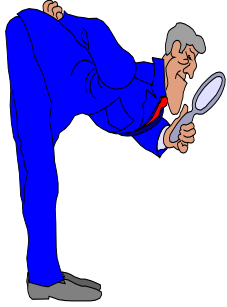




**PRESENTATION TO THE SADC REGIONAL
INVESTMENT CONFERENCE HELD IN
WINDHOEK, NAMIBIA
(19-21 SEPTEMBER 2005)**

PRESENTED BY

**RHODNIE P SISALA
MANAGING DIRECTOR-ZESCO LTD**



PRESENTATION OUTLINE



- 1. CURRENT ZESCO SYSTEM**
- 2. ELECTRICITY DEMAND PATTERNS**
- 3. IMPLEMENTATION STRATEGIES**
- 3. PROJECTS FOR DEVELOPMENT**
- 4. PROJECTS STATUS UP DATE**
- 5. CONCLUSION**



CURRENT ZESCO SYSTEM

- INSTALLED GENERATION CAPACITY (1670MW)
 - KAFUE GORGE
 - 900 MW INSTALLED
 - KARIBA NORTH BANK
 - 600 MW INSTALLED



CURRENT ZESCO SYSTEM

- VICTORIA FALLS-108MW
- LUNSEMFWA HYDRO -40MW
- SMALL HYDROS-24MW
- DIESEL PLANTS-8MW



CURRENT ZESCO SYSTEM

- **TRANSMISSION ASSETS**
 - 330KV-2280km
 - 220KV-348km(+230km)
 - 132KV-205km
 - 88KV-704km
 - 66KV-3014km(+500km)
 - HIGH VOLTAGE SUBSTATIONS-24
 - NATIONAL CONTROL CENTRE-01
 - REGIONAL CONTROL CENTRES-02

