

THE MKHOMAZI HYDRO-ELECTRIC PROJECT FEASIBILITY STUDY



The Mkhomazi Hydro-Electric Project was initiated by the uMgungundlovu Municipality in 2008 and was launched with the objective to investigate the feasibility of a run-of-river hydro-electric plant on the Mvoti River in southern KwaZulu Natal. The concept behind the project was to use a run-of-river; micro hydro plant on the river to generate electricity to supply the national power grid, the income thus generated would then (in part) accrue to the nearby community and be used for economic upliftment. The feasibility study was to be used as a technical document which will be referred to by potential funders and donors and also used to develop a comprehensive business plan.

Now close to implementation, the project has been able to overcome many challenges that have required changes to the project scope. One of the central aspects of the project was to raise the interest of developers to fund the project construction. However, it turned out that the project was not that interesting for the funders due to Hydro being the "Cinderella" of the IPP process, and the fact that no sizeable projects of any magnitude (in comparison to Solar and Wind) were able to be developed due to the low volumes and heads available in suitable rivers. Due to this, the funders considered the project too risky in comparison to the possible revenues. In addition to that, the Power Purchase Agreement negotiated with ESKOM resulted in a tariff that was not high enough to ensure the sustainability of the project.

After a relatively long period, an alternative funding basis was found, through the UNEP and UK Carbon Trust, who are considering the scheme under the Clean Energy Mini Grid Programme (CEMG). This also required that the project scope would be changed from a grid connected project into dedicated mini-grid supplying electricity to the nearby medium-sized, non-electrified rural community.

The change in terms of the community involvement has required a lengthy period of negotiation in obtaining development approvals from the local communities and

authorities.

The lessons learnt regarding the development of possible future hydro projects similar in nature to this are as follows:

- 1. Before conducting final feasibility studies, determine first if the project is to be Grid tied or dedicated Mini grid.
- 2. If it is envisaged to be grid tied, enter into negotiations with Eskom on the likelihood of a significant power purchase agreement being concluded before you proceed any further.
- 3. If it is to be dedicated mini grid, ensure first that population densities in the immediate vicinity of the project scope are of sufficient size to support an income stream to sustain project development costs and profitability to investors. Undertake studies to draw conclusions that the community that are to be electrified have the ability (and want to) pay for the service that they are to receive.
- 4. Site selection should take into account the negative environmental effects of the development and possible threats in obtaining a successful EIA.
- 5. Of paramount importance, ensure that you have the backing of the local community situated in the immediate vicinity of the project development, make sure that they understand the benefits of the economic spin offs of the project.