Luxembourg, 14.05.2012

Project Completion Report

The Caprivi Interconnector (Namibia)

1. FULFILLING THE PURPOSE

The project consisted of the construction of a 300 MWe (upgradeable to 600 MWe) High Voltage Direct Current (HVDC) transmission connection from Zambia to Namibian electricity network, interconnecting the northern and western parts of the South African Power Pool (SAPP) network. The purpose is to reinforce the electricity transmission interconnection between Zambia, Namibia and South Africa for provision of a reliable route for electricity exports and imports, support of a competitive regional power market and improved security of supply. The project is a 970 km new transmission line starting from Katima Mulilo, in the north-eastern tip of Namibia, continuing along the Caprivi Strip, a narrow 400 km long section of Namibia on north-east of the country between Zambia and Botswana, and ending to Gerus, in central Namibia.

The project fulfils the purpose of reinforcing the transmission connection. The level of the reinforcement is limited by constraints in Zambian network (resulting from equipment failures, see § 5 for details) to max 100 MWe. The support to the competitive market has not yet materialized, as the limited capacity is fully utilized by existing Zesco-NamPower supply contract. The improvement of security of supply has largely been fulfilled. The import levels of 100 MW from Zambia, together with Namibia's own capacity, would allow NamPower to operate normally even when the main supply from RSA would be constrained or cut.

In addition of these Zambian network constraints from equipment failures, the capacity is as well limited by other network bottlenecks in Namibian and Zambian networks; the stable transfer when equipment failures are repaired is expected to be 200 MW.

The project is not yet fulfilling its potential and purpose fully.

2. CONTEXT / BACKGROUND

2.1 Project background

Eskom is currently providing the majority of the electricity consumed in Namibia. The pricing of this electricity has been reasonable, as there has been overcapacity of old coal-fired generation in South Africa. This surplus reserve has declined and the present situation shows a deficit of generation in the SAPP network. The previous bilateral contract between Eskom and NamPower expired in 2006, and the renewed contract does not specify any firm capacity on the electricity deliveries. The pricing level has remained reasonable. South Africa has after the signature of this present bilateral contract launched an extensive generation capacity expansion program, and the marginal costs of that expansion are expected to substantially increase the electricity prices both in South Africa and in next bilateral contracts with Namibia. The electricity market of Namibia is only approximately 1% of the South African market, and this disparity is reflected in the contractual relationships between the parties.

The project is the only major development of transmission network between north and south SAPP during the last 15 years. The bottlenecks in SAPP physical transmission capacity exist both on the north-south and east-west axis, which prevent or reduce the ability of SAPP members to trade electricity. The result is that there is at some times excess hydro or coal capacity available in some parts of the network, and simultaneously on the other parts of the network there is a need to use expensive oil-based generation, or even to perform load-shedding. Eskom has addressed some of these constraints with their transmission investment program (part-financed by the Bank through Eskom Power Transmission Project 2006-0132). This transmission system provides a new 750 kV backbone connection between Johannesburg area and Cape Town area. The project is delayed by the section that is close to Cape Town, but the key section that supports the connection to Namibia (750/400 kV substation of Hydra) was commissioned in 2011.

The main north-south axis of SAPP remains still congested in several sections of Zimbabwean network, where hardly any transmission expansion has been taking place for more than 15 years. This weak point of the SAPP network separates the two parts of SAPP, the southern (Namibia, Botswana, South Africa, Lesotho, Swaziland, and southern Mozambique) and northern (Zambia, DRC, Malawi, northern Mozambique and Angola), into effectively two different electricity markets that are often also technically separated from each others by faults or overloading of this undersized connection. This bottleneck hinders as well the development of the northern SAPP hydro resources by separating them from the more economically reliable demand in southern SAPP markets.

The recent refurbishments of Zambian hydro plants (projects part-financed by the Bank) and expansion of Kariba North power plant have been providing about 600 MWe of additional electricity to the northern SAPP. The rapid expansion of mining and related industries in the Copperbelt of Zambia and the DRC have largely consumed this additional capacity. Zesco has sold 50 MW firm and 50 MW non-firm capacity of this expansion to NamPower.

