

# Energizing Africa Through Energy Efficiency

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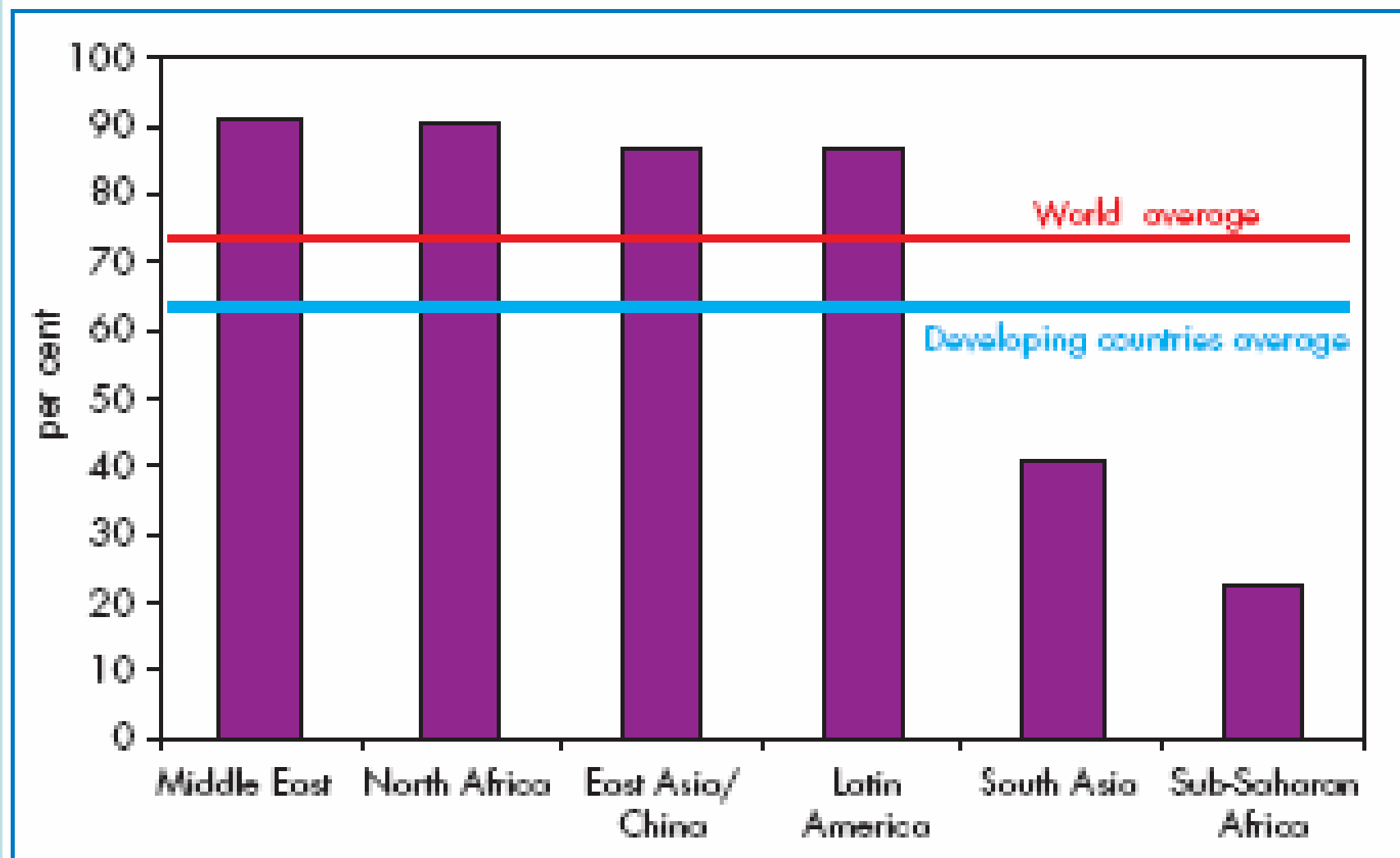
**6<sup>th</sup> Global Forum For Sustainable Energy**  
**29<sup>th</sup> November – 1<sup>st</sup> December 2006,**  
**Vienna, Austria**

# Why Energy Efficiency?

- **Acute shortage** of commercial energy. Increased thermal electricity generation
- **Commercial** and industrial sector consumes large % of electricity generated.
- **Wastage of energy** ranges between 10% and 40% of primary energy input



