<td>3</td>
<td>Moderate tariffs for power in Zimbabwe do not recover costs (World Bank 2011)</td>
</tr>
</tbody>
</table>

List of Annexes

<table>
<thead>
<tr>
<th>Annex</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Performance Indicators for Electricity Services</td>
</tr>
<tr>
<td>2</td>
<td>Performance Indicators for Water Supply and Sanitation Services</td>
</tr>
<tr>
<td>3</td>
<td>Performance Indicators for Transportation Services</td>
</tr>
<tr>
<td>4</td>
<td>Performance Indicators for ICT Services</td>
</tr>
<tr>
<td>5</td>
<td>Steps for Establishing “Empresas mixtas”</td>
</tr>
<tr>
<td>6</td>
<td>Study To Promote Lower ICT Tariffs Through Enhanced Competition</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

(i) Many empirical studies have demonstrated the close relationship between a country’s economic development and its stock of infrastructure. Good infrastructure can attract investors and speed up economic growth and, conversely, poorly performing infrastructure acts as a brake on economic development;

(ii) Decades of deferred maintenance and lack of long-term financing have taken a heavy toll on Zimbabwe’s infrastructure that at one time was ranked at the top in Africa. Electricity output is now around half the level of demand and has made daily load-shedding necessary with inconvenience, loss of production, and reluctance of investors to engage in new industries and mining. Water supply and sanitation service access and quality have deteriorated sharply, and water-related disease has risen with higher costs and suffering as the consequence. About 40% of Zimbabwe’s roads are in need of rehabilitation and railway service has been curtailed because only one third of rolling stock is operative. Only the information and communications technologies (ICT) sector has been performing relatively well but its high tariffs add to the cost of doing business in Zimbabwe;

(iii) Cognizant of the need to rehabilitate and expand the country’s infrastructure the Government that took office following the July 31, 2013 elections has launched its Agenda for Sustainable Socio-Economic Transformation (Zim ASSET). This economic blueprint for the period 2013-18 contains a long list of infrastructure projects that the Government wishes to realize during its mandate period. Although ASSET program costs remain to be estimated it is highly likely that in the aggregate they will far surpass the possibilities of the Public Sector Investment Plan (PSIP) to finance them which calls for strict priorities;

(iv) Zim ASSET lays out strategies that the Government will pursue to implement its ambitious program. The strategy in the infrastructure sectors in particular is to encourage Public Private Partnerships (PPPs) for the financing and execution of the different sub-projects. This strategy has been emerging in the electric power, road transport, and ICT sectors and is now being extended to water supply and sanitation, at least as an objective;

(v) This review builds on the findings from an October-November 2013 mission that, upon the request of the Ministry of Finance, assessed the ministerial submissions for the 2014 Public Sector Investment Program (PSIP). During the course of the PSIP mission meetings were held with the Ministries of Environment, Water and Climate, of Energy and Power Development, of
Transport and Infrastructure Development, and of Information, Communication Technologies and Postal and Courier Services, respectively. The review has also benefited from a series of existing studies including the 2011 AfDB flagship report “Infrastructure and Growth in Zimbabwe” and the 2013 World Bank report “Water Sector Investment Analysis”.

(vi) This review has examined the needs for reform in the electricity, water, transport, and ICT sectors and assessed the prospects for PPPs. The review concludes that the perception of the predictable policies is key for attracting responsible private partners for sustainable PPPs. Most of all, tariff policies must guarantee a viable cash flow for the PPPs. This perception of predictability has been impaired by the recent impromptu write-offs of consumer debt to electricity and water supply services with the long-term impact on collections still unknown;

(vii) The review makes a number of recommendations to improve the prospects of mutually advantageous PPPs. Specifically, for the electricity sector the review concludes that the prospects of large IPP investments from Independent Power Producers (IPP) are uncertain since country and project risks in Zimbabwe remain high. As alternative forms of PPP the review recommends less risky options such as (i) Outsourcing operations of existing plants; (ii) Lease contracts of existing plants; and (iii) Sales of existing thermal plants. The review notes that under no circumstances should the Kariba hydropower station, and the country’s transmission and distribution systems be divested because of their key role in power generation, the concomitant risks of reduced competition, and the necessity to focus more on purchasing electric energy at the regionally best prices;

(viii) There are advanced preparations for contracting a study to forecast demand in the electricity sector in Zimbabwe. This study would best be combined with a forecast of national and regional supply capacity with due consideration given to the SAPP transmission capacity. This study would likely be financed by the Analytical Multi-Donor Trust Fund (AMDTF) that is scheduled to close on June 30, 2014;

(ix) The water sector performance in Zimbabwe has deteriorated since 2000 due to deferred maintenance, the loss of institutional capacity and weak financial performance. Sector investments have been unevenly allocated with the largest investments @ USD 100 per beneficiary per year made in the water resources sub-sector where, in the aggregate, Zimbabwe needs no increased capacity over the next 20 years. Conversely, investments in urban water supply and sanitation systems have been low @USD 2.8 per beneficiary per year and insufficient to reverse the deterioration of the existing infrastructure. Investments in rural water supply and sanitation systems have been exceedingly low @USD 0.2 per beneficiary per year due
in part to the limited absorptive capacity in that sub-sector. It should be noted that the PSIP does not include those investments financed by Non Governmental Organizations and Development Partners.

(x) In order to rectify this sub-optimal investment allocation it is recommended that all water sector investments be scrutinized before being included in the public sector investment program, to ensure that funding will be aligned with the goals of the National Water Policy. The scrutiny of water investments is expected to produce a shift of investment away from water resource development towards urban and rural water supply and sanitation systems. In order to enable these two sub-sectors to absorb the higher investment volumes and pave the way for sustainable operations it is recommended to reform the governance in these two sub-sectors in the following manner: (a) starting with the larger urban localities water supply and sewerage services should be separated from other municipal services and acquire an autonomous legal constitution. The exact governance must be defined by a separate study with options presented; (b) the autonomous water supply and sewerage services should be ring-fenced so that their collected revenue could only be used in these two services; and (c) an effort should be made to create water supply and sewerage authorities of a critical mass through agreements between all municipalities within the largest urban areas, such as Greater Harare.

(xi) The convenience of establishing a regulatory body in the urban water supply and sanitation sub-sector should be considered with the prime objective to institutionalize monitoring of the equity, efficiency, and sustainability of services, and with the additional task of developing and applying tariff methodology for these services;

(xii) In the transport sector this review recommends that (a) the Ministry of Transport restrict its role to one of setting policy, planning, and monitoring in the road and railways sectors, respectively; and that (b) all maintenance, rehabilitation, and new construction in the road sector be the responsibility of the road fund ZINARA that may choose to exercise this responsibility through contracting with specialized contractors such as those used for rehabilitation. Reportedly, the African Development Bank is at an advanced stage of contracting a Transport Sector Study that is likely to examine in greater detail reforms in the road, railways, and aviation sectors.

(xiii) In the relatively well performing ICT sector the review recommends a study to understand the reasons for Zimbabwe’s high cost structure of ICT services. The study should consider both the demand and supply aspects of the ICT market in Zimbabwe, identify the reasons for the tariffs charged, suggest ways to increase competition, including for the State to divest itself
of the remaining state-owned operators, and propose reforms to strengthen the ICT regulator;

(xiv) The review notes that the Analytical Multi Donor Trust Fund (AMDTF) is programmed to close on June 30, 2014. It is of the essence to explore the possibilities to locate concessionary funding for a successor to the AMDTF given the high priority of additional studies in the power, water, and ICT sectors to prepare for the reforms suggested.
GENERAL ASPECTS OF INFRASTRUCTURE

Infrastructure is often defined as “the basic physical and organizational structures needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function.”¹ This report will discuss four of those structures in the context of Zimbabwe: the electric power sector, the water sector, the transport sector, and the information and communications technologies (ICT) sector. These four sectors are key for supporting economic growth as shown in Figure 1 below:

Figure 1 Infrastructure Stock versus GDP per capita, LAC and non-LAC countries²

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¹ See http://en.wikipedia.org

² “Meeting the Infrastructure Challenge in Latin America and the Caribbean”, World Bank, 1994. The slopes of the Latin America and Caribbean (LAC) countries and the 69 non-LAC industrial and developing countries are 0.98 and 1.12, respectively in logarithmic scale.
The close fit between the infrastructure stock and per GDP does not mean that the former causes the latter to grow but does show that over time economic growth must be underpinned by a roughly proportionate growth of the infrastructure stock, or else infrastructure will become a constraint on economic growth.

