

**WORLD ENERGY COUNCIL (WEC)
AFRICA WORKSHOP ON ENERGY
EFFICIENCY**

**LEGAL & REGULATORY
FRAMEWORKS FOR ENERGY
EFFICIENCY PROGRAM &
PROJECTS**

THE CASE OF ETHIOPIA

ADDIS ABABA , ETHIOPIA JUN 29-30, 2009

PRESENTATION OUTLINE

I/ Country overview

II/ Energy Supply

**III/ Energy policy legislations &
Institutions**

I V/ Energy efficiency activities

V/ Anticipated frameworks

VI/ Summery

Country overview (Cont..)

www.theodora.com/maps



WEC AFRICA WORKSHOP ON ENERGY EFFICIENCY - AA JUNE 29

Country overview (Cont..)

- Location: Eastern Africa, west of Somalia
 - Lies within **15 degrees** North of the Equator,
- Terrain: high plateau with central mountain range divided by Great Rift Valley
- Size; Total: 1,127,127 sq km
 - water: 7,444 sq km
 - land: 1,119,683 sq km
- Altitude extremes:
 - lowest point: Denakil Depression - 125 m
 - highest point: Ras Dashen 4,620 m
- Population about **75** Million
 - Rural population: **84%** ; Urban population: 15.13% ; Density: **59.4/Km²**; Growth rate;
 - Total: **2.73** ; Urban: 2.57 ; Rural: 4.10

Country overview (Cont..)

Cool Zone - above 2,600 m (8,530 ft) temperatures range from near freezing to **16 degrees**

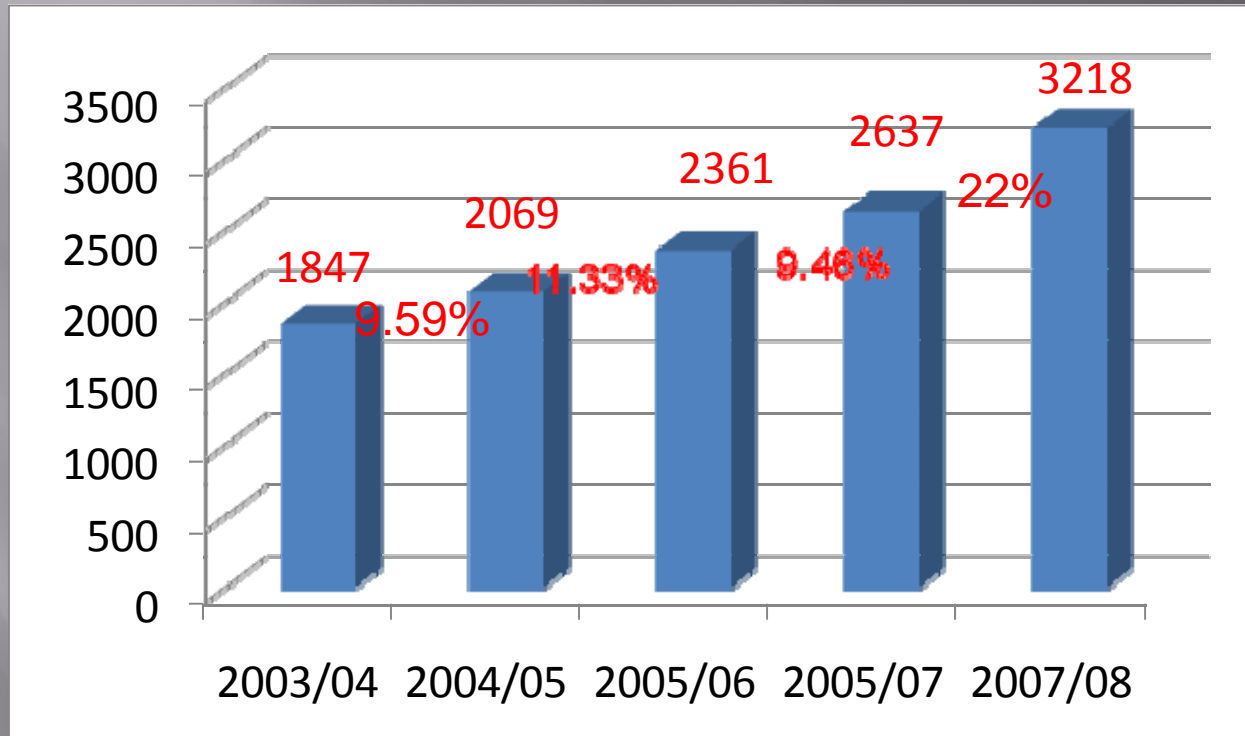
-Temperate Zone - between 1,500 m (4,920 ft) and 2,600 m (8,530ft) temperatures range from **16 degrees to 30 degree**, densely populated area.