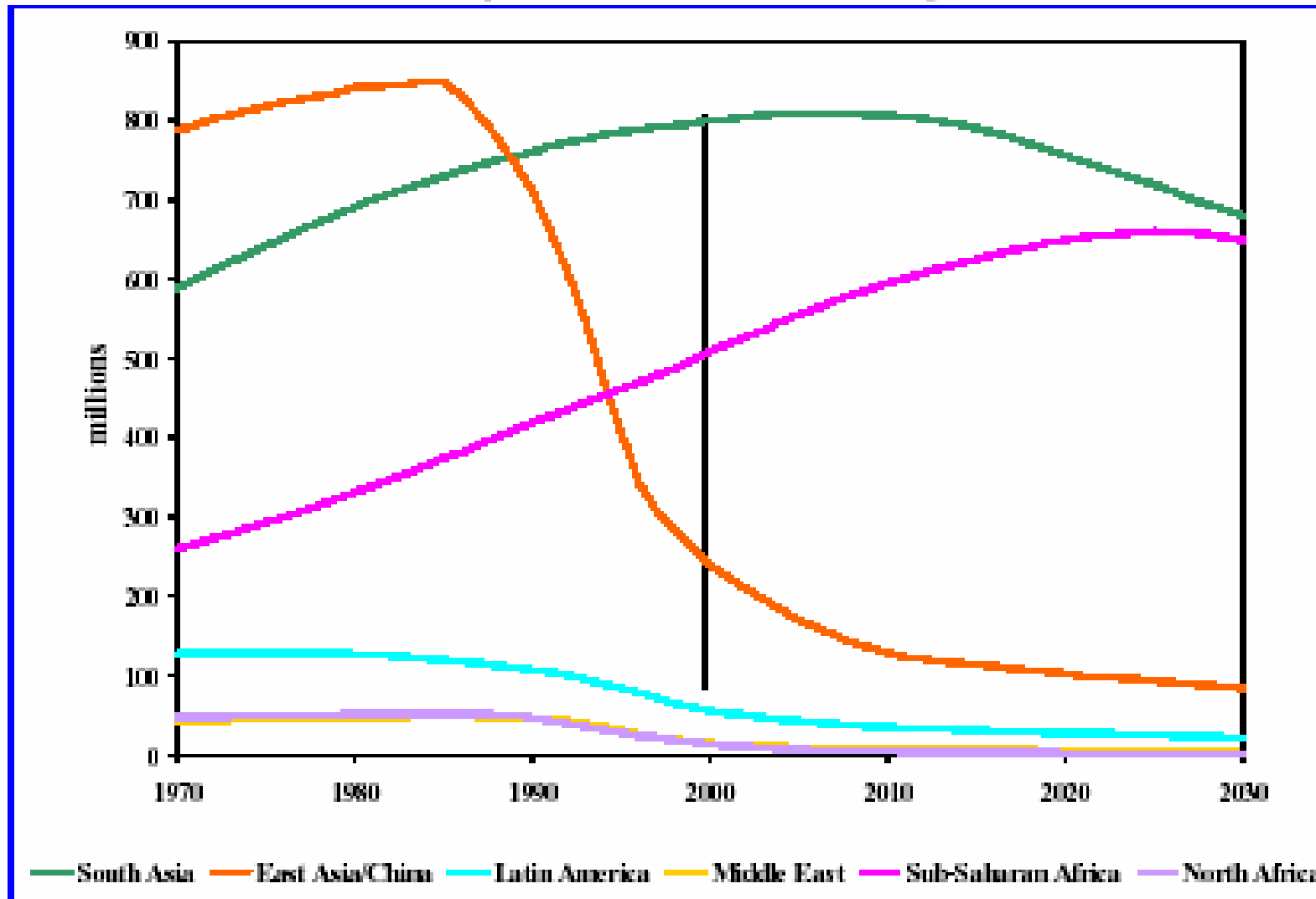
# Electrification Rates by Region (2002)



*IEA 2002 analysis*

# Serious Power deficit in Africa

Number of People Without Electricity, 1970-2030



# Constraints to Energy Availability

## □ Power sector

- Inadequate development of energy infrastructure
- Prohibitive costs for new capacity development
- Inefficient Generation and transformation,
- Distribution Losses – Up to 23%
- End use Losses – Up to 40%