From the redistributive point of view it is essential to spread the benefits of economic growth, for instance through the construction of water supply and sanitation systems to meet basic needs of low-income households. Good infrastructure is no luxury but a basic requirement for better and more productive lives. By the same token, the performance of infrastructure services is often taken as a measure of a country’s socioeconomic progress.

At the same time, the difficulties in creating the conditions for well-functioning infrastructure services are considerable and require consistency in policies and implementation over the long term. Infrastructure is capital intensive but, if well maintained, will supply services practically indefinitely. The converse is also true. When preventive maintenance is allowed to slip the quality of service invariably falls and, if left to continue, will eventually make necessary a rehabilitation of physical assets the costs of which approach those of new construction. Rehabilitation is proof of past neglect of maintenance and constitutes a waste of resources. For instance, an annual level of maintenance of 3% of the replacement cost water supply and sanitation systems will enable infrastructure stock to produce services over the foreseeable future at a capitalized cost of 30% of the cost of replacement.

Since infrastructure is so capital-intensive investment costs can only be recovered over a relatively long period in order to keep user charges at a reasonable level. Pricing policies differ between sub-sectors but it is often possible for the ICT sector to recover its full costs of service from its subscribers and this may also be possible in the electricity sector. The transportation sector does not have the same tradition of user charges although toll roads are gaining ground. The water sector displays the greatest range of pricing policies. It is rare to require agricultural users to pay even for operations and maintenance of irrigation systems, let alone for capital costs. However, prior to the land reforms ZINWA was an exception and raised most of its revenue from selling raw water to irrigators. Good pricing policies in the rural water supply and sanitation sector include user charges that pay for the costs of operations and maintenance, but capital costs are usually financed with public grants. Urban water supply and sanitation systems pricing policies vary a good deal. The benchmark countries, such as Chile and Colombia, prescribe tariffs that recover both operational costs and capital costs while many other countries only recover the running costs, at best. As a result the relationship between asset requirements and annual revenue display a wide range as shown in Table 1:
Table 1. Asset Requirements per Dollar of Annual Revenue

<table>
<thead>
<tr>
<th>Infrastructure Sector</th>
<th>Amount of Assets (dollars)</th>
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<tbody>
<tr>
<td>Water systems</td>
<td>10-12</td>
</tr>
<tr>
<td>Toll roads</td>
<td>7</td>
</tr>
<tr>
<td>Electric utilities</td>
<td>4</td>
</tr>
<tr>
<td>Telephone companies</td>
<td>3</td>
</tr>
</tbody>
</table>


In summary, then, the infrastructure sectors are characterized by being capital intensive and requiring long periods of time of preparation and construction. However, once built they are then able to produce services for periods that are practically unlimited, provided that annual maintenance is regular and sufficient. Table 2 illustrates the importance of investing sufficiently in time and money to prepare the infrastructure investments:

Table 2 Relative Costs of Preparation, Design, Construction, and Capitalized Operations

<table>
<thead>
<tr>
<th>Stage of the Infrastructure Project Cycle</th>
<th>Relative Cost</th>
</tr>
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<tbody>
<tr>
<td>Feasibility Study</td>
<td>1</td>
</tr>
<tr>
<td>Detailed Design</td>
<td>5</td>
</tr>
<tr>
<td>Construction</td>
<td>100</td>
</tr>
<tr>
<td>Operations and maintenance</td>
<td>100</td>
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</tbody>
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The relative costs demonstrate why it is poor economy to proceed to construction without adequate preparation. By skimping on feasibility studies a country can end up building the wrong project at a cost one hundred times the cost of the feasibility study and, once built,
the capitalized costs of operations and maintenance, can easily match the construction costs.

**Minimum Required Project Preparation**

At a minimum project preparation should comprise a technical least cost analysis to consider alternatives before selecting the one with the least life-cycle cost. The least cost alternative should then be the object of an economic cost-benefit analysis to ensure that the sum of capitalized benefits is at least as great as the sum of capitalized capital and operating costs. For utility projects, such as those for electric power, ICT, or water supply and sanitation it is also necessary to undertake a financial analysis to confirm that funding will be provided to pay for the costs of implementation and those of operations and maintenance. The preparation should also include an institutional assessment to ensure that the administrative capacity exists to operate and maintain the constructed infrastructure. The fifth and final piece of project preparation is a social assessment to make certain that environmental safeguards are satisfied of the project’s impact on the environment and that affected populations are no worse off that they would be without the project implemented.
INFRASTRUCTURE IN ZIMBABWE

The deterioration of Zimbabwe's infrastructure is evident after decades of far-reaching domestic reforms, a period of hyperinflation, and the effects of sanctions and difficulties to obtain long-term financing due to arrears with the international financing institutions. A contributing factor has been populist pricing policies that have held back necessary tariff increases and prevented utilities from generating cash for preventive maintenance. The result has been an erosion of the productive value of existing assets.

The electric power sector is barely able to provide a reliable output of 1,300 MW compared to peak demand of 2,000 MW. The shortfall is managed through loadshedding that causes inconvenience and loss of production. An equally important, albeit hidden, cost is how unreliable power supplies discourage prospective investors in the mining and other industries. Annex 1 contains additional data on key performance indicators in the power sector and compares those indicators to international and regional benchmarks.

The urban water supply and sanitation sector could at one time boast of the highest access rates to reliable and safe services in Africa. This is no longer the case. The combination of deferred maintenance and lack of funding for rehabilitation and expansion has made service intermittent and created a constant threat to public health. Estimates are that between 40% and 70% of all rural systems do not supply water as intended and are inoperative. Only the irrigation sub-sector has a favorable balance between supply and demand for raw water, due in part to the fact that irrigated areas have declined from 120,000 hectares in the year 2000 to about 50,000 hectares at the present time. Annex 2 provides further details on the urban and rural water supply and sanitation sectors and compares Zimbabwe's performance to regional and international benchmarks.

The transport sector comprises three sub-sectors: roads, railways, and aviation. All are important to allow landlocked Zimbabwe to take advantage of regional synergies. However, the speed of travel is constrained by a road network where 40% of state roads are in need of rehabilitation. Railways could possibly offer the cheapest and safest mode of transportation but with only one third of locomotives operational formerly daily service between major cities has been curtailed. The track infrastructure is deteriorating albeit at a slower pace. Annex 3 supplies a scorecard of the road and railways performance.

The ICT sector offers an exception to the picture of deteriorating infrastructure and slipping service in the other three sectors. The ICT sector is favored by strong demand that has made it possible to keep tariffs high and help produce healthy operational surpluses that have been used for investment and for servicing debt. Annex 4 shows the performance indicators for the ICT sector.

The Zimbabwe ASSET

Cognizant of the need to rehabilitate and expand the country's infrastructure the Government that took office following the July 31, 2013 elections has launched its Agenda for Sustainable Socio-Economic Transformation (Zim ASSET). This economic blueprint for
the period 2013-18 contains a long list of infrastructure projects that the Government wishes to realize during its mandate period. Although Zim ASSET program costs remain to be estimated it is highly likely that in the aggregate they will far surpass the possibilities of the Public Sector Investment Plan (PSIP) to finance them. In order to not to spread available resources too thinly over many projects a strict prioritization is called for.

Zim ASSET lays out strategies that the Government will pursue to implement its ambitious program. The strategy in the infrastructure sectors in particular is to encourage Public Private Partnerships (PPPs) for the financing and execution of the different sub-projects. This strategy has been emerging in the electric power, road transport, and ICT sectors and is now being extended to water supply and sanitation, at least as an objective.

The planned key role of PPPs reiterates the 2012 National Energy Policy that states “that the private sector will be the engine of economic recovery and growth in Zimbabwe, necessitating far-reaching initiatives and reforms to reduce the risk for investors and make Zimbabwe an attractive investment destination.” Accordingly Government will give priority to public–private partnerships (PPPs) in the following areas: ICTs, Local Government, Mining, Health, Water, Transport, Tourism and Natural Resources, Energy and Power Development, Agriculture, Social Amenities and Education.3

The National Energy Policy also adds the complementary strategic goal of improving the institutional framework and governance in the energy sector in order to ensure that the private sector becomes the engine for provision of energy services. Presumably, the same aspiration holds for the other infrastructure sectors.