-Hot Zone - below 1,500 m (4,920 ft) with both tropical and arid conditions , temperatures range from **27 degrees to 50 degrees.**

-Rainy season from **mid-June to mid-September** (longer in the southern highlands) preceded by intermittent showers from **February or March**; remainder of year is generally dry

II. Energy supply and demand

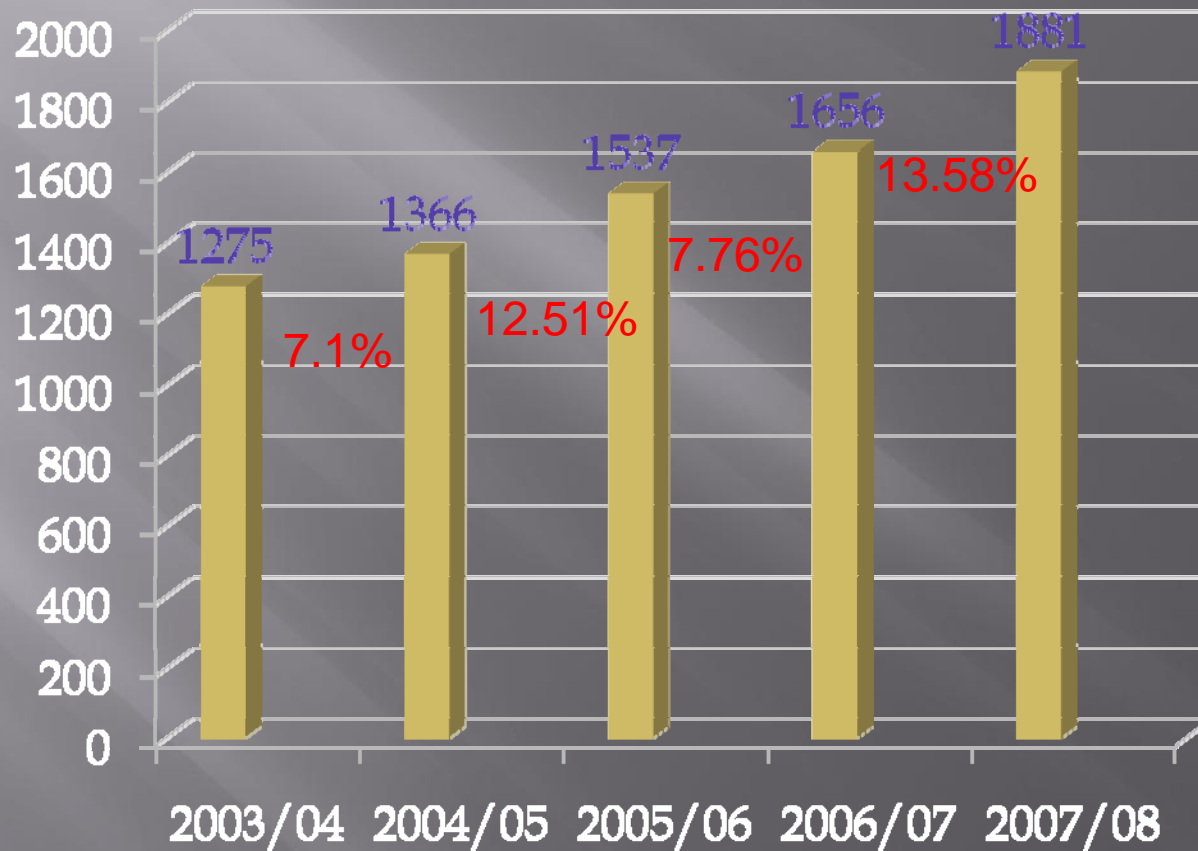
A/ Electricity sales GWh



Source : MM&E

Energy supply and demand (cont...)

