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East African Submarine Cable System Project (EASSy)

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Preamble

The Heads of States and Governments in their Dar-es-Salaam Declaration adopted in the United Republic of Tanzania on 20 November 2004, saw the promotion of regional cooperation in the use of Information and Communication Technology (ICT) as one of the key factors and dimensions in nurturing peace, encouraging economic development and reinforcing regional integration in the Great Lakes Region (GLR). The proposed East African Submarine Cable System (EASSy) is a multinational project, which is expected to provide improved inter-regional and global ICT connectivity. It will provide a cheaper alternative and more efficient means of communication between the countries in the region and with the rest of the world, and thus encourage e-commerce as well as other allied business opportunities to the regions. The project is therefore an appropriate instrument of bridging the gap between people and nations, which should promote closer regional integration and cooperation, as the Heads of States and Government intended in the Dar-es-Salaam Declaration.

Executive Summary

As part of the global trend to improve communications and data transfer technologies, a high capacity optic fibre submarine cable has been laid along the whole West African coast (i.e. from Morocco to South Africa). Similarly, a cable has been laid along the entire North Africa Coast up to the Red Sea. Those regions where such submarine cable has been laid have already got access to cheaper and more efficient communication with the rest of the world. So far the whole of the eastern Africa region has been left out on this global optic fibre system connectivity. The proposed EASSy project is aimed at closing this gap and therefore enabling the entire continent to be encircled with this high capacity submarine optic fibre cable. When implemented, the project will therefore facilitate the connection of the eastern region of Africa to the rest of the continent and the entire global optic fibre system.

EASSy project is one of the flagship projects of NEPAD and is contained in the Short –Term Action Plan (STAP). It is at an advanced state of preparation. Detailed feasibility studies have been prepared as well as cost estimates. To complete the circuit, the backbone project will comprise the laying of a high capacity optic fibre submarine cable from Mtunzini in South Africa to pass along the entire eastern coast of Africa and connect to the Mediterranean sea cable at Port Sudan. It will have a total of eight landing points i.e. Mtunzini (South Africa), Maputo (Mozambique), Toliary (Madagascar), Dar-Es-Salaam (Tanzania), Mombasa (Kenya), Mogadishu (Somalia), Djibouti (Republic of Djibouti), and Port Sudan (Sudan). The project is estimated to cost a total of US$ 200 million, and its implementation is expected to start early 2006 and be operational by mid 2007.

Many national telecommunications utilities from the countries in the region have signed a memorandum of understanding (MOU) and are keen to participate in

and contribute towards the project costs. Similarly, during its presentation to the commercial, banking and financiers fraternity in July 2005, the project generated a lot of interest, which should translate to commitments for funding and management of the infrastructure.

However, a number of countries have still to sign the MOU and show commitment to participate in the project. In addition, even after laying the backbone coastline cable, its utilization will depend on the quality speed with which it is effectively interfaced with national communication systems. The implication of this is that each country is required to roll out own improved internal communications network. Funding for this as well as the commitment by each of the member countries in the region is vital for the project to succeed. The other issue concerns the landlocked countries, which have to depend on an intermediary for connection to the submarine cable. These inter-land connections (or backhaul links) will require close cooperation and commitment to fund and execute.

1. Introduction

The Eastern Africa Submarine Cable System (EASSy) Project is part and extension of the SAT-3/WASC/SAFE project contained in the NEPAD' Short-Term Action Plan (STAP). The project is aimed at providing infrastructure to increase the inter-regional and global information and communication technology (ICT) connectivity. The project involves providing a high capacity optic fibre sub-marine cable running the total length of eastern coast of Africa. This would then provide the whole eastern board of the Continent with interregional, and global connectivity via Europe and Asian continental optic fibre cables.

The EASSy would provide the last link of high capacity fibre cable encircling the whole continent of Africa. Similar cables have already been laid covering the whole of western African coast from Morocco up to South Africa and the northern African coast to the Red Sea, with the exception of a small section between Tunisia and Libya which has still to be laid. The proposed project is therefore meant to provide the missing link covering eastern and southern Africa so as to encircle the whole continent with a submarine optic fibre cable and connect the same to the global system.

