



Renewable Energy and Rural Electrification: South Africa Experience



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Electrification - Background

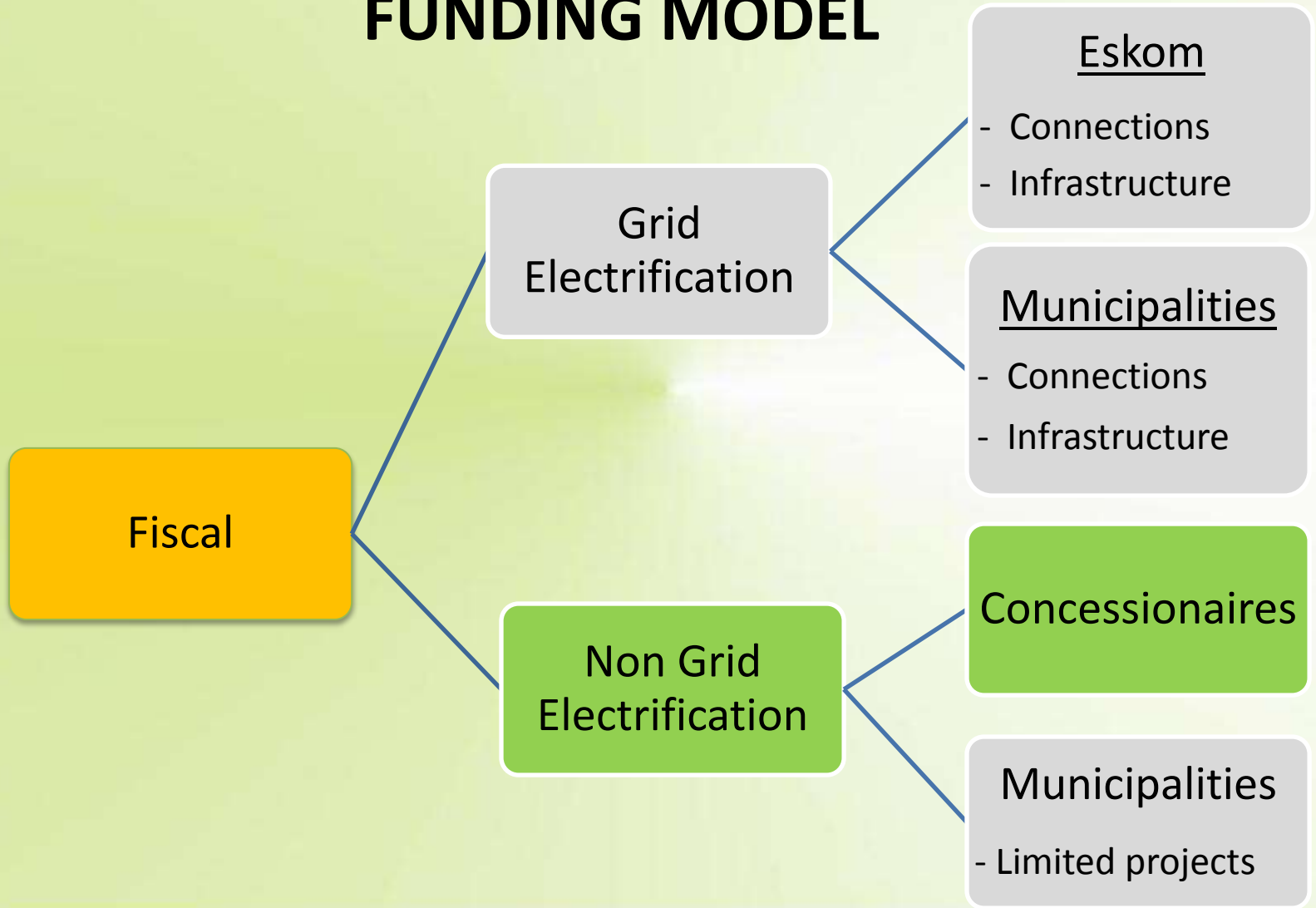
- The electrification programme is managed by a unit within the Department of Energy - Integrated National Electrification Planning (INEP);
- Over 5.2 million households were connected to the grid between 1994 and 2010;
- From 1994 to 2010 more than 12 000 schools were grid connected and about 3 000 schools were electrified with non-grid technology, while 345 clinics in rural areas were supplied with non-grid;
- Currently 76% of all households electrified - backlog of 3.4 million households;
- Annual subsidy of about US\$ 400 million made available for grid and non-grid electrification projects;
- This subsidy ensure about 200 000 connections per year (190 000 grid and 10 000 non-grid), including backbone grid network infrastructure such as substations and HV inter-connections;



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FUNDING MODEL



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Electrification – Background (...2)

- South Africa's electrification programme is still grid focused due to historic reasons – Eskom started in late 80's with grid electrification projects;
- In 1994 this programme become a national electrification programme financed by the ESI;
- The Energy White Paper (1998) gave policy direction to establish a National Electrification programme and the Integrated National Electrification Programme (INEP) was established in 2000, become fully operational in 2001/2
- Non-grid electrification become formally part of the National Electrification programme with the establishment of INEP and
- In period 2002 - 2010 more than 46 000 households were supplied with non-grid technology (SHS – Renewable Energy).



