African Union Commission | African Development Bank | Economic Commission for Africa

ClimDev-Africa

FOSSIL FUELS IN AFRICA IN THE CONTEXT OF CARBON CONSTRAINED FUTURE

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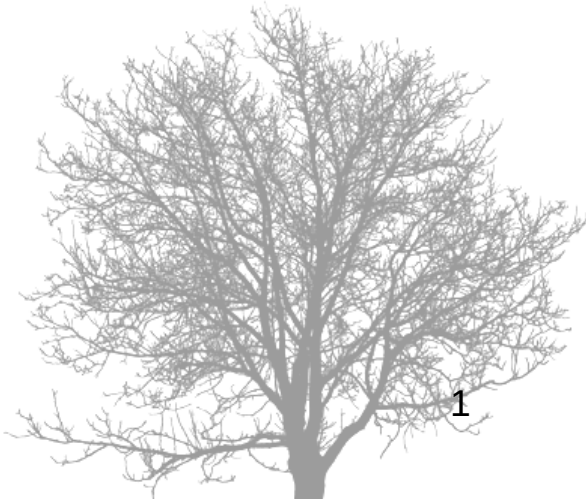
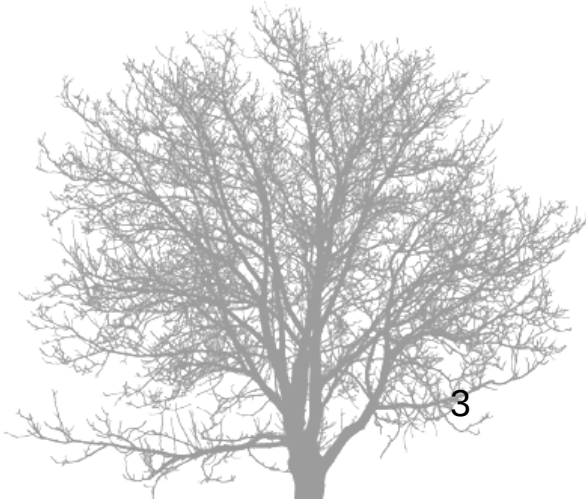


INTRODUCTION

- Fossil fuels (crude oil, natural gas and coal) play vital roles in the energy system and economies of African countries.
- Africa has enormous fossil fuel reserves (shares in total reserves): Crude oil (9.5%), natural gas (8%) and coal(4%)
- Over 80% of Africa's electricity generated from fossil fuels
- Challenges and opportunities:
  - Use fossil fuels for improved energy access, economic growth and poverty reduction
  - Mitigate contributions of these resources to climate change.

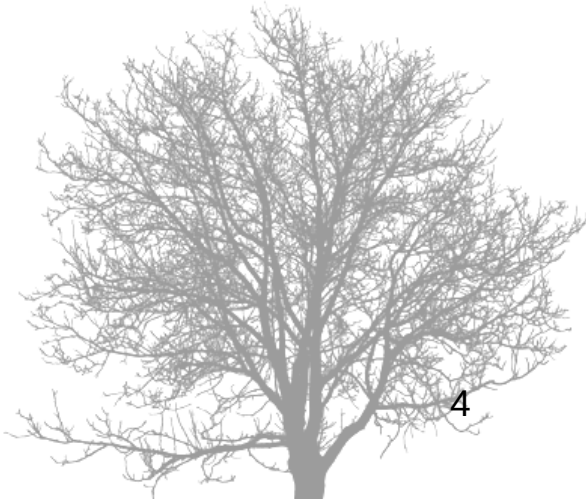
Objectives

- to review reserves, production and consumption
- to examine GHG emissions trend, and
- to explore technical and policy options for a low carbon pathway