NamPower entered into a barter contract in 2008 with Zimbabwe on refurbishing parts of Hwange coal-fired power plant in north-western Zimbabwe, and transmitting part of the power of the refurbished units to Namibia in exchange for refurbishing work and equipment. This contract is for a period of 5 years, ending in early 2013. NamPower does not expect to renew that contract. This electricity has not been transmitted through the Caprivi link, because of Zambian transmission constraints.

2.2 Project implementation

The project was co-financed by three European financiers, EIB, KfW and AFD. The three financiers provided joint interface toward the Promoter, by combined appraisal, loan conditions, monitoring, and completion mission. The three institutions have during the operation made a co-operation structure Mutual Reliance Initiative (MRI) and although the Caprivi project does not formally fall under this initiative, it has been a predecessor of that more formal co-operation.

The promoter, NamPower, implemented the project through several separate contracts. The largest of these contracts were converter station contract (ABB) and transmission line contracts (KEC and Jyoti).

3. REVIEW OF VALUE ADDED

3.1 Consistency with EU priority objectives

The main economic interest of the project is linked to the wider benefits of developing electricity interconnections between countries in the SAPP. An interconnector between Zambia and Namibia would reinforce security of supply and support the emergence of a competitive power market. The main benefit to the Namibian consumers is improved security of supply which is the basis of economic development of the country.

The export of power from the northern part of the SAPP network through the interconnection will provide an economically sound solution for growing electricity consumption in Namibia. Stronger interconnection of SAPP will improve the security of electricity supply in northern SAPP, especially during the times of prolonged draughts in the region. The new wheeling route as well enables the development of new hydro generation projects in northern SAPP by stronger them to the more reliable and predictable market of the southern SAPP. On technical level the Caprivi Interconnector provides benefits to the members of the SAPP network, in form of reduced system faults, reduced transmission losses and reduced generation excess capacity required for reserve capacity and spinning reserve.

The link has not yet been used to supply electricity northwards. It has been used to allow south-western Zambian network to operate securely during essential refurbishment works of the network that would have been requiring lengthy outages without existence of Caprivi link. The support to new hydro development appears to be materializing, as all hydro developers in Zambia that have recently approached the Bank are envisaging to sell part of their production through the link to SAPP.

By providing reliable power and access to functioning electricity markets to the customers of the northern SAPP network, the project is contributing to the EU development policies of poverty reduction in sub-Saharan Africa. The project makes a substantial contribution to the broad development objectives of the Bank's ACP Mandate, notably poverty alleviation through sustainable economic growth, modernisation of the economy, and regional integration in southern Africa.

Caprivi substation has been utilized now substantially as a hub of rural electrification of Caprivi strip. This electrification has been partly financed by the Development Account that Nampower uses with Bank oversight.

3.2 Quality and soundness of the investment

The project utilization level has been during the first year of operation lower than expected, because of Zambian network capacity constraints. When these constraints are removed (these are addressed in project 2010-0457 Transmission Line Kafue –Livingstone, that is commissioned by end 2014, but short-term improvements are expected earlier), the full project benefits are expected to materialize. The project will then provide the benefits of reliable electricity with similar or lower economic costs than the other possible technical solutions (additional Namibian generation capacity, based either on imported coal or fuel oil)and provide significant economic benefits to the northern SAPP members.

The financiers (EIB, KfW and AFD) continue to monitor the work that NamPower does to remove these Zambian constraints. NamPower is providing semi-annually a report specifically on this subject.

The reliability of the link has been acceptable, with overall availability of 92%. When external events and the long annual outage of June 2011 (inter alia to replace the remaining valve units that were damaged in testing) are excluded from the availability calculation, the availability shows good level of 99% (exceeding the contractual reliability guarantee of 98%)

The project has an acceptable environmental impact, avoiding existing nature reserves and nature conservation sites and requiring no resettlement. The Environmental and Social Management Plan that was set for the project has been followed. The HSE performance was tarred by a fatal incident involving a linesman (see section §9)

The short term financial benefits to the promoter, NamPower, have not materialized. The link is an expensive investment and at the moment the electricity price level in the northern SAPP appears to provide no other immediate benefit in electricity purchases to Namibia except for security of supply. The security of supply

could have been achieved more financially advantageously with a combination of continuing South African bulk electricity supply and own peak generation (see §13).

In the long term the project achieves NamPower target as a strategic investment that has changed its role in SAPP from marginal consumer of ESKOM to and active energy trading company.