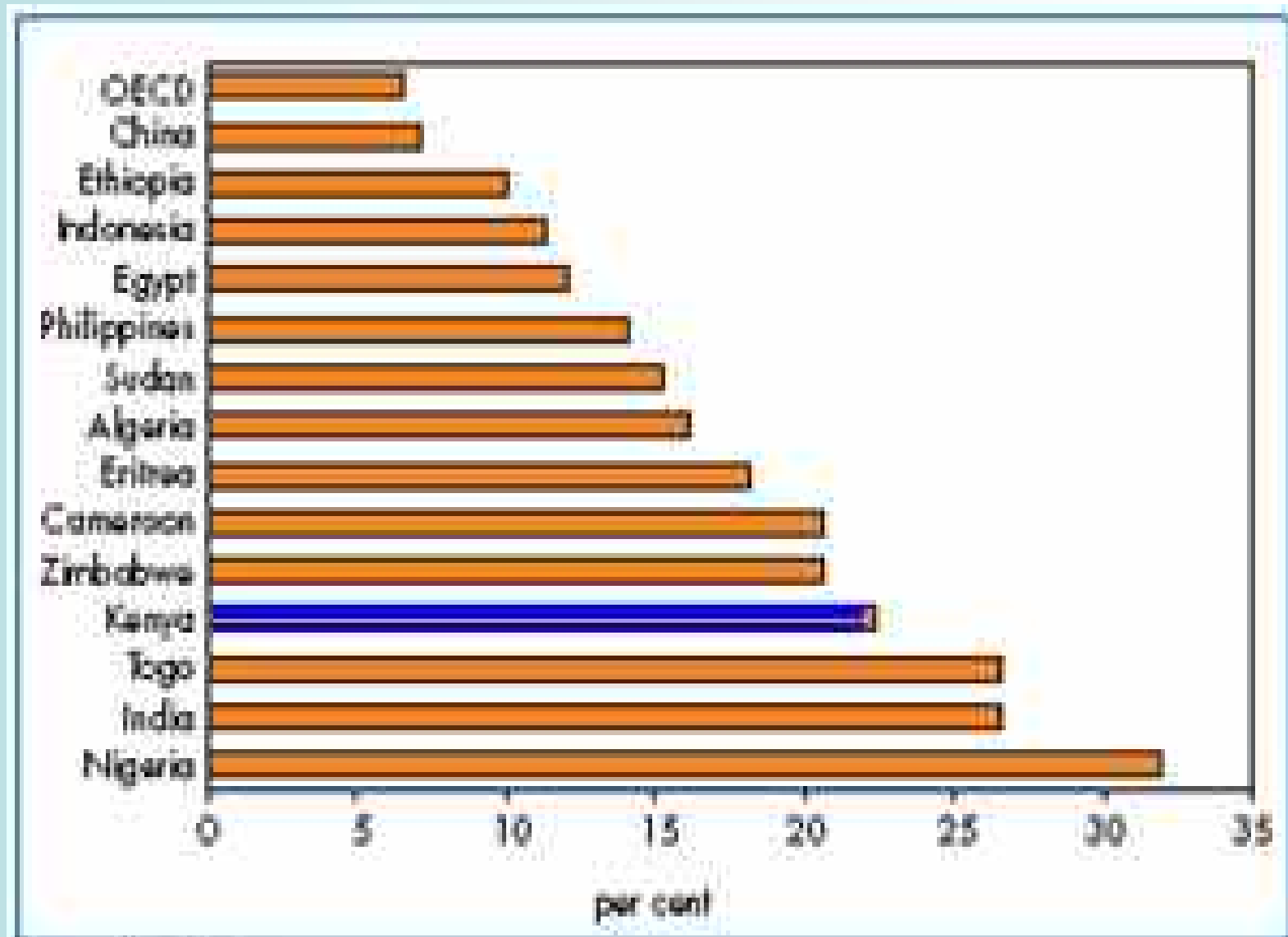
## ▪ Wood fuel Sector

- Poor charcoal production. Efficiency 15-30% (Uncontrolled and illegal operations)
- Inefficient end use – stoves

