



SUSTAINABLE ENERGY CONCEPTS FOR CITIES



City of Johannesburg

ENVIRONMENTAL MANAGEMENT, INFRASTRUCTURE AND SERVICES

+27 11 407 6748/50,

environment@joburg.org.za or peterc@joburg.org.za

ENER-KEY JOBURG

14 July 2006

PRESENTATION OUTLINE

- Some facts on Joburg
 - Energy infrastructure and services
 - Household energy use
 - Impact of energy use
 - Context of energy approach
 - Outcomes / intervention areas
 - Conclusion
-

SOME FACTS ABOUT JOBURG

- **Population = 3.2 million people**
 - **53% in previously disadvantaged areas**
 - **1 006 930 households**
 - **16% of South Africa's GDP**
 - **Energy intensive economy**
 - **Electricity from coal powered stations is still a major source**
 - **Electricity purchased by the city 11 636.55 GW/ hr by the Electricity utility**
-

MAJOR ENERGY SUPPLIERS

1. Kelvin Power Station

- fully privatised
- Power purchase agreement with City Power

2. ESKOM

- State electricity utility
- Produces most electricity from coal
- Also provides some parts of Joburg with electricity

3. iGoli Gas Works

- fully privatised
- Service delivery agreement with SASOL

4. Diesel turbine

- owned by City Power
- conversion programme to natural gas

ENERGY SERVICE PROVIDERS AND SOURCES

Joburg



1. **KELVIN POWER STATION-** 1,2 million tons of coal/ year
- 1247 GW/hr per annum provided to Joburg
2. **ESKOM-** coal fired stations
- 10209.4 GW/hr per annum

Household Energy Use

Percentage of households within the City of Johannesburg using specific energy sources classified by end use (Census SA 96)

	% of Households using Specific Energy Sources by End Use		
	Heating	Cooking	Lighting
Electricity	83.2	83.9	87.0
Gas	1.2	2.7	0.2
Paraffin	7.1	11.7	2.0
Wood	1.2	0.3	
Coal	4.3	0.4	
Animal dung	0.0	0.0	
Other	0.0	0.0	0.0
Unspecified	3.0	1.0	1.1
Candles			9.8

ENERGY PRACTICES



Open air coal burning

Impact



AREAS OF INTERVENTION

Demand side intervention

Optimising gas works

A central orange cloud shape with a black outline and a drop shadow, containing the word "ENERGY" in black, uppercase letters.