Current Roles of the Public and Private Sectors

The strong endorsement of PPPs is in contrast to how infrastructure has actually been financed, owned, and operated up till now. With the exception of the ICT sector with one dominant private operator the other infrastructure sectors are still firmly within the public domain.

In the electric power sector ZESA Holdings is state-owned as are its subsidiaries ZPC that generates power and ZETDC that operates the electric transmission and distribution systems. Similarly, all water systems, both for irrigation, and for urban and rural water supply and sanitation systems, are publicly owned and operated. In the case of water supply and sanitation systems the owners are urban and rural local authorities and ZINWA that operate these services alongside a host of other municipal services. In the transport sector roads are publicly owned as are the railways and the aviation company, Air Zimbabwe.

Limiting the state's role in infrastructure to being more of a regulator (in the case of the power generation and ICT sectors) and less of a direct operator is in line with best practice

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3 Zimbabwe, Medium Term Plan, 94.
in developing countries such as Chile and Colombia where regulation has been strengthened and protected against undue political interference. The same policies could be applied in the urban water supply and sanitation sector in Zimbabwe, starting with the major cities of Greater Harare and Bulawayo. PPP reforms could attract private financing and know-how and freeing financial resources from the Government budget for those sectors, such as education and health that are not suitable for PPPs.

The interest from private investors in entering into PPPs is tempered by Zimbabwe's indigenization law that mandates at least 51% national company ownership. However, this law may be applied flexibly in the energy and water supply sectors where investment requirements are large and lumpy. However, the indigenization law would not preclude PPPs with domestic investors who might consider shifting their investments into longer-term sectors such as the electric power, ICT and water supply and sanitation sectors.

Possibly as a reflection of its poorly rated investment climate Zimbabwe has not captured as much private financing for infrastructure as many of its neighbors. During the early 2000s, Zimbabwe captured private investment commitments worth only around 0.4% of GDP, predominantly in the ICT sector. Most of Zimbabwe’s peers have done significantly better in this area. For instance, the absence of private investments in the power sector is notable. Countries such as the Democratic Republic of Congo, Liberia, Nigeria, Uganda, Kenya, and Senegal have all captured between 1.8 and 2.5 percent of GDP, while the most successful country in this regard, Guinea-Bissau, has captured in excess of 3% of GDP (figure 2).

![Figure 2: Zimbabwe needs to attract more private investment (World Bank, 2011)](image)

References need to be consistent with reference list
THE ELECTRIC POWER SECTOR

Institutional Arrangements

The Ministry of Energy and Power Development is the lead ministry in the energy sector and submits financing requests to the Ministry of Finance that concern (i) electric power generation; (ii) transmission and distribution of electric energy; and (iii) development of renewable energy systems. It relies upon the detailed work and cost estimates from the parastatal Zimbabwe Electricity Supply Authority (ZESA) Holdings with its generating company, the Zimbabwe Power Company (ZPC) and its transmission and distribution company, the Zimbabwe Electric Transmission and Distribution Company (ZETDC).

There is an energy regulator, the Zimbabwe Energy Regulatory Authority (ZERA) that grants licenses in the energy sector, comprising both electric energy and fossil fuels. ZERA also authorizes tariffs based on “cost plus” regulation and monitors the performance of ZESA and ZETDC. It can also grant licenses to private investors in power generation through Independent Power Producers (IPP).

Zimbabwe has recently developed domestic production of ethanol for the use as an automobile fuel mixed with gasoline. The objective is to blend imported fossil fuel with domestic ethanol that is produced as a by-product in the country’s sugar industry.

Electric Power Generation

The ZPC has two major generating stations, the Kariba hydropower plant on the Zambezi River with an installed capacity of 750 MW, and the Hwange thermal power plant with a nominal capacity of 920 MW. Hwange is located near substantial deposits of high-quality coal that it burns. Due to gradual deterioration of Hwange up till 2010 the effective generating capacity of Hwange is currently limited to about 450 MW although this output is up from its nadir of 250 MW. There are three smaller thermal plants in Bulawayo (nominal capacity 90 MW, effective capacity 20 MW); Harare (nominal capacity 60 MW, effective capacity 20 MW); and Munyati (nominal capacity 90 MW, effective capacity 20 MW). These plants rely on coal that has to be hauled in from Hwange over distances as long as 600 km and are also quite inefficient due to their aged technology. Their production has been ring-fenced to supply customers willing to pay a tariff of about USD 0.13 per kWh, about 30% higher the ZERA-authorized USD 0.10 per kWh.

In addition, there are small industrial captive plants with an aggregate capacity of less than 50 MW, producing for the industries’ own power consumption. The combined effective power output in the order of 1,300 MW for the open market is insufficient to meet estimated national peak demand of around 2,000MW resulting in a supply demand gap of up to 700MW. The deficit is managed by rotating load shedding in the order of five hours daily.

Transmission and Distribution
Zimbabwe is part of the Southern Africa Power Pool (SAPP) and is located strategically on the East-West and North-South transmission crossroads. It has used the SAPP to import about 100 MW from Hidroeléctrica de Cabora Bassa (HCB) in Mozambique to alleviate the domestic power generation deficit. On the other hand, it has until recently been dispatching 100 MW to Namibia as repayment of a loan of USD 40 million that Namibia’s bulk buyer, Nampower, extended to partially rehabilitate the Hwange plant.

**Current Expansion Path of Generation and Transmission Capacity**

ZPC plans a number of capacity increases but is restrained by the difficulties in obtaining long-term financing due to the lack of access to World Bank and AfDB funding. Nevertheless, there are plans to invest for selective rehabilitation of the critical Kariba hydro station that is operating since 1959. There are also advanced plans to add 300 MW of generating capacity to Kariba with Chinese financing. This addition will improve the ability to meet peak demand in Zimbabwe but will not add energy.

ZERA encourages Independent Power Producers (IPP) and has licensed a number of thermal plants that propose to burn indigenous coal. These are at various stages of preparation but have not yet closed financially, let alone begun construction. The difficulties of closing the IPPs are understandable due to the fact that Zimbabwe has large arrears to the international financing institutions (IFIs).

In parallel ZPC is exploring Nampower financing for upgrading the three small thermal plants in Bulawayo, Harare, and Munyati with repayments in the form of power deliveries through the SAPP.

There are also plans to increase the transmission capacity from the northern neighboring countries to the Republic of South Africa through the construction of a new 765 kV line that could be financed commercially on the strength of the offtake agreement with South Africa’s credit-worthy power company, ESKOM.

**The Credibility of the ZERA Price Regulation in the Electricity Sector**

The current development plans in the electric power sector are conceived and implemented by state-owned institutions such as ZPC and ZETDC. These plans are characterized by piecemeal investments, contingent on the operational surpluses from operations and/or grants from the national budget. Unfortunately, neither source of financing is reliable. The operational cash surpluses are affected by political meddling with the tariff that contradicts the well-conceived policies of the regulator, ZERA. For example, in the heat of the 2013 political campaign the Government decided to announce a write-down in the order of USD 150 million of accounts receivable from individual and farmer electricity subscribers. The predictable result will be lower operational surpluses and less funding available for maintenance and rehabilitation. Significantly, although it was not the regulator, ZERA, that initiated the write-off, the action taken undercut the credibility of the regulator in the eyes of prospective IPP investors. The write-off, announced by politicians might have been compensated by equal compensations paid by the national budget that is also controlled by
politicians but this did not happen. Budget financing of the capital expenditure in the electric power sector has been nil for both ZPC and the ZETDC in 2013 and should not be necessary in the first place if the economic regulation by ZERA were honored.

Recent efforts to level tariffs with costs have not been enough to allow ZESA to reach cost-recovery status. The average true cost of power is about $0.10 per kilowatt-hour (kWh) in Zimbabwe, which is already relatively low by African standards. Nonetheless, due to subsidies of various kinds, at present tariffs amount to only $0.06 per kWh, among the lowest in Africa (figure 3).

In view of the impaired credibility of the price regulation in the power sector it is doubtful whether any of the IPPs for which ZERA has given provisional licenses will actually close financially, or whether they will even be in the best interest of Zimbabwe if they materialize. The risks to private investors of committing large up-front investments that can only be recuperated over a long time period are high and have risen following the undermining of ZERA’s regulatory authority. The result will be diminished interest from prospective private investors and therefore less competition. Nor should the operating risks of IPPs be underestimated. For example, a thermal IPP plant depends on adequate supplies of coal at predictable prices in addition to general operating risks.