This difference between the financial and economical profitability was addressed by the proposed Infrastructure Trust Fund subsidy to the project. That subsidy is designed to make a project that largely benefits other SAPP members, affordable to the Namibian electricity customers. The subsidy scheme envisages to use part of the revenues (when the link is in full use) to rural electrification, similarly like in earlier NamPower Transmission loan subsidies that have been re-attributed to rural electrification through a NamPower-administered and Bank-controlled Development Account.

4. DESCRIPTION, CAPACITY

The project consists of transmission line, transformers and HVDC converter stations. The transmission capacity of the link is 200 MWe, and it will be stepwise upgradeable up to 600 MWe (first to 300 MW and 400 MW). The new transmission line between Gerus and Zambezi of 970 km is a 350 kV bipolar HVDC line. In the first phase the converters are used in monopolar configuration. The HVDC system will be equipped with reserve earth return facility, but works on that system are still ongoing.

The upgrade to 300 MW will require the reinforcement of the Zambian network. First upgrade (Kafue Town-Victoria Falls, 340 km, 220 kV transmission line upgrade to 330 kV is under implementation. The remaining weak section will be the Zambezi - Victoria Falls 230 km, 220 kV transmission line that should be doubled in the context of ZiZaBoNa-project (which has not yet materialized). Further upgrade to 400 MW requires an upgrade of HVDC converters into bipolar structure, new transformers, and a new 400 kV transmission line between Auas and Gerus. The full 600 MW transfer capacity would require a new 330 kV transmission line from Katima Mulilo to either Zambia or Zimbabwe, and matching transformer capacity.

5. PARTICULAR TECHNICAL OR TECHNOLOGICAL ASPECTS

The project is built with "HVDC light" technology which utilizes IGBT-transistors instead of thyristors of classical HVDC converters. The difference of IGBT-transistors and thyristors is that currency in IGBT-transistors can be better controlled, while thyristors have better voltage withstand ability, and lower no-load losses. These differences create a number of technical benefits as well as some drawbacks and risks to the HVDC light solution that NamPower chose for the project.

A very significant benefit of the HVDC light is the excellent network support properties of the technology. Voltage and reactive power support to the network are stabilizing the operation both in constant operation and during load changes and disturbances. Namibian high voltage network, characterized by extremely long distances, is inherently very difficult to operate in a stable manner. According to the operational experience of the first year, the constant operation and load change benefits have materialized as planned.

The HVDC light technology, and its novelty, were causing some risks to the project. The project was the first significant transmission line application of this technology, all earlier applications have been underground/sea cables and back-to-back applications. Transmission line brings to the link much larger amount of disturbances (lightning stroke and bushfire-induced flashovers). The HVDC light systems were required to be developed to cope quickly with such incidents, in order to allow stable operation. This development work was slower than the contractor had anticipated, and resulted into a delay in project implementation. The requirements of rapid fault clearance were as well the reasons for excessive testing. The converter station of Gerus was seriously damaged during the testing phase of the project, by clearing a

fault with too rapid clearance time. The fault clearance times have since that incident been increased, and the fault clearance operates now safely.

The project has during the first operational year had on average 4 trips or outages for a month. This level is considered still high, but the single largest reason has been bushfire-induced flashovers on HVDC line (a reason which is not related to HVDC technology). All project benefits for the network stability have still not fully materialized. The safeguards that were requested for financing (regarding the novelty of HVDC light) were appropriately implemented.

The Caprivi link is connecting through Zambian 220 kV transmission lines Sesheke-Victoria Falls-Kafue Town. Kafue Town is the connection point to Zambian 330 kV backbone network. Victoria Fall is 100 MW hydro plant. The line section Kafue Town –Livingstone has not been able to be taken out of operation for maintenance for any longer time, as such maintenance would have prevented using Victoria Falls hydro. The line has severe mechanical stability problems (foundation erosion) on 4 km section crossing Kafue River. When Caprivi link became operational, Zesco took the line out of operation for re-build of that line section. Although the work was clearly necessary and urgent, it as well meant that Caprivi Link was used for a purpose that was not envisaged and, in terms of energy flows, underutilized. The work was as well not properly planned, resulting in extended outage of 5 months.

