

**GLOBAL ENERGY EFFICIENCY
WORKSHOP
March 6 to 13, 2010**

**Designing regulatory framework;
energy efficiency & conservation**

Getahun Moges Ethiopian Energy Agency

Washington DC

PRESENTATION OUTLINE

I/ Country overview

II/ Energy Supply

**III/ Energy Institutions &
Energy efficiency activities**

IV/ Anticipated frameworks

V/ Summery

Country overview (Cont..)



Country overview (Cont..)

- **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:**
 - **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**

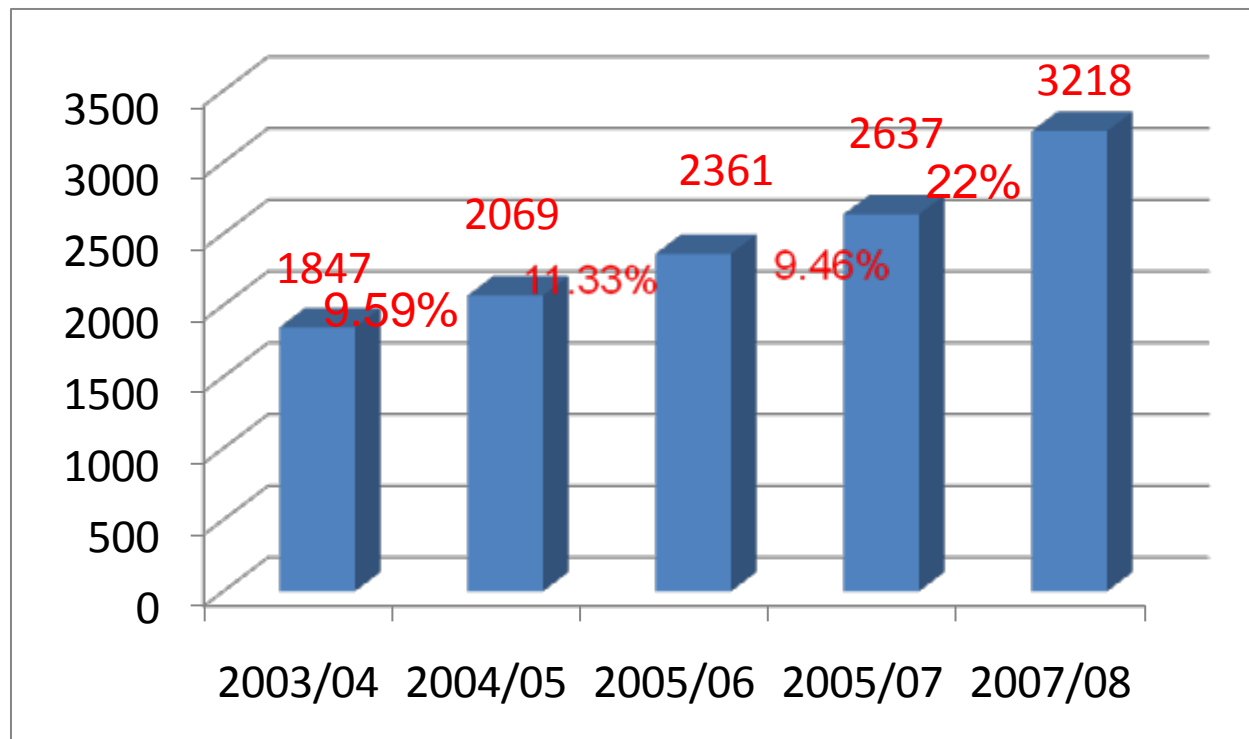
-Temperate Zone - between **1,500 m (4,920 ft) and 2,600 m (8,530ft)** temperatures range from **16 degrees to 30 degree**, densely populated area.