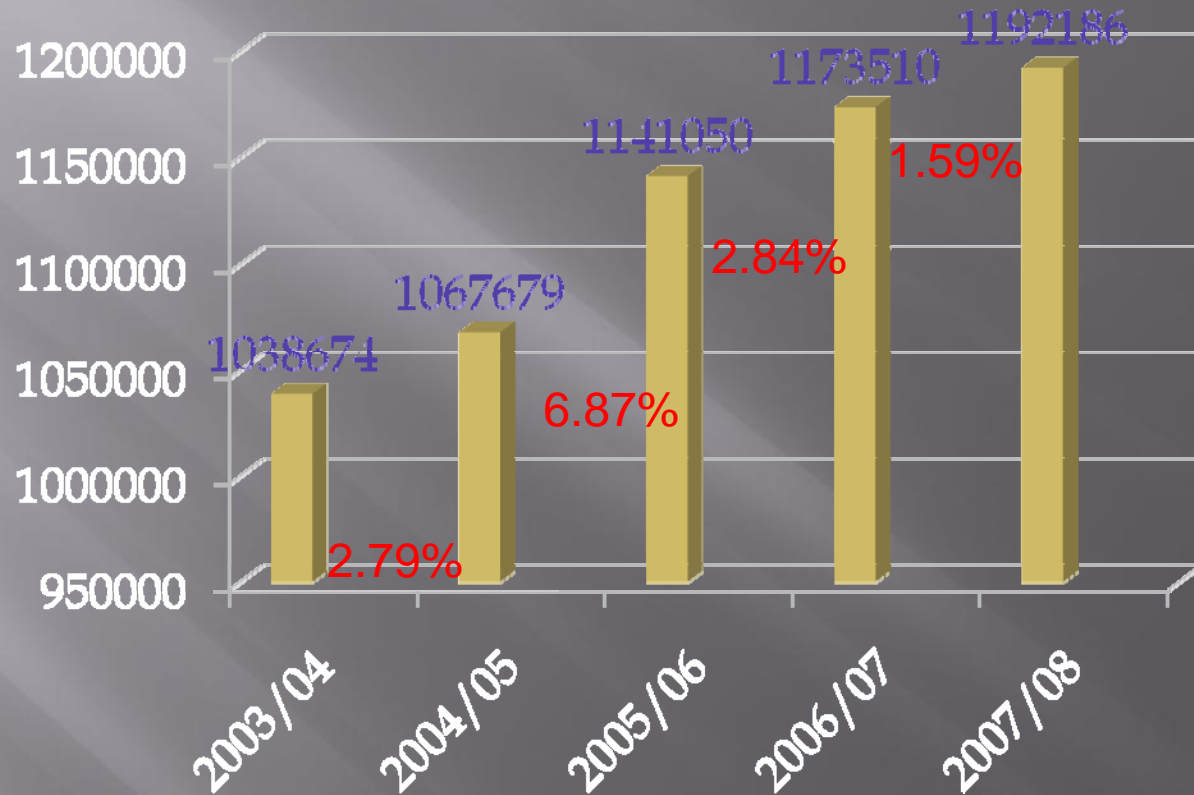
B/ Petroleum products consumption In 000 metric tones



