

Skills Development Programs in the biogas industry at the University of Fort Hare

Renewable Energy Capacity Building through

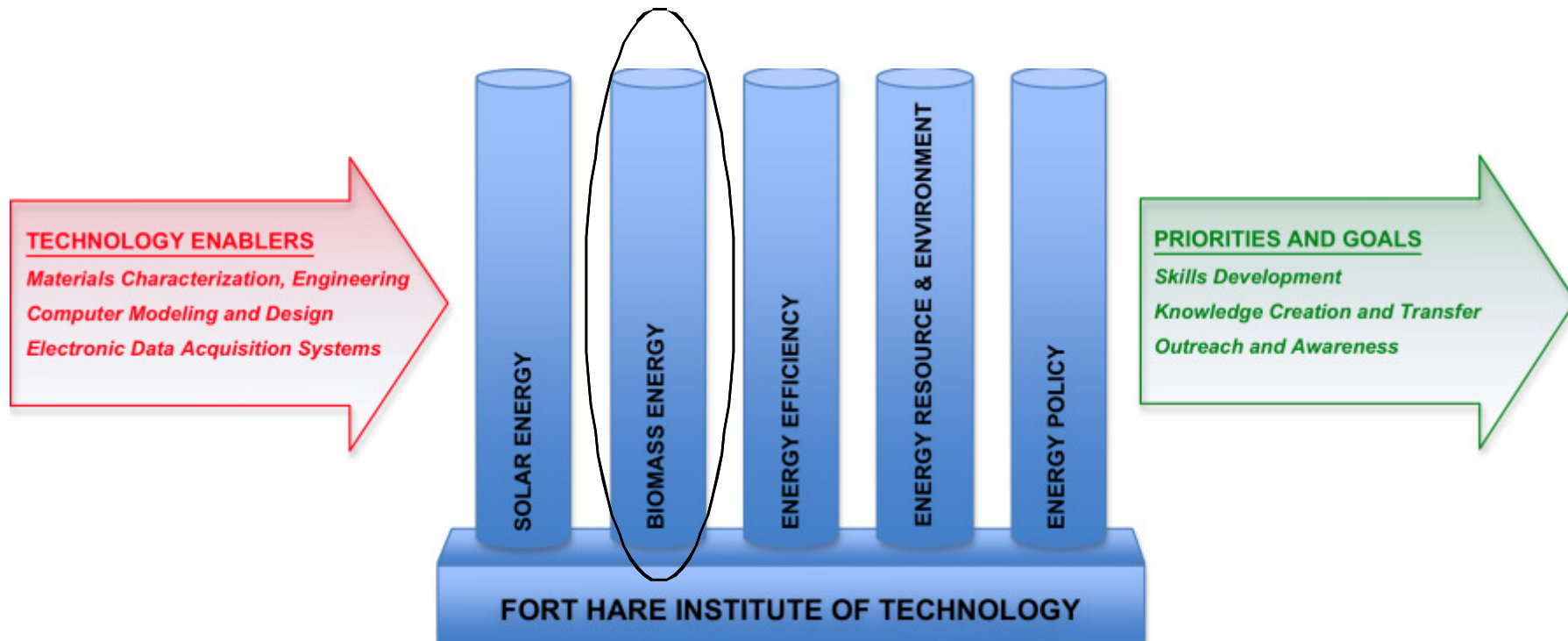
INNOVATIVE RESEARCH, TRAINING AND JOB CREATION

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Presented at the 2nd National Biogas conference by
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INTRODUCTION



INTRODUCTION: THE CHALLENGES

- High unemployment rates with particular reference to youth unemployment
- Energy poverty in rural areas leading to the “energy divide” between the rich and poor.
- Energy Provision uncertainties in the country (load shedding)
- Ignorance and skills shortages amongst communities in the country.
- The aim of the skills development program is to address the latter challenges and create sustainable jobs.



SKILLS DEVELOPMENT PROGRAM OVERVIEW

- Solar Energy technologies
 - Solar home systems and Solar water heaters installation
- Wind Energy technologies
 - Wind generators/turbines for home and water pumping
- Energy Efficiency
 - Process and retrofitting (Greenfields and brownfields)
- **Biogas digesters (focus of presentation)**
 - Household biogas digesters installations and maintenance.



TARGET GROUPS

- The program targets:
 - unemployed graduates,
 - grade 10-12 school leavers.
 - semi-skilled and self-taught plumbers, builders etc from the rural areas.
 - At least 70% of the trainees will be women and most of the trainees will be youth.



BIOGAS TRAINING PROGRAM CONTENT

- The theory behind biogas digesters
- The designs of biogas digesters
- Construction/installation of biogas digesters.
- The maintenance of the biogas digesters.
- The use of biogas.
- The use of the effluent.



BIOGAS TRAINING PROGRAM CONTENT

- Environmental benefits of using biogas digesters.
- Business development in the biogas industry.
 - Establishment and management of “Biogas” cooperatives.
- Health and safety issues.



THE TRAINING MODEL

- The training will involve both theory and practice with the practice taking 90% of the training.
- The trainees will be divided into various teams and in the end encouraged to register cooperatives that will participate in the roll out of digesters under close supervision.
- A two years period of incubation under the University for “selected” cooperatives will be set aside.
 - Linkages will be created between the newly formed cooperatives and established companies.



THE ENVISAGED IMPACT OF THE TRAINING

- It is anticipated that the training will result in a number of cooperatives participating in the biogas industry.
- The participation of the trained teams/cooperatives will assist with the massive roll out of household digesters.
- Digesters will be built using low-cost and locally available materials that are accessible to most households in rural areas and local labour will come from the training.
- Bridging of the energy divide between areas that do not have access to clean energy and those that do have access.
- Easing the pressure on the national electricity grid, for instance.....