Where does the Energy

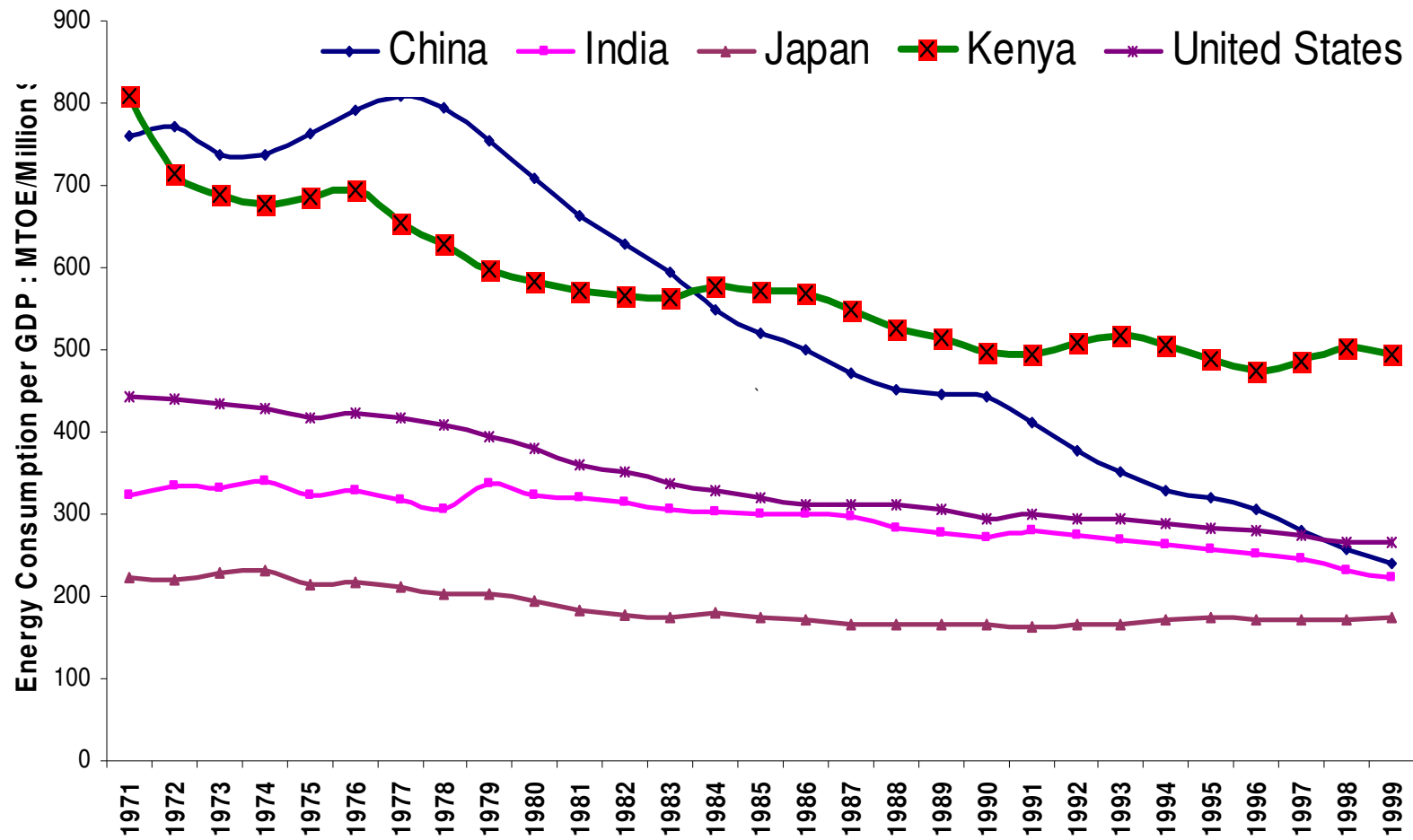
Go?

# Electricity Losses by selected countries



Source: IEA analysis.

# Energy Intensity Vs GDP



# **The GEF-KAM INDUSTRIAL ENERGY EFFICIENCY PROJECT**

**A Project of GEF, UNDP,  
Government of Kenya and the  
Kenya Association of  
Manufacturers**

# Overall Objective: Removal of Barriers to Energy Efficiency



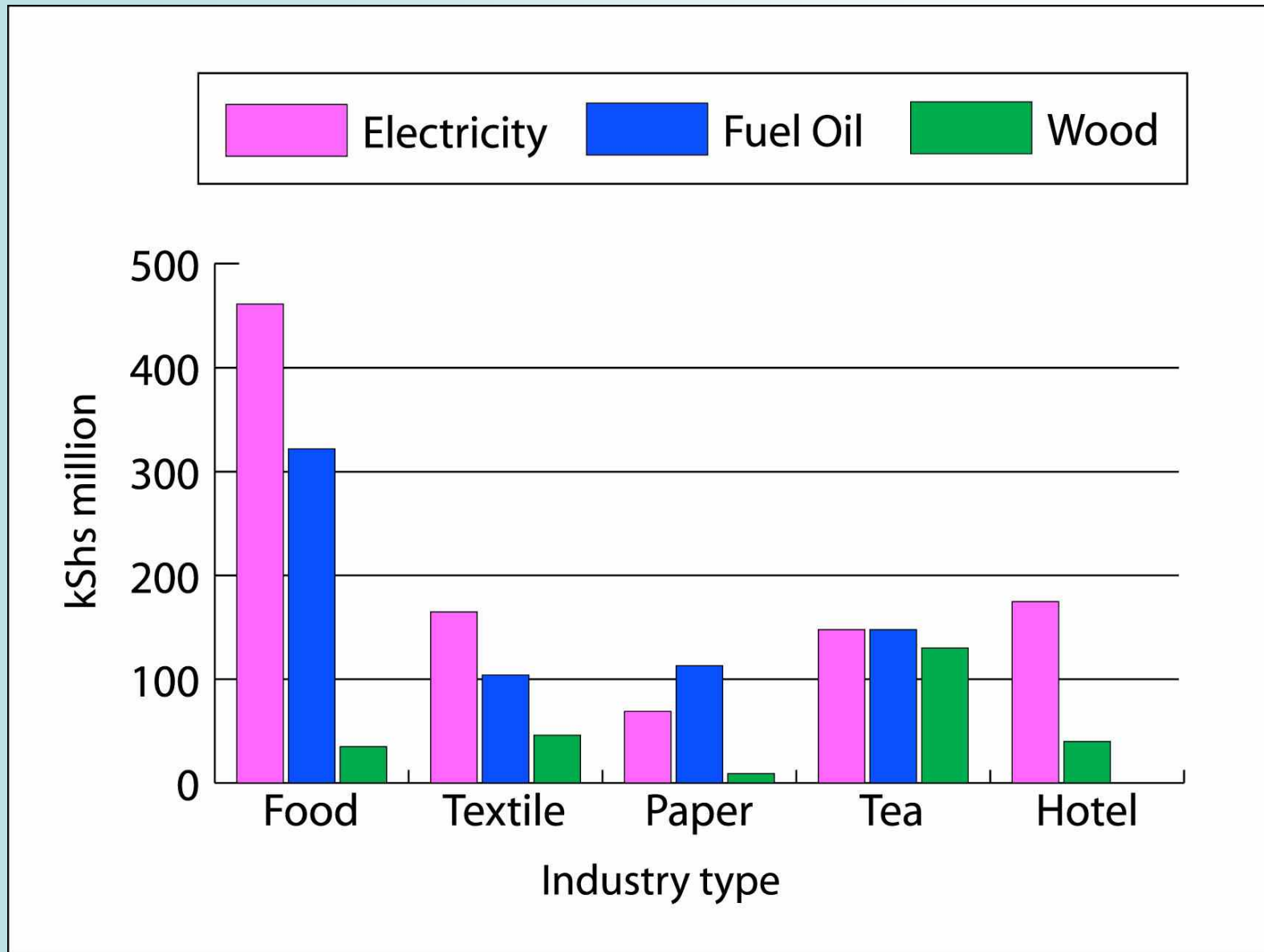
- **Awareness and Information**
- **Capacity**
- **Financial**
- **Policy and Institutional**