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Background to non-grid programme

- Department of Energy (DoE) appoints concessionaires and a capital subsidy of US\$ 750 is provided for installation of a 50 Wp SHS – customer can apply for upgraded system;
- Non-grid customers pay about US\$ 15 application/ connection fee for a 50 Wp SHS;
- Concessionaires have energy shops which also supply LPG;
- Customers pay a monthly service flat rate fee of about US\$ 10 – not for consumption but for access (time based);
- Municipalities subsidize customers' maintenance fee through the equitable share (Free Basic Electricity);
- Concessionaires repair and maintain SHS for the period until grid encroaches or as long as systems are installed;
- Total installed SHS countrywide is 46 165 and
- Non-grid electrification programmes will in future not only be implemented in concessionary areas, but on a limited basis in other areas in the country that qualifies for non-grid roll-out.



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Enabling circumstances for effective RE electrification programmes

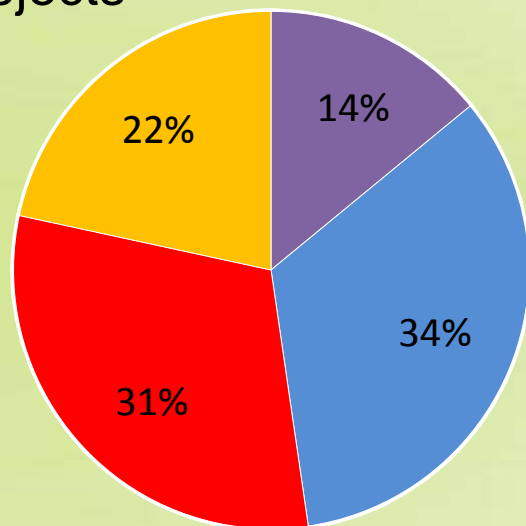


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World Energy Outlook 2011 – Energy For All

In 2009 about US\$ 9.1 billion was invested in access to modern energy - of which about US\$ 8 billion was for electrification projects



- Bilateral Official Development Assistance
- Multilateral organisations
- Developing country governments
- Private sector finance

Modern Electricity or Renewable Energy has to address not only the energy needs of rural communities, but it must also;

- Address poverty eradication;
- Environmental sustainable and
- Stimulating economic development.



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Requirements for effective RE electrification

Following environment/circumstances are required to have an effective RE electrification programme:

- Rural customers need to understand RE technology – education, education , education.....
- Need mass roll-out of RE to ensure acceptability and to make business sense;
- Stable and effective electricity and RE industry;
- Ring-fenced 100% capital subsidy system – long term and transparent;
- Integrated electrification planning and monitoring unit/agency;
- Good project management systems and processes are essential, with effective financial and technical monitor systems;
- Required national/regional technical standards which projects need to be monitored against;



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Requirements for effective RE electrification (...2)

Following environment/circumstances is required to have an effective RE electrification programme (continue):

- Sufficient number of stable RE contractors that are available to partake on a continuous basis in the electrification projects;
- Role-players need to understand the RE electrification policy/rules;
- Multi-year funding must be available for RE projects;
- Pre-paid meters the most effective revenue collection method for RE electrification customers – simulates grid technology;
- RE electrification customers have to make a financial contribution (connection fee) to ensure responsibility for service/infrastructure.



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Misconception regarding RE electrification

Misconceptions exist regarding RE electrification:

- The modern world is excited about RE technologies, but are not using it - expect rural customers to do so;
- Electrification is an electricity industry challenge – it is a socio-economic responsibility;
- Rural electrification does not make commercial sense – at the most it can be a break even venture:
 - In most instances not even possible to recover operation costs;
- Every new RE research breakthrough will result in new electrification product/implementation method;
- RE pilot projects will solve electrification problems - very few pilot projects are suitable for mass roll-out;
- RE technology systems requires no maintenance – need service providers and community responsible to take ownership of asset.



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Conclusion

- Electrification projects can only be successful and sustainable if performed within an effective run electricity and RE industry;
- Planning of RE electrification needs to be based on a policy that is long term based;
- Not all RE pilot projects or new methodologies by default will solve rural electrification problems - very few pilot projects or new methodologies are suitable for rural mass roll-out;
- Rural electrification does not make commercial sense – it is a socio-economic responsibility and required large external capital and operation subsidies;
- RE technology needs community support, high level of maintenance oversight and funds to ensure that the systems are operating effectively and
- South Africa is committed to the United Nations “*International Year of Sustainable Energy for All*” declared for 2012.



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Thank you



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