Source : MM&E

Energy supply and demand (cont...) 1.59%

C/ Woody Biomass in TERA JOULES



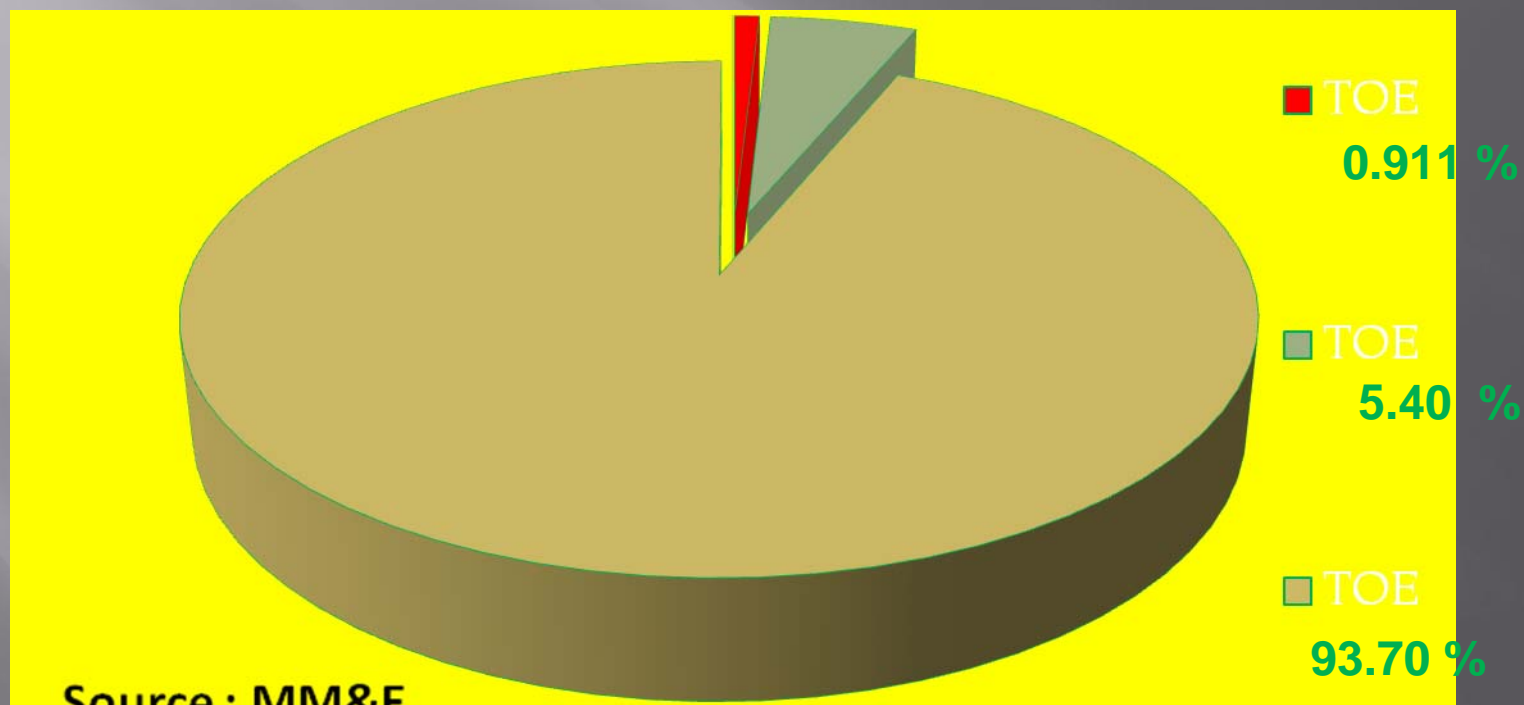
Source : MM&E

Energy supply and demand (cont...)

2007/8 national energy data

Electricity:	276,680	TOE	0.911 %
Oil:	1636174	TOE	5.40 %
Biomass:	28 474 873	TOE	93.70 %
Total	30,387,727	TOE	100 %

National Energy Consumption TOE



Source : MM&E

Energy supply and demand (cont...)

- Power supply 97% comes from Hydro small proportion from Geothermal,
- 37% of the population have access to power

III/ Energy Policy legislations & institutions

The objectives of the Energy Policy issued in May 1994 is to:

- Timely supply;
- Transform traditional energy;
- Provide dependable and economical energy supply;
- Prevent/mitigate negative environmental impact;
- Expand power generation and transmission & distribution;
- Appropriate institution to follow on implementation;
- Promote private sector in commercial energy;
- Promote energy efficiency at ; production, transmission, distribution and consumption level.

Energy policy legislations & institutions (cont...)

□ MM&E

- ✓ Ministry of Mines & Energy issues exploration prospecting and development licenses for energy minerals like geothermal energy,
- ✓ Manage energy data,
- ✓ Conduct energy studies,
- ✓ Supervise activities of reporting Agencies,

□ EEA

- ✓ Autonomous Federal Agency;
- ✓ Determination and enforcement of the quality and standard of electricity services;
- ✓ Issuance operation & Investment license & competency certificate; supervise implementation;
- ✓ Conduct Tariff Study;
- ✓ Indirect efficiency regulation via DSM

Energy policy legislations & institutions (cont...)