By the same token, the impaired creditworthiness of Zimbabwe and of its state-owned electric power companies has reduced competition and in turn will drive up economic proposals of those firms that do bid on procurement invitations for the state-owned companies. There has been interest from equipment suppliers from China and India but such bids and contracts, if they materialize, may be contingent on export credit guarantees from these countries. In any case, the diminished competition will put extra demands on ZPC and ZETDC as they procure goods and services from bidders to ensure that goods meet required specifications and that contractors have sufficient experience and solidity to deliver as required by the bidding documents.
Suggested Alternative Expansion Path with Selective PPP

In order to reduce risks to private investors and operators the sector might find it better to attempt to pursue other PPP-options that are less risky for investors than IPPs. Three such PPP-options would meet these criteria:

- Outsourcing operations of existing plant;
- Lease contracts of existing plants;
- Sales of existing plants.

*Outsourced operations* is the PPP-option where the risks to the private operator are the lowest. A typical contract would simply negotiate a price per kWh supplied that ZPC would pay the contract operator of the existing plant. Such a contract is reportedly under discussion for the Hwange thermal plant with an Indian firm. The incentive for the private contract operator is then to deliver as much power as possible from the existing plant. However, successful outsourcing is contingent upon attracting experienced operators with a good track record and will therefore require good procurement capacity and integrity from the state-owned utility.

It would also be possible to bid and sign *lease contracts* with regard to the operations of existing generation plants. Risks are higher for prospective private firms but so are the rewards. Given the state of much of the power sector assets lease contracts may not be realistic, at least not until potential contractors have become more knowledgeable about the state of the assets for which they might consider lease contracts.

Neither outsourced operations, nor lease contracts will resolve the difficulty of finding financing of rehabilitation and extension of existing plants. Instead, ZPC may pursue the possibilities of actually *selling existing plants*. Those that would seem good candidates would be the Hwange thermal plant, and the three small thermal plants in Bulawayo, Harare, and Muniyati. These four plants are aged and will require substantial rehabilitation to enable them to increase reliable power production. Such investments may be costly for ZPC and even uneconomical in the case of the smaller plants. However, a private investor and operator might find greater incentives to do both at lower costs and could succeed where the public sector has failed. The determination of which of these plants would actually be suitable for sale would require further studies and would have to consider the ZPC’s success or lack thereof in raising the reliable output and the costs associated with doing so.

Power Assets Unsuitable for PPPs

Certain power sector assets should retain their public ownership and management. On the generating side the Kariba hydropower station should remain public because of its key role in supplying Zimbabwe with a cheap base load of renewable energy. A PPP would not add any benefits to the state since the plant is in reasonably good operating order.

The national transmission system should also always retain its public ownership and management in order to afford open access, albeit at cost-based tariffs, to all generators.
including potential Independent Power Producers. Relinquishing part of the ownership or operational responsibility to a private investor or operator would create a risk of reduced access and therefore reduced competition from alternative generators. There is also regional dimension because of Zimbabwe’s key location as a transmission country north-south and east-west and its membership in the Southern Africa Power Pool makes it natural to retain state ownership of all transmission lines.

The fact that the distribution systems in each city and town represent natural monopolies speaks against any PPP that would involve even partial private ownership. However, this would not preclude outsourcing certain functions, such as maintenance, billings and collections, to private operators. However, at the present time it is doubtful that the capacity for taking on these functions exists outside the public sector after decades of emigration of professional and skilled staff.

**Recommended Additional Studies in the Power Sector**

There are advanced preparations for contracting a study to forecast demand in the electricity sector in Zimbabwe. This study should be combined with a forecast of national and regional supply capacity with due consideration given to the SAPP transmission capacity. This study would likely be financed by the Multi-Donor Trust Fund and be the starting point for additional studies.

One such follow-up study would be the recommended analysis of which existing thermal plants might be the object of PPPs at different levels of risk sharing with prospective private investors and operators. Such follow-up studies on PPP options would be contingent on additional funding for a successor to the current Analytical Multi-donor Trust Fund that is scheduled to close on June 30, 2014.
THE WATER SECTOR

Institutional Arrangements

The Ministry of Environment, Water and Climate is the lead ministry in the water sector and submits financing requests to the Ministry of Finance that concern (i) water resource development; (ii) some minor semi-urban water supplies; and (iii) some rural water supply and sanitation systems. It relies upon detailed work and cost estimates from the parastatal Zimbabwe National Water Authority (ZINWA) that manages the country’s water resources.

The Ministry of Local Government and Urban and Rural Development has the purview of urban water supply and sanitation but the actual operations and maintenance of systems are the responsibility of the larger of the 32 urban local authorities and of some 66 local rural authorities, respectively. ZINWA is responsible for operations and maintenance in smaller urban and some rural water supply systems. The Department of Infrastructure Development (DID) under the Ministry of Transport and Infrastructure also manage some rural water supply and sanitation activities.

There is no regulatory body in the water sector although one is contemplated under the National Water Policy that was launched on March 22, 2013.

Water Resource Management

Zimbabwe is fortunate to count on some 8,000 dams and reservoirs for storing raw water, most of which were built for irrigation. The recently concluded Water Sector Investment Analysis (WSIA) concludes that in the aggregate Zimbabwe will have sufficient storage capacity to meet the demand for raw water until 2032 with a few exceptions for the urban water supplies of Greater Harare, Buluwayo, Gweru, Karoi, and Plumtree. The favorable water balance is partly explained by a drop in the total irrigated area from 120,000 hectares (2000) to some 50,000 hectares (2012). The groundwater potential is thought to be considerable in sedimentary rocks in the west and along the Save valley in the east but will require additional testing to become a reliable supplement to surface water. In 2007 agriculture accounted for 82%, domestic and industrial users for 15%, and mining for 3% of total surface water use.

Drinking Water Supply and Sanitation

The provision of drinking water and adequate sanitation is much less favorable. Access of urban households to a piped water system dropped from 99% in 1990 to 77%, while the share of urban households with sewerage decreased from 99% in 1990 to 67%. System-wide continuous 24/7 water service is practically non-existent and the periodically empty

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distribution pipes are contaminated by pathogens from human feces that then spread to the entire population. Low-income households suffer disproportionately but no one is fully protected since disease can quickly spread to the entire population as happened during the 2008 cholera epidemic.

Slipping metering explains increased water losses to 43%, making it difficult and inefficient to achieve sustainable finances. Operating costs have risen unduly, in part due to a high 11 staff per thousand water connections versus the international benchmark of 3.

Collected revenue is barely sufficient to pay for cash operating costs and is completely insufficient to replace depreciating assets, pay for preventive maintenance and contribute to system expansion. The financial situation is worsened since urban councils do not ring-fence their water collections and often use the cash collected from water customers for other purposes, including paying municipal staff salaries in areas such urban roads, stormwater drainage, health, schools, and other community services.

The absence of an equitable, efficient, and sustainable water supply and sanitation sector in Zimbabwe represents a socioeconomic injustice since the lowest-income strata are suffering disproportionately from poor health and death related to unsafe water and sanitation. The unsatisfactory service situation also makes it more difficult to develop an international tourism industry when visitors are reminded of the recurrent risk of contracting cholera, typhoid fever, dysentery and other diseases associated with unsafe water and sanitation.

Policy Framework in the Water Sector

The National Water Policy (NWP) was launched on March 22, 2013 with the overall goal to achieve sustainable utilization of water resources that in turn will improve:

- Equity in access to freshwater by all Zimbabweans;
- The efficient use of water among competing users;
- Provision of affordable and sustainable water and sanitation and hygiene (WASH) services;
- Environmental protection;
- Protection of water sources, including safety of the country's dams and groundwater;
- Consumer and institutional viability in the sector;
- The economic development of the country; and
- The administration of the Water Act (of 1998, based on universally accepted principles of Water Resources Management (WRM)).

The eight goals refer to the various uses of water in Zimbabwe’s economy. The priority order would seem to be equitable access to drinking water to the urban and rural population (sub-goal #1), affordable and sustainable WASH services for the urban and rural population (sub-goal #3), environmental protection (wastewater treatment in urban areas,
sub-goal #4), consumer and institutional viability (affordable and viable urban water and rural providers of water supply and sanitation services, sub-goal #6), and cross-cutting goals such as efficiency in use of water (sub-goal #2), protection of water sources (sub-goal #5), the economic development of the country (sub-goal #7), and the administration of the Water Act (sub-goal #8).