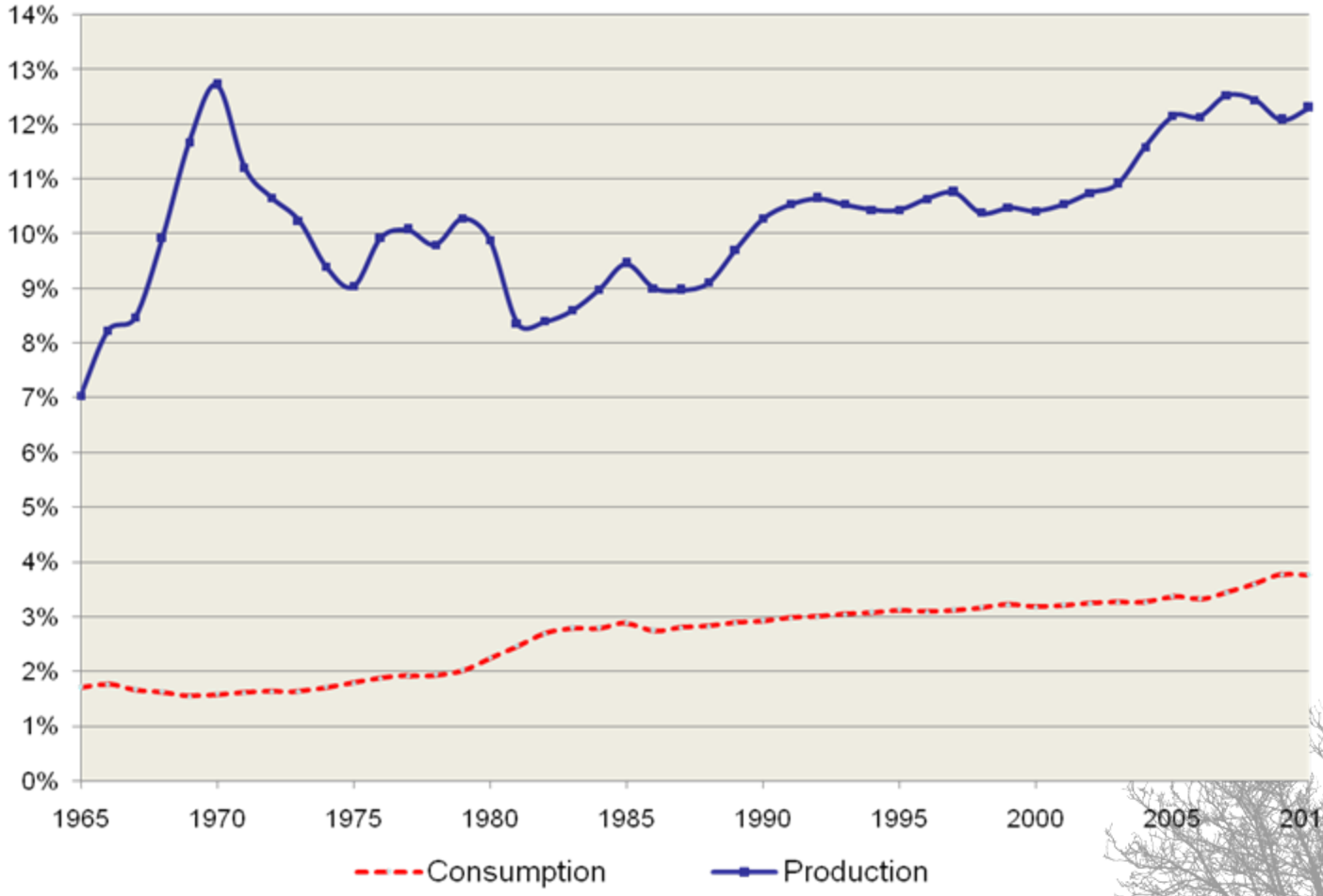


Fossil fuel reserves in Africa

- Crude oil (132.1 billion barrels)
- Natural gas (14.7 trillion m^3)
- Coal (31,696 billion tonnes)



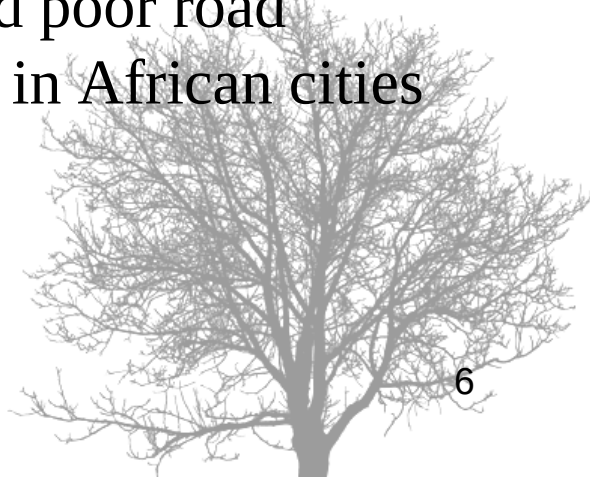
African Oil Production and Consumption Pattern