-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

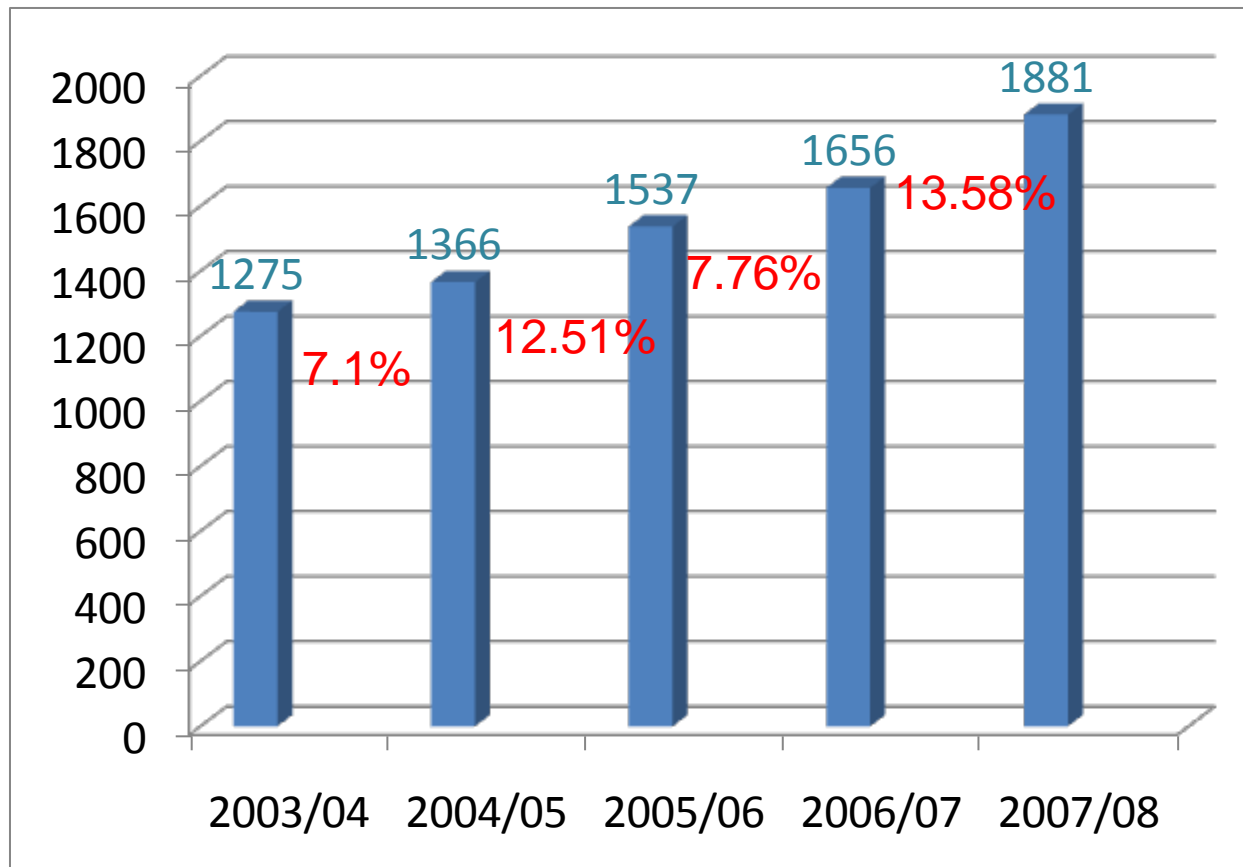
A/ Electricity sales GWh



Source : MM&E

Energy supply and demand (cont...)