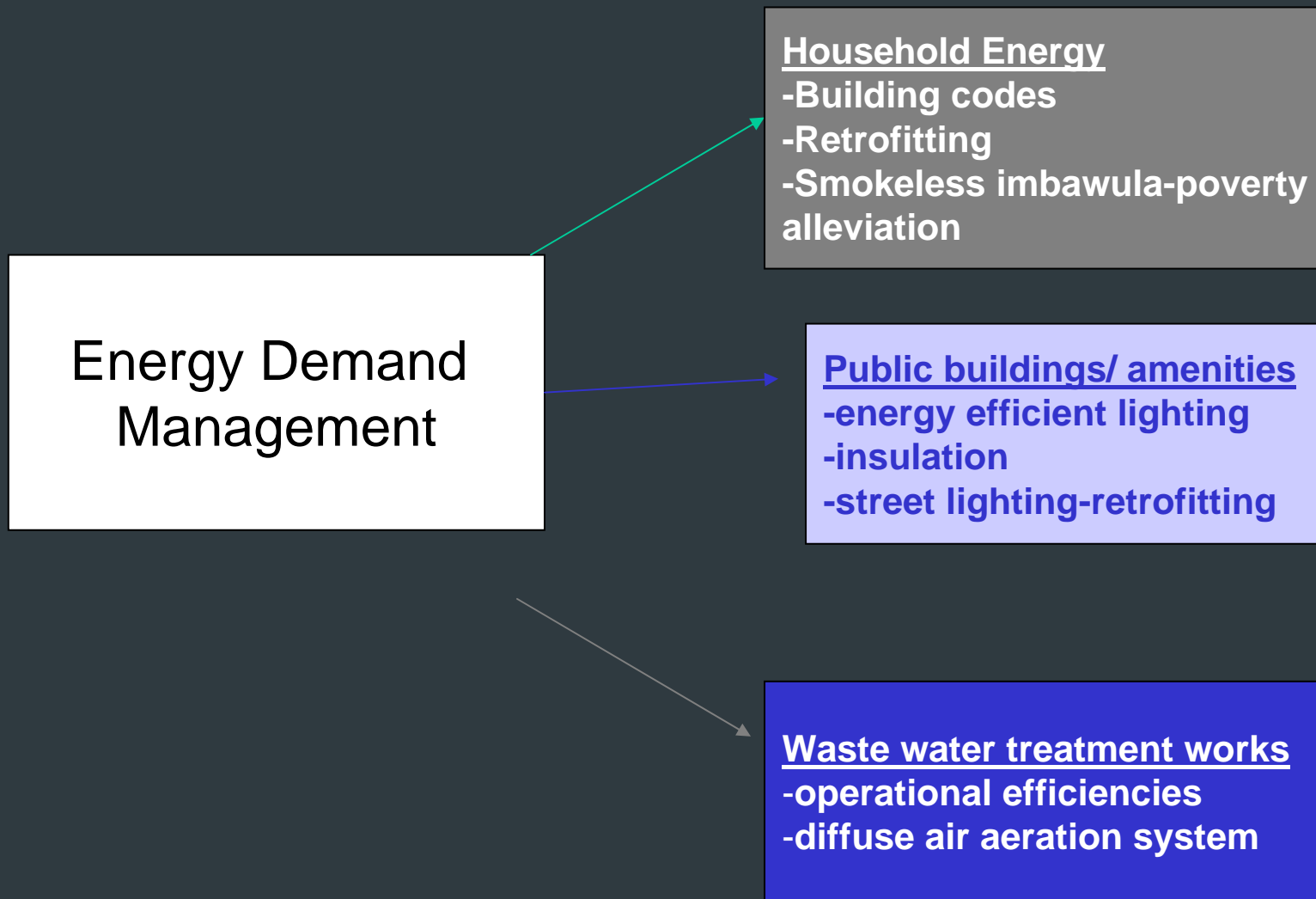
ENERGY

Renewables