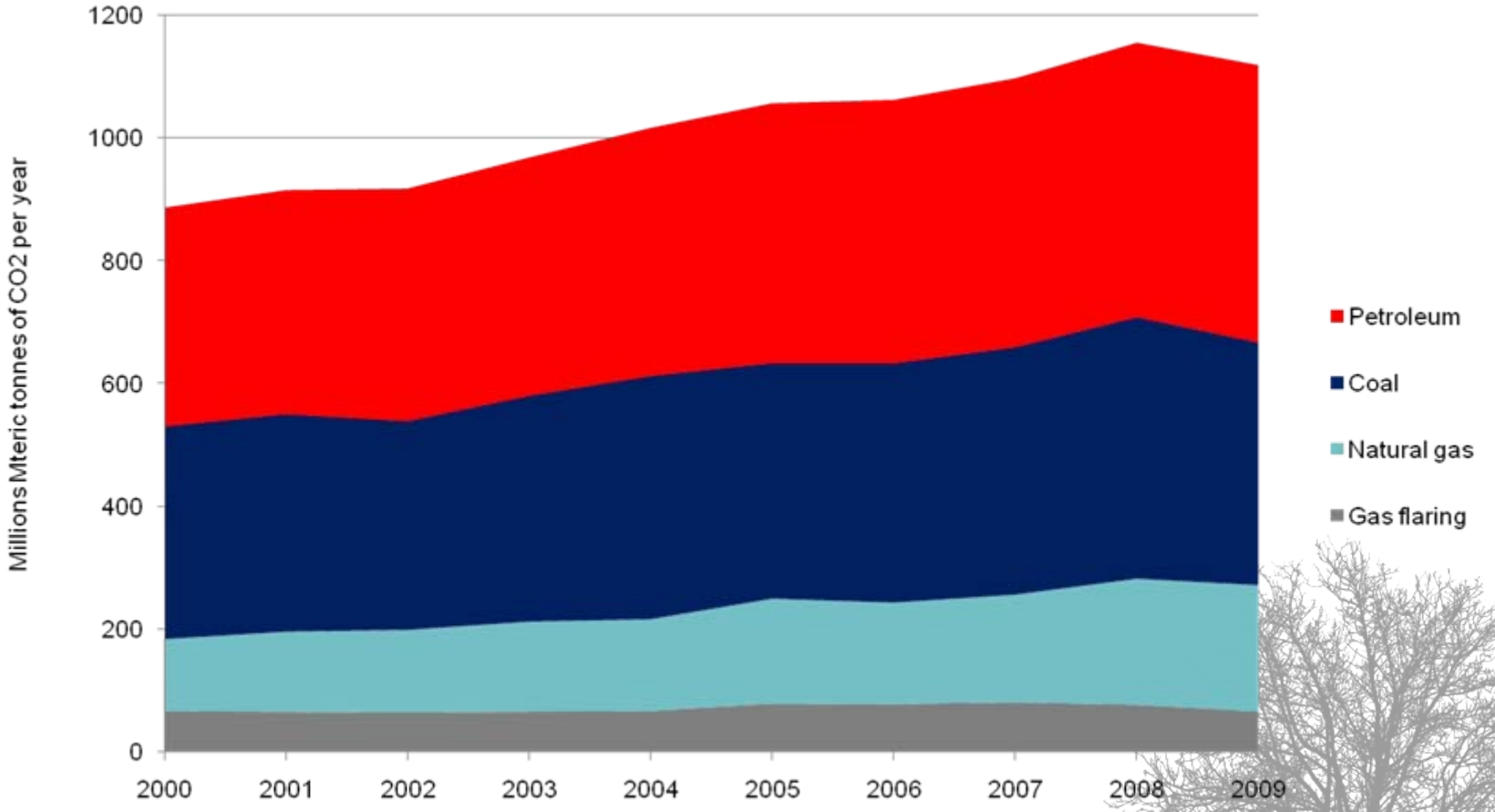
ROLE OF FOSSIL FUELS IN GHG EMISSIONS

- Africa responsible for 2.5% of the global cumulative CO_2 emissions from fossil fuels (1980-2005)
- S. A (38%)
- Egypt, Algeria, Nigeria, Libya & Morocco (46%)
- Combustion of fossil fuels -concern to the health of citizens.

e.g.: Old and/or poorly maintained vehicles, and poor road networks are aggravating urban air pollution in African cities