2. Background

When it comes to ICT, the continent of Africa has always lagged behind other regions of the world. For example, the continent has the highest density of international traffic per line of any other region in the world. At the same time, international communications to the rest of the world is in many parts of the continent scarce, expensive and unreliable. This is explained by the fact that many countries of the continent still depend on a single communication system, involving terrestrial infrastructure of cables and earth stations, which are then linked via satellite to the global telecommunication systems. The satellite space is diminishing, while the existing terrestrial infrastructure is aged and has limited capacity. In the meantime, more opportunities are being opened by the ongoing telecommunication sector liberalization. Therefore this calls for more efficient and cost effective connectivity to meet the ever-rising demand for ICT including e-commerce, internet, mobile network, and data services as well as the VOIP. The envisaged provision of a modern optic fibre cable encircling the whole continent is aimed at addressing the pressing need for improved ICT broadband facilities in Africa, and in a way contribute to bridging the development gap in this sector between the continent and the rest of the world.

3. Situational Analysis

3.1 General

The first phase of the fibre cable in connection with the SAT3/WASC project was completed in 2002. An optic fibre cable was laid along the entire western coast of Africa terminating in South Africa. Under this phase of the programme, a total of eleven (11) African countries (5 of which are within ECOWAS) are connected and able to use the connectivity provided by this SAT3/WASC project, through the already installed marine cable. For the countries of the Great Lakes Region (those touching the West coast), only Angola is connected to the optic fibre submarine cable. The Democratic Republic of the Congo (DRC), Congo Republic, and Central Africa Republic (CAR) are among the five members of the GLR and also of the Economic Community of Central African States (ECCAS), which so far are not yet connected. The matter is still being pursued and the countries have already been requested to provide details of their cable requirements to enable the technical configuration details for the connections to be worked out.

Regarding EASSy, this is expected to provide the last link to ensure optic fibre connection for the entire continent. As pointed out above, this is part of the private sector driven SAT3/WASC/SAFE programme meant to link the African Continent with Asia and Europe, with high a capacity optic fibre system. The development process of EASSy started almost four years ago when some of the countries in the region met to chart the way forward for the cable to be extended to close the gap on the eastern coast of the continent. The cable would cover all countries in the region including those of the GLR, which are not covered by a similar cable already laid on the western coast of the continent. Preliminary feasibility studies to establish the viability of the project were carried out. These were later followed by more detailed feasibility studies financed by the World Bank Group, Development Bank of South Africa (DBSA) and Agence Francaise de Development (AFD) in collaboration with NEPAD.

In order to proceed to the implementation phase of the project, a Memorandum of Understanding (MOU) has been signed by twenty (20) national telecommunications utilities among other entities in the region including the following:

1. Botswana Telecommunication Corporation
2. Dalkom Co Ltd (Somalia)
3. Djibouti Telecom
4. Ethiopia Telecom Corporation
5. Kenya Data Networks
6. Malawi Telecom
7. MTN Uganda
8. Onatel Burundi
9. Rwanda Telecom
10. Satcom Ltd
11. Sentech South Africa

12. Sudan Telecom Ltd (Sudatel)
13. TDM Mozambique
14. Telecel Burundi
15. Telecom Malagasy
16. Telecom Kenya
17. Telcom South Africa
18. Telecom
19. Zambia Telecom (Zamtel)
20. Zanzibar Telecom

From the above list of cosignatories, it is evident that all the countries of the GLR except those to be connected to the continent's western coast optic fibre cable, are on board and ready to participate in the development of the EASSy project. These countries include Zambia, Burundi, Rwanda, Uganda, Tanzania, Kenya and Sudan.

A Project Management Committee (PMC), which was constituted in 2003 is spearheading the development process of this project. The PMC is assisted by a number of sub-committees looking after the various specific aspects of the project. The project received very favourable reception when it was presented to all stakeholders in an international meeting, which took place in Cape Town, South Africa, in July 2004. The stakeholders included the private sector, bankers, financing agencies and the beneficiary countries. The next task is to put together the funding required for the submarine cable. In the meantime, the beneficiary countries are supposed to put plans in place, of rolling out both the inland interconnections (backhaul links) as well as their own national networks of high capacity carrier systems, to enable their populations to benefit from the improved global inter-connectivity.