Zesco network got as well damaged during Caprivi link project implementation by a 330/220 kV, 160 MVA transformer failure. Zesco replaced this damaged transformer with an ancient 33/220 kV, 60 MVA transformer. This low-quality quick-fix is further limited by 33 kV cables, and reduced the connection strength to Zambian backbone to 45 MW. The Zesco has not been able to source a proper 330/220 kV replacement transformer. The Zesco failures have resulted into Caprivi link capacity being limited to max 80 MW provided largely from Victoria Fall hydro). The envisaged energy wheeling and trading has thereby not been possible during the first operational year, and these project objectives have not been met on that context. The permanent solution to these technical limitations are planned by EIB and World Bank into Kafue-Livingstone transmission line project, that envisages restringing of line to 330 kV voltage level and a new substation to Livingstone (close to Victoria Fall station that cannot be extended for environmental reasons). The rapid solution of capacity limitations and prioritizing the use of Caprivi link are established as loan conditions. The one-line diagrams showing the problems of Zambian network are attached below.

Namibian security of supply was limited by South African network weaknesses. ESKOM addressed these limitations simultaneously to Caprivi link with new 750 kV backbone (part-financed by EIB). That project has faced timetable delays on Cape area (difficulties in obtaining line corridors). The Omega 750 kV substation and 750 kV lines from Johannesburg area, that are critical from Namibian security of supply, have been energized and are operational.

6. IMPLEMENTATION

6.1 Management

The project implementation was managed professionally and with high quality.

6.2 Timetable

The project was planned to be completed by the end of 2009, and got delayed by approximately 10 months. 8 month of this was attributed to design delays, and two months to the testing incident that damaged Gerus converters.

The 330/220 kV transformer delivery was delayed by 8 months, and the transformers did not fulfil the technical guarantees of noise level. The delay was similar to the delay of the main ABB converter contract,

and did not therefore delay further the project overall timetable. The noise level of the transformers is as well rather a nuisance than a real technical defect.

6.3 Employment

The employment created by the project was, as envisaged, 1000 person-years.

7. PROCUREMENT, COST CONTROL

NamPower procurement and cost control were acceptable and in line with EIB requirements. The three EPC–contracts (Engineering, Procurement, Construction) for the transmission line sections and one contract for the HVDC converter stations were tendered internationally, using restricted procedures and consistent with the Bank's Guide to Procurement. The promoter asked for pre-qualification of companies with publication in the Official Journal of the EU. The procurement of the HVDC converter station followed international procurement procedures, in line with the Bank's Guide to Procurement, and the Bank financed this contract.

The procurement of the transmission line sections were split into three smaller sections in order to reduce implementation risks. NamPower used a mechanism in which no single tenderer was allowed to win more than 2/3 of the full works, but this mechanism (although logical and acceptable for projects purposes) was not properly described in tender documents. This anomaly prevented EIB from giving its no-objection to these awards and the Bank did not finance these contracts.

NamPower viewed the quality of insulators for the HVDC transmission lines as critical regarding the reliability of the line, and purchased them separately on international tender. This material was then issued for the use of the EPC-contractors. Similarly NamPower procured transformers and reactors separately, by an international tender. The other contracts of the project that was part of the project consist of engineering design, local civil works and ground clearing contracts, and local minor supply and erection contracts. The engineering design was done by a South African consultancy company. NamPower procured these contracts following their internal procurement procedures. The Bank did not finance these contracts.

The project was implemented very accurately within the envisaged budget. The cost control mechanisms of NamPower proved to be effective.

8. OPERATION OF THE FIRST YEAR

8.1 General

The project is operated remotely from the national control centre. The operational mode has largely been different than expected, Caprivi link has been connected half of the time to small island-type network of Victoria Falls (100 MW power plant) and the south-western Zambia. For the other half of the time the network connection from this island to main Zambian network has been on the level of 45 MW only.

8.2 Usage level

The project has been operating below the expected levels. The normal load has been 50 MW (25% of the capacity), the amount of the fixed contract between Zesco and NamPower. The network constraints of Zambia have prevented that mo more than 100 MW have been conveyed even during the test phase of the link. The Hwange contract between NamPower and Zesa (Zimbabwe) has not been conveyed through the Caprivi link because of these Zambian constraints. The damaged HVDC converters of Gerus substation

would neither have allowed higher load until their repairs in June 2011. The energy transmitted during the first year of operation was 400 GWh.

9. ENVIRONMENTAL AND SOCIAL IMPACT

The project will enable NamPower to access the hydropower capacities of Zambia, Mozambique, DRC and Zimbabwe, replacing its own (coal and oil-based) generation and imported (mostly coal-based) electricity of South Africa.