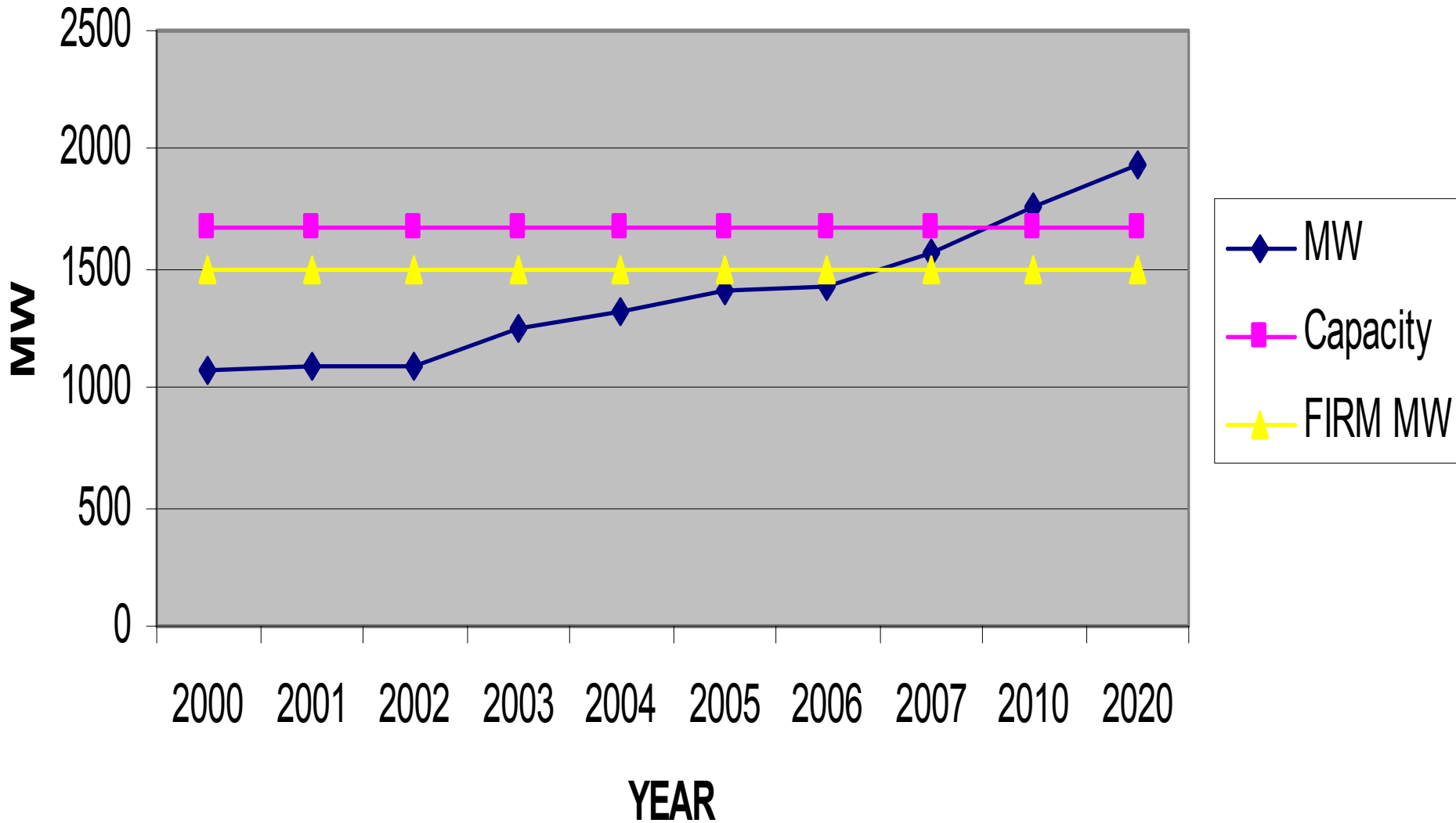
ELECTRICITY DEMAND PATTERN



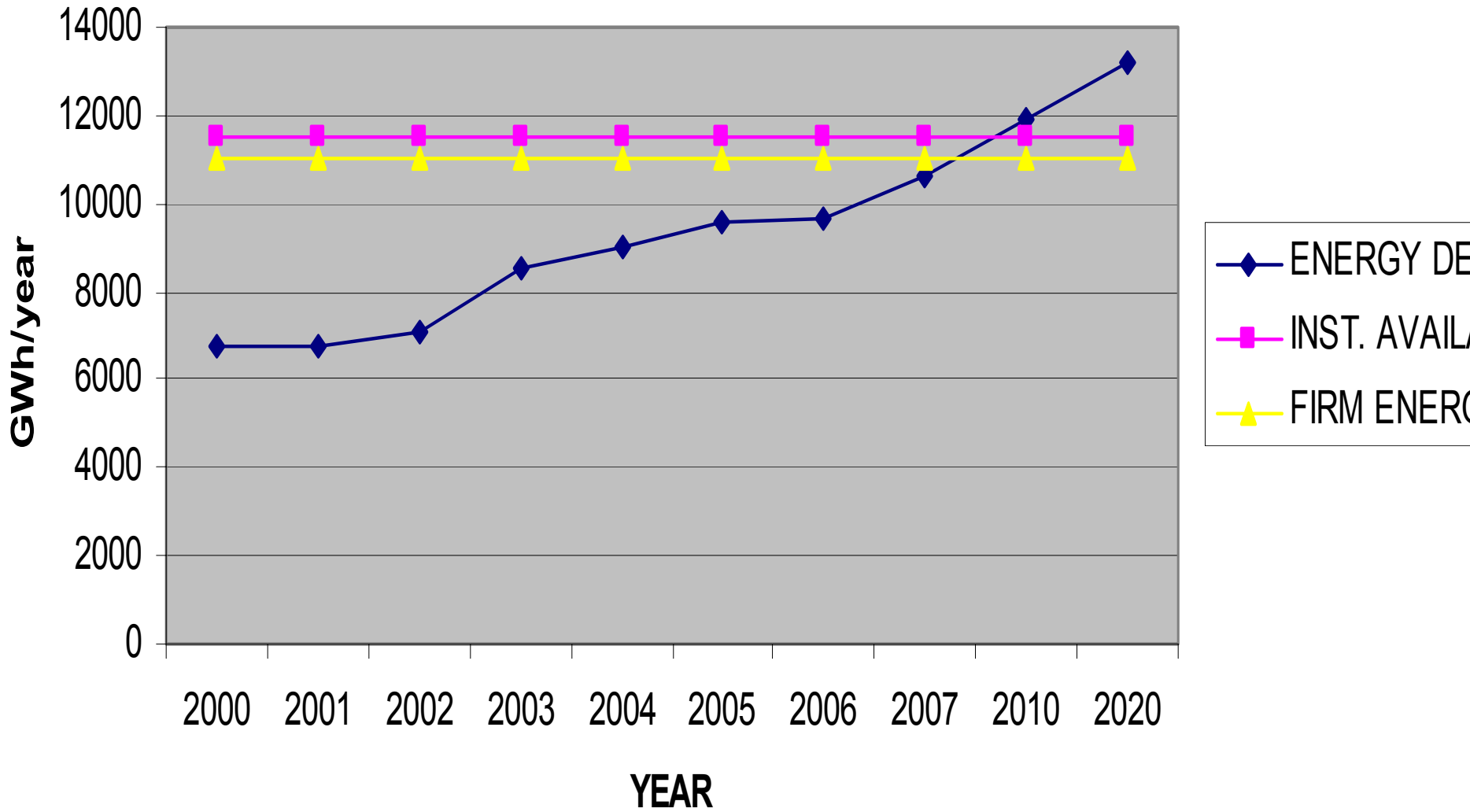
- NATIONAL DEMAND INCREASING FAST 3-4% ANNUALLY
- REGIONAL DEMAND FAST INCREASING AS WELL
- CAPACITY DEFICIT FROM 2007/8
 - IN ZAMBIA
 - IN THE REGION