CO_2 emissions from fossil fuel consumption in Africa



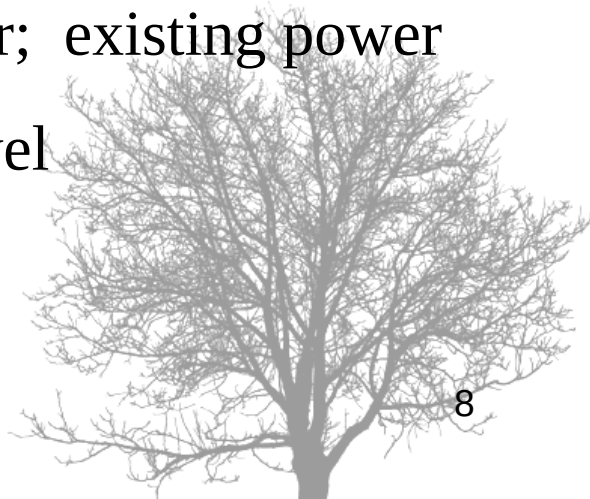
AFRICA'S OPTIONS IN A CARBON CONSTRAINED WORLD

Role of Renewable Energy Sources

(i) Importance of renewables (ii) Problems

Inter-fuel Substitution

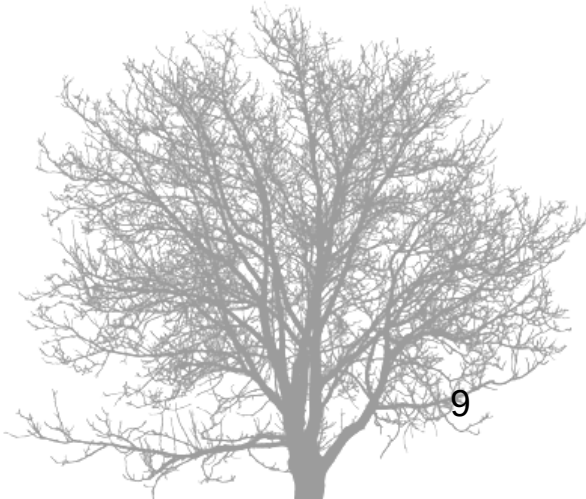
- Policy makers concern: to reduce emissions by making inter-fuel substitution
- Long-run - everything is possible except cost implications
- Focus on the short run: Substitution can occur; existing power generation plants, household & industrial level



Role for Cleaner (Fossil Fuel) Technologies

- To minimize GHG emissions into the atmosphere
- Options include: CCS, pollution control technology for coal-fired power plants, natural gas as a cleaner fossil fuel, etc

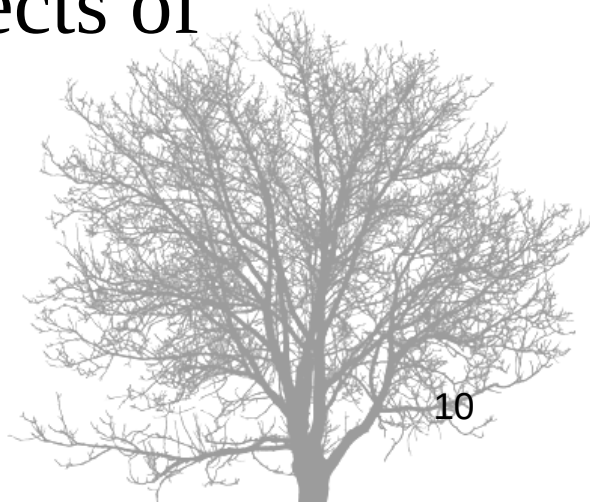
  - Rules and regulations: improved traffic management and vehicle maintenance, fuel substitution & modal shift, etc.



Policy instruments

- Taxes, subsidies, regulation, product charges, tradable permits, information provision

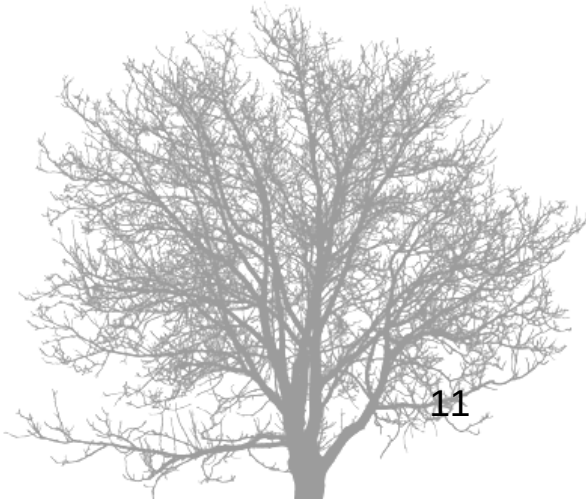
- Need to understand (indirect) effects of instruments