It might be expected that investment allocations would support the rough priority order but the reality has been quite different as shown in Table 3:

Table 3       Annual Per Capita Water Investments Costs 2009-2013

<table>
<thead>
<tr>
<th>Category</th>
<th>Annual Investments</th>
<th>Benefiting Population</th>
<th>Per Capita, USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dam construction</td>
<td>29.7 million</td>
<td>0.29 million</td>
<td>100.7</td>
</tr>
<tr>
<td>Urban water supply</td>
<td>10.1 million</td>
<td>3.6 million</td>
<td>2.8</td>
</tr>
<tr>
<td>Rural water supply</td>
<td>2.2 million</td>
<td>9.0 million</td>
<td>0.2</td>
</tr>
</tbody>
</table>


Dam construction has absorbed the lion’s share of water investments or about USD 100 per beneficiary and year while urban water supplies have received less than USD 3 per capita and year, and rural water supplies about USD 0.2 per capita and year. The level of investment in both the urban and rural water supply sub-sectors are low and well below annual preventive maintenance requirements. In other words, the urban and rural water supply sectors are not maintaining their existing capital stock, let alone adding capacity to meet demand growth.

The water sector allocations would seem to be at variance with the NWP goals, and the opportunity cost of pursuing such lopsided allocations is considerable. The high cost of disease associated with unsafe water and inadequate sanitation is only one consequence, and the cost in lost convenience is also high. Conversely, in the aggregate Zimbabwe already has sufficient reservoir capacity to meet the demand for irrigation water through the year 2032. This circumstance implies that additional investments in more dams and reservoirs for irrigation water do not add benefits as efficiently as using the already existing excess reservoir capacity. The aggregate excess capacity can be explained by the fact that the total irrigated area has dropped from 120,000 hectares in the year 2000 to around 50,000 hectares in 2013.

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5 Based on scaling up estimates for Tokwe-Mukorsi adjusted for an assumed 4.2 persons instead of the WSIA-estimate of 6.0 persons per beneficiary household

6 Zimbabwe-The Water Sector Investment Analysis, World Bank report, October 2013

7 Ibid.
Institutional Constraints to Improved Investment Allocations

It is likely that the much higher investment levels for water resource development as compared to the urban and rural water supply and sanitation sectors reflect the different capacities of the institutions that prepare and implement investments. Specifically, the water resources sector has the Zimbabwe National Water Authority, ZINWA that relies on its own proven capacity and that of experienced contractors to build dams and conveyance works for irrigation projects. The dominant selection criterion from one budget year to the next seems to be the continuation of already initiated works and accounts for inertia but also for increased absorptive capacity in terms of investments.

In contrast, the urban water supply and sanitation sector is fragmented across 32 local urban authorities that manage these services as only one of many municipal tasks, such as solid waste management, urban roads, schools, and social services. There is no sense of managing these services as an autonomous utility where the objective would be to focus on water supply and sanitation services only and build capacity to this end. In contrast, the revenues from water sales are not ring-fenced in the Zimbabwe local urban authorities but are used to pay expenditure anywhere in the administration and notably for staff salaries. The small size of the local urban authorities also makes it difficult to prepare projects and lobby for their implementation politically. With the exception of Harare with 1.6 million, Bulawayo with 0.7 million, and Chitungwiza with 0.3 million the local urban authorities typically have about 30,000 inhabitants.

The situation is even more extreme in the rural sector where there are some 66 rural local authorities with a number of responsibilities. Under the circumstances it is easy to see that the rural sector has a quite limited absorptive capacity for investment and has great difficulties to prepare and implement rural WASH schemes. Symptomatically, funding from the Public Sector Investment Program to the rural sector is fragmented over the Ministries of Environment, Water and Climate; of Transport and Infrastructure Development; and of Local Government. It is unrealistic to expect that any of these three ministries will take on rural water supply and sanitation programs as a priority irrespective of the great needs for such programs.

Agglomeration to Build Critical Mass in Urban and Rural Water Supplies

Under these circumstances it is necessary to attempt to build water supply and sanitation institutions of a critical mass that could enable them to acquire the political weight to argue for higher investment allocations, and the technical and operative capacity that would make it possible to prepare projects and to operate and maintain these systems. A process of amalgamation would likely start in Greater Harare where one water supply and sanitation utility could be created to provide services in a number of urban authorities, including Harare proper, Chitungwiza, Epworth, Norton, and Ruwa with a combined urban population of around 2.0 million. A ring-fenced utility of this size could stand a chance of attracting and
developing skilled staff and benefit from the economies of scale in the water supply and sanitation sector.

In most remaining urban authorities the immediate task would be to start building a sense of utility-like operations where the objective would be to make such services autonomous by ring-fencing their collected revenue. Without ring-fencing the sector stands little chance of progressing since the “leakage” of water revenue to other municipal dependencies would deprive water supply and sanitation services of a reliable source of funding of maintenance, arguably the critical issue in the sector.

The urgency for the Government to create umbrella institutions to organize and implement programs to build capacity is even greater in the rural sector that is the home for 70% of the population. Public financial support would best be concentrated through one ministry rather than through three as is currently the case.

**The Potential for Public-Private Partnerships in the Water Supply Sector**

The necessity of creating a sense of utilities of critical size and of ring-fencing the water revenue collected have a direct bearing on the possibilities of attracting competent private firms through PPP contracts. Without either it is unlikely that any responsible private firm would respond since there would be little guarantee they would get paid regularly for their services. Assuming these two conditions, *sine qua non*, were created there would seem to be three PPP options:

- Outsourcing
- Mixed public-private ownership companies (“empresa mixta”) and
- Lease contracts

None of these three forms of PPP would bring in private financing but would enable urban water supply and sanitation systems to be operated and maintained better than is now the case. In this way, the conditions for sustainable operating cash flows could be created against which borrowing might be possible later on.

**Outsourcing**

Outsourcing constitutes a flexible and low-risk PPP whereby private firms are contracted to undertake well defined tasks such as maintenance of assets, operations of water supply and/or wastewater treatment plants, of pumping stations, of metering and billing for consumption and so on. Outsourcing lends itself well for simple contracts where the private firm would be paid on measurable outputs, such as produced potable water, or treated wastewater, on the number of meters read and amounts of water billed. Zimbabwe has some limited experience of PPPs in water in Chiredzi and Ngozi from which lessons could be learnt for other PPPs.

*“Empresa mixta”*
The Spanish model of administering small-and medium-sized towns and cities based on joint public private operations could well be applicable to the largest of Zimbabwe's urban populations. Their flexible design could accommodate the indigenization requirements in Zimbabwe and could provide an investment opportunity for national investors. The procedures for creating such a joint public-private operator, or “empresa mixta”, involve a number of steps that are described in Annex 5. “Empresas mixtas” are attractive for managing risk since the private partner is expert in managing operational risks and since the municipal partner is in a good position to manage the political risk that tariff increases represent. This type of PPP has been used successfully in Colombia (See Box 1)

Box 1: The Success of “Empresas Mixtas” in Colombia

Barranquilla, a city of 1.5 million on the Caribbean coast, was under private operation from 1925 to 1960. Universal coverage and good service quality made the city’s water supply the best in Colombia. However, the municipal government took over operations in 1961 and in three decades operations and service quality deteriorated to rival the worst in the country. The central government and civic organizations in the city rallied around reform that resulted in the creation of an “empresa mixta” with joint ownership of the municipality, local investors, and a Spanish private operator, AGBAR, that assumed operational control in 1996. A capable manager was successful in boosting water coverage from 78 percent to 97 percent in five years and sewerage coverage from 68 percent to 88 percent. Service quality improved rapidly. The positive achievements were possible mainly through a better use of existing facilities and firm management that sharply reduced undocumented connections and unmetered consumption. Annual water production actually dropped from 17 to 15 million cubic meters although annual consumption rose by a third from 7 to 10 million cubic meters and the number of connections grew by 44 percent from 180,000 to 260,000. As a result, the percentage unaccounted water decreased from 55 percent to 38 percent in five years.