ZESCO DEMAND FORECAST FOR ZAMBIA



ZESCO ENERGY FORECAST FOR ZAMBIA



IMPLEMENTATION STRATEGIES



- THREE APPROACHES USED TO ADDRESS THE SITUATION

- REHABILITATION OF CURRENT INFRASTRUCTURE

- UPGRADING EXISTING POWERSTATIONS

- DEVELOPING NEW HYDRO POWER PROJECTS



REHABILITATION OF CURRENT INFRASTRUCTURE



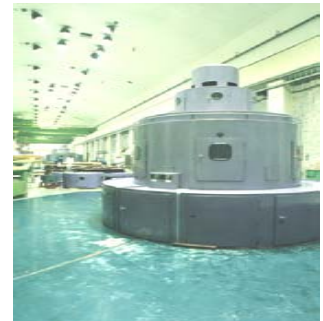
- ALL MAJOR POWERSTATION PLANT & EQUIPMENT BRINGING IT BACK TO DESIGN CONDITION
- ALL TRANSMISSION EQUIPMENT REHABILITATED
- DISTRIBUTION SYSTEMS IN MAJOR TOWNS REHABILITATED



UPGRADING EXISTING POWERSTATIONS



- THE 900MW KAFUE GORGE POWERSTATION BEING UPGRADED TO 990MW BY END 2006
- THE 600MW KARIBA NORTH BANK POWERSTATION BEING UPGRADED TO 720MW BY DECEMBER 2007



DEVELOPMENT OF NEW HYDRO PROJECTS



- ZAMBIA HAS ABUNDANT HYDRO POTENTIAL FOR DEVELOPMENT
 - TOTAL ABOUT 6,000MW
 - ONLY 1640MW DEVELOPED SO FAR
 - 4,360MW YET TO BE DEVELOPED

PROJECTS FOR DEVELOPMENT IN ZAMBIA



- **PROJECTS FOR IMMEDIATE IMPLEMENTATION:**
 - **KAFUE GORGE LOWER**
 - FOR 750MW CAPACITY
 - NEAR KAFUE GORGE UPPER
 - ON KAFUE RIVER
 - **ITEZHITZHI**
 - 120MW CAPACITY
 - ON KAFUE RIVER UPSTREAM OF EXISTING KAFUE GORGE UPPER POWER STATION

PROJECTS FOR DEVELOPMENT IN ZAMBIA



- PROJECTS FOR IMMEDIATE IMPLEMENTATION:
 - KARIBA NORTH BANK EXTENSION
 - 250-360MW CAPACITY
 - ON ZAMBEZI RIVER AT KARIBA DAM NEXT TO EXISTING KARIBA NORTH PS





