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## Providing Off-Grid Power the GOOD or BAD news for sub-Saharan Africa

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The views presented within this paper do not necessarily reflect the policy or views of Siemens, but are from personal experience gained over 15 years in Renewable Energy product supply.

Agenda

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## Statement

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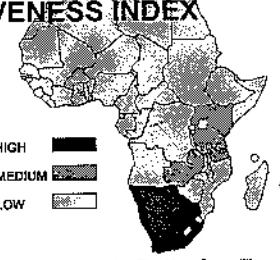
**“Electrification is a potent symbol of access to development and modernity. The perception of being valued enough to be electrified, should not be underestimated.”**

**“Energy is a key factor in economic development, whether for growth in the commercial and industrial sectors or in the provision of basic services to rural populations.”**

## Economic Indicators

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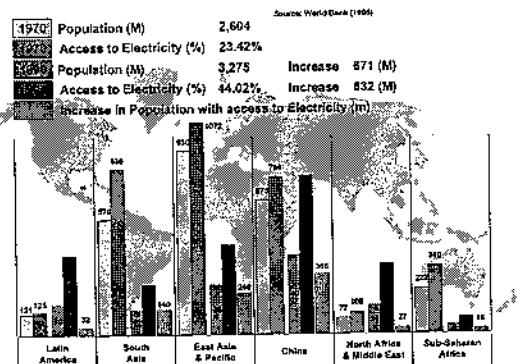
### PERFORMING ECONOMIES ACCORDING TO THE COMPETITIVENESS INDEX



(source The Africa Competitiveness Report - 1998)

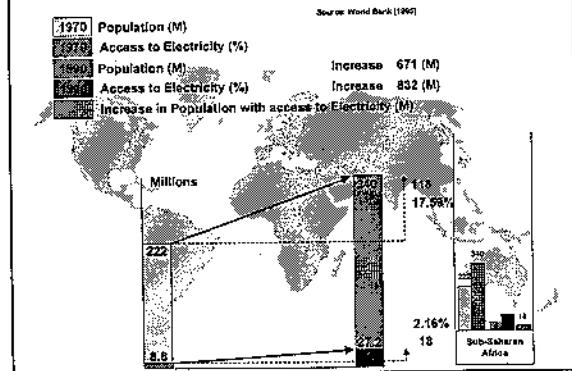
## Access to Electricity

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## Access to Electricity

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## Africa the DARK Continent

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This picture is courtesy of Eskom and is used in their advertising campaign - Southern Africa

## Agenda

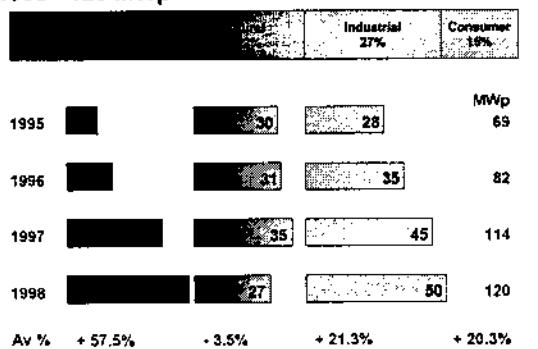


Introduction	Statement
	Economic Indicators
	Access to Electricity
	Africa "The dark Continent"
	Facts
World Markets	Applications
	Market Development
	Regions and Regional Development
	PV Production
	Technology & Comparisons
The Potential	Customers & Market
	Challenges
Conclusion	The Way

## World Market - Development (MWp)

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1998 - 120 MWp



## Facts

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FACT - Large segments of the population in developing countries are not connected to the electricity grid.

FACT - Relief of the problem is unlikely anytime soon, as many of these areas are sparsely populated, far away from the electricity grid or difficult to access making conventional grid electrification uneconomical.

FACT - As a result numerous people are relegated to 'SURVIVAL ENERGY CONSUMPTION.'

## World Market - Applications

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1998 - 120 MWp



### Good News

#### Grid Connected

- Growth rates are excellent thanks to government programs in Japan, Germany etc.

### Bad News

- Governments come and governments go; so do their programs.

### Rural electrification

- More and more governments understand how important it is to bring electricity to the 2 billion people who live without it.

### Industrial & Consumer

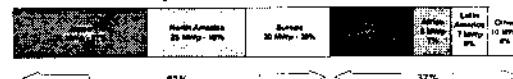
- Steady growth rates; totally "natural" market. Siemens has a most competitive product - they need it and have the money.

- No bad news.