□ EEPCO:

- ✓ Provides commercial electricity service,
 - electric generation, transmission, distribution and sales****
- ✓ Operates the ICS & SCS;**
- ✓ Enters in to /PPA/agreements with IPPs
(BOO/BOT/BOOT/ and sell to customers**

Energy policy legislations & institutions (cont...)

□ RDPC:

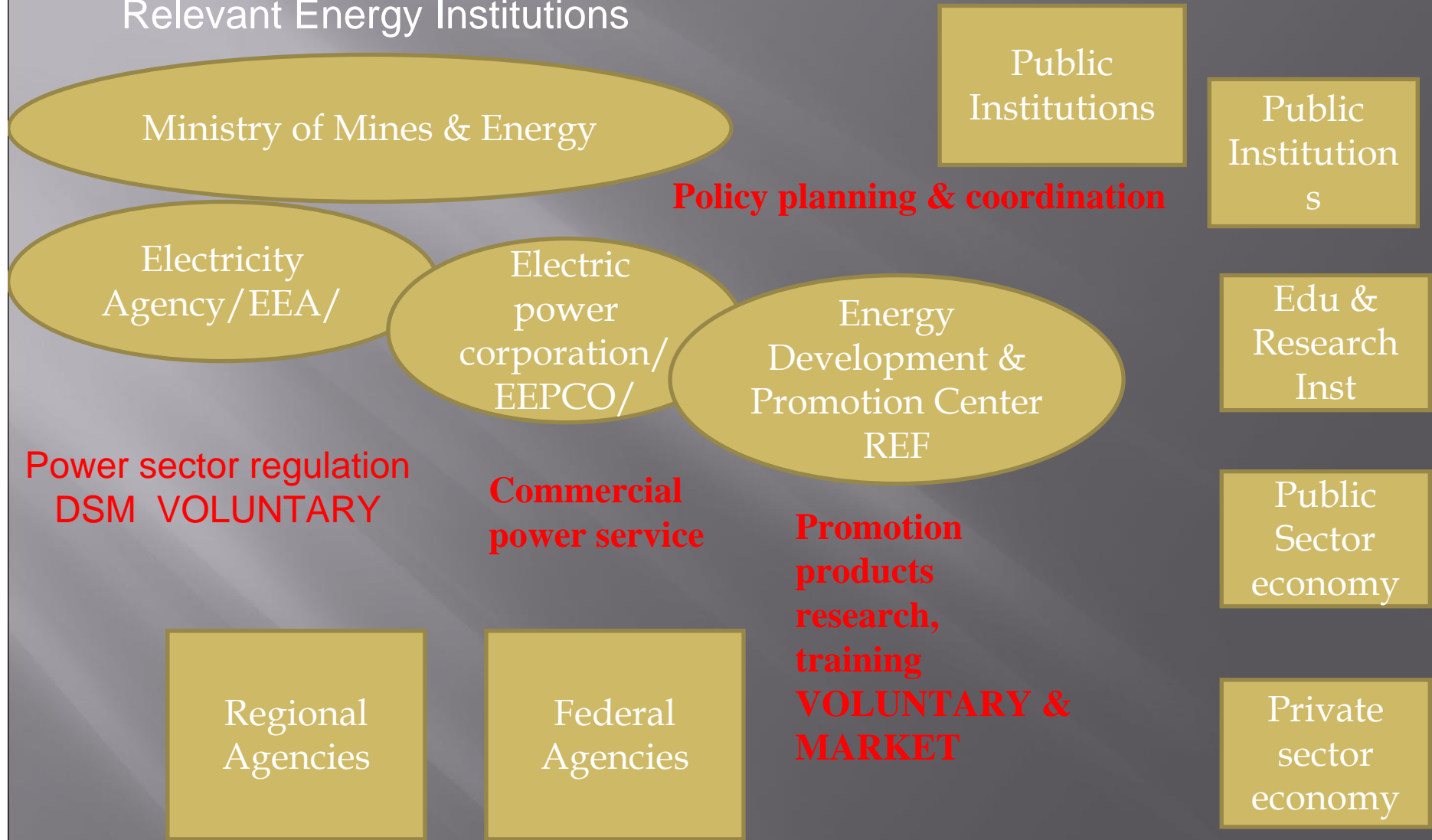
- ✓ Rural Energy source identification
- ✓ Energy Technology identification
- ✓ Energy technology research /adoption
- ✓ Energy studies,
- ✓ Consultancy services,
- ✓ Training and information dissemination