KARIBA NORTH - ZAMBIA

KARIBA DAM



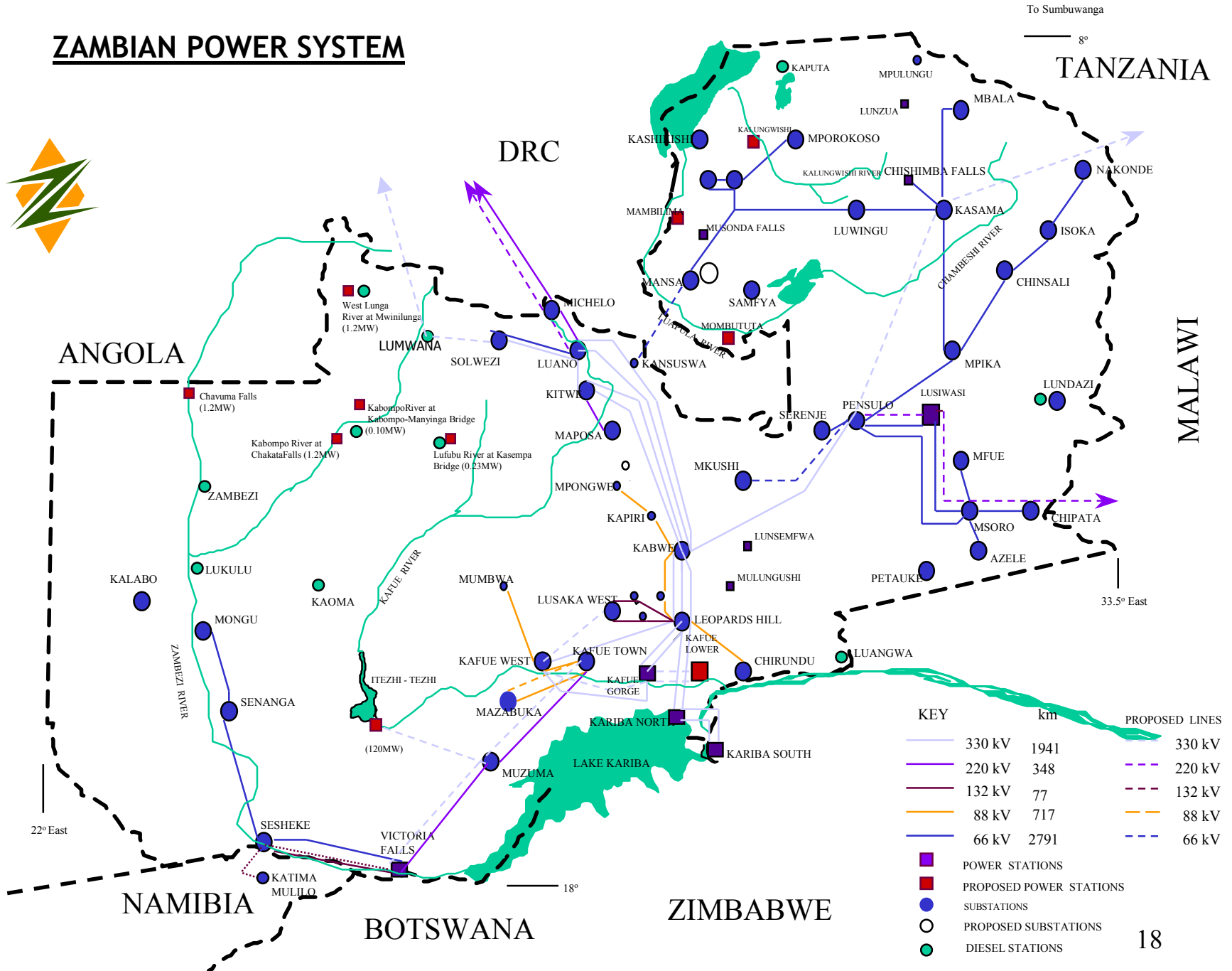
- LARGE DOUBLE CURVATURE CONCRETE ARC TYPE DAM
- HEIGHT 128m
- CREST LENGTH 617m
- WIDTH AT CREST 13m
- MAX RETENTION LEVEL – 488.50m
- VOLUME OF 64 Billion Cubic metres WATER
- MEAN ANNUAL INFLOW- 1,200 cubic metres/s