3.2 Problems to be Resolved

For the countries of GLR to fully participate and benefit from the proposed improved interconnectivity under the EASSy project, the following problems have to be addressed:

i) Not all countries are on board and ready to participate in its implementation. Those which have not joined so far should be encouraged and assisted to sign the MOU;
ii) All the countries have to give priority the project and participate fully in its development. This is particularly true for those countries on the Atlantic Coast, which should have been connected to the existing western Africa coast submarine cable.
iii) Each of the countries will individually, have to address the issue of the adequacy of their internal communication network system including policy and institutional framework. Each country will need to create the enabling environment and upgrade their own national systems to the

same quality and capacity as the EASSy. This is necessary so that the users of ICT in the region can benefit from improved global connectivity provided by the project.

iv) Lack of access by the land locked countries to the infrastructure provided by EASSy of high capacity coastal optic fibre cable. While EASSy concerns only the submarine cable and hence will directly benefit those coastal countries that want to be connected immediately, the landlocked countries will have to depend on intermediate back haul links to get hooked to the submarine cable.

3.3. Constraints to be Overcome

i) Inadequate resources including both financial and human resources could hinder the realization of the proposed project. For example, review progress made on NEPAD's STAP carried out in early 2005, revealed major weaknesses within ECCAS regarding its ability and capacity to play its full role in the implementation of STAP. This was particularly so in the ICT sector including the proposed EASSy project. There is a serious manpower and expertise shortage within this REC. Capacity building in the IT sector is therefore an issue that requires urgent attention;

ii) Problems including scarce manpower have their founding in the many years of instability in the GLR. It is therefore imperative that stability and peace prevail in the region, in order to provide space and an enabling environment for development of human resources necessary for economic and social progress of the region;

iii) The multinational nature of the project requires deep and unwavering commitment by all beneficiaries and member countries. Multinational cooperation is required for comprehensive implementation of the project.

4. The EASSy Project

4.1 Project Objectives

The over-arching goal of the EASSy project is to promote economic development and reinforce regional and inter-regional integration, by providing cost effective and improved alternative international connectivity to the global optic fibre system. Specifically, the objective of the project is to improve the region's global connectivity, by providing the last link of the high capacity optic fibre submarine cable encircling, and connecting the continent of Africa to the global high capacity optic fibre system.

4.2 Project Description

The project will entail construction and laying of a high capacity optic fibre submarine cable, approximately 8,840m long, running from Mtunzini in the eastern coast of South Africa, along the whole eastern coast of the continent, up to Port Sudan on the Red Sea. The cable will at that point connect with the existing European/Asian optic fibre cables. The planned eight landing nodes are listed below and also shown in the following map:

Landing sites namely:

- Mtunzini (South Africa)
- Maputo (Mozambique)
- Toliary, (Madagascar)
- Dar-es-Salaam (Tanzania)
- Mombasa (Kenya)
- Mogadishu (Somalia).
- Djibouti (Republic of Djibouti).
- Port Sudan (Sudan)

4.3 Technical Description

The project will provide a superior connectivity utilizing the latest technology on fibre optics including Dense Wavelength Division Multiplexing Technology (DWDM). The Proposed ultimate capacity per optic fiber pair is as follows:

