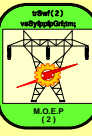


THE ISSUES, CHALLENGES AND PRIORITIES FACED BY REULATORS IN THE NEXT 5-10 YEARS IN MYANMAR

**KHIN MAUNG WIN
DEPUTY DIRECTOR GENERAL
DEPARTMENT OF ELECTRIC POWER
MINISTRY OF ELECTRIC POWER NO. (2)**

FEBRUARY 6, 2010 – BANGKOK , THAILAND



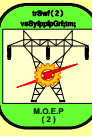
STRUCTURE OF ELECTRIC POWER SECTOR

IN ORDER TO EFFECTIVELY CARRY OUT TO FULFILL THE ELECTRICITY REQUIREMENT FOR THE ECONOMIC DEVELOPMENT, NATION-BUILDING, MULTI-SECTOR DEVELOPMENT TASKS, THE MINISTRY OF ELECTRIC POWER HAS BEEN REORGANIZED AS TWO MINISTRIES ON 15 MAY 2006.

MINISTRY OF ELECTRIC POWER NO.1

AND

MINISTRY OF ELECTRIC POWER NO. 2



STRUCTURE OF ELECTRIC POWER SECTOR

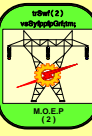
RESPONSIBILITY OF MINISTRIES

MINISTRY OF ELECTRIC POWER NO. (1)

- **HYDROELECTRIC POWER GENERATION AND COAL FIRED THERMAL POWER GENERATION.**
- **SELLING THE ELECTRICITY TO M.O.E.P (2)**
- **DEVELOPMENT OF NEW HYDROELECTRIC POWER PROJECTS**

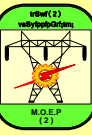
MINISTRY OF ELECTRIC POWER NO. (2)

- **THERMAL GENERATION**
- **CONTROL & OPERATION OF THE NATIONAL GRID**
- **CONSTRUCTION & MAINTENANCE FOR TRANSMISSION LINES AND SUBSTATIONS**
- **PURCHASE THE ELECTRICITY**
- **SUPPLY ELECTRICITY TO THE CONSUMERS**



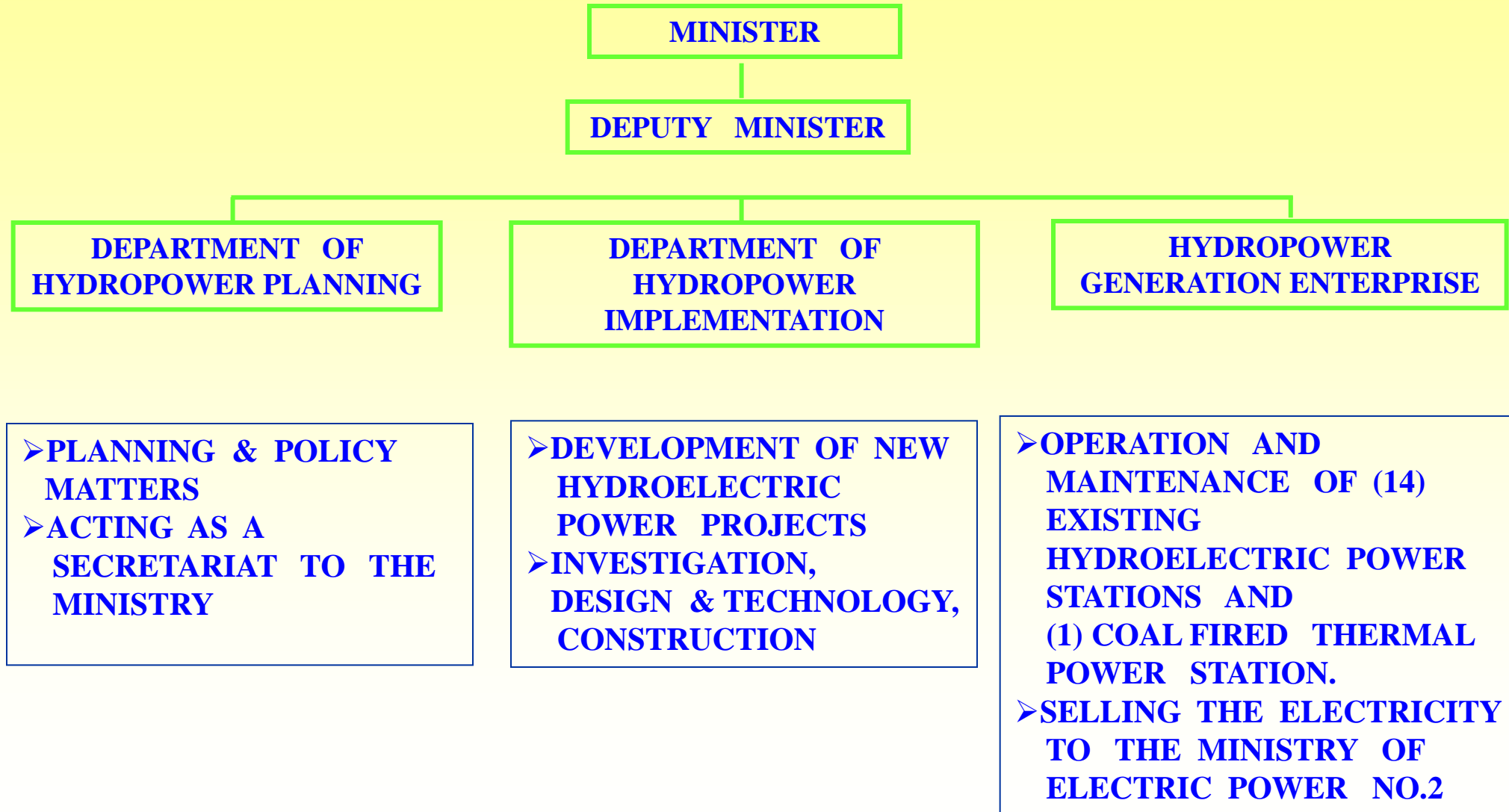
REGULATORY FRAME WORK FOR ELECTRIC POWER SECTOR