ITEZHITZHI DAM



- EARTH-ROCK FILL TYPE DAM
- MAX HIEGHT 51m
- CREST LENGTH 1,800m
- WIDTH AT CREST 12m
- FULL SUPPLY LEVEL – 1,030.50m
- VOLUME OF 6 billion Cubic metres WATER
- MEAN ANNUAL INFLOW- 320 cubic metres/s

ZAMBIAN POWER SYSTEM



KEY		km	PROPOSED LINES
	330 kV	1941	330 kV
	220 kV	348	220 kV
	132 kV	77	132 kV
	88 kV	717	88 kV
	66 kV	2791	66 kV
	POWER STATIONS		
	PROPOSED POWER STATIONS		
	SUBSTATIONS		
	PROPOSED SUBSTATIONS		
	DIESEL STATIONS		

PROJECT STATUS UP DATE

GENERAL



- ACTIONS HAVE COMMENCED TO DEVELOP HYDRO PROJECTS (IMMEDIATE THREE)
- NOTE THAT THIS DEVELOPMENT IS LONG OVERDUE
 - FEASIBILITY STUDY FOR KAFUE GORGE LOWER DONE 1995
 - FEASIBILITY STUDY FOR ITEZHITZHI DONE 1999
 - IF RESOURCES WERE AVAILABLE BOTH STATIONS SHOULD HAVE BEEN IN SERVICE BY NOW
- KGL, ITT PROJECTS WERE INITIALLY TO BE DEVELOPED THROUGH PRIVATE SECTOR FOLLOWING FEASIBILITY STUDIES DONE
- UNFORTUNATELY PRIVATE INVESTMENT MOBILISATION WAS NOT SUCCESSFUL

DEVELOPMENT THROUGH PRIVATE SECTOR



- 1992 GOVT. OF ZAMBIA EMBARKED ON A SERIES OF MARKET ORIENTED REFORMS
 - REDUCE STATE PARTICIPATION/CONTROL OF ECONOMIC ACTIVITIES
 - GIVE PRIORITY TO CONSTRUCTION OF HYDROPOWER PLANTS AND TRANSMISSION LINES
 - RESTRUCTURE ELECTRICITY SUBSECTOR
- STRATEGY (TWOFOOLD)
 - PROVIDE FOR PRIVATE CAPITAL PARTICIPATION IN THE POWER SECTOR (MOSTLY NEW HYDRO GENERATION/TRANSMISSION)
 - PROMOTE INTER-CONNECTIONS WITH NEIGHBOURING COUNTRIES

DEVELOPMENT THROUGH PRIVATE SECTOR



- LEGAL FRAMEWORK WERE PUT IN PLACE TO LIBERALISE THE POWER INDUSTRY
 - REMOVED MONOPOLY BY PUBLIC UTILITY
 - NEW ACTS ENACTED (ELECTRICITY & ERB)
 - FRAMEWORK OF PACKAGE OF INCENTIVES PUT IN PLACE
- 1999 SET UP OFFICE FOR THE PROMOTION OF PRIVATE POWER PROJECTS (OPPPI) AS A “ONE WINDOW” OPERATION TO ATTRACT INVESTMENT

DEVELOPMENT THROUGH PRIVATE SECTOR



- IN 2001 - 3 CONSORTIA WERE SHORT-LISTED :
 - ZAMPOWER (led by AES)
 - KAFUE HYDRO GROUP (led by Spie Batignolles)
 - STATKRAFT GROUP (Norway)

DEVELOPMENT THROUGH PRIVATE SECTOR



- WHILE GOVT WAS IN PROCESS OF ADDRESSING CONCERNS FOR DEVELOPING THE PROJECTS, GLOBAL CHANGES DERAILED THE PROCESS
- SOME OF THE REASONS FOR FAILURE WERE:
 - COLLAPSE OF ENRON IN USA (SCARED POTENTIAL INVESTORS)
 - EVENTS OF SEPT 11 2001(USA)
 - COLLAPSE OF AES SHARES ON THE AMERICAN STOCK MARKET
 - EVENTUAL WITHDRAWAL OF AES & OTHERS FROM INVESTING IN AFRICA ETC. (**LAST NAIL**)
 - LACK OF SUCCESSFUL PRIVATE SECTOR MODEL