# Case of Kenya: Energy Scenario



- Biomass meets 72% of national energy demand.
- Dependence on imported petroleum products for Industry and Transport.
- **Represents over 30 % of Kenya's total import bill.**
- Oil meets 90% of commercial energy demand

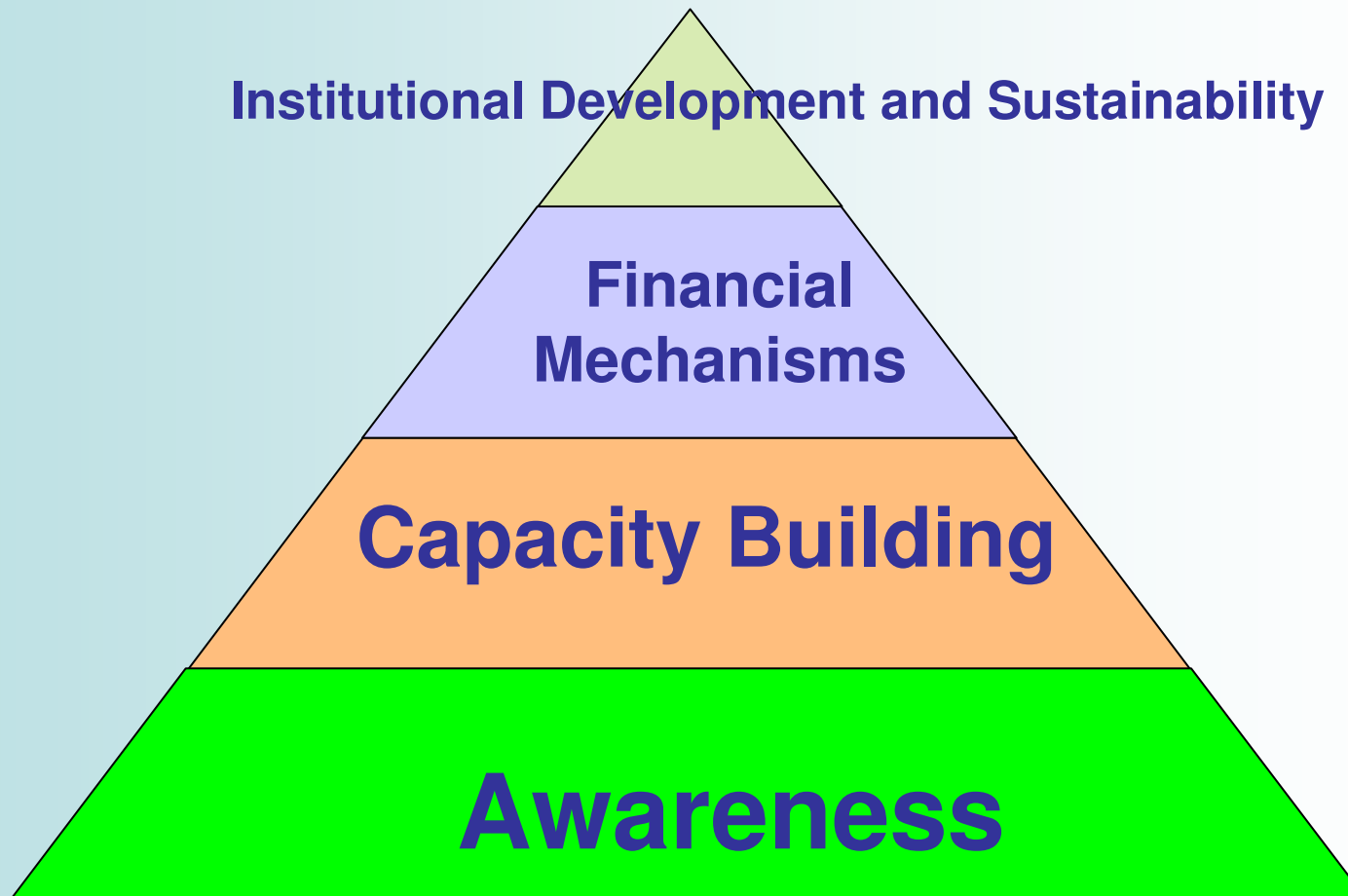
