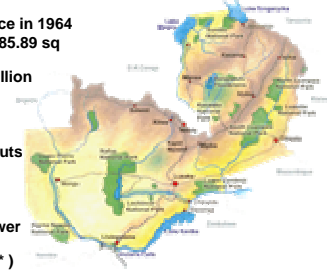


ZAMREN Formation – Emerging Academic Networking Project

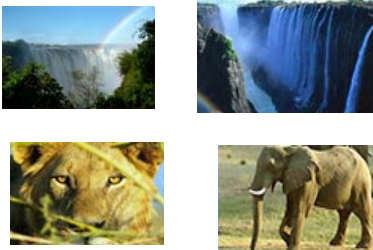
Presenter:
Dr. Mbale J.

1. Zambia's Brief Background

- . A republic, got independence in 1964
- . Area: 752,614 sq km / 290,585.89 sq mi
- . Population: approx. 11.5 million
- . Languages: 72
- . Currency: Kwacha
- . Industry: Copper mining
- . Agriculture: Maize, groundnuts
- . Tourism: Game parks, Victoria Falls
- . Other economy: large quantities of electricity power
(utilization power line -> rollout fibre *)



Tourism Attraction



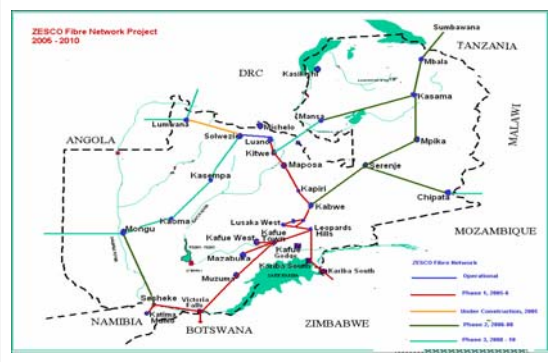
Objectives of ZAMREN

- . Interconnecting Tertiary and Research Institutions
- sharing of human, financial and technical resources, i.e. caching servers, supercomputers, a national grid, virtual libraries, etc.
- . Advance the Pan-African Research and education vision of connecting all African Universities and colleges
- . Lobby for Government / political will
- . Lobby funding from donor agencies, government and the private sector for the fiber project
- Spearhead the fibre networking vision of SARUA

Status of Optic Fibre - Zambia

- . Zambia has no national fibre backbone
- . However, the country has adequate infrastructure to support setting up of fibre network
- . Three organisations planning and working to lay the fibre
 - Zambia Electricity Supply Corporation (ZESCO)
 - Copperbelt Energy Corporation (CEC)
 - Zambia Telecommunication (ZAMTEL)
- . ZESCO case study – 1:
 - . Electric power lines – borders of Zimbabwe and Namibia in the south to Congo DR the north
- . ZESCO plans to rollout the fibre across the country on the power lines

ZESCO Planned Fibre Network



ZESCO Planned Fibre /2

ZESCO Phase 1: Installation fibre

- . Victoria falls to Chingola (Luano)
- . Katima Mulilo in Namibia to Victoria Falls in Livingstone

Phase 2:

- . National Backbone to provincial towns
- . Later extended to Tanzania

Phase 3:

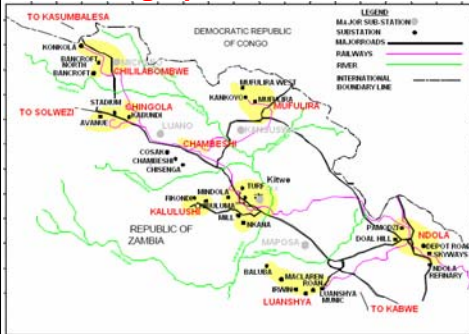
- . Installation fibre form a complete ring
- . Extended to Angola, Malawi, and Congo DR

CEC Fibre Network

CEC case study – 2:

- . Privately owned electricity power transmission & distribution company
- . Power network covers 6000 sq km, of 802 km of 220KV & 66KV power lines
- . CEC's stretches Copperbelt province
- . 520 km fibre optic network
- . CEC also owns part of Luano & Kitwe 330/220 KV substations at which points its grids joins ZESCO

Geographical – CEC Network

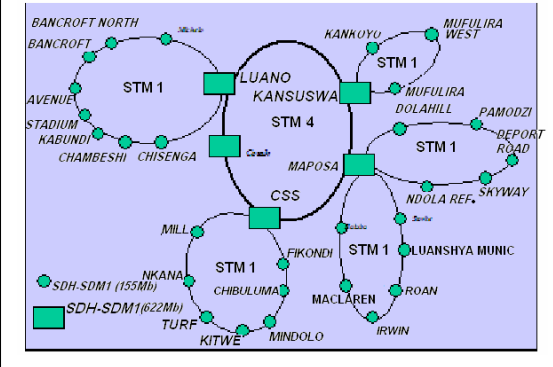


CEC Fibre Network /2

CEC case study – 2 (contd.):

- . Network consist of six rings
- . Ring one being central backbone with 622Mbps capacity
- . Rest five outer rings -> capacity 155Mbps
- . OPGW contain 24 optical fibres