PROJECT STATUS UPDATE GENERAL



- 2003 ZESCO APPROACHED SINOHYDRO OF CHINA FOR ANY POSSIBLE COOPERATION
- THIS LED TO DISCUSSIONS AND ENTERING INTO OF A PARTNERSHIP BETWEEN SINOHYDRO OF CHINA AND ZESCO TO DEVELOP :
 - **KAFUE GORGE LOWER (KGL)**
 - **KARIBA NORTH BANK EXTENSION (KNBE)**
- WITH GOVT SUPPORT ZESCO HAD DISCUSSIONS AND ENTERED INTO PARTNERSHIP WITH FARAB COMPANY OF IRAN TO DEVELOP :
 - **ITEZHITZHI HYDRO PROJECT**

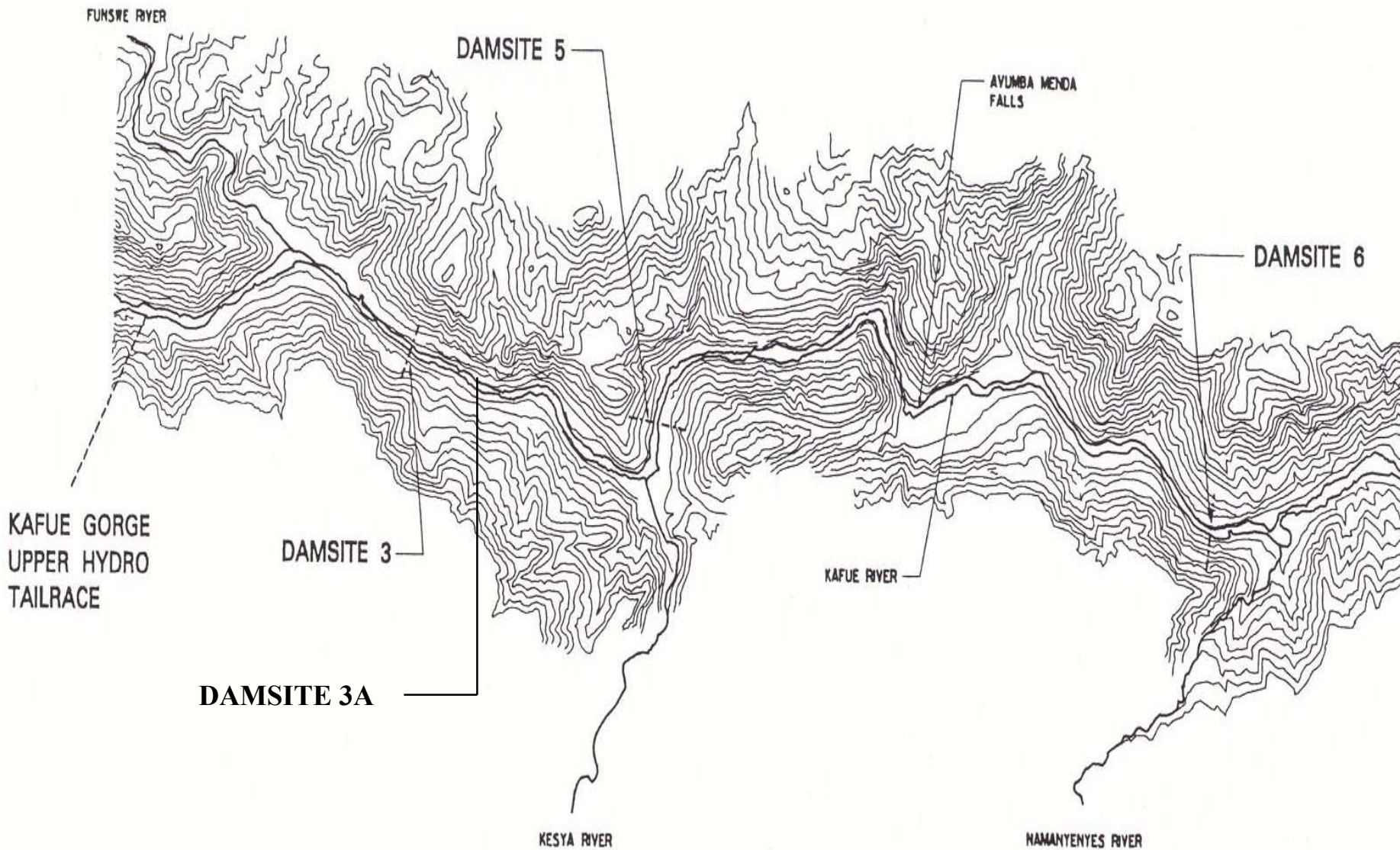
STATUS UPDATE

KAFUE GORGE LOWER



- DISCUSSIONS HELD WITH SINOHYDRO ON VARIOUS TECHNICAL, COMMERCIAL AND FINANCIAL ISSUES BOTH IN ZAMBIA & CHINA
- MOU SIGNED IN DEC 2003 AND ROADMAP AGREED
 - IDENTIFIED NEED TO CARRY OUT RESERVOIR OPERATION STUDIES (TO SELECT DAM SITE LOCATION) USING MWH CONSULTANTS





KAFUE GORGE LOWER HYDRO

KAFUE GORGE LOWER



- STUDY WAS DONE & SUBMITTED IN APRIL 2005
- FINDINGS DISCUSSED BETWEEN ZESCO, SINOHYDRO AND MWH

KAFUE GORGE LOWER



- SINOHYDRO RAISED SOME MORE ISSUES NEEDING TO BE ADDRESSED BY THE STUDY BEFORE COMPLETION
 - REVIEW & UPDATE PROJECT COSTS FOR THE THREE SITES (3, 3A & 5)
 - CARRY OUT COST BENEFIT ANALYSIS
 - PREPARE A SEPARATE “SITE SELECTION REPORT” AS PER REQUIREMENT IN CHINA
- THIS ADDITIONAL WORK IS BEING DONE BY MWH & TO BE COMPLETED IN OCTOBER 2005