# Energy Saving Potential



**Estimated energy saving potential in Kenya for selected sub-sectors**

# Implementing energy efficiency

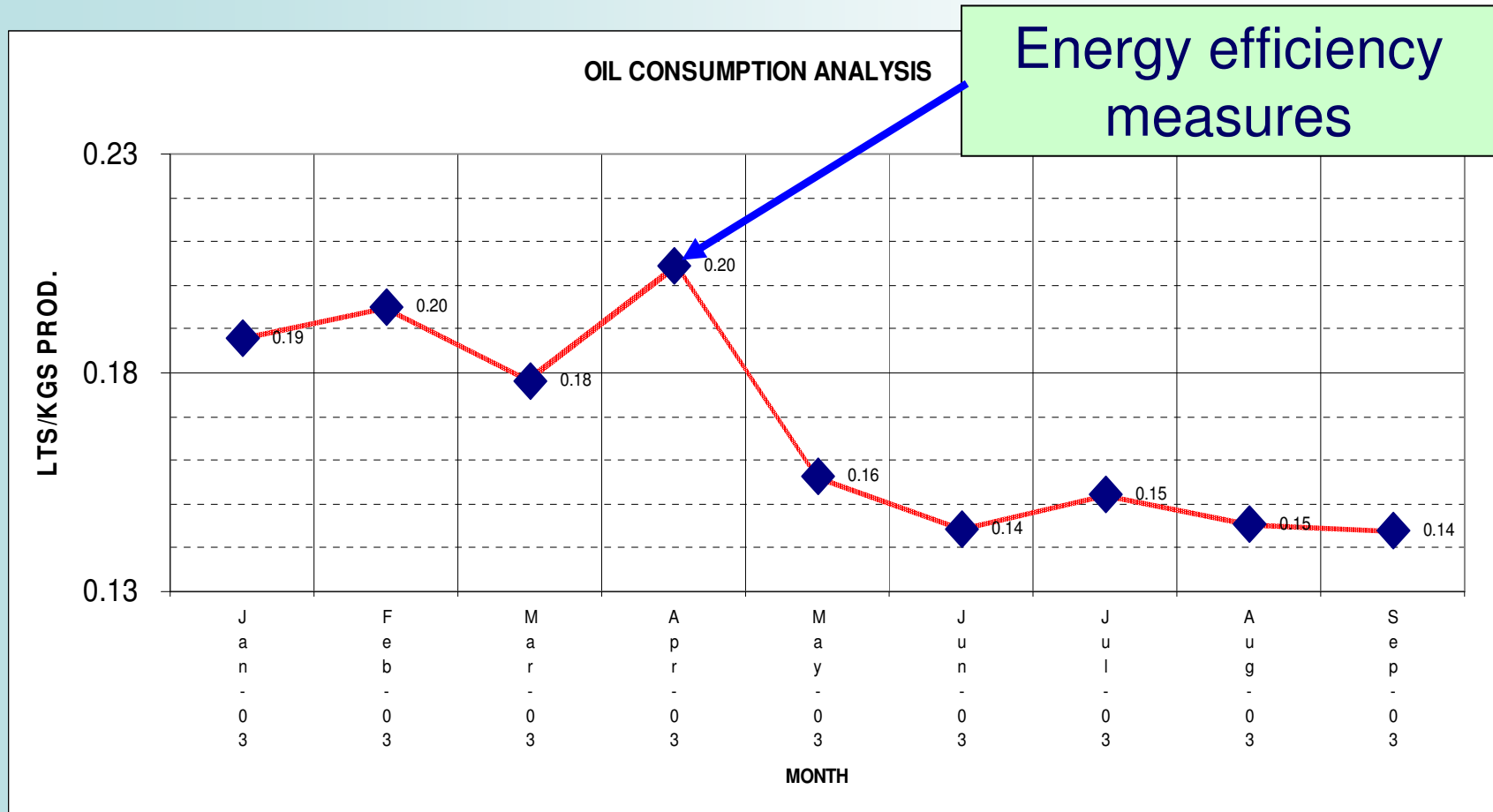
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# Common Energy Efficiency Measures