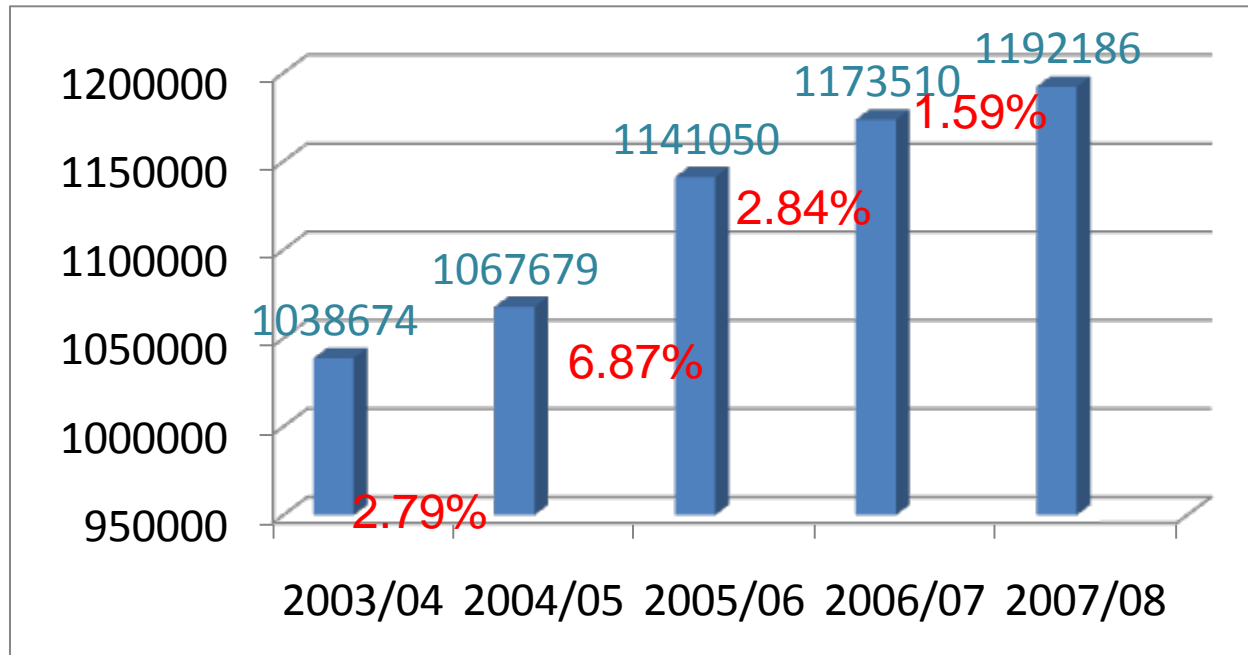
B/ Petroleum products consumption In 000 metric tones