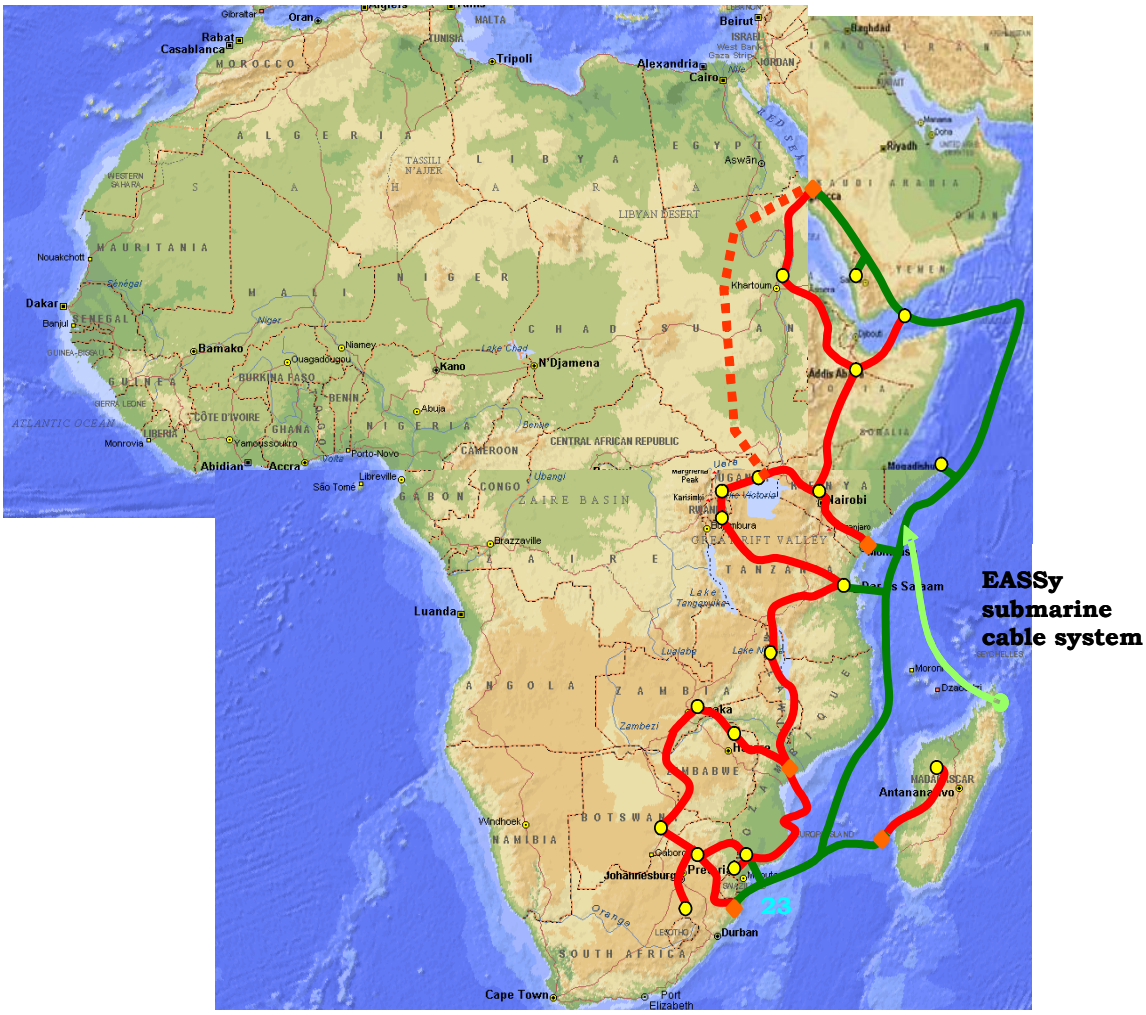
- 16 or 32 wavelengths at 10Gb/s;
- Total capacity of 320 or 640 Gb/s;
- Initial equipage: 1 or 2 wavelength per fiber;
- System design life of 25 years

On their part, each of the participating countries will be expected to provide the enabling environment to attract the private sector and to roll out their individual national communication networks. This is necessary in order to obtain maximum benefits from the improved external connectivity. Most of the countries have already prepared such plans, and some are in the process of implementing such plans. However, there are still a number of countries in the region, which have still to start the preparatory work leave alone implementation.

The project components will comprise the following:

i) Supply and laying of high capacity optic fibre cable of approximately 8,840 km;
ii) Construction of a total of eight (8) landing stations, equipped with the necessary interfacing equipment to the existing national or regional telecommunication net-works;
ii) Socio-Environmental Impact Assessment – Studies will be carried out to assess the potentially significant social and environmental impacts arising from laying the cable along the shallow ocean waters where it will traverse sensitive areas including marine parks and bathing beaches. Both positive social impacts including creation of jobs and business opportunities, as well as negative social impacts from such a large scale infrastructure project like importation of migrant workers from diverse places and background to the project areas, with the inherent risks for encouraging the spread of contagious diseases including HIV/AIDS, shall be analyzed. Issues of human rights as they relate to the various stages of the project shall be explored and taken into account when defining the mitigation measures to address the negative impacts. Proposals including specific components and related costs of measures to mitigate against the negative impacts should be prepared;
iii) Project management during construction and commissioning;
iv) Though not part of the EASSy project, the connectivity between the countries themselves and the inland links (backhaul links) to the optic fibre submarine cable for the land locked countries, are essential and a priority for its effectiveness. They have therefore to be considered and implemented in parallel with the EASSy. Under the MOU of the latter, the countries are collaborating in the planning and implementation of these backhaul links. This includes the evaluation of optical fibre infrastructure owned by power and oil pipeline utilities as alternatives of connecting landlocked countries to the cable. Planning for

alternatives routes for landlocked is a priority to assure resilience. Below is the map for the backhaul routes.