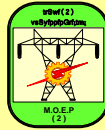
**MINISTRY OF ELECTRIC POWER NO. (1) AND MINISTRY OF ELECTRIC
POWER NO. (2) TAKE THE RESPONSIBILITIES OF REGULATOR IN
ACCORDANCE WITH THE GUIDANCE OF THE GOVERNMENT UP TO NOW.
ELECTRICITY BUSINESS HAS BEEN SUBSIDIZED BY THE GOVERNMENT .**



STRUCTURE OF ELECTRIC POWER SECTOR

Organization Chart for Ministry of Electric Power No. (1)





STRUCTURE OF ELECTRIC POWER SECTOR

Organization Chart for Ministry of Electric Power No. (2)

MINISTER

**DEPUTY
MINISTER**

**DEPARTMENT OF
ELECTRIC POWER**

- **PLANNING & POLICY MATTERS**
- **ACTING AS A SECRETARIAT TO THE MINISTRY**

**MYANMA ELECTRIC
POWER ENTERPRISE**

- **THERMAL GENERATION**
- **CONTROL & OPERATION OF THE NATIONAL GRID**
- **CONSTRUCTION & MAINTENANCE FOR TRANSMISSION LINES AND SUBSTATIONS**
- **PURCHASE THE ELECTRICITY FROM M.O.E.P 1**
- **SELLING ELECTRICITY TO E.S.E & Y.E.S.B**