THE ENVISAGED IMPACT OF THE TRAINING

- Most rural households use two plate electric stoves for cooking with each plate having a 1kW element.
- At peak energy demand the stove would consume 2kWh over a one hour cooking period (elements are resistive loads so they take more than this).
- **Assuming** that 5000 households use the two plate stove at peak energy demand for one hour, this translates to 10000kWh used over a one hour cooking period. This is a potential for saving.
- The rural households with electricity currently pay about R90c/kWh of electricity used. Taking the latter example this translates to a collective saving of R9000 per cooking hour and they normally cook twice a day. The households that will use the trainees to install digesters will save this money-**direct saving**.



THE ENVISAGED IMPACT OF THE TRAINING

- It is anticipated that at least 30 people will be trained during the initial training and all of them will participate in the EPWP project currently funded by the Department of Energy through SANEDI.
- An additional 10 people trained at Ikwezi municipality will participate in the project funded by the Energy & Water SETA and they will be organized under a cooperative and absorbed into the University incubation program.



DOES THE MODEL ADOPTED WORK?? TRAINEE SUCCESS

- The University of Fort Hare has been mentoring a cooperative (UHURU Development Projects Cooperative) established by young people who participated in the DoE/SANEDI biogas project. They have succeeded in the following:
 - Sourcing funding for installation of a digester in a school in KZN in partnership with a KZN based company-TSAZ Renewable Energy.
- The accompanying photos show the toilet infrastructure that forms part of the digester to be installed.



DOES THE MODEL ADOPTED WORK?? TRAINEE SUCCESS

- The cooperative was involved in sourcing of funds and involvement in the EWSETA/UFH/UHURU/Ikwezi municipality training program.

The accompanying photos show the EWSETA CEO, UFH VC, Ikwezi Municipality Mayor and UHURU Managing Member during the signing of an agreement opening doors for the renewable energy training to take place at Ikwezi municipality.



DOES THE MODEL ADOPTED WORK?? TRAINEE SUCCESS

- The cooperative has been building a number of plug flow digesters in the country and abroad.

- The accompanying photos show (top) a digester under construction at one of the Minister's house (bottom) a digester constructed at One World University in Mozambique.



DOES THE MODEL ADOPTED WORK?? TRAINEE SUCCESS

- The cooperative established a collaboration with Finishes of Nature Global (Pty)ltd, an established company in the biogas industry currently involved in the University of Fort Hare/DoE/SANEDI project under a joint venture with the cooperative.
- Establishment of a collaboration with TSAZ Renewable Energy in Kwazulu Natal.
- Participation in other renewable energy projects and;
- Establishment of collaborations with International companies for development of biogas and other renewable energy projects.



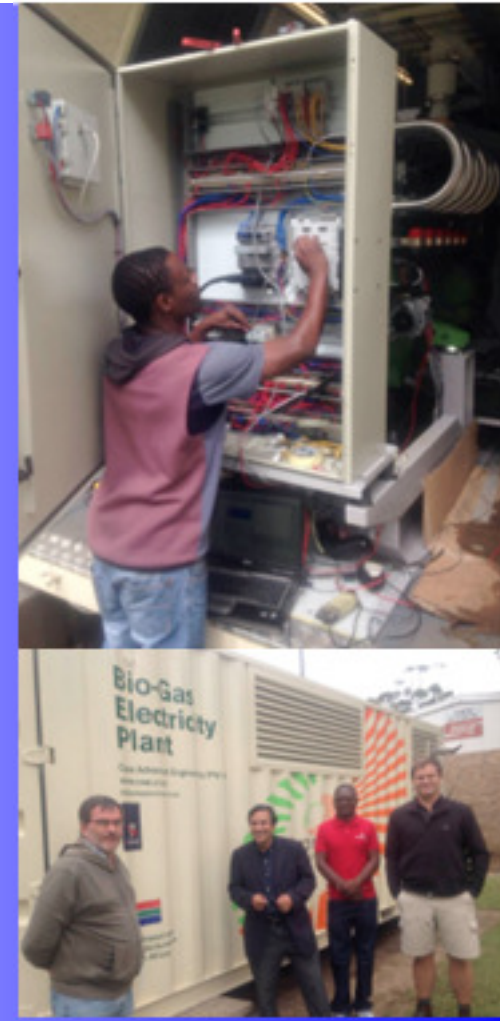
FACTORS DETERMINING THE SUCCESS OR FAILURE OF THE MODEL/TRAINEES

- We anticipate that we will ultimately not end up with a 100% success rate.
- The success of the trainees depend to a greater extent on the commitment of the trainees and the will to participate.
- It also depends on the will of established companies to involve cooperatives in their partnerships and projects.
- However the success of one cooperative from the training will be a reason for celebration as it is a huge step towards job creation and bridging the energy divide.



OTHER BIOGAS PROJECTS THAT UFH IS DEVELOPING

- The University of Fort Hare is busy developing a 180kWe biogas digester funded by the National Department of Science and Technology.
- The project will assist with the training of Masters and Doctoral candidates at UFH.
- DST also funded a school digester at Cofimbvaba in the Eastern Cape. This digester will assist with the community outreach and training of few individuals in that area in anticipation for a roll out.



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- Cape Advanced Engineering (Pty) Ltd
- The National Department of Science and Technology
- TSAZ Renewable Energy Holdings





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