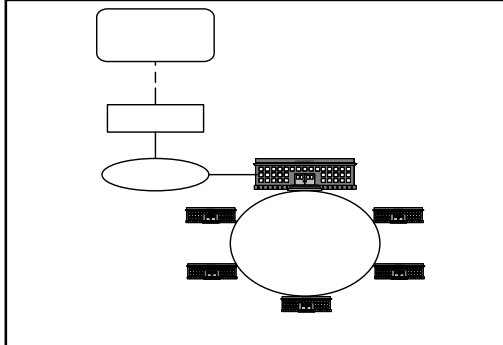
CEC FIBRE NETWORK TOPOLOGY



ZAMREN Connectivity - Project

- . ZESCO & CEC substations near hub institutions => "last-mile"
- . Last mile linked to hub institution -- fibre
 - i.e. UNZA-ZESCO vs. UNZA (Lusaka campus), 150 metres between
 - i.e. Kitwe-CSS vs. CBU (Riverside campus), 300- 500 metres between
- . UNZA connected to Southern zone institutions – ring topology
- . CBU connected to Northern zone institutions – ring topology

ZAMREN Planned Fibre Network - Project



NOTE: for CBU, would be similar

Brief Background of Internet Access Technologies

- . Dial-Up
- . Digital Subscriber Line (DSL)
- . Fibre
- . Wireless Link
- . Satellite

NOTE:

The most wide spread and used technologies are dialup, DSL, and satellite. Fibre is mostly used by banks.

ISPs - Zambia

- . Zamnet
- . Zamtel
- . CopperNet
- . UuNet
- . MicroLink
- . AfriConnect
- . RealTime

Adhoc Committee (Task Force)

Adhoc committee: Spearhead the creation of ZAMREN

- . Two Committees
 - Steering Committee (SC)
 - Implementation Committee (IC)
- . Steering Committee
 - Hon. Minister – MCT, PS. MoE, two Vice Chancellors, MD's CAZ, ZESCO, ZAMTEL, CEC,
- . Implementation Committee
 - Technical people

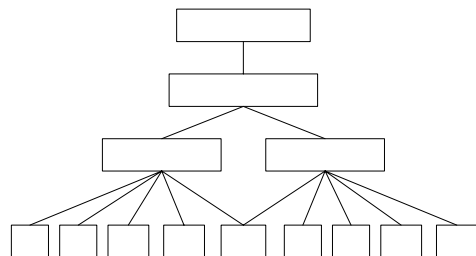
Roma Substation

Adhoc Committee (Task Force)/2

- . UNZA in charge of SZ
- . CBU spearheads NZ
- . Central province be shared by UNZA and CBU

The L

Structure of ZAMREN



ZAMRE
Optical Fib
Ring T

Implementation of ZAMREN

Phase 1:

- . Connect to the last-mile
- . Connect from hub to respective zones – ring topology

Phase 2:

- . Interlink to other NRENs

Phase 3:

- . Design and develop research materials (content)

Tasks by Committees /1

- . Establish the terms of references
- . Design an operational plan
- . Creation of ZAMREN and its board
- . Registration of ZAMREN and acquisition of licence from regulatory body (i.e. CAZ)
- . Design the ZAMREN policy
- . Creation of ZAMREN constitution
- . Sourcing seed funds
- . Training before and after
- . Site visit
- . Implementation

Stakeholders – ZAMREN /1

- . Ministry of Communication and Transport (MCT)
- . Ministry of Finance and National Planning
- . Ministry of Education
- . Ministry of Health
- . Ministry of Science and Technology
- Ministry of Agriculture
- . Communication Authority of Zambia (CAZ)
- . Zambia Telecommunication Company (ZAMTEL)
- . Zambia Electricity Supply Corporation (ZESCO)
- . Copperbelt Energy Corporation (CEC)
- . University of Zambia (UNZA)
- . Copperbelt University (CBU)

Stakeholders – ZAMREN /2

- . Internet Service Providers Association
- . Zambia Library Consortium (ZALICO)

Constraints

- . Political will to implement the project
- . Un availability infrastructure i.e. equipment, office space and access to fibre
- . Donor dependency to jump start the project and its sustainability
- . Non availability of funds from proposed sources for certain tasks and this might discourage some members
- . Capacity building
- . Lack of skills for content development
- . Resist to change i.e. negative attitude to new technology

Implementation

- Phase 1:** Lusaka – kitwe Gigabit Academic Network
- . Create fibre network to connect colleges and research institutions in Lusaka
 - UNZA as a hub
- . Create fibre network to connect colleges and research institutions in Copperbelt
 - CBU as a hub
- . This phase to commence some time in 2007

Implementation /2

Phase 2: ZAMREN Regional Connection

- . Connecting the Lusaka and Copperbelt regions
- . Connecting neighbouring cities
- . To lobby from the following organization: ZESCO, ZAMTEL, CEC, and others

Implementation /3

Phase 2: (contd.)

- ZAMREN Connection with Neighbouring and Over Seas NRENs
- . TENET in South Africa, MAREN in Malawi , etc.
- . KENET in Kenya, AARNET in Australia, GARR in Italy, SURFNet in the Netherlands, NorduNet in Scandinavia, CERNET in China, SINET in Japan, Abilene, ESNET and National LambdaRail in the USA, JANET) in the UK, CANARIE in Canada and RedClara in South America

Implementation /4

Phase 3:

- . ZAMREN Content Development
- . Note that, the first two phases concentrated on network infrastructure
- . Software, research materials

Ownership - ZAMREN

- . There is a consideration to register the ZAMREN as a Institution Research organization

Funding - ZAMREN

- . Not currently available
- . Plans to approach: DFID, IDRC, SIDA, CIDA, WBI, NORAD, European Commission, etc.