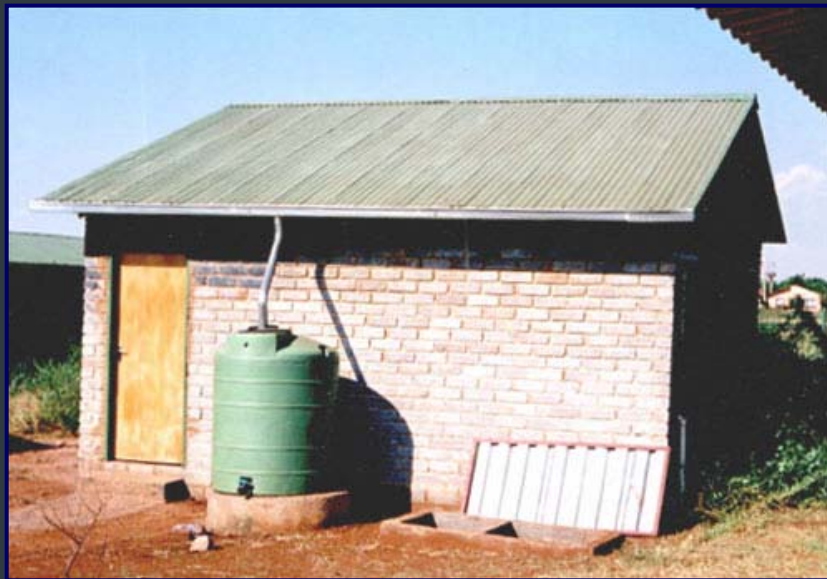
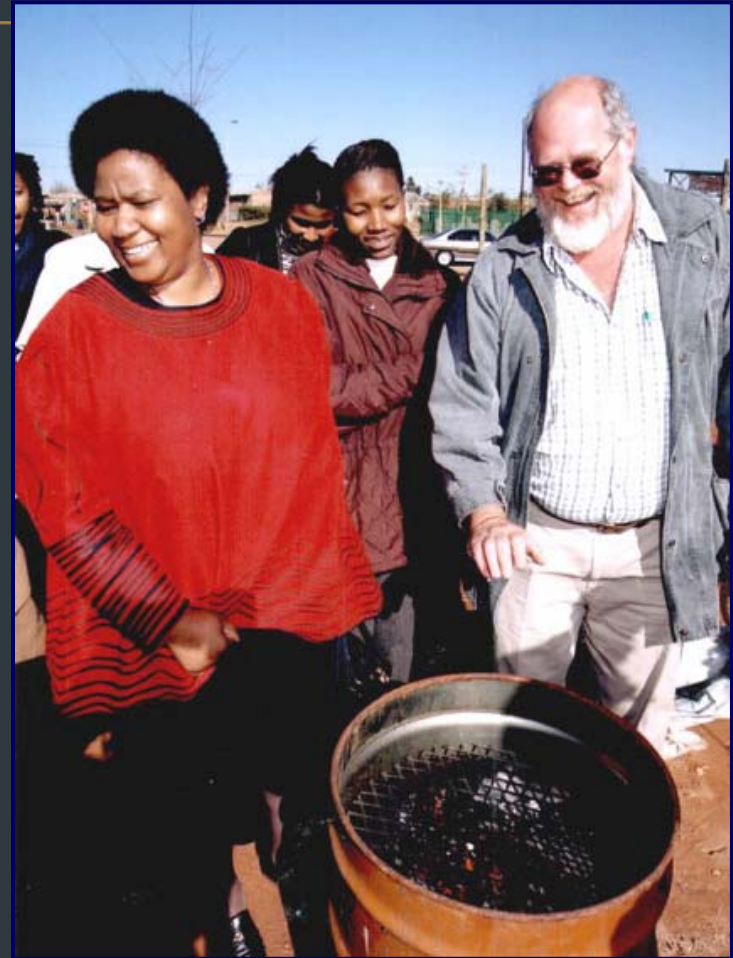
Transportation