The EIA procedure has been completed for the full length of the link. The line route is very sparsely inhabited, and no resettlements were considered necessary at planning stage. Some resettlements did actually take place, anyhow and the compensations paid in that context were audited and considered adequate.

The EIA includes a comprehensive Environmental Management Plan (EMP) that describes the necessary mitigating measures in project planning, construction, operation and decommissioning phases. The project has followed this plan, but some modifications were necessary.

Final compliance audit of EPM concluded that the implementation of the EMP was satisfactory for this project. Some of the issues encountered and explained in audit are issues that are seen on all transmission line projects, and due to the circumstances of the work it would be very difficult to fully eradicate these problems from projects. The final audit of the EMP recommended the following areas of improvements for future projects:

- Redraft the responsibilities as soon as the project team has been finalised and make sure that each individual, or group of people, fully understand what is expected of them and by when
- Ensure that a monitoring programme is developed at the beginning of the project and assign a specific person / persons to ensure that activities related to daily inspections and monthly monitoring are carried out
- Ensure that the surveyor receives detailed induction prior to going on to site
- Ensure that open lines of communication are maintained throughout the duration of the project
- Ensure that there is a strong focus on operational issues during the EIA phase of the process

The EMP did not envisage the use of herbicides for vegetation control, but that proved to be unavoidable. The herbicide use was later subject of separate environmental assessment, and was conducted through a recorded and documented application programme.

The project has not been able to fully avoid some environmentally sensitive areas. These consist of a crossing of the Okavango River and Caprivi Game Park (part of proposed Bwa Bwata National Park). The main negative impacts of the line are the visual impact of the power line and bird collisions. Both of these impacts have been mitigated to the extent possible by route selection and transmission line structures. The project consists of the first 350 kV DC voltage line in the world using very low visual impact cross-rope type towers. The visual impact of the line will therefore be as limited as technically is feasible for an overhead transmission line.

The occupational health of the project was troubled with one fatality that happened during the line construction work. A linesman fell from a tower under construction (stringing) and died. The conclusion of the investigation was that the linesman did have the required safety harnesses and fall arrestors, but had removed them apparently to climb down more quickly from the tower.

10. MARKET UPDATE

NamPower's installed electricity generating capacity is 380 MW, comprising 240 MW of hydropower (Ruacana), 120 MW coal (Van Eck), and 20 MW of diesel powered generation (Paratus). In 2011, the peak load reached 510 MW and total sales were 3540 GWh. Currently, Namibia imports most of its electricity from South Africa and other countries in the region. Electricity demand is forecast to continue growing a rapid rate of 4-6% p.a.

NamPower has not been able to renegotiate firm power supply from South Africa, but continues to purchase from there a large bulk (40%) of its energy. Current power purchase arrangement from Zimbabwe (as exchange of refurbishing Hwange units) runs out on 2013.

The existing hydro power plant of Namibia, Ruacana, is 27 years old. It has been extended from 240 MW to 320 MW in 2012, in order to better utilize the water for peaking purposes, to enable more generation during the wet season and to enable the major maintenance of the existing units. The Angolan government has refurbished the Gove dam upstream of Ruacana. Together these measures increase the amount of hydro generation available to Namibia by some 300 GWh and will provide some 80 MW of new peaking capacity.

NamPower has as well commissioned in 2011 a new 23 MW peaking diesel power plant, Anixas, next to their existing Paratus power plant in Walvis Bay.

Namibia has as been promoting for a long time the development of the Kudu offshore gas field and related 800 MWe CCGT power plant near Oranjemund in the south-west corner of Namibia. The gas-fired power plant has been delayed by uncertainties related to the cost of the gas field development. Erongo coal-fired power plant (300 MW) close to Walvis Bay has emerged as an alternative, as well as long-planned Baynes 600 MW hydro plant on Angolan border.

Zambia has installed generating capacity of 1778 MW, 94% of which is hydropower. The power plants that are under construction are new Ithezi Tezi (120 MW run-of-the-river hydro), the extension of Kariba North (360 MW, peaking hydro) and Maamba (300 MW, coal) are expected to restore self-sufficiency and to raise capacity to 2500 MW. Further projects (Kapombo, Muchinga hydro plants) are under development. Demand growth in the SAPP however will require new generation capacity and the further development of hydropower plants in Zambia, where the total hydropower potential is estimated to be 7000 MW, is likely to occur in the period 2012-2020. Significant electricity exports from Zambia and/or the DRC to South Africa would likely trigger an upgrade of the Caprivi link.