- TECHNICAL & COMMERCIAL PROPOSAL TO BE PREPARED BY SINOHYDRO

KAFUE GORGE LOWER



- ON FINAL CONCLUSION/AGREEMENT ON TECHNICAL, COMMERCIAL & FINANCIAL MATTERS NEGOTIATE & SIGN IMPLEMENTATION AGREEMENT



KAFUE GORGE LOWER

FINANCIAL MATTERS



- DISCUSSIONS HELD WITH CHINA EXPORT IMPORT (EXIM) BANK WHO HAVE INDICATED WILLINGNESS TO FINANCE UP TO 85% OF PROJECT COST
- FURTHER DISCUSSIONS WITH CHINA EXIM BANK & SINOHYDRO ARE PLANNED AS SOON AS STUDIES ARE COMPLETED
- 15% TO BE FROM OTHER FINANCIAL INSTITUTIONS BY ZESCO
- DISCUSSIONS HELD WITH LOCAL BANKS FOR FINANCING WITH POSITIVE RESULTS
- ON FINAL CONCLUSION/AGREEMENT ON TECHNICAL, COMMERCIAL & FINANCIAL MATTERS TO NEGOTIATE & SIGN IMPLEMENTATION AGREEMENT
- PROJECT ESTIMATED COST **USD 600 MILLION**

KARIBA NORTH EXTENSION



- WAS INCLUDED IN THE PARTNERSHIP AGREED BETWEEN ZESCO AND SINOHYDRO.
- PROJECT WAS INITIALLY BEING HANDLED BY KNBC BEFORE THE MERGER WITH ZESCO.
-
- A PREFEASIBILITY STUDY HAD BEEN DONE EARLIER (2002)

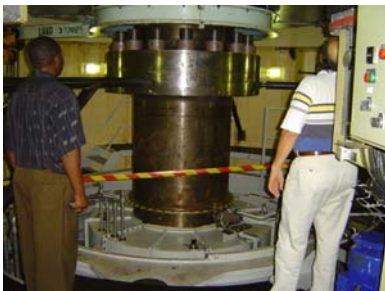
KARIBA NORTH EXTENSION

- DISCUSSIONS WERE HELD WITH SINOHYDRO ON TECHNICAL, COMMERCIAL & FINANCIAL ISSUES
- IT WAS AGREED THAT A FEASIBILITY STUDY BE DONE BY SINOHYDRO IN PARTNERSHIP WITH ZESCO.