Lease Contracts

Lease contracts are another PPP-contractual form that shifts substantial risk to the private partner. However, the greatest shift in risk would also imply the potentially greatest gains in performance. However, like the other PPP-options leases would be contingent on reliable operating surpluses that would be ring-fenced to reserve them to pay for the running costs of the systems. These conditions do not apply at the present time. The lease in Senegal offers an example of a successful PPP-contract. (See Box 2)
Box 2: The Successful Lease Contract in Senegal

In 2010 Senegal provided one of the best urban water supply services in Sub-Saharan Africa. Access to the piped water infrastructure was almost universal and the connection ratio was more than 75%. Monitoring showed that (i) reliable water was distributed on a permanent “24/7” basis and meeting bacteriological quality standards; (ii) efficient: non-revenue water was 20% of the production, the staffing ratio 2.5 staff per thousand water connections and bill collection ratio 98%; (iii) financially sustainable: revenues from user charges were sufficient to cover operation and maintenance costs, depreciation of fixed assets and financing costs and to contribute excess cash to the capital expenditure program and (iv) lifeline water consumption was offered at a discounted tariff; but households that still relied on public standpipes paid a much higher price per cubic meter than this discounted rate.

The success story of Senegal’s urban water supply and sanitation sector is the result of a major reform that was implemented in the mid-1990s. The much improved “accountability framework” has clarified the contractual obligations of the various actors and designed a set of adequate instruments for carrying out the five key functions of: (i) policy formulation: primarily by the Ministries in charge of Water and of Finance; (ii) infrastructure development: by the public asset holding company SONES; (iii) service provision: by the private operator SdE under an Affermage-type of lease contract with the public operator SONES; (iv) financing: primarily by the Ministry of Finance and its international partners; and (v) economic regulation: interestingly without any independent body in charge but successfully carried out thanks to a transparent and predictable regulatory tool.


Common Requirements for all PPP-options

The ownership and listing of all assets that are the object of the different PPP-forms must be resolved. Ownership would remain with the local authorities but must be clearly identified and assigned for the use of the private partner. Their state of repair (or disrepair) must also be assessed prior to the competitive bidding to select and contract with a private partner since failure to do so would increase the risks for the private partner who will then demand extra compensation as protection against operational risks.

The perception of predictability in the tariff and in the potential operational revenue is also key for successful PPP-contracts. Against this background the politically announced write-off of accounts receivable during the July 2013 political campaign, amounting to at least USD 360 million in the urban water supply and sanitation sector alone, arguably damaged the confidence of potential PPP-investors that they could predict their operational revenue. Not only did the urban local authorities lose the written-off accounts receivable, the payments discipline was impaired because of the expectations of future write-offs that were created.
Recommendations for Reforms in the Water Sector

In summary, the water sector performance in Zimbabwe has deteriorated since 2000 due to the deferred maintenance and a loss of institutional capacity and financial performance. Sector investments have been unevenly allocated with the largest investments @ USD 100 per beneficiary and year made in the water resources sub-sector where, in the aggregate, Zimbabwe needs no increased capacity over the next 20 years. Conversely, investments in urban water supply and sanitation systems have been low @USD 2.8 per beneficiary and year and insufficient to reverse the deterioration of the existing infrastructure. Investments in rural water supply and sanitation systems have been exceedingly low @USD 0.2 per beneficiary and year due in part to the limited absorptive capacity in that sub-sector.

As a consequence, this review recommends that:

(i) All water sector investments be scrutinized before being included in the public sector investment program, to ensure that funding will be aligned with the goals of the National Water Policy. This scrutiny should comprise, as a minimum, the following preparatory information:

- an indication of who and how many the beneficiaries of the infrastructure project are and whether services will be affordable (equitable access and affordable services);
- a demonstration that alternatives have been considered and that the least cost option has been selected (efficient use of water);
- the existence of some level of cost benefit analysis comparing costs to benefits and-if subsidies are necessary and justified-who will finance them (efficient use of resources);
- some level of financial projection to show how the investment costs will be financed during the implementation stage and-crucially-how funds will be available to pay for operations and-crucially again-preventive maintenance (sustainable services);
- an indication whether there is institutional capacity to operate and maintain the piece of infrastructure being analyzed (institutional viability);

(ii) The scrutiny of water investments is expected to produce a shift of investment away from water resource development towards urban and rural water supply and sanitation systems. In order to enable these two sub-sectors to absorb the higher investment volumes and to pave the way for sustainable operations it is recommended to reform the governance in these two sub-sectors in the following manner:

- starting with the larger urban localities water supply and sewerage services should be separated from other municipal services and acquire an autonomous legal constitution. The exact governance must be defined by a separate study with options presented;
- the autonomous water supply and sewerage services should be ring-fenced so that their collected revenue could only be used in these two services;
• an effort should be made to create water supply and sewerage authorities of a critical mass through agreements between all municipalities within the largest urban areas, such as Greater Harare.

(iii) The feasibility of establishing a regulatory body in the urban water supply and sanitation sub-sector should be considered with the prime objective to institutionalize monitoring of the equity, efficiency, and sustainability of services, and with the additional task of developing and applying tariff methodology for these services;

(iv) The responsibility for preparing, implementing and operating rural water supply, sanitation and hygiene programs should be concentrated within one agency that would in turn be under one ministry, to be determined by a special study.
THE TRANSPORTATION SECTOR

Institutional Arrangements

The transport sector in Zimbabwe comprises the road sector, the railway sector, and the aviation sector. Only the former two have been briefly surveyed. The Ministry of Transport is the titular ministry for both the road and railroad sectors. Annex 3 provides some performance indicators for the transport sector.

The Road Sector

Zimbabwe has a relatively dense national road network. Total road density is 100 km/1,000 square kilometers (km²), double the figure for neighboring Zambia and almost triple that of Mozambique. The rural-accessibility index in Zimbabwe, at 46 percent, is more than double regional averages. Zimbabwe has strong road connections with the SADC. Zimbabwe is linked to its neighbor South Africa, the largest regional economy and home to the busiest port in Africa and other countries such as Mozambique, Botswana, Zambia, the Democratic Republic of Congo, Malawi, and Tanzania through the North–South Corridor, the most extensive corridor system in the region. In addition, the North–South Corridor serves as a link to other important corridors that branch off from it, such as the Trans-Kalahari, Beira, Lobito, Dar es Salaam, and Nacala corridors. Along the corridor, the core road artery runs 7,500 km from Dar es Salaam in Tanzania to Durban in South Africa, via Lusaka, Zambia, through the Chirundu border crossing and on to Harare, Zimbabwe, and then into South Africa at Beitbridge.

In summary, the latest estimates for the total lengths of the four different types of roads are:

- State roads (18,800 km in total)
- Urban roads (8,200 km in total)
- Rural district council tertiary roads (36,000 km in total)
- District Development Fund (DDF) tertiary roads (25,000 km in total)

The Ministry has a Department of Roads (DDR) which is responsible for the construction, maintenance and rehabilitation of all state roads but is supported by the Zimbabwe National Road Administration (ZINARA). ZINARA captures earmarked revenue and has therefore acquired a large measure of autonomy with an independent board. There are 27 Urban Councils with a responsibility for maintaining, constructing, and rehabilitating their respective urban roads in accordance with ZINARA programs.

The road sector appears better organized to address the challenges of maintaining the existing state roads and expanding selected sections. ZINARA in a joint venture has contracted the rehabilitation of the Plumtree-Harare-Mutare of 730 km of inter-urban roads and 80 km of urban roads are being rehabilitated. Infralink, the joint venture between ZINARA (70% of shares) and the G5 International Group (30% of shares), has secured
funding of about USD 207 million from the Development Bank of Southern Africa (DBSA) for the purpose. This funding will be disbursed during the 2012-2014 period. Repayment of this loan will be guaranteed by tolls collected. Reportedly, however, this large rehabilitation project has recently been halted due to the delays from the Zimbabwe side in disbursing in a timely fashion its contractual counterpart funding to match the DBSA financing. Such delays, if not resolved promptly, can have a serious negative effect on future planned road rehabilitation projects where DBSA would co-finance rehabilitation projects of roads that are of regional importance.

In addition, ZINARA disburses about USD 34 million for rehabilitation and expansion of roads in Zimbabwe. The financing of these works is from earmarked revenue that ZINARA collects, including from car license fee and road tolls.

