



## Council for Scientific and Industrial Research (CSIR)

Natural Resources and the Environment (NRE)

Durban, South Africa

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| <b>Title:</b>                              | <b>Beneficiation of pulp and paper mill sludge into value added products: biogas and compost</b>  |
| <b>Abstract:</b>                           | <p>Pulp and paper mills in South Africa are consumers of large amounts of fresh water, consuming between 100-150 m<sup>3</sup> of water per ton of product produced. This is because water is used in almost all phases of the process since it is the medium which transports the fibres through the various pulping and papermaking processes. At the same time, this implies that pulp and paper manufacture is associated with the generation of large quantities of waste water that has to undergo several treatment processes before being discharged into the environment. The purification of the waste water entails several unit operations such as sedimentation, biological treatment, chemical precipitation, flotation and anaerobic treatment, all of which result in large amounts of sludge. The sludge is the solid residue left over from waste water treatment. The economics and environmental impact of the mill depend heavily on the efficient treatment of the waste water and disposal of the sludge. In South Africa, current mill practice involves disposing of the sludge by land-filling/spreading. However, due to increasing costs, land constraints and other undesirable environmental impacts, this is not ideal and may not be a viable option in the future. The focus of this study is to investigate opportunities to beneficiate the sludge into valuable products or recover valuable chemical components from the sludge before disposal:</p> |
| <b>Lead institution:</b>                   | CSIR  |
| <b>Partner institutions:</b>               | UKZN, eThekweni municipality, University of Fort Hare, Sappi, Mondi, Kimberly-Clark,  |
| <b>Principal Investigator:</b>             | Prof. Bruce Sithole   |
| <b>Student:</b>                            | Neville Tawona  |
| <b>Degree:</b>                             | PhD   |
| <b>Funded by:</b>                          | CSIR, NRF   |
| <b>Start date:</b>                         | Sept 2014   |
| <b>End date:</b>                           | Sept 2017   |
| <b>Feedstock:</b>                          | Pulp and paper mill sludge  |
| <b>Value chain products:</b>               | Biogas, compost   |
| <b>Geographic source of the feedstock:</b> | Across South Africa   |