1. Energy efficiency and fuel switching for industrial facilities
  2. Energy efficiency for residential and domestic use
  3. Energy efficiency and fuel switching for buildings
  4. Energy efficiency and fuel switching for agricultural facilities and activities
  5. Supply side energy efficiency improvements – generation
  6. Supply side energy efficiency improvements transmission and distribution
- A system wide approach to efficiency in the entire energy chain.
  - Energy Standards and labels

# Practical energy savings



Lowering of energy intensities in a textile plant in Kenya

# Recognition



# Energy Management Awards



# Adoption in Industry



# “New Energy” from Energy Efficiency

## Energy Savings

115,000Toe or 1,198 GWh in 4yrs – worth US\$22m

Represents 1/4 of annual electricity consumption or a Equivalent to 140MW generation plant operating for 1 Yr

**This is available new energy!!**

## CO<sub>2</sub> Savings estimates

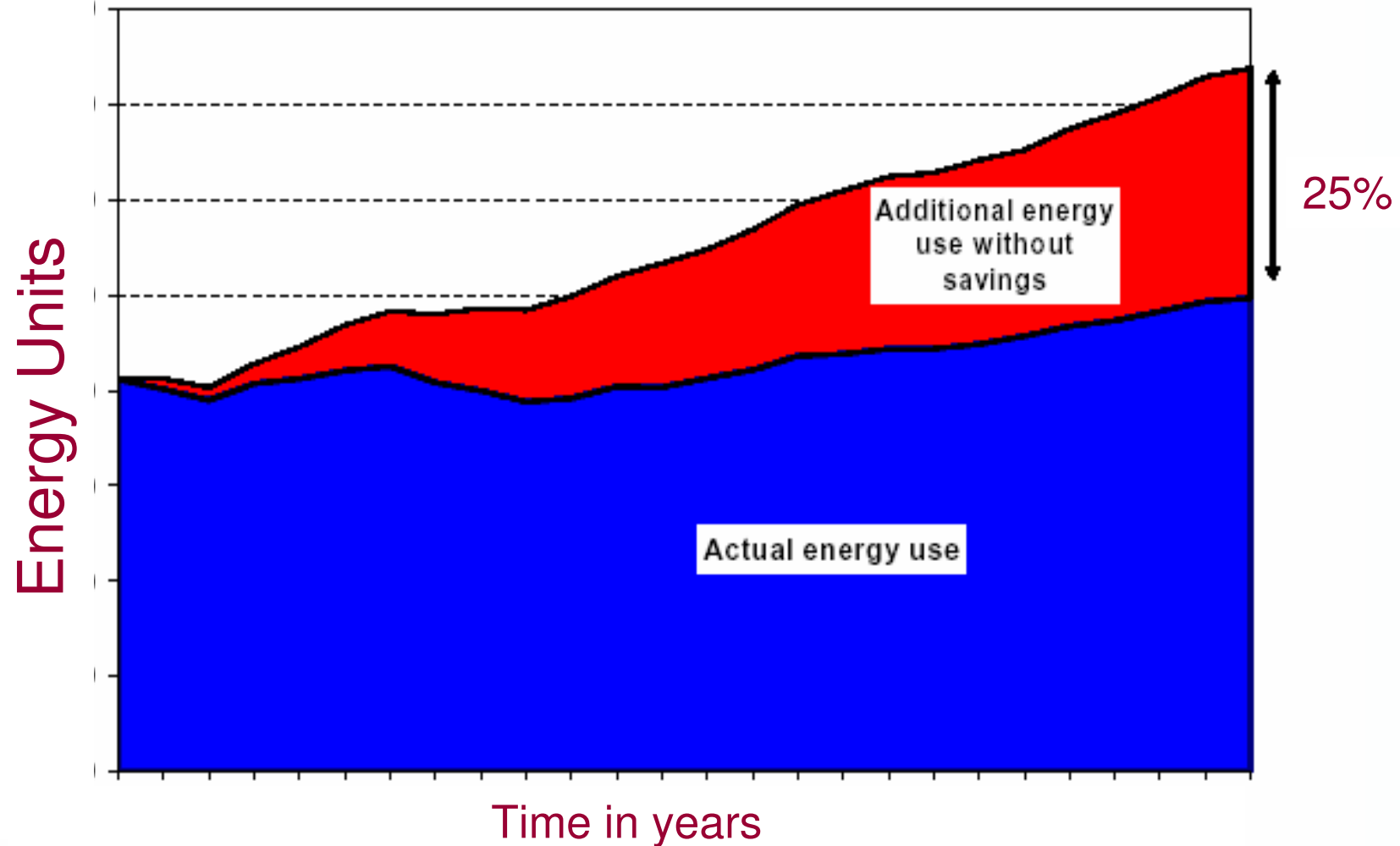
**5 years - 580,000 tonnes @ \$5.50 per tonne,**