4.4 The Project Costs

From the results of the feasibility study, the project is estimated to cost a total of US$ 200 million. This amount is broken to US$ 170 million as the cost of laying the cable, and approximately US$ 30 million required to meet related costs including consultancy services, project management during construction and the preparation for the future management of the infrastructure. As pointed out above, these costs do not include the cost of backhaul links or of internal improvements of the existing telecommunication systems within each country.

4.5 Project Financing

As pointed out above, the project attracted a lot of interest both locally and internationally when it was presented to the stakeholders during the last Data Gathering Meeting in Cape Town in July 2005. This is primarily a private sector driven project. As such, its eventual ownership structure will depend on the level of equity contribution from potential users of the system i.e. both regional operators and global carriers. The parties to the MOU have pledged various project capital funding in terms of required capacity. Still other investors need to come on board to bridge the gap in order for the project to be fully funded. The Project Commercial Group has developed a Progressive Incentive Pricing Scheme (PIPS) for capacity pricing on the EASSy system, so as to allow more investments in order to bridge the financing gap.

Other possible sources of funding include:

- Operators in the region that are not yet EASSy MOU parties;
- Global carriers that may participate as equity partners;
- Debt-development loans.

Financing from any of the above sources could be configured according to the following options:

- Consortium of Parties;
- Private company owning the system;
- Hybrid (with elements of two above) - likely in form of a Special Purpose Vehicle (SPV).

5 Project Implementation

5.1 Institutional Arrangements

The project is supposed to be sponsored by all the countries (both coastline and landlocked) in the region as shown in the map given above. Some of these have already signed the MOU, while those not signed yet will be encouraged and assisted to become members. As indicated in the previous sections, a Project Management Committee (PMC) and its various sub-committees have already been put in place to be in charge of the project implementation. The PMC will provide day-to-day management during project implementation. In addition and in order to ensure overall coordination, a Project Steering Committee (PSC) will be constituted mainly from the telecommunication utilities of the participant countries and the RECs in the region, to provide advice and guidance during implementation of the project and in the operation of the infrastructure thereafter. The Steering Committee will also be responsible for ensuring that political issues are addressed to enable all the beneficiary countries to participate.

5.2 Status of Implementation and the Way Forward

As pointed out above, the Project Management Committee (PMC) will have the overall responsibility of implementing the project. This Committee will liaise with the contractors, suppliers, and the client countries to ensure a well-coordinated implementation process. The following table shows the critical activities, which have been accomplished towards the realization of this project and those programmed.

Table 5.1 Implementation Progress and Way Forward

Activity	**Time Frame**
MOU Signature	4th Quarter 2003
Detailed Feasibility Study	2nd Quarter 2005
DGM / Potential Investors Meeting	2nd Quarter 2005
Initiate C&MA Discussions	3rd Quarter 2005
Issue Invitation to Tender	3rd Quarter 2005
Receive Tender Responses	3rd Quarter 2005
Financial Closing	4th Quarter 2005
C&MA and Supply Contract Signature	1st Quarter 2006
Ready for Commercial Service	2nd Quarter 2007

The above schedule prepared by the PMC, is tight and a lot has already been accomplished. The project is inexorably moving forward and as shown from the above schedule, its implementation should be starting at the beginning of next year, 2006. The countries which want to benefit from and hence be part of this development should have already been on board. Considering that even some of the GLR countries on the Atlantic have still to be hooked to the already existing western coast submarine cable, there is an urgent need for the GLR countries to get together and renew their commitment to the project by signing the MOU for those which have not done so already. In order for these countries not to lose out, it is proposed that a meeting between all the countries of the GLR and the PMC be called not later than March 2007 to discuss the following issues:

(i) Deadline for signing the MOU;
(ii) Action to be taken to avoid delays for connection of the hinterland Countries;
(iii) Deadline for upgrading own internal telecommunication systems within each country;
(iv) Progress on the preparation of these other activities including construction of the backhaul links, preparation of improvement of internal telecommunication systems;
(v) Cost estimates of these other works excluding the submarine cable, and plans for financing the same.