Source : MM&E

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

C/ Woody Biomass in TERA JOULES



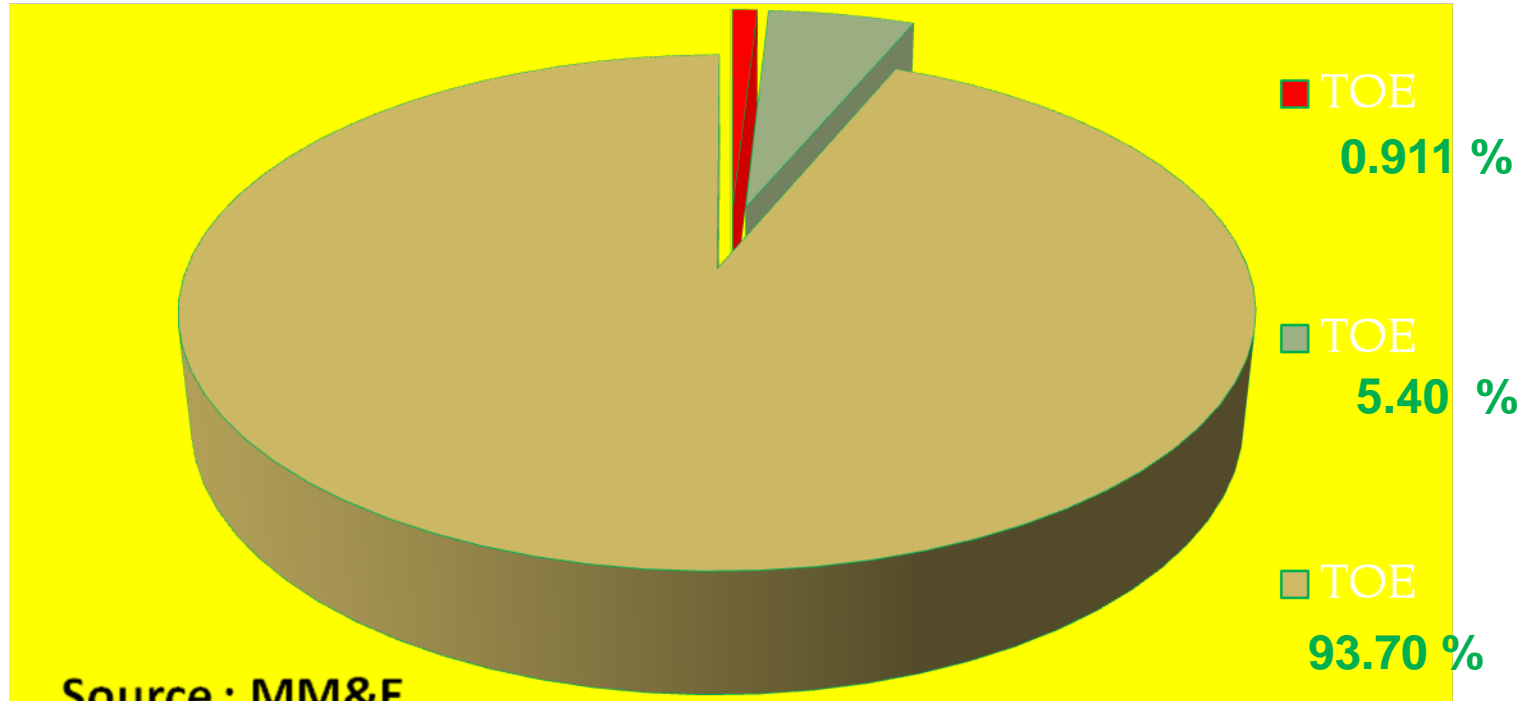
Source : MM&E

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

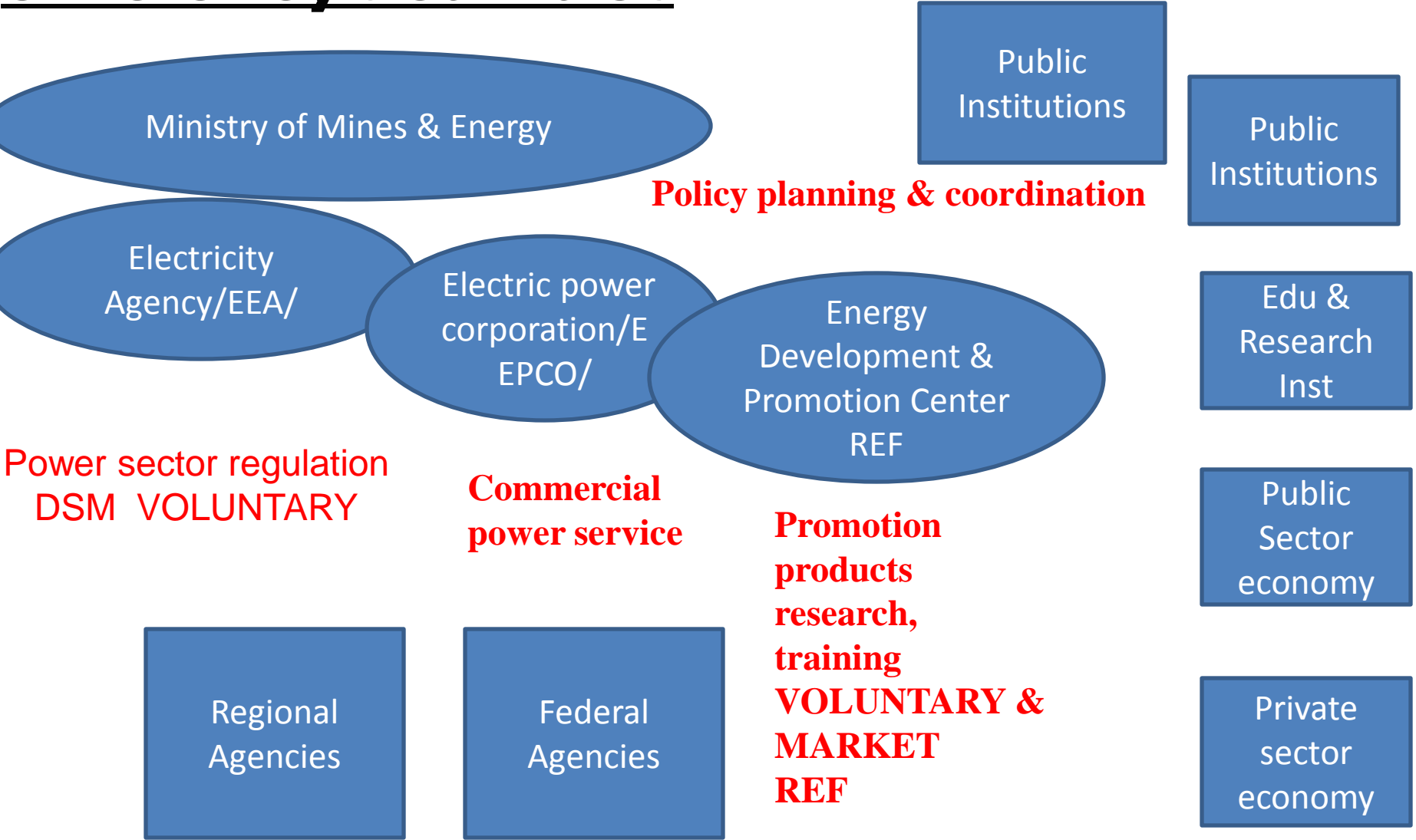


Source : MM&E

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 institutions & energy efficiency activities



Energy institutions & energy efficiency activities (cont...)

- ❖ **High potential for energy saving and conservation in all sectors of our economy,**
- ❖ **Limited baseline studies and some studies are already too old**
- ❖ **Previous government efforts to promote energy efficiency and alternative energy sources focused 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 attempt to find solutions from the market

❖ The effect of different DSM 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;**
- ❖ **Bread baking using biomass resource the brand saves up to 54% compared with 5 to 6 % of the traditional version.**
- ❖ **For cooking stove the improved efficiency reached to 25% as compared with the traditional 7 to 8 %,**
- ❖ **Penetration one third of the family (about 5 million families)**

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.

close to 5 Million CFLs freely distributed

**/exchange for incandescent lamps/ Saving of
75 MW**

. Duties waved for CFLs removed/recently/

Another round of 5 Million CFLs in progress

Transport sector:

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

IV/ Anticipated legal & institutional Frameworks

Limitations & triggers

- In adequate 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
- ✓ Role played by rural Energy Development and promotion dominates the national effort though other Agencies and NGOs plays their own part/propagation, dissemination, conservation etc. energy technologies/
- ✓ Dominated by biomass energy in the HH sector

Anticipated legal & institutional (cont...)

- **Environmental negative impacts**
- **Woody biomass coverage declining:**
 - ✓ **65% of the 500 administrative regions/ are in net deficit,**
 - ✓ **This is about 30 to 40% of the population,**
- **Market fails to guarantee efficient use of energy resources**
- **Ever increasing energy price, especially petroleum,**
- **Population growth , economic growth**

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 artificial lights,
- 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

PROCURMENT PRACTICE & THIRD PARTY FINANCING

Anticipated framework (cont...)

- Fiscal policies and laws:
Efficiency oriented energy tax systems
e.g. rebates on energy efficiency products, tax exemptions, subsidies,
- Investment laws /Investment incentives
oprofit 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, certification, equipment & appliance labeling, licensing energy efficiency services**
- ❑ Creating mandatory or market based systems for energy savings, voluntary agreement, certificates**
- ❑ 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**

