



African Energy Commission

AFREC's Approach to Energy Efficiency in Africa: Policy Framework & Technical Programs

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Thematic Focus

Energy Efficiency in Africa: Status and Future Prospects

Growth Trends in Africa

The WEC estimated that between 1980 to 2001:

- **Africa has 13 per cent of the world's population with growth rate of 2.5% per year.**
- **Africa's real GDP growth averaged 2.0% per year but per capita real income fell, while electricity, carbon, and energy intensity levels increased.**
- **Energy consumption grew at 2.5%, and carbon dioxide emissions 2.3% with per capita energy use and carbon dioxide emissions rates declining very gradually.**
- **Africa's electricity consumption grew the most rapidly over the period, rising 88% overall -- an average rate of 3.1% per year.**

Energy & Carbon Dioxide Intensity

- **Africa's energy intensity increased slightly between 1980 and 2001, from 5,953 Btu per \$1995-PPP to 6,555 Btu per \$1995-PPP.**
- **Nigeria and South Africa accounted for the bulk of this increase, as they consume the bulk of the region's energy and constitute the largest economies.**
- **Between 1980 and 2001, African carbon dioxide intensity grew slightly, from 0.49 metric tons per thousand \$1995-PPP to 0.51 metric tons per thousand \$1995-PPP.**
- **Africa is the only world region where carbon dioxide intensity increased during this period.**

Electricity Consumption & Intensity

- **African electricity consumption grew an average of 3.1% per year between 1980 and 2001, from 146 bkwh to 275 bkwh. During this time, the per capita demand declined, making Africa with the smallest per capita consumption of electricity in the world.**
- **Africa's lack of industrialization is indicative for its very low per capita demand for electricity. In 2001, Africans consumed only 394 kwh per person, which is less than 5% of the OECD per capita electricity consumption rate and just over half of Developing Asia's consumption rate.**
- **Overall, African electricity intensity grew 23% between 1980 and 2001, rising from 183 kwh per \$1995-PPP to 224 kwh per \$1995-PPP. This constitutes an average annual increase of 1%.**

Reasons for Africa's Poor Energy Efficiency

- **Old and outdated technologies which consume a lot of energy.**
- **Weak or absent competitive market forces.**
- **Subsidy of petroleum fuels and electricity prices.**
- **Trade barriers and discriminatory taxes and subsidies.**
- **Lack of local financing at competitive rates.**
- **Relatively high weight given to first-cost considerations when making equipment purchases.**
- **Lack of government commitments to efficiency-related policy and institutional changes.**
- **Lack of in-country technical knowledge and the absence of local suppliers of energy-efficient options.**
- **Absence of specific efficiency incentives, such as mandated energy performance codes and standards for industry and transport.**

Justification for Need of Operating Energy Efficiency in Africa

- **Energy growth will spur economic growth and living standards.**
- **In doing so, African countries need to increase their energy consumption.**
- **Energy efficiency offers the means to achieve the twin goals of sustainable socioeconomic development and environmental protection.**
- **Energy efficiency increases industrial competitiveness and frees up capital.**
- **The key to improving energy efficiency is through modernizing technologies, practices, policies and building institutions for promoting energy efficiency.**
- **Industrial countries can best help developing countries by providing guidance and resources to empower nongovernmental organizations (NGOS).**

Benefits of Energy Efficiency to African Countries

- **African countries have potential to achieve significant gains in energy efficiency.**
- **Realization of gain opportunities should start in planning stages.**
- **Improved energy efficiency would delay the need for capital-intensive investments in energy supply in addition to the potential savings in fuels.**
- **Energy-intensive activities are growing rapidly in several African countries.**
- **With the current unprecedented global energy prices, sector restructuring and utility deregulations will be forced to acquire new efficient technologies.**
- **Most energy-efficient technologies are cost-effective from the perspective of the life-cycle costs of technologies.**

Areas of Potential Savings in Energy Resources

In the Hydrocarbons Sector:

- Minimize losses in the refining sector
- Eliminating gas flaring

In Electric Power Generation Sector:

- Implement technical efficiency in electricity generation
- Minimize T&D losses (technical and non-technical)
- Improve in-house and plant management and practices
- Operate combined-cycle power cogeneration

In Biomass Sector:

- Promote the usage of efficient wood and charcoal stoves
- Create nationwide forestation and afforestation schemes
- Reduce carbon emissions through expansion of green cover
- Collaborative R&D to advance feedstock and conversion technologies;
- Public-private partnerships.