KARIBA NORTH EXTENSION



- AN AGREEMENT (FOR FEASIBILITY STUDY) WAS SIGNED IN DECEMBER 2004
- SITE GEOLOGICAL DRILLING INVESTIGATIONS WERE DONE
- A DRAFT FEASIBILITY STUDY REPORT HAS JUST BEEN SUBMITTED AND IS BEING REVIEWED
- FINAL REPORT EXPECTED BY END OF SEPTEMBER/EARLY OCTOBER 2005



KARIBA NORTH EXTENSION



- 85% OF FINANCING TO COME FROM CHINA EXPORT IMPORT BANK
- 15% TO BE FROM OTHER FINANCIAL INSTITUTIONS BY ZESCO
- DISCUSSIONS HELD WITH EXIM BANK IN AUGUST 2005 IN LUSAKA
- TERMS OF FINANCING DISCUSSED WITH EXIM BANK AND ARE BEING ADDRESSED
- PROJECT ESTIMATED COST **USD 300 MILLION**
- EXPECTED TO SIGN IMPLEMENTATION AGREEMENT BEFORE END DECEMBER 2005





ITEZHITZHI HYDRO PROJECT

- IN 2003 ZESCO INITIATED DISCUSSIONS FOR A PARTNERSHIP WITH FARAB COMPANY OF IRAN TO DEVELOP ITT PROJECT
- DISCUSSIONS HAVE SINCE BEEN HELD IN ZAMBIA & IRAN ON TECHNICAL, COMMERCIAL & FINANCIAL ISSUES
- MOU SIGNED IN JAN 2005 WITH FARAB COMPANY

ITEZHITZHI HYDRO PROJECT



- A TECHNICAL PROPOSAL FOR ELECTROMECHANICAL EQUIPMENT/ PLANT AND CIVIL WORKS SUBMITTED BY FARAB AND COMMENTS MADE BY ZESCO.
- DETAILED DISCUSSIONS BY TECHNICAL TEAMS OF ZESCO & FARAB HELD
- ALL MAIN TECHNICAL ISSUES AGREED



ITEZHITZHI HYDRO PROJECT

FINANCIAL MATTERS



- DISCUSSIONS HELD WITH EXPORT DEVELOPMENT BANK OF IRAN (EDBI) WHO HAVE CONFIRMED WILLINGNESS TO FINANCE 85% OF THE POWERSTATION'S PROJECT COST
- A TERMSHEET WAS SUBMITTED BY EDBI TO ZESCO AND COMMENTS HAVE BEEN SENT BY ZESCO



ITEZHITZHI HYDRO PROJECT



- VARIOUS OPTIONS IN THE TERMS (FOR GUARANTEES) DISCUSSED
- ZESCO IS REVIEWING THE OPTIONS FOR IMPLEMENTATION
- IT IS EXPECTED THAT ALL ISSUES WILL BE FINALISED BEFORE END OF DECEMBER 2005
- ESTIMATED COST **USD 120 MILLION** (INCLUDING LINE)



PROJECT COMPLETION

- COMPLETION IS EXPECTED IN:
 - 2009/10 FOR KAFUE GORGE LOWER
 - 2008/9 FOR ITEZHI TEZHI
 - 2008/9 FOR KARIBA NORTH BANK EXTENSION

CONCLUSION



- ZESCO IS COMMITTED AND IS ACTIVELY ADDRESSING THE ISSUE OF DEVELOPING THE NEW HYDRO GENERATING PLANTS IN ZAMBIA
- THIS CAPACITY WILL BE AVAILABLE BOTH FOR INTERNAL ZAMBIAN CONSUMPTION AND FOR EXPORT TO OTHER REGIONAL COUNTRIES
- ZESCO HAS THE REQUIRED GOVERNMENT SUPPORT TO DEVELOP THESE PROJECTS



END OF PRESENTATION

***THANK YOU FOR
YOUR ATTENTION***