**15 years - 5.27 million tonnes @US\$ 0.6 per tonne**

**Developed a S&L Programme**

# Energy Efficiency

## A cost effective “Source of Energy”



**25% reduction in energy consumption**

# Benefits of Energy Efficiency

- ✓ Availability of energy at 1/3 cost of new generation
- ✓ Reduce reliance on imported energy
- ✓ Increase competitiveness
- ✓ Less environmental impacts
- ✓ Keep and Create Jobs
- ✓ Contribute to Poverty reduction
- ✓ System wide improvement benefits

# Why the Low uptake of Energy Efficiency in Africa?

# Barriers to Energy Efficiency

- knowledge of energy saving potential is lacking;
- Low technical capacity to identify and implement measures
- Lack of supportive financial mechanisms;
- the motivation and decision criteria of those who make investment/procurement decisions
- Institutional and policy weaknesses

# Challenges

- Poor power quality – causing costly losses to industry which wipe out EE gains
- Uneven trading field – Competition not based on efficiency and cost reduction
- Equipment – no energy standards and labels to control equipment and appliances efficiency
- Lack of information on energy indices
- CDM complexities – (methodologies, project size, etc)

# Action Areas: Technical

1. Up-scaling energy efficiency to all sectors of the economy
2. Ensure the “saved” energy is available for increasing access to energy
3. Setting national targets, and standards

# Action areas: Policy

1. Establish legislation to promote and improve efficiency
  - ❑ Energy Transformation – Set Targets
  - ❑ Energy Distribution (reduce losses)
  - ❑ Utilization of Energy -
  - ❑ Promote Demand side management
  - ❑ Promote ESCOs
2. Introduce Energy Standards and Labels
2. Incentive schemes - Price signals
3. Promote Financing Mechanisms
4. Mainstream Energy Efficiency into policy and energy policy and programmes.
5. Build capacity at national and enterprises

# Action Areas: institutional

- Develop Energy Efficiency support institutions e.g. National energy commission, energy efficiency bureau (Korean energy management corporation established in 1974)
- Address use of CDM
- Establish fruitful Partnerships
  - REEEP
  - World bank
  - OECD
  - AfDB

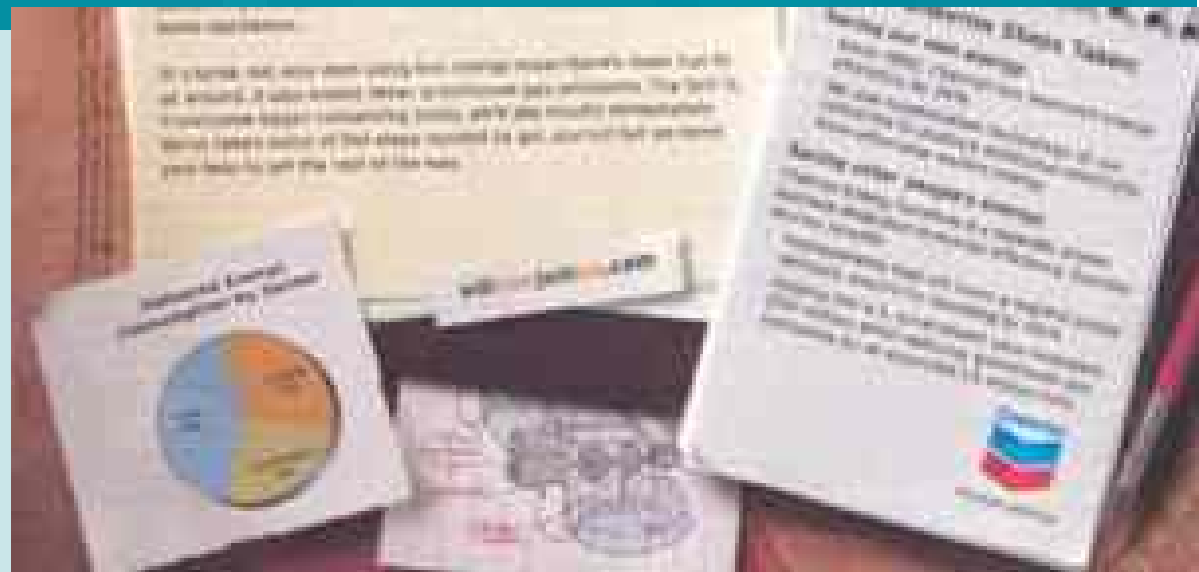
# Conclusion

- Energy Efficiency is a major pillar in energy access, affordability and security strategies
- The Key lies in implementation of Cost-effective investments in energy efficiency in parallel with investment in energy supply to meet the energy needs.
- There is need to promote continuous research and development, Awareness creation and capacity building
  - Set National targets: Energy intensity, Energy Elasticity, etc.

# Energy Efficiency Potential

A 5% reduction in global energy use would be enough to power Australia, Mexico, and the entire UK.

So what are we waiting for?



# Energy Efficiency Works

So Lets make it work

Thank You