11. INVESTMENT COST OUTCOME

The project costs were estimated at appraisal 302 MEUR (2887 MNAD). The cost outcome of the project was 2782 MNAD, with some minor works (earth electrodes) still outstanding. The project was thereby implemented very well in line with the cost estimations.

The original budget for the link with classical HVDC structure (thyristor bridge) was 3210 MNAD, but with the HVDC light technical solution was some 40 MEUR cheaper and the budget was reduced accordingly.

12. FULFILLMENT OF PROJECT RELATED CONDITIONS

12.1 Disbursement conditions

The promoter provided, to the satisfaction of the Bank, a risk analysis and mitigating measures report establishing the technical and contractual safeguards to ensure the functioning of the HVDC Light solution as the technology of the project.

The promoter is sourced an electricity supply contract from Zesco for the capacity of 50 MW firm and 50MW non-firm (produced in environmentally acceptable way) to be transmitted through the project. This disbursement condition was partially waived during project implementation. The requirement was for 100 MW firm, but the capacity constraints that were present in Zambia did not allow for that full firm amount to be contracted.

12.2 Undertakings

The EMP compliance audit showed that the promoter did implement the mitigating measures described in the EMP (the final version including the addendums) in a satisfactory way.

13. FINANCIAL AND ECONOMIC PROFITABILITY

13.1 Financial

The financial profitability of the project and NamPower is entirely up to the discretion of the regulator. NamPower's investment plan has been incorporated in the tariff as expected, and an acceptable FIRR of between 5-6% has resulted.

13.2 Economic

The first year of operation has had only 50 MW of energy transferred through Caprivi link because of technical constraints of Zambia, and the capacity of the link has been limited to max 100 MW. The result is that the economic justification for the Caprivi link is less than expected, but the main factors are still there. The following economic benefits can be quantified: 1) improved security of supply – the project will provide 200 MW of firm power capacity to Namibia in the absence of firm supply from South Africa (currently 100 MW of this capacity has materialized), 2) increased renewable imports from Zambia, instead of coal-fired production from South Africa (currently 50 MW has materialized), and 3) reduction of transmission losses – transmission of 50 MW electricity to Namibia for 3000 km over 400 kV lines results in an estimated loss of 10 MW. In addition, the project will increase the north-south transmission capacity of the SAPP network which could facilitate the development of hydroelectricity exports from Congo and Zambia to South Africa – the value of this benefit has not been quantified, but adds a significant upside economic potential to the project. This economic upside of invoking additional hydro projects to materialize in Zambia (factor difficult to quantify) has been recently confirmed by accelerated development of Itezhi-Tezhi, Kabompo and Muchinga projects.

The alternatives to the project that would provide a similar level of security of supply are: 1) build a fuel-oil fired gas turbine power plant for emergency use only and to continue importing low cost energy from South Africa when it is available, or 2) build a coal-fired power plant for use in base load. Both options would provide firm power at a cheaper cost compared to the project, but neither would generate economic benefits outside of Namibia for the SAPP network, nor diversify electricity trading in the SAPP or facilitate the development of new sources of low cost hydropower in countries like Zambia. At the appraisal, the project's

ERR was estimated to be 7.5% compared to the alternative security-of-supply solution (fuel oil-fired gas turbine plant).

If the present level of utilization (50% of envisaged hydro imports, no wheeling materialized so far) would continue, the fuel-oil fired gas turbine solution would have been more economic solution. The utilization is expected to increase to the projected levels when faulty Zambian transformers are repaired or replaced, in approximately 1 years time. NamPower is actively following these repairs, and financiers have as well established pressure towards Zesco (specifically with loan conditions of Kafue-Livingstone line).

South African supply has been constant and the value of Caprivi link in emergency situations has thereby not been tested. Some non-quantified economic benefits have materialized that were not envisaged at the time of appraisal; the Caprivi link enabled Zambia to repair the fragile section (Kafue crossing) of their network without interruption of supply to south-west of the country. The rural electrification of Caprivi strip has increased substantially as the power transfer limitations to this remote corner of Namibia have now been removed.