## World Market - Regions

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1998 - 120 MWp



### Good News

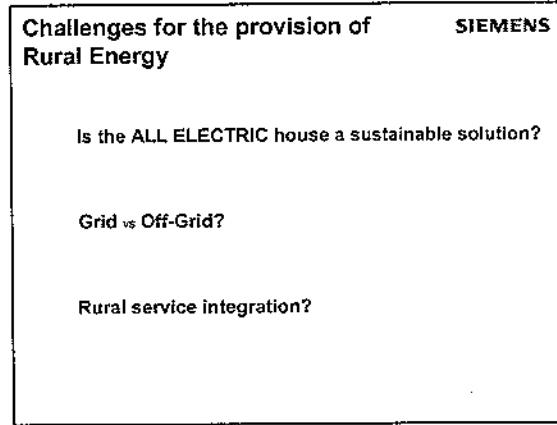
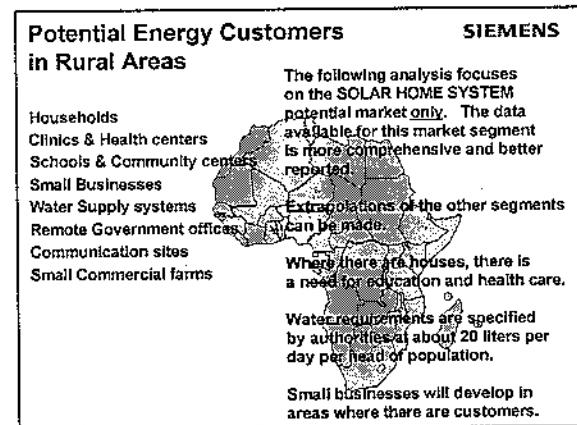
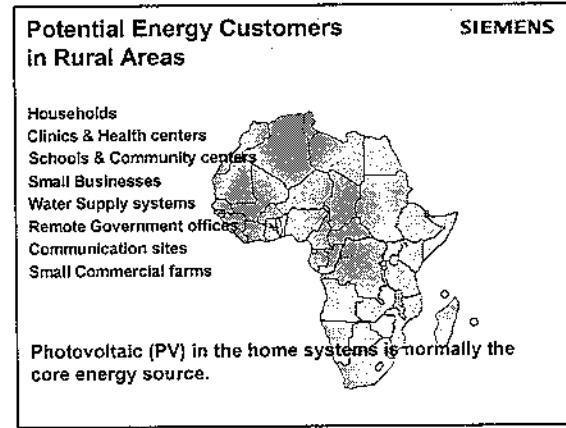
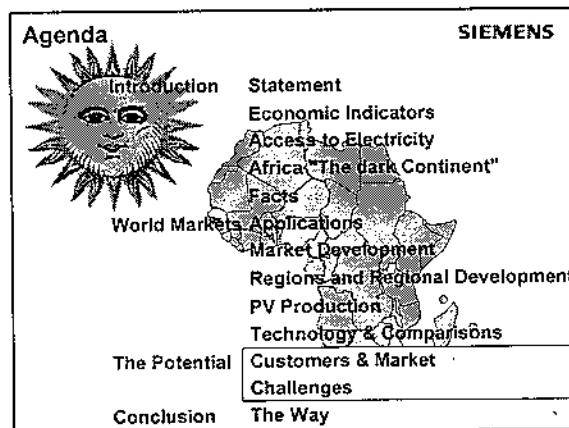
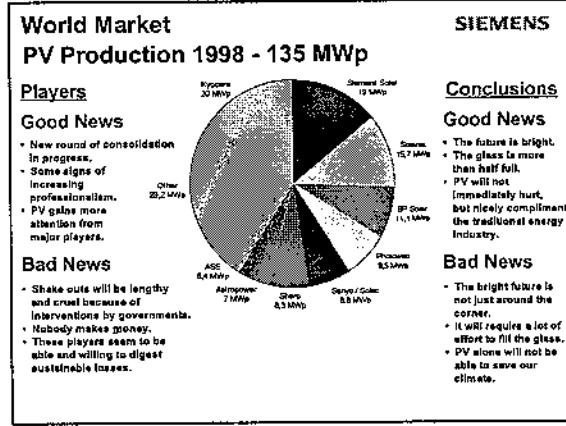
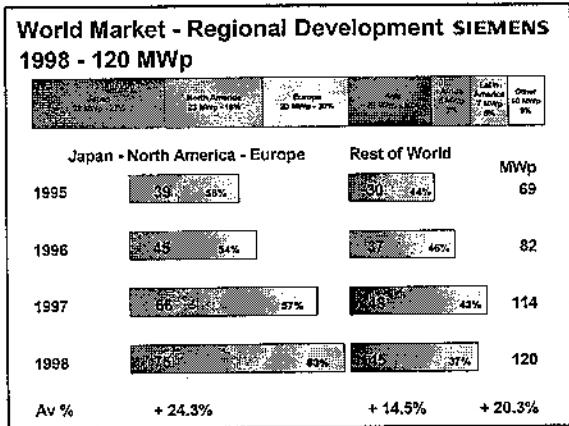
- Japan - North America - Europe
- Excellent development due to subsidized programs, industrial and consumer applications.