The Department of Roads itself uses force accounts for 80% of its rehabilitation and maintenance works and tenders the balance of 20% of work. The Department believes that a sustainable level of maintenance of state roads is about USD 2,000 per km and year representing only about 0.3% of the estimated replacement cost of USD 600,000 per km. The level of maintenance appears low. The Department designs roads for demand within 20 years but believes that the high standard of road construction in the past guarantees a much longer useful life of roads.

The Railroads Sector

The railroads sector has entrusted the actual operations and maintenance of railroad services to a parastatal, the National Railways of Zimbabwe (NRZ). The Bulawayo-Beitbridge Railway (BBR), a build-operate-transfer (BOT) project, consists of around 317 km and runs from Beitbridge on the border with South Africa to Heany Junction near Bulawayo. Zimbabwe has the highest rail-traffic density in the region aside from South Africa. NRZ has a high freight density at around 900,000 ton-km/km of track, while most other southern African railways are serving substantially less. Passenger density is also comparatively high.

However, the railways sector faces difficulties to maintain the existing track and equipment in operating order. At least 11% of its railroad tracks are in needs of rehabilitation, only 33% of its locomotives are operational, and there is a need to rehabilitate the signaling system. The shortage of operational locomotives has forced service on the main sections to be curtailed from daily service to three times a week. Passenger volume is reported as steady whereas goods service report rising volumes transported. Railways appear to be competitive in the transport of the imports of fuel, maize, and fertilizer and in the exports of coal, sugar, and black granite.

Recommended Reforms in the Road Sector

This review recommends a clearer demarcation of the policy-setting role of the Ministry of Transport and the implementation and operating roles of ZINARA and the National Railways of Zimbabwe, respectively. At the current time, the Department of Roads is still undertaking
maintenance using force account and new construction. In consequence, this review recommends that:

(i) The Ministry of Transport restrict its role to one of setting policy, planning, and monitoring in the road sector;

(ii) All maintenance, rehabilitation, and new construction in the road sector should be the responsibility of the road fund ZINARA that may choose to exercise this responsibility through contracting with specialized contractors such as those used for rehabilitation. This wide responsibility of ZINARA will demand the recycling of the funds that it captures to the respective areas in the urban and rural authorities from where the funding originates.

Recommended Reforms in the Railways Sector

(iii) All maintenance, rehabilitation, and new construction in the railways sector be the responsibility of the National Railways of Zimbabwe;

(iv) The Ministry of Transport restrict its role in the railways sector to one of setting policy, planning, and monitoring; and

(v) The Ministry of Transport analyze the convenience of expanding public-private partnerships in the railways sector by tendering additional sections

These recommendations with respect to the transport sector are tentative and may be revisited in the larger study that is reported to be contracted and executed by the African Development Bank.
THE INFORMATION AND COMMUNICATIONS TECHNOLOGIES SECTOR

Institutional Arrangements

The Ministry of Information is the titular of the information and communications technologies (ICT) sector. Effective September 1, 2013 the ICT sector was transferred from the Ministry of Transport and Communications to the newly created Ministry of Information. There are three cellular telephone operators: the state-owned NetOne, and two private operators, Econet and Telecel. There is a fourth potential operator, Powertel that aspires to become operational. In addition, there is the state-owned fixed line operator TelOne. There is a regulator, the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) that was established in 2001. Annex 4 provides key performance indicators for the ICT sector.

The telecom sector of Zimbabwe has developed rapidly during recent years with the growth of mobile, fiber optic cable and international connectivity. A fully liberalized regulatory approach to data networks allows fiber optics to be laid out throughout the country by the private sector and government entities. At the end of 2013 fiber optic cable had been laid in 16 of the 23 urban local authorities, or about 70% of the urban authorities but considerably higher as a proportion of the country’s urban population.

International connectivity has expanded, with communications traffic routed through neighboring countries (Mozambique, South Africa, Botswana, and Zambia) to submarine cables in the Indian and Atlantic oceans, instead of through costly satellite links.

Problems however remain due to lack of effective competition and therefore costly services. The fixed-line market is dominated by a loss-making state-owned monopoly that cannot compete with the predominant cellular communications and fiberoptic communications. The private mobile operator, Econet, has about 70% of the market. The second private cellular operator, Telecel has about 20% of market. The third and state-owned cellular operator, NetOne has about 10% of the market. The fixed line operator, TelOne, is state owned and is losing subscribers to the cellular operators and to providers of fiber optic cable services such as Econet’s subsidiary, Liquid Telecom.

ICT Sector Performance

The sector is characterized by high costs due to insufficient competition and lack of a strong government agency that could drive an agenda of competition. Table 4 provides a comparison with the Zimbabwe mobile voice tariffs as compared to those of neighboring countries. Mobile voice tariffs in Zimbabwe are among the highest in the region and particularly high in comparison with the neighboring Mozambique and Kenya. Broadband services in Zimbabwe cost roughly double of what they cost in Mozambique.
Table  Voice Tariffs in Selected African Countries, November 2013

<table>
<thead>
<tr>
<th>Prepaid phone tariffs</th>
<th>Per second</th>
<th>Per minute</th>
<th>Exchange rate per USD</th>
<th>Tariff in USD per minute</th>
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Source and copyright: Scanbi-Invest

**Recommendations**

It is recommended to undertake a study to understand the reasons for Zimbabwe's high cost structure of ICT services. The study should consider both the demand and supply aspects of the ICT market in Zimbabwe, identify the reasons for the tariffs charged, suggest ways to increase competition, including for the State to divest itself of the remaining state-owned operators, and propose reforms to strengthen the ICT regulator. A digest of the terms-of-reference is included as Annex 6.
PERFORMANCE INDICATORS FOR ELECTRICITY SERVICES

The ten performance indicators for electricity services should be linked to the goals of achieving equitable, efficient, and sustainable service:

In order to monitor equitable service:

1. The share of urban households connected to an outside electricity supply; 83%\(^8\) versus the international benchmark of 100%

2. The share of rural households connected to an outside electricity supply; 13%\(^9\)

3. The number and cumulative duration (in hours) of planned and unplanned service interruptions per year; 4 hours per day of rotating load shedding versus the international benchmark of 0

In order to monitor efficient service:

4. Total distribution losses as a percentage of total energy supplied; 20%\(^10\) versus the international benchmark of 8%

5. Generation uptime\(^11\) (annual delivered electric energy as a share of maximal energy generated with installed capacity), in percent; Kariba 82%; Hwange 39%, and the three small generators in Buluwayo, Harare, and Munyati 22%.\(^12\)

6. Total number of utility clients per utility employee: Not available

In order to monitor sustainable service:

7. The rate of return on capital for generating companies and for distribution companies, respectively. (Financial sustainability) 8.5% for both;

8. Collections percentage (Collections/billings); (Financial sustainability); 83%\(^13\) in 2012 but lower in 2013 versus the international benchmark of 99%

9. The share of electric energy generated from renewable sources. (Environmental sustainability) 57% (2006)\(^14\)

10. The share of the income of low-income households that is paid for residential electricity services. (Social sustainability) Not available

\(^8\) National Energy Policy, September 2012
\(^9\) Ibid
\(^10\) Infrastructure and Growth in Zimbabwe, ADB, 2011
\(^11\) Annual Report 2012, Zimbabwe Energy Regulatory Authority
\(^12\) Ibid
\(^13\) Zimbabwe Electricity Transmission and Distribution Company
\(^14\) Annual Report 2012, ZERA
PERFORMANCE INDICATORS FOR THE URBAN WATER SUPPLY AND SANITATION SECTOR

The National Water Policy goal is to promote equitable access to freshwater by all Zimbabweans, the efficient use of water, and affordable and sustainable services. Progress towards these goals are described by ten performance indicators for urban water supply and sanitation services:

Indicators of equitable service:

(1) The share of urban households with service connections to a piped network: 77\%\textsuperscript{15} versus the international benchmark of 100\%.

(2) The share of urban households with individual connections to a piped wastewater collection system: 67\%\textsuperscript{16} versus the international benchmark of 100\%.

(3) The share of urban water supplies with system-wide continuous, 24/7 water service: 0\%\textsuperscript{17} versus the international benchmark of 100\%.

(4) The share of water samples testing negative for bacteriological contamination (coliforms): 82\% versus the international benchmark of 100\%.

Indicators of efficient service:

(5) The share of connections with meters in good operating order: 89\% versus the international benchmark of 100\%.

(6) The level of non-revenue water, i.e. the share of system water input that does not generate financial revenue: 43\% versus the international benchmark of 20\%.