**ELECTRICITY SUPPLY
ENTERPRISE**

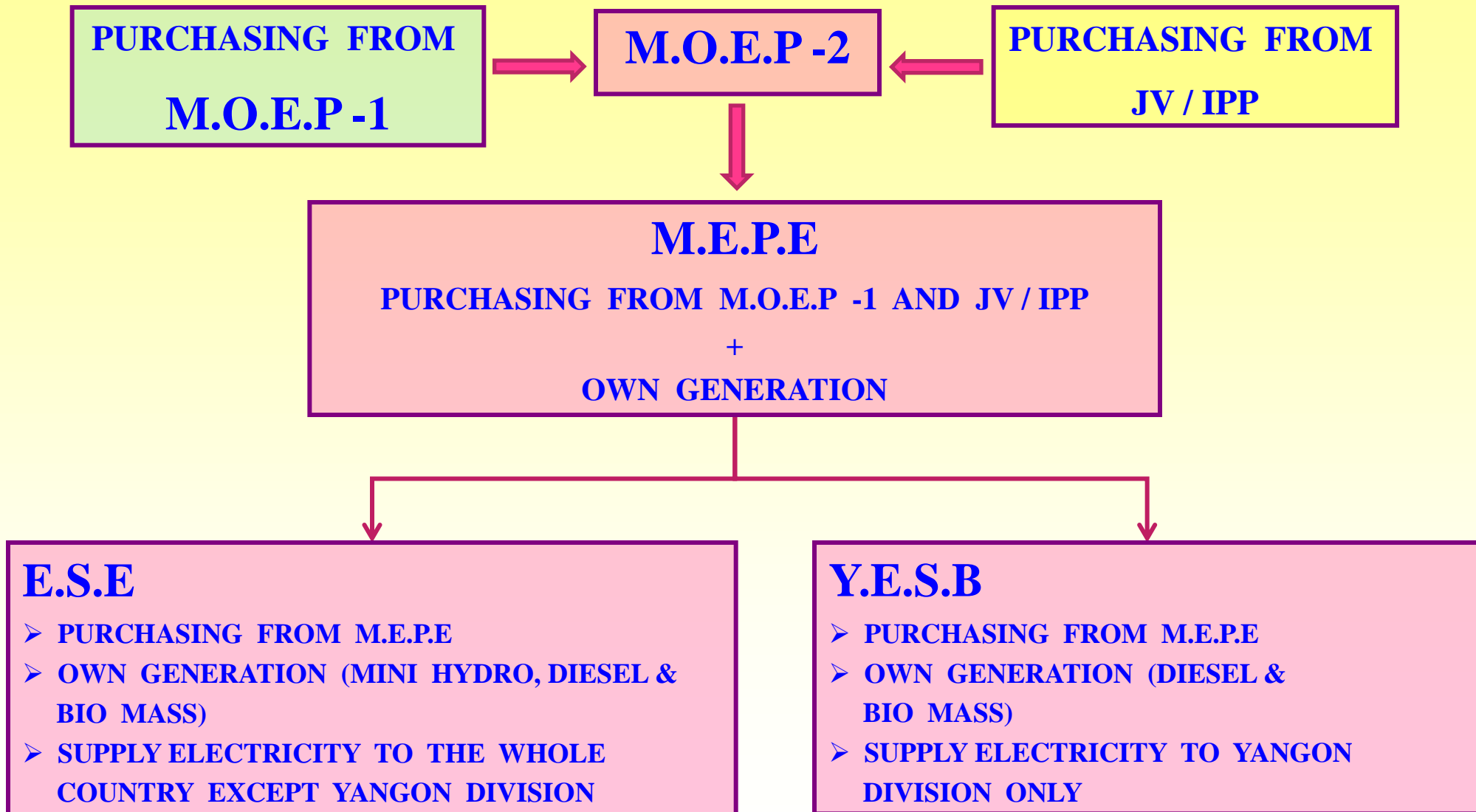
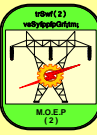
- **SUPPLY ELECTRICITY TO THE WHOLE COUNTRY EXCEPT YANGON DIVISION**
- **CONSTRUCT DISTRIBUTION LINES & SUBSTATIONS WITHIN STATES & DIVISIONS**

**YANGON CITY
ELECTRICITY
SUPPLY BOARD**

- **SUPPLY ELECTRICITY TO YANGON DIVISION ONLY**
- **CONSTRUCT DISTRIBUTION LINES & SUBSTATIONS IN YANGON DIVISION**
- **(SUBSISTS ON OWN FUND)**



ELECTRICITY TRADE WITHIN THE COUNTRY





ELECTRICITY LAW

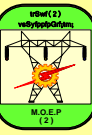
➤ ELECTRICITY LAW

ENACTED IN 1984

➤ THE BOARD OF YANGON CITY ELECTRIC POWER SUPPLY LAW

ENACTED IN 2005

- ❖ In Conformity With The State Constitution , The Draft Electricity Law Was Submitted To The Prime Minister Office And Attorney - General Office.**



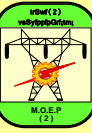
ELECTRICITY LAW ENACTED IN 1984

CABINET OF THE GOVERNMENT SHALL GRANT THE PERMISSION TO CARRYOUT

- (a) EXPLORATION OF RESOURCES FOR ELECTRICITY GENERATION**
- (b) GENERATION OF ELECTRICITY**
- (c) TRANSMISSION OF ELECTRICITY**
- (d) DISTRIBUTION OF ELECTRICITY**