○ REF:

- ✓ Provides financial & technical support for off grid electrification

Energy policy legislations & institutions (cont...)

Relevant Energy Institutions



IV/ Energy Efficiency activities

- ❖ There is, presumably high potential for energy saving and conservation in all sectors of the economy
- ❖ However there are limited studies and some studies are already too old
- ❖ A government designated federal institution; the Rural Energy Development & Promotion Center /EDPC/ for quite some time has been working to promote efficiency and alternative energy sources focusing on house hold energy,

Energy Efficiency activities(cont...)

Energy saving potentials; Industrial sector:

- In the use of fuel oils in 15 selected industries such as textile, tannery, food processing etc, and
- Commercial applications such as oil fired boiler had been found to be significant,
 - *the outcome of the energy audit showed 40 to 50 % heat loss*
- ❖ Very recently, industries recent attempt to find solutions from the market .
- ❖ The effect of different DSM and alternative energy sources.(market driven extent and effect not studied)
- ❖ Few private energy conservation and efficiency firms /dealers provide services to business enterprises industries etc.

Energy Efficiency activities(cont...)

- ❖ Stove efficiency is reportedly one of the successful achievements;
- ❖ Injera baking using biomass resource the brand known as
 - Gonze has a 54% efficiency compared with the traditional Injera Stove which has 5 to 6 % efficiency,
- ❖ For cooking stove (MIRT) the improved efficiency reached to 25% as compared with the traditional 7 to 8 %,

Source: Rural Energy

Energy Efficiency activities(cont...)

Electricity sector;

Lighting efficiency;

market driven + promotional= generally slow
utility driven + incentives i.e free distribution of
CFLs(very recent but) effective.

Transport sector:

- Potential saving presumed to be high
- Effectively unreached for EE

V/ Anticipated legal & institutional Frameworks

Limitations & triggers

- Inadequate frameworks; no coherent energy efficiency & conservation strategy /EE&C/, program & institutions,
- ✓ The pursuit of energy efficiency and alternative energy resource /since the late 70s/ much of promotional than regulatory /electricity voluntary via DSM/
- ✓ Role played by rural Energy Development and promotion dominates the national effort though other Agencies and NGOs play their own part/propagation, dissemination, conservation etc./
- ✓ Dominated by biomass energy in the HH sector

Anticipated legal & institutional (cont...)

- Environmental negative impacts
- Woody biomass coverage declining:
 - ✓ 65% of the WOREDAS/ administrative regions/ are in net deficit,
 - ✓ This is about 76% of the population,
- Market fails to guarantee efficient use of energy resources
- Immediate possible intervention is EE&C measures
- Ever increasing energy price, especially petroleum,
- Population growth /**2.73%**/,
- Economic growth **10-11 %**

Anticipated legal & institutional (cont...)

➤ The economy is energy intensive as ever, Relatively high energy intensive economy GDP out put,

Energy consumption per GDP:

Unites: TOE per million constant	2000 price	in USD
2005 Data: Developed countries	161	
Developing countries	191	
Ethiopia	288	
World	210	

(World Resource Institute (www.wri.org) FROM IEA)

➤ Legal and institutional framework must include all energy resource regulation though the task will have obviously difficult .

Anticipated legal & institutional (cont...)

- A/ Energy policy revision Emphasis;**
- structure & development of the economy,**
 - Energy security & fuel resource base,**
 - Current Industrial structure & trend,**
 - State of the environment,**
 - Affluence of the population,**
 - Strategy & program development**

Anticipated Frameworks (cont.)

B/ Legislation & institution;

EE&C issues must be encapsulated in to the development policy principles:

- Long term strategy,**
- Action plan,**
- Specific measures for accomplishing the strategy**

Anticipated Frameworks (cont.)