(7) The ratio between the number of the utility’s own and outsourced staff per thousand water connections: 11 versus the international benchmark of 3.

Indicators of sustainable service:

\textsuperscript{15} Service Level Benchmarking (SLB) for Urban Water Supply, Sanitation, Solid Waste Management in Zimbabwe – Final Project Report, September 30, 2013, Government of Zimbabwe, Association of Urban Councils, and Water and Sanitation Program. This report is the source for all data unless explicitly noted.

\textsuperscript{16} After including septic tanks the share with access to toilets rises to 82\%.

\textsuperscript{17} Except for Kwekwe and Victoria Falls no urban system has 24/7 service.
(8) The financial working ratio, i.e. the ratio of cash operating costs (without depreciation) and cash operating revenue, or cash collections. (Financial sustainability) 1.00 versus the international benchmark of 0.50;

(9) The number of pipe bursts per year and kilometer network. (Operational sustainability) Not available (NA) versus the international benchmark of 0.15;

(10) The share of the income of low-income households that goes to pay for water supply and sanitation services. (Social sustainability) Not available (NA) versus the international benchmark of 5% or less;

PERFORMANCE INDICATORS FOR THE RURAL WATER SUPPLY AND SANITATION SECTOR

The indicators for the rural water supply and sanitation sector are simpler than in urban areas and relate to the water supply, sanitation, and hygiene programs (WASH):

In order to monitor equitable service:

(1) The share of households with service connections to a piped network; 69% \(^{18}\)

(2) The share of households with adequate sanitation; 32% versus the international benchmark of 100%

(3) The share of water samples, testing negative for coliforms; Not Available

In order to monitor sustainable service:

(4) The share of rural water supplies that are operative; 30-60% \(^{19}\) versus the international benchmark of 0%

(5) The share of the income of low-income households that is paid for water supply and sanitation services. Not Available

\(^{18}\) Joint Monitoring Program (JMP) Progress Report on Drinking Water and Sanitation, 2010 estimates contained in 2012 report

\(^{19}\) Informal 2013 estimate by UNICEF. A survey in 2004 estimated the share of operative rural water supply systems at 70% but this high proportion may not be credible.
PERFORMANCE INDICATORS FOR THE TRANSPORTATION SECTOR

The ten performance indicators for transportation services should be linked to the goals of achieving equitable, efficient, and sustainable service. Data were obtained in mission discussions with the Ministry of Transport. The performance indicators are:

In order to monitor equitable road transport service:

(1) The total length of the existing road network in km;
    27,000 km or state or urban roads, and 61,000 km of tertiary roads;

(2) Share of total length that is paved;
    17,500 km (65%) of state roads and urban council roads; Tertiary roads (0%)

(3) The total length of new roads commissioned in km per year:
    10 km of additional lanes to existing roads, otherwise 0 km new construction

(4) The total planned length of roads under construction in km by year; 0 km

(5) The share of roads that is in need of rehabilitation; 40% of state roads

(6) The total number of road deaths per year and 100,000 people: 19.3 as compared to 13.9 in the USA and 3.8 in Japan\(^\text{20}\)

In order to monitor sustainable road service:

(7) The total length of roads that were rehabilitated in km per year: 2 km by the Department of Roads;

880 km of the state road Plumtree-Harare-Mutare are being rehabilitated in the period 2012-14 by a joint venture between ZINARA of Zimbabwe and Group Five (G5) International of South Africa.

In order to monitor railway service:

(8) The total length of railroad track in km; 2,760 km

(9) The total length of railroad track in need of rehabilitation; 295 km, or 11% of total length of existing railroad track

(10) The total length of railroad track rehabilitated in km by year. 70 km, or 2% of total length of existing railroad track

\(^\text{20}\) WHO 2011
ANNEX 4

PERFORMANCE INDICATORS FOR ICT SERVICES

The ICT performance indicators should track sector performance in achieving *equitable, efficient, and sustainable service*:

In order to monitor *equitable service access*:

1. Mobile coverage of country area or of total population; 72%

2. Mobile penetration (mobile subscriptions per 100 people); 99 (Late 2013)

3. Broadband penetration (fixed broadband subscriptions per 100 people); 37 (Late 2013)\(^{21}\)

4. Quality of service (Failed calls as percentage of total calls). Not available

In order to monitor *efficient service*:

5. Number of mobile service operators (3 of which the largest with 70% of market);

6. Average price of a mobile call (USD per minute); USD 0.24 compared to benchmark of USD 0.15 in Mozambique

7. Average price of broadband service (USD per MB); USD 0.13

In order to monitor *sustainable service*:

8. Profitability of fixed line operator. (Financial sustainability) Loss-making

9. Profitability of mobile operators. (Financial sustainability) 44% EBITDA margin for Econet (Earnings before Taxes, Interest, Depreciation, and Amortization)

10. The share of the income of low-income households that is paid for the cheapest mobile telephone subscription. (Social sustainability) Not available compared to below 3% in OECD-countries.

\(^{21}\) Information from discussion with Ministry of Information. Broadband penetration rate remains to be confirmed.
STEPS FOR ESTABLISHING “EMPRESAS MIXTAS”

- The municipal administration prepares a feasibility study comprising the legal, financial and technical analysis that will allow the Municipal Council to consider the creation of an “empresa mixta”, a company set up to operate the municipal water supply and sewerage system, and co-owned by the municipality and by a specialized private operating company;

- Following the decision to proceed with this option the public procurement procedures and bidding documents are prepared;

- The public competitive bid to select a private operator considers both a technical evaluation and a financial evaluation. The bid incorporates general instructions to bidders plus a draft copy of the by-laws of the “empresa mixta” to be set up;

- The by-laws define the respective percentages of public ownership, exercised by the contracting municipality itself, and private ownership, exercised principally by the specialized private operator but leaving the door open for other non-public owners. Usually, the “empresa mixta” is majority owned by the municipality in order to respond to local political sensitivities. The by-laws will also specify the amount of equity and how new investment will be financed by the public and private co-owners. The remuneration of the private operator is agreed and usually comprises a percentage of gross revenue in payment for contributing technology, administrative know-how, and commercial and accounting systems. On the other hand, the municipality can negotiate an annual payment to be paid out of revenue in return for handing over the fixed assets in the system to the “empresa mixta” for operations and maintenance.

- The public competitive bid is awarded to the private operator that offers the most attractive proposal considering the financial and technical proposal and the private partner’s relevant experience.

- The “empresa mixta” will then become operational under the by-laws and contract contained in the bidding documents. Typically, the contract period in Spain may be at least 50 years and possibly up to 75 years considering extensions. The private owner/operator has full control over the daily operations.

- At the end of each fiscal year a portion of each year’s profit is distributed to the owners in proportion to their relative shares of ownership of the “empresa mixta”.

Source: Adapted and translated from proceedings of “Conferencias y Resenas del Seminario sobre Abastecimiento de Agua”, Alicante, 14-18 Junio, 1993, Aquagest, Banco Mundial y Aguas de Alicante
STUDY TO PROMOTE LOWER ICT TARIFFS THROUGH ENHANCED COMPETITION

Digest of Terms-of-Reference

Objective

The objective of the proposed study is to analyze the ICT market in Zimbabwe in order to identify reasons for the high tariffs for cellular telephony and for broadband services. The consultants should then suggest measures to reduce costs of service, including reforms to strengthen the regulator, and divestiture of state-owned operators of mobile and broadband services.

Scope of Assignment

(i) A description of the market for telephony and broadband services in Zimbabwe with data on the growth of demand and on the different operators;

(ii) The performance of the ICT sector performance should be reviewed and compared with relevant international benchmarks such as cost of international access, service penetration, usage and price of fixed and mobile voice and Internet;

(iii) An analysis of sector structure in terms of public and private ownership and degree of competition in the different market segments (international, backbone and access network infrastructure and wholesale and retail voice, data and other services);

(iv) Options for increasing private participation with effect on investment and competition in the sector while addressing any need for aggregating demand for the purpose of economic viability (e.g. fibre optic backbone networks), including full or partial divestiture of state-owned operations to new or existing stakeholders with recommendations,

(v) Review of institutional capability to set policy and regulate a competitive market effectively in terms of appropriate allocation of powers by law and do so impartially in terms of separation of regulation and policy from operations, with recommendations provided..

The ToR should also describe the process in terms of meetings with the relevant public sector and private sector stakeholders, and deliverables and timing.