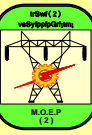
TO THE FOLLOWING ORGANIZATION AND INDIVIDUALS

- STATE OWNED UTILITIES.**
- STATE OWNED INDUSTRIES.**
- LEGAL COOPERATIVE GROUPS.**
- LEGAL PRIVATE ORGANIZATIONS.**
- OTHER ORGANIZATIONS.**



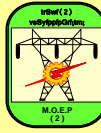
PRIVATE SECTOR PARTICIPATION ACCORDING TO ELECTRICITY LAW (ENACTED IN 1984)

- **PRIVATE SECTOR PARTICIPATION IN ELECTRICITY SECTOR IS ALREADY ALLOWED , BUT IT IS ESSENTIAL TO GET PERMISSION FROM THE GOVERNMENT.**
- **APPLICATION HAS TO BE SUBMITTED TO CABINET MEETING AFTER APPROVAL FROM MYANMAR INVESTMENT COMMISSION AND TRADE COUNCIL.**
- **LOCAL INVESTORS ARE ALLOWED TO PARTICIPATE IN THE SCHEME OF INDEPENDENT POWER PRODUCER (IPP) FOR MEDIUM HYDROPOWER PROJECTS.**



POWER PURCHASE (LOCAL)

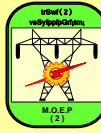
- **NOT STATED SPECIFICALLY IN ELECTRICITY LAW (ENACTED IN 1984)**
- **BUT PRACTICING BETWEEN MINISTRIES AND AMONG THE STATE OWNED ORGANIZATIONS UPON THE APPROVAL OF THE GOVERNMENT.**
- **ACCORDING TO THE BOARD OF YANGON CITY ELECTRIC POWER SUPPLY LAW , Y.E.S.B CAN PURCHASE ELECTRICITY AT THE PRICE APPROVED BY THE MINISTRY.**



CROSS BORDER POWER TRADE

WE ARE NOW ON STARTING STAGE OF BILATERAL POWER TRADING.

- **THE PROSPECTS FOR HYDROPOWER IN SHWALI (1) , (2) , (3) AND DAPEIN ARE THE JOINT VENTURE PROJECTS FOR POWER SALE TO CHINA.**
- **THE PROSPECTS FOR HYDROPOWER IN TASANG, HUTGYI, TANINTHARYI ARE THE JOINT VENTURE PROJECTS FOR POWER SALE TO THAILAND.**
- **IN THE CURRENT SITUATION , MYANMAR AND CHINA DEVELOPED THE BILATERAL POWER TRADING BETWEEN TWO COUNTRIES.**
- **THE POWER PURCHAS AGREEMENT FOR SWELI (1) HYDROPOWER PLANT WAS RECENTLY SIGNED BETWEEN M.E.P.E AND THE JOINT VENTURE COMPANY (S.H.P.C) IN SEPTEMBER , 2009.**
- **BECAUSE OF NO PRACTICING IN CROSS BORDER POWER TRADE , WE MADE THE SHORT TERM CONTRACT.**



POWER TRADE (CROSS-BORDER)

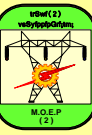
AT PRESENT, MOSTLY CROSS - BORDER SMALL SCALE POWER PURCHASE FROM CHINA AND THAILAND EXISTED UPON APPROVAL OF MINISTRY.

SMALL SCALE POWER PURCHASE FROM CHINA

NAME OF TOWN	YUAN	CENT (US)	KYAT
MUSE, NAMKHAN, MANHERO, HOPIN, KUNLON, MANTON	1.2	17.587	175.87
MUSE(105 MILE)	1.4	20.518	205.18
KYUKOKE	1.5	21.975	219.75

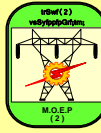
SMALL SCALE OF POWER PURCHASE FROM THAILAND

NAME OF TOWN	BAHT	CENT (US)	KYAT
TACHILEIK	6.25	17.692	176.92
PHAYATHONESU	6	16.973	169.73
MYAWADDY	4.5	12.725	127.25



COMPETITION

- **COMPETITION BETWEEN STATE OWNED GENERATION SECTOR AND IPPS, AMONG IPPS EACH OTHER.**
- **COMPETITION BETWEEN STATE OWNED DISTRIBUTION UTILITIES AND SELF FUNDED DISTRIBUTION UTILITIES , AMONG SELF FUNDED UTILITIES EACH OTHER , WILL BE REALIZED SOON.**



RELIABILITY PROBLEMS IN MYANMAR

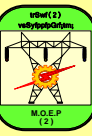
➤ MAIN PROBLEMS

➤ GENERATION IS NOT SUFFICIENT OR SHORTAGE EVEN THOUGH THE INSTALLED CAPACITY IS MORE THAN PEAK DEMAND, DUE TO THE FOLLOWING CONDITIONS,

❖ HYDRO POWER STATIONS HAVE TO GENERATE ACCORDING TO THE SEASONAL VARIATION OF RESERVOIRS.