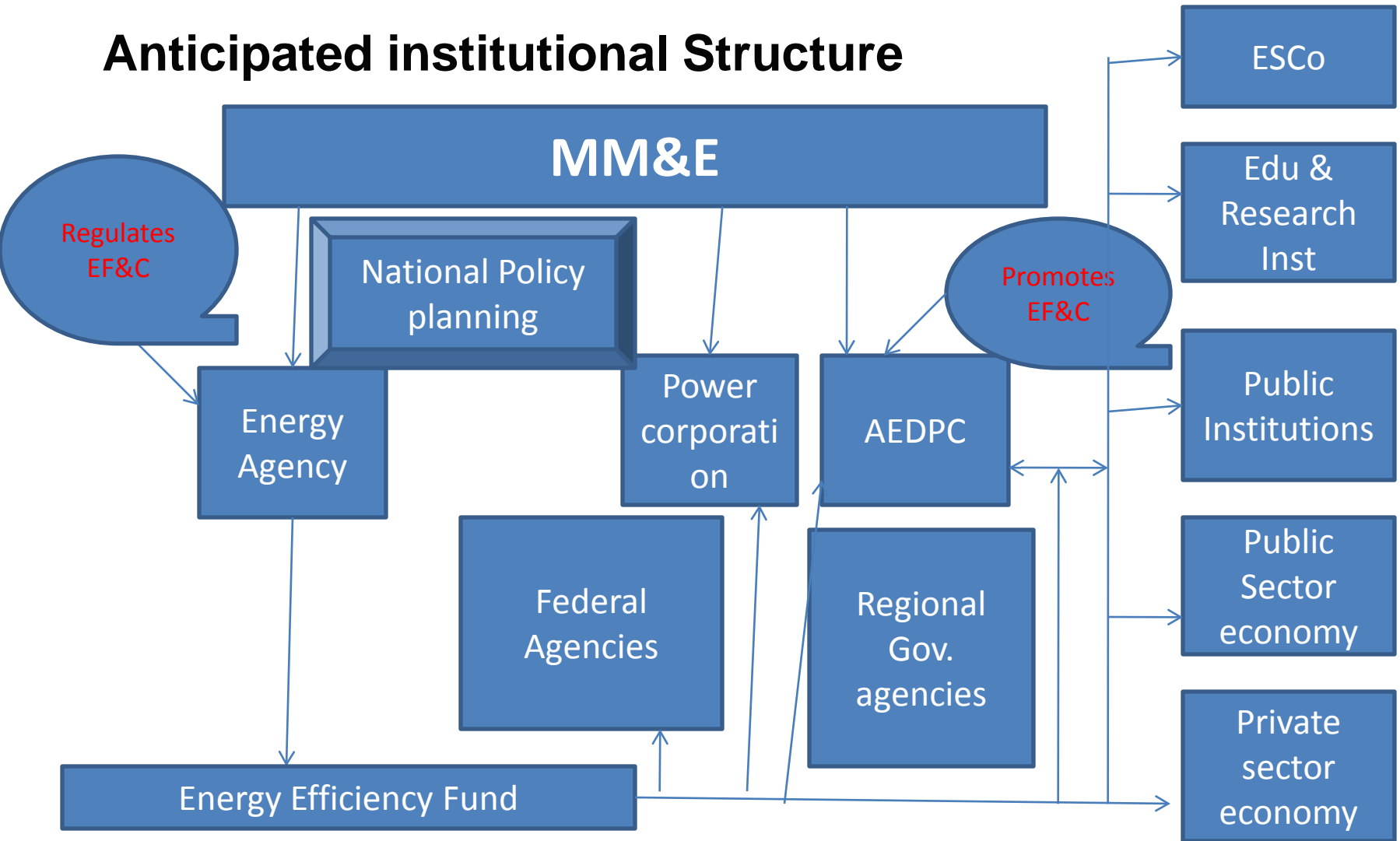
- **Setting institutional requirements**
 - **Redesign Electricity Agency in to an Energy Agency responsible for regulating EE&C, buildings, Industry, Transport, Appliances, Energy auditing, promotional and mass persuasion/education etc.**

Anticipated Frameworks (cont.)

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

Anticipated Frameworks (cont.)

Anticipated institutional Structure



V/ 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...)

➤ **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**



THE END
THANK YOU FOR YOUR ATTENTION