Barriers to Technology Development and Use

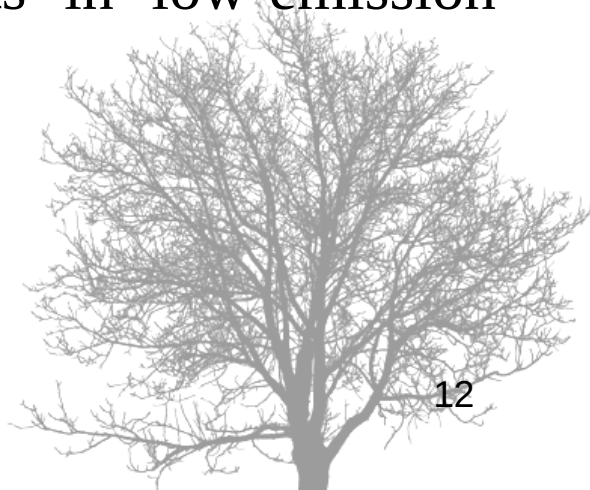
- **Economic barriers include:** high development and capital costs; limits on access to financing; lack of trained staff, etc

- **Institutional barriers include:** weak institutional capacity, problems of monitoring & enforcement, limited information, cultural & social barriers, etc.



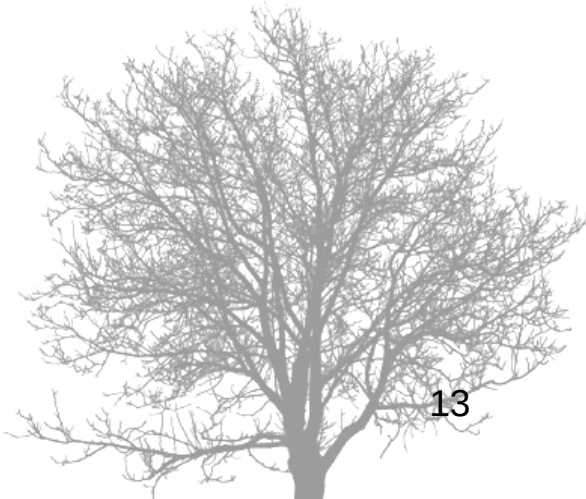
Investment Requirements and Availability of Finance

- Lack of finance- a main barrier to sustainable energy use
- Barriers to mobilizing investments in sustainable energy:
- Ex. Political risks, absence of the necessary institutional frameworks and effective legal remedies, etc.
- Need to significantly scale up investments in low-emission fossil-fuel technologies



Research and Development

- Limited R&D on energy in Africa
- Reasons include:
  - inadequate funds,
  - lack of skilled professionals, and
  - lack of government commitment

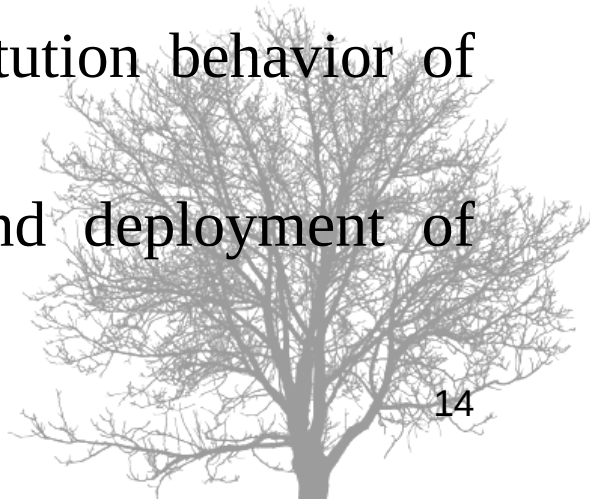


Implications

- Polices that encourage energy consumers to shift to less polluting fuel sources should be designed and implemented
- Focus on technologies that improve energy efficiency and conservation, and hence reduce GHG emissions
- Climate finance needed for low carbon development

In the future

- Need to assess policy instruments/experiences available in various Africa countries
- Need to study further the inter-fuel substitution behavior of different agents
- Need to identify barriers for adoption and deployment of cleaner fossil fuel technologies



Thank you