

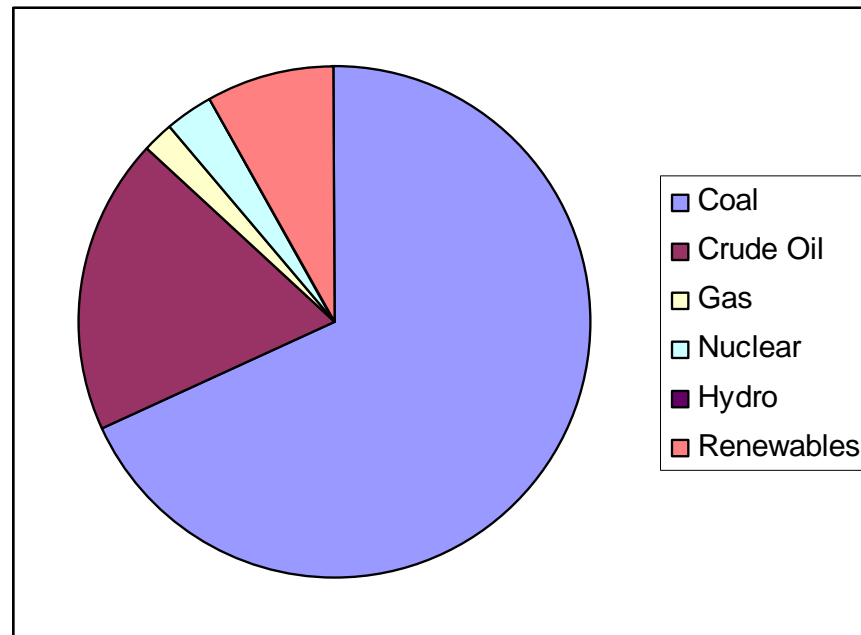


# Wind and Solar Energy Alternatives for the Karoo



# ENERGY in the SOUTH AFRICAN CONTEXT

## PRIMARY ENERGY SUPPLY: 2004



SOURCE: Digest of South African Energy Statistics - 2006

## Two major issues around the CURRENT ENERGY methods:

1. Not sustainable
2. Harmful to our environment  
and therefore to us

# SUSTAINABILITY

Non-renewable - running out of resources (2040/50)

- technological advancement
- population growth
- growing consumerism

Affordability - inexpensive now but set to change.

# HARMFUL EMISSIONS

According to ESKOM:

1 Kw hour (unit) of electricity =  
1 kg of carbon dioxide

# HARMFUL EMISSIONS

- Climate change
- Environmental Pollution  
(land, water, air)

The **ALTERNATIVE** to the current measures needs to:

- Be sustainable
- Consider the environment

# What are these ALTERNATIVES?

1. SOLAR ENERGY
2. WIND ENERGY



WHAT IS SOLAR energy?

## MAIN APPLICATIONS:

1. Solar Energy for WATER HEATING
2. Solar Energy for ELECTRICAL APPLIANCES

# SOLAR ENERGY FOR WATER HEATING

The heating up of water consumes the greatest amount of energy

e.g. heating up 150L of water  
(using a 3Kw element for 5 hours / day)  
= 15 Kwh (units)

# SOLAR ENERGY FOR WATER HEATING

- Small Scale: geysers, underfloor, pools, etc ...
- Large scale: dams ...

## RONDEVLEI

Solar water geyser – close coupled system (flat plate collector)









# SOLAR ENERGY FOR ELECTRICAL APPLIANCES









What is WIND energy?







# IMPLEMENTATION of Solar and Wind Energy

- Stand alone systems  
(off grid)
- Integrated systems  
(grid connected)

- Stand alone systems  
(off grid)

Without back up

With back up (gas, battery)

Hybrid vs single systems

- Integrated systems  
(grid connected)

Single applications

Hybrid applications

Back up (grid)





# APPLICATION of SOLAR and WIND Energy

# SMALL SCALE APPLICATIONS

(supply and sustainability)

Domestic: Individual homes developments

(Upper and LED's)

Commercial: hospitals, office buildings,  
municipal buildings, stadiums, malls,  
hotels, lodges, B&B's ...



# LARGE SCALE APPLICATIONS

(supply, sustainability, revenue generation)

PV Farms

Wind Farms

# SUMMARY of the application of RE:

- Availability and sustainability
- Revenue generation



# BENEFITS of using Solar and Wind Energy in the KAROO

## BENEFITS OF RENEWABLE ENERGY

- Sustainable (renewable; reduces reliance on Eskom)
- Reduced carbon emissions (environmental considerations)
- Revenue generation
- Growth of a new industry - job opportunities etc ..



# CONCLUSION



Solien Energy Solutions cc

THANK YOU FOR LISTENING!