6. Project Justification

With the liberalization of the telecommunication sector, the current facilities in most of the African Countries are inadequate. These countries solely rely on satellite connections and do not have any other alternative. The terrestrial infrastructure including earth stations need upgrading, while the satellite space is not adequate to meet the growing demands for ICT, including e-commerce, data transmission, mobile, internet, and VOIP. The proposed project will provide adequate band width to meet the required capacity, as well as connectivity to the global optic fibre network. In summary, the project is justified by the following factors:

- Improved high capacity optic fibre connectivity within Africa and the rest of the world;
- Enables new services and products not possible before due to bandwidth restrictions;
- Contributes towards the socio-economic development of the region;
- Reduced unit costs (capital and operational) for global connectivity, leading to increased profits;
- Reduced out payments to foreign telecommunications (satellite) facility providers;
- Direct routes through own infrastructure obviate the need for transits through Third Parties - reduced out payments;
- Expansion in inter-Africa trade, facilitated by better communication in the region.

7. Risks and their Mitigation

Implementation of EASSy project will be a big leap forward in improving the ICT services in Africa. And as can be seen from Table 5.1 above on the status of implementation and the way forward, it is evident that a lot of progress has already been made with respect to project preparation. However, the project faces some risks which have the potential of delaying or negatively affecting its implementation. These are briefly discussed below.

i) While the project has generated and continues to generate a lot of interest from potential financiers, there is still the risk of delays in raising the required financing. Efforts should be made to close the financing gap so as not to delay the commencement of its implementation;

ii) Lack of support for the project by some of the key stakeholders could delay its implementation. Still a number of countries of the GLR and others have still to sign the MOU and thus fully participate in the

project. These countries need to be brought on board as soon as possible.

iii) Lack of access to the submarine cable by hinterland countries is also a risk faced by the project. This coupled by high charges for the hinterland connectivity could delay access to the submarine optic fibre system. The financing to roll out planned backhaul links and the cooperation required to implement them in order to get the land locked countries connected need to be put in place urgently;

iv) Similarly, lack of funds by some of the parties to the MOU to improve their internal systems could delay the benefits of the project reaching the beneficiary population of these countries. Some countries, especially those without updated and firm IT policies, might not see the urgency to give this project the priority it deserves;

v) The project also faces the risk of competition in the pricing of its products and services, from other providers using different medium like satellites. While such competition has the potential of adversely affecting the operations of the submarine cable system, this could also lead to efficiency and hence improved and affordable services for the consumers;

vi) And lastly, the upsurge of hostility is a risk that is ever present in the volatile GLR. Therefore, the regional leaders have the responsibility to ensure that conducive peaceful environment prevails to enable the project to be implemented in particular, and in general to promote economic development in the region.

EAST AFRICAN SUBMARINE CABLE (EASSy) – PROJECT MATRIX

Narrative Summary (NS)	**Verifiable Indicators (OVI)**	**Means of Verification (MOV)**	**Important Assumptions**
Project Sector Goal: 1. To promote economic development and reinforce regional and inter-regional integration, by providing cost effective and improved alternative international connectivity to the global optic fibre system. .	1. All the people of the GLR have access to improved and affordable ICT services;	1. Statistics from the Government of the Great Lakes Region	(Goal to Supergoal)
Study Objectives: 1. To improve the region's global connectivity, by providing the last link of the high capacity optic fibre submarine cable encircling, and connecting the continent of Africa to the global high capacity optic fibre system.	1.1 Both the optic fibre submarine cable and the backhaul links constructed;	1. Project Progress Reports 2. Supervision and audit reports	(Project Objective to Goal) 1. Peace is maintained in the regions; 2. Continued commitment in the by countries by having improved ICT policy and institutional development framework.

Outputs: 1. A high capacity optic fibre cable laid between Mtunzini in South Africa and Port Sudan, to close the gap and encircle the entire continent with the cable; 2. All the countries along the coast connected to the optic fibre submarine cable;	1.1 A total of 8,840 km long cable laid on the entire South and East African Coast; 1.2 A total of 8 landing points constructed;	1. Project implementation progress reports 2. Statistical national reports 3. Audit reports	(Output to Project Obj.) 1. Construction of the backhaul links connecting the land locked countries; 2. Internal communication systems improved in each of the participating countries;

Activities: 1. Campaign to get all countries to get on board by signing the MOU; 2. Sourcing of funding for the submarine cable and for the backhaul links; 3. Carry out socio-environmental studies; 4. Procurement of the works; 5. Execution of the works;	Inputs: Total of project: US$ 200 million Resources: TBD Financing Plan: TBD		(Activity to Output): 1. Timely sourcing of funding; 2. All the countries sign the MOU