

RICE HUSKS TO POWER COMMUNITIES

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Rice husks to power communities

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Staff Reporter

Malawi's rice-growing districts are being hounded in rising hopes of husks, which expose widespread gaps in waste management. The piling husks, which pollute air, land and water sources, could generate electricity and substitute firewood and charcoal, which have left forests up in smoke.

Malawi University of Science and Technology (MUST) has discovered a powerful source of energy in the leftovers. "Given the energy challenges faced by Malawians, especially the rural majority who have no hope of being connected to the national grid soon, we came up with a rice husk gasification system for generating electricity," says Dr John Tsulo, head of the department of energy resources management at MUST.

Tsulo is working with Hendrix Kasembe, Willy Marwoto and Alfred Malawa on the study to churn out electricity from rice husks.

The findings would



The gasification machine under construction in Blantyre

PHOTOCOURTESY MUST

help expand Malawi's energy sources in line with the revised National Energy Policy of 2018, the country's roadmap for global goals to provide access to sustainable energy for all by 2030.

Maize has missed the previous energy policy goal to supply electricity to about 30 percent of the

population by this year.

The new policy envisages electricity coverage reaching 30 percent by 2040, but the fresh target requires greater investment in expanding the energy mix instead of just relying on hydropower.

Electricity is neither accessible nor affordable for many Malawians. Power supply remains

erratic, increasing the dependence on charcoal and firewood for cooking which speed up the loss of trees.

These challenges have compelled scientists at MUST to turn to rice husks for producing electricity.

The university at Ntata Farm in Thyolo is running the trial with funding from

the Science Granting Councils Initiative (SGCI) through the National Council for Science and Technology (NCST).

In 2019, the research team received a grant worth \$30 000 (about K22 million) to design, develop and characterise rice husk gasification system as an alternative source of power.

After a countrywide survey in all rice-producing districts in Malawi, the researchers selected Phalombe for the trial to cut the costs.

"We considered Wonsi chiver in Traditional Authority Nkhulambe because there is high production of rice. The area is close to Malanje Mountains where they harvest their firewood. The setting is highly deforested, so we are helping conserve forests while ensuring women do not to walk up to 10 kilometres in search of firewood," Tsulo explains.

MUST is collaborating with the Industrial Research Centre, Department of Agricultural Research Services and the Department of Mechanical Engineering

at The Polytechnic in designing the husk gasification machinery to be installed in Phalombe.

A gasifier converts gas from plant material into energy without burning it.

It requires about \$100 000 (about K5 million) to install the plant and connect households excluded from Electricity Supply Corporation of Malawi transmission power lines.

"The plant can power up to 25 000 households if all goes well," says Tsulo.

If the trial is successful, the partners plan to expand it to other rice-growing areas.

The researchers are also exploring the potential of running a similar trial on maize cobs for production of electricity. Maize is widely grown in Malawi which may translate to more people basing access to this form of energy.

Says NCST director general Professor Elijah Wanda: "It is pleasing that our scientists have the capacity to come up with life-changing innovations. The SGCI grants have really brought out the best. We are looking at ways of making sure the innovation reaches out to those that need it the most," said him.

The scientists will use the remains of the husk-gasification system to produce briquettes to replace charcoal and firewood, the main source of cooking for 98 percent of Malawians.

"In the pilot villages, the plant will provide power for productive use. This electricity can supply a rice mill so that people do not travel over five kilometres with grain on their head. It can also power entertainment places, barbershops, lighting and charging phones. All these activities spur economic activities in rural settings," argues Tsulo. ■

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