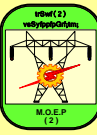
❖ NATURAL GAS IS NOT SUFFICIENT FOR GAS TURBINE POWER STATIONS NEAR LOAD CENTERS.

➤ POWER SUPPLY NETWORK IN MYANMAR IS STABLE IN STEADY STATE, BUT IT'S NOT STABLE UNDER THE TRANSIENT AND SUB-TRANSIENT CONDITIONS.



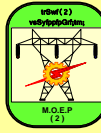
CONSEQUENCES OF RELIABILITY PROBLEMS

- **SCHEDULED LOAD SHEDDING SCHEME THROUGH OUT THE COUNTRY.**
- **AUTOMATIC LOAD SHEDDING WITH UNDER FREQUENCY RELAYS.**
- **REGIONAL OUTAGE DUE TO TRANSMISSION LINE FAULTS, MOSTLY IN MONSOON SEASON.**



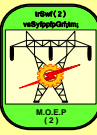
RESULT FIND OUT TO MITIGATE

- TO IMPLEMENT URGENTLY GENERATING FACILITIES TO MEET PEAK DEMAND.
- TO INSTALL STATIC CONDENSERS AND SHUNT REACTORS FOR STABILITY .
- TO REPLACE THE EXISTING ELECTROMAGNETIC RELAYS WITH DIGITAL RELAYS.
- TO INSTALL THE AUTO RECLOSING DEVICES IN THE POWER SYSTEM NET WORK .
- TO REPLACE OLD AND LOW CAPACITY MINIMUM OIL CIRCUIT BREAKERS WITH NEW HIGH CAPACITY GAS CIRCUIT BREAKERS.



RESULT FIND OUT TO MITIGATE

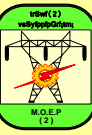
- **TO REINFORCE WITH ADDITIONAL TRANSMISSION LINES & POWER TRANSFORMERS TO MEET THE CAPACITIES .**
- **TO INSTALL DATA ACQUISITION AND SUPERVISORY CONTROL SYSTEM FOR GENERATION , TRANSMISSION AND DISTRIBUTION MANAGEMENT.**
- **TO INSTALL STATIC CAPACITOR BANK AT NECESSARY SUB-STATIONS FOR VOLTAGE IMPROVEMENT .**
- **TO IMPROVE THE DISTRIBUTION SYSTEM FOR OVER -LOAD & LONG DISTRIBUTION LINES.**
- **TO CONTROL THE UTILIZATION OF CUSTOMERS' EQUIPMENT WITHIN THE POWER QUALITY DISTURBANCE LIMIT , SUCH AS REACTIVE POWER COMPENSATION.**



SYSTEM BLACKOUT REDUCTION PLAN

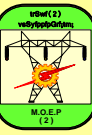
MEPE'S BLACKOUT PREVENTION METHODS

- ESPECIALLY IN DRY SEASON, GENERATION CAPACITY IS NOT ENOUGH TO THE LOAD DEMAND .
- LOAD DISPATCH CENTER MAKE LOAD SHEDDING PLAN IN THE UNIMPORTANT AREA TO BE STABLE POWER SYSTEM.
- LOAD SHEDDING PLAN IS ACCOMPLISHED BY USING UNDER FREQUENCY RELAYS.



CHALLENGES IN REGULATION

- **POLICY OF MYANMAR POWER SECTOR IS CHANGING GRADUALLY TOWARDS PRIVATIZATION.**
- **REGULATION FOR NEW SYSTEM IS NOT READY YET AND A LOT OF REGULATORY CHALLENGES AHEAD.**
- **OPPORTUNITY TO LEARN EXPERIENCES OF OTHER ASEAN COUNTRIES ON REGULATORY ISSUES.**



THANKS

FOR YOUR KIND ATTENTION