□ PRINCIPLES;

➤ **Energy Efficiency & Conservation /EE&C/ is a separate sphere of regulation therefore needs targeted legal & regulatory instruments, namely;**

- **market viz. efficient use of energy,**
- **energy viz. environment,**
- **energy viz. sustainable growth**

➤ **Remove market barriers & develop market for EE Services**

➤ **EE&C law based on long-term , strategy plan and specific measures**

➤

Anticipated framework (cont...)

□ EE&C laws should work on the synergies of a number of laws and regulations and **not on one overarching law**

○ Eg: housing construction, spatial planning, technical requirement /voluntary, mandatory standards, public procurement, licensing, market design, certification etc

Anticipated framework (cont...)

BUILDING CODES to incorporate energy efficiency and conservation at design & construction stage **E.G;**

- Rules & requirements for building energy performance,
- Mandatory conservation measures; solar thermal,
- Maximum use of natural light/ reduction of heat from the sun,
- Efficient use of light,
- Mandatory diagnostic energy audit, (occupancy certificate),
- Use of energy efficient construction materials

URBAN (SPETIAL)PLANNING

- Space for mass transport & other modes of transport,

PUBLIC SECTOR AS MODEL FOR EE&C/EU energy directive/

PROCURMENT PRACTICE & THIRD PARTY FINANCING

Anticipated framework (cont...)

□ Fiscal policies and laws:

Efficiency oriented energy
taxes/negative taxes etc

e.g. rebates on energy efficiency
products, tax exemptions, subsidies,

□ Investment laws /Investment
incentives

o profit tax exemption on EE
investments etc.

Anticipated framework (cont...)

EE&C regulatory goals:

- Setting;
 - minimum energy efficiency standard or,
 - Maximum energy intensity standard

- Monitoring energy consumption in various sectors of the economy,

- Evaluation of energy consumption via; energy audit, energy labeling & other instruments

Anticipated framework (cont...)

C/ Objectives of the energy law:

- Define EE&C separate sphere of regulation
- Commercializing/liberalizing energy prices,
- Responsibility at national, regional for EE&C
- Defining technical bench marks & performance standards for EE
- Mandating promotion, certification, equipment & appliance labeling,
- Creating mandatory or market based systems for energy savings, voluntary agreement, white certificate
- Defining EE incentives or sanctions

Anticipated Frameworks (cont.)

- Defining the framework for energy services,
 - Regulating demand side management & auditing, audit structure audit procedure, auditors qualification