### Bad News

- High risk due to political fluctuation and extremely competitive.
- Bureaucracy.

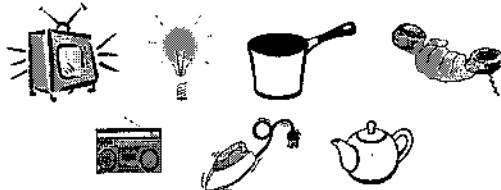
### Rest of World

- World Bank and some governments realize the value of PV (especially) for these regions.



**Challenges for the provision of Rural Energy** **SIEMENS**

Not all the households have the same energy needs,



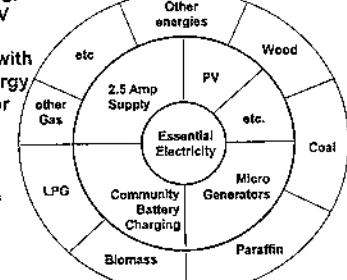
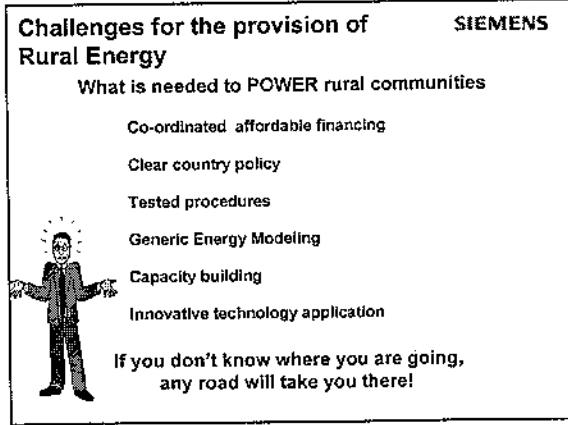
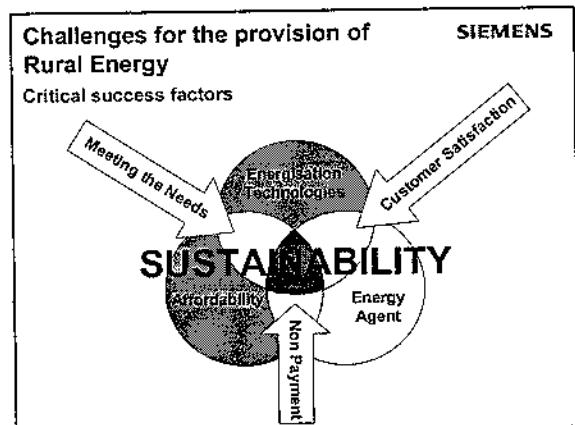
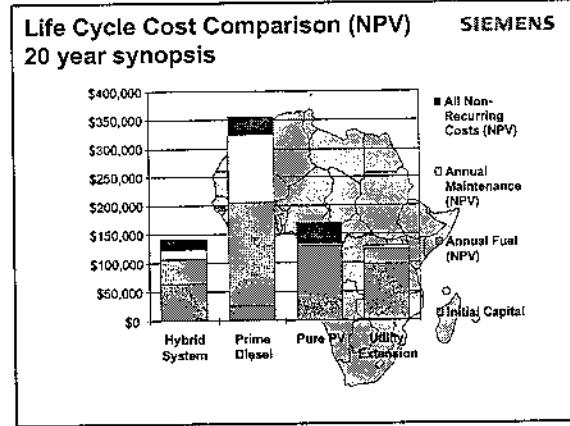
**Challenges for the provision of Rural Energy** **SIEMENS**

There are a number of fuels which can meet those needs:

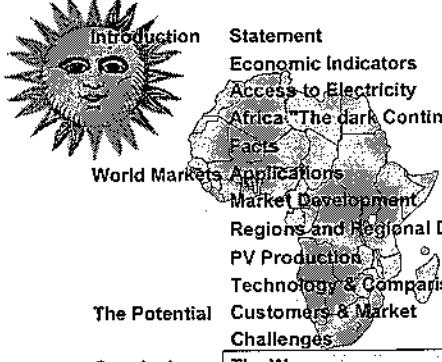
- Differing in technology
- Differing in price
- Differing in efficiency
- Differing in availability

**Challenges for the provision of Rural Energy** **SIEMENS**

The core is essential electricity - for lighting, radio & TV packaged together with other energy forms - for cooking, water heating, cooling & space heating.

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- Facts
- World Markets Applications
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## CONCLUSION

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Nelson Mandela: Opening of Parliament 1996

"We can neither heal nor build if the rich in our society see the poor as hordes of irritants; or if the poor sit back, expecting charity.

All of us must take responsibility for the upliftment conditions and prepare to give our best to the benefit of all."



Thank You