**Urban efficiency/
Spatial structure**

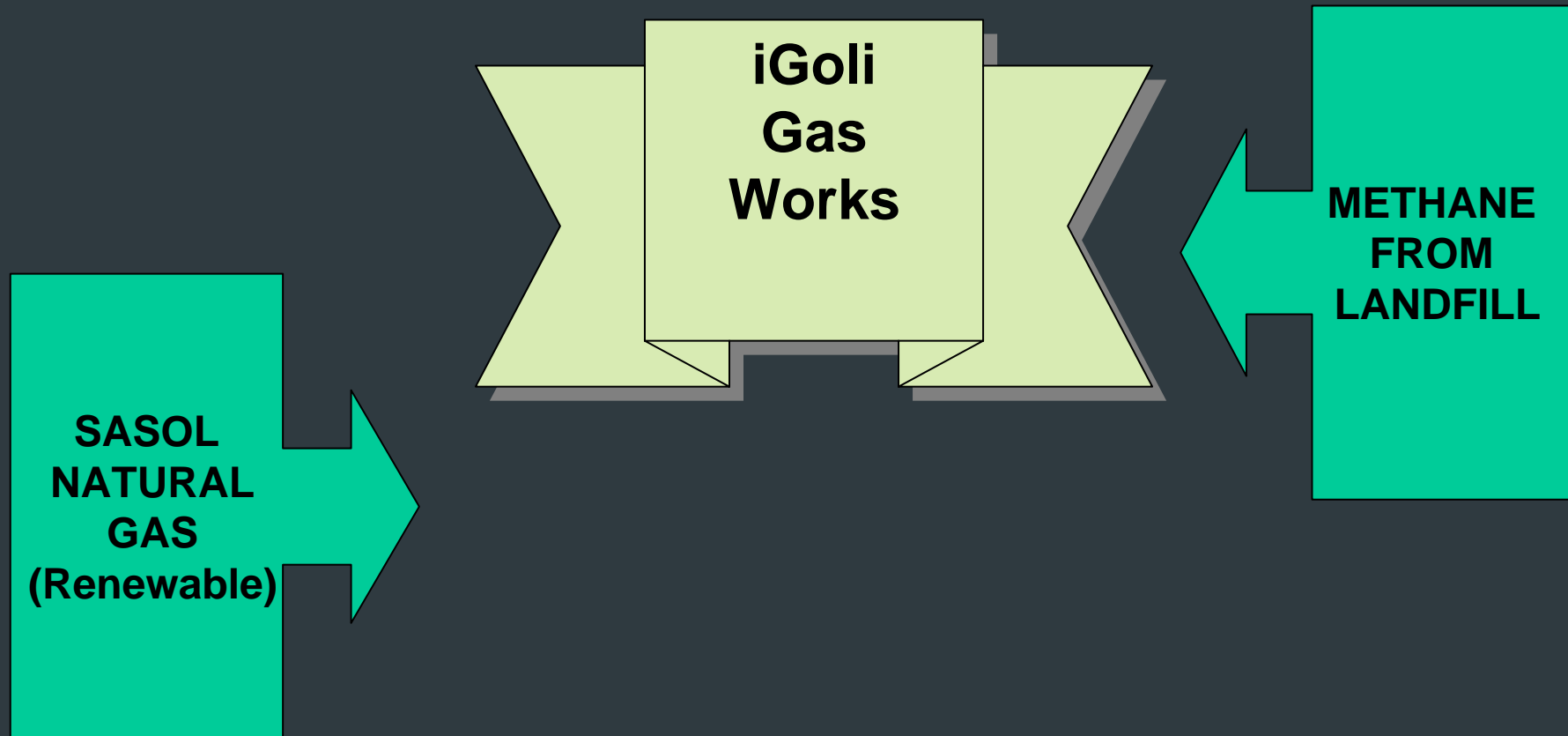
DEMAND SIDE INTERVENTIONS



HOUSEHOLD INTERVENTIONS Joburg



OPTIMISING GAS SUPPLY



TRANSPORTATION AND URBAN FORM



URBAN FORM

1. Inner city housing
2. Urban boundary
3. Infill developments
4. Nodal developments

TRANSPORTATION

1. Integrated Transport Plan
2. Metrobus fleet
3. Public transport initiatives
eg GAUTRAIN
4. Non-motorised transport



Transportation



- Mobility
 - Synchronization
 - GPRS
 - Video Monitoring
 - Green Wave
 - Education
 - Reduce Energy Consumption
 - Solar Energy
 - Use of LED
 - Integrated Traffic Control
-

Other energy interventions

- Demand side interventions for Council owned buildings and other infrastructure
 - Energy efficiency through retrofitting
 - Education
 - Provision of alternatives
 - Solar Energy
-

CONCLUSION

- High intensity economy which is likely to follow national trends
 - Energy approach takes an integrated perspective
 - Supported by excellent energy infrastructure
 - Opportunity to explore high intensive and low intensive mix of energy options
 - Energy options are cost efficient (environmentally beneficial), technologically feasible and effective (economically viable)
 - Energy approach allows for internalization of costs in the long run
-