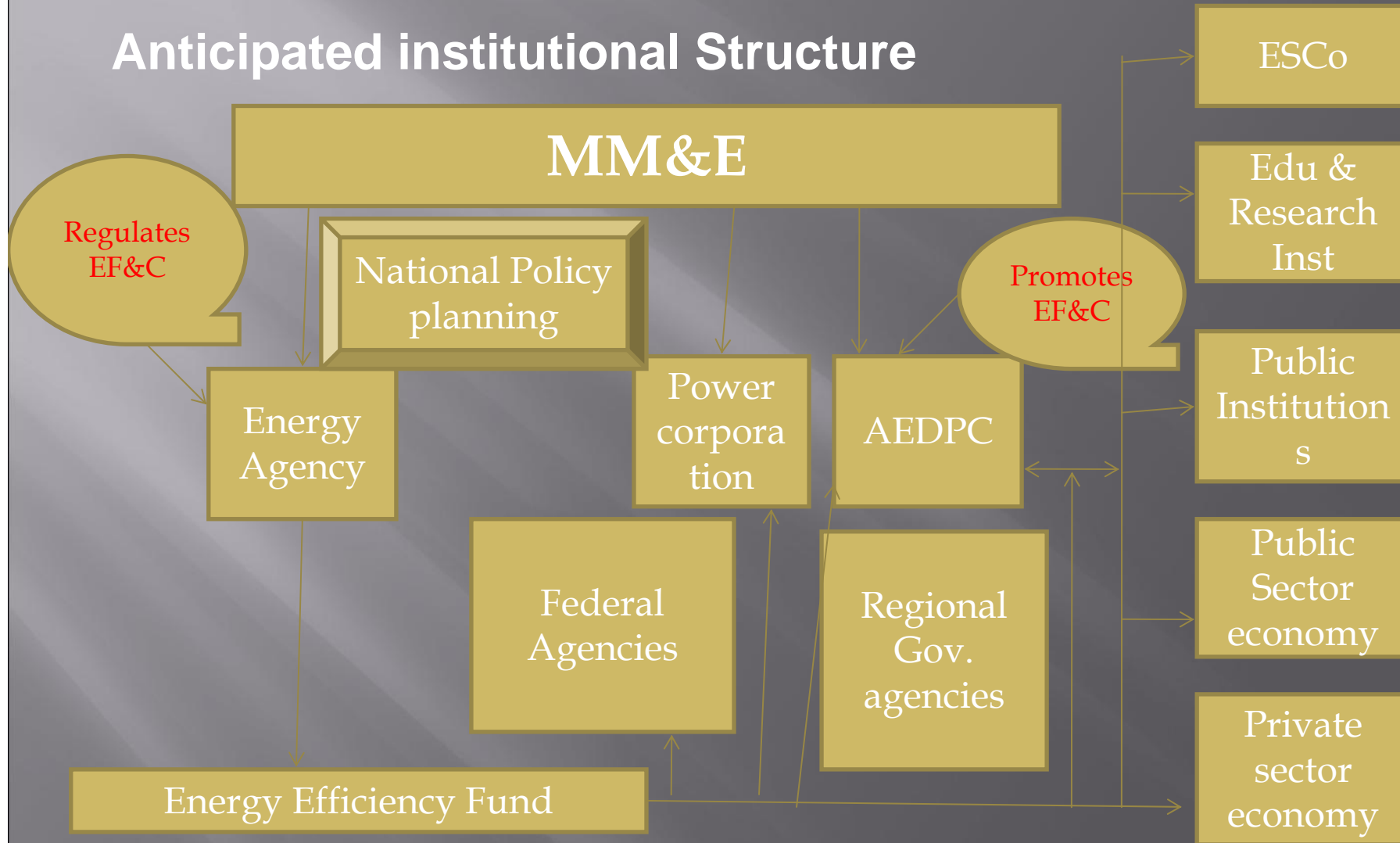
- Setting institutional requirements
 - Redesign Electricity Agency in to an Energy Agency responsible for regulating EE&C, buildings, Industry, Transport, Appliances, Energy auditing, mass persuasion/education etc.

Anticipated Frameworks (cont.)

- Devolving authority to local governments, municipality authorities, federal agencies etc.
- Efficiency & conservation regulation on Biomass resources,
- Municipal authorities building permits, road design, etc
- Custom offices,
- Standards authority/enforcements of mandatory standards on efficiency/

Anticipated Frameworks (cont.)

Anticipated institutional Structure



VI/ Summery

- **Energy does not guarantee economic development so is efficiency,**
- **However, affordable and efficient energy supply must be part of a broader development package,**
- **Energy is a vital engine for growth, not only in the urban-industrial context but also in rural areas,**
- **Its absence equally constrains development,**

Summery (cont...)

- Its efficient generation & usage makes the difference on price and sustainability,
- Therefore, it should be analyzed within an integrated framework of development strategies,
- In particular, it should be subject to the same rational analysis, and closely coordinated with the other policy tools available to meet national development objectives and goals,

Summery (cont...)

➤ **The urgency for achieving much in difficult situation such as ours is becoming more pressing agenda to day than ever, most of all to:**

- **prepare the economy and consumers to cope up with the ever increasing energy praises.**

Summery (cont...)

➤ Awaiting tasks:

- Placement of robust, policy legal framework and strategy programs
- Resource assignment
- Institutions with necessary authority and skills

➤ Expected results:

- Cost effective energy savings & conservation **VERIFIABLE**
- Impact assessment.

Are objective served?

▪ **Key issue: identify cost effective savings & meeting objectives**

i. EE&C

is a subject of dire importance

ii/ Should be considered as a
separate sphere of regulation

iii/work to develop market for
energy services

iv/creat less energy intensive
economy & socity

v/verifiale achievements

THE END

THANK YOU FOR YOUR ATTENTION