Areas of Potential Savings in Energy Consuming Sectors

In Transportation Sector:

- **Sponsor new vehicle concepts that run on hybrid flex fuel modes.**
- **Creation of fuel consciousness among motor users.**
- **Setting the prices of fuels products to reflect their real costs.**
- **Encourage acquisition of modern vehicles through incentives.**

In Industry Sector:

- **Acquisition and use of better electric motors, adjustable speed controls.**
- **Operation of efficient boilers and electric heaters;**
- **Apply incentives.**

In Residential/Public/Service Sectors:

- **Encourage improved lighting and better refrigeration technologies.**

AFREC's Approach to Energy Efficiency in Africa

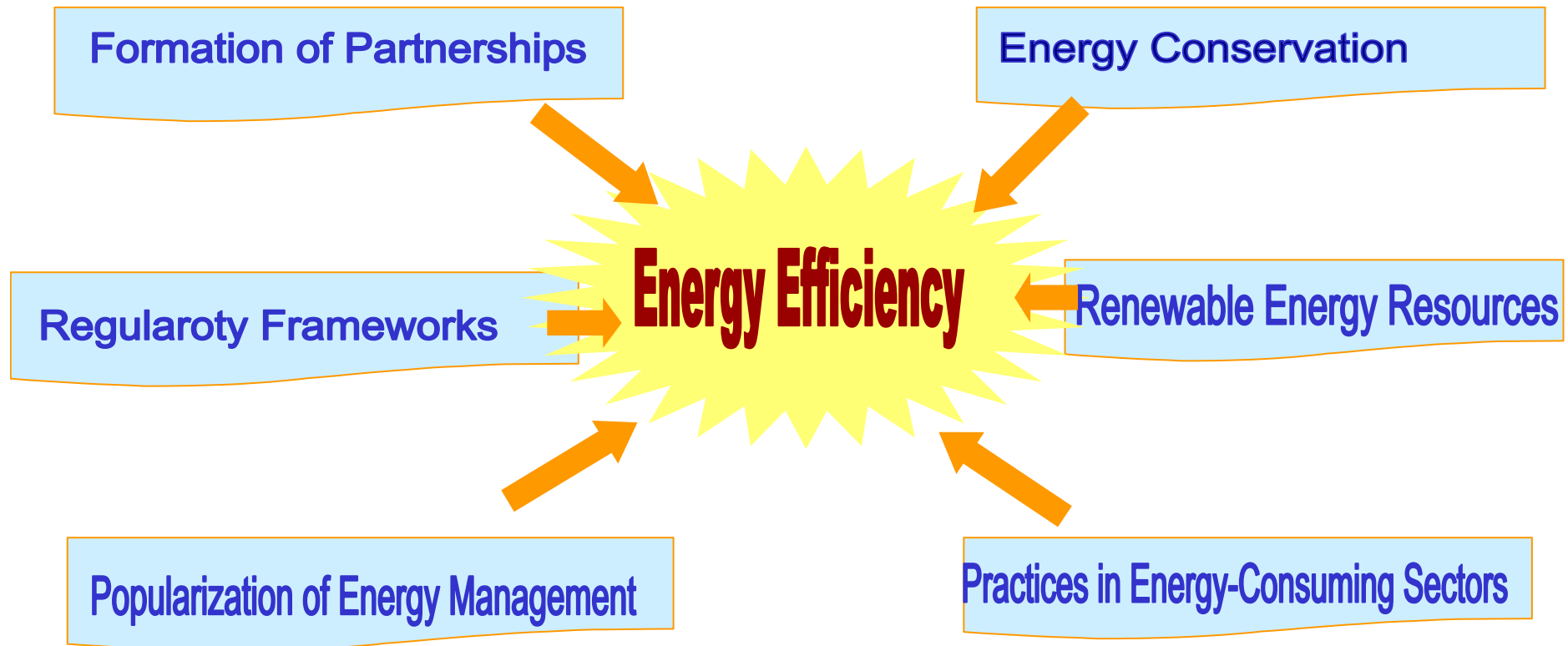
Legal Framework -- Article 4(i): Functions of AFREC

- **“Establish the necessary mechanisms for the exploitation and utilization of energy resources of the continent in an optimal and efficient manner with the aim of complementarity”**

Areas of Policy Intervention:

- **Holistic**
- **Gap Filling**
- **Technical assistance and Capacity Building**
- **Provision of Information and Guidance**
- **Advocacy and Facilitation**
- **Transfer of knowledge and Dissemination of Proven Experiences**
- **Formation of Partnerships (PPPs),**

Areas of Policy Intervention:



Requirements for Successful Energy Efficiency Implementation

- **Well articulated policy approach and solid regulatory framework**
- **Deliverance of adequate finance and supporting the capacity**
- **Formation of efficient partnerships with advanced countries**
- **Adoption of serious policies for technology transfer and know-how**
- **Provision of financial support and adoption of energy efficiency in the national energy and economic plans**
- **Research, training, technology development and education**



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