Technology Fact Sheet for Mitigation

Technology	Description	Benefits	Challenges
Geothermal [i]	Geothermal energy is thermal energy generated and stored in the earth. This energy can be used to generate electricity using technologies such as dry steam power plants, flash steam power plants and binary cycle power plants. The investment costs , O+M costs and levelised costs are relatively competitive depending on the design. Geothermal flash(1800-3600 US$/kW, 152-187 US$/kW, and 3.82-11.0 US$ cents/kWh): Geothermal Binary Cycle (2100-5200 US$/kW, 152-187 US$/kW, and 4.1-14 US$ cents /kWh). Both technologies are commercially viable.	No fuel, and is therefore immune to fuel cost fluctuations. Geothermal electricity production has been successfully developed in regions with hydrothermal manifestations (e.g., geysers and hot springs). For example the rift valley where Kenya is currently producing electricity around 250 MW. Zambia lies in the rift valley and has similar manifestations like Kenya and therefore have good potential which warrants serious investigations. Geothermal power is a stable source of energy as it is independent of weather circumstances. It is therefore a reliable source of energy and commonly has a high capacity factor of between 70 and 90% of installed capacity, which makes it applicable for both base and peak load. Geothermal power production has the environmental benefit of being a relatively clean. The contribution to greenhouse gas emission reduction from geothermal electricity production would lie in the possibility that it could replace fossil fuel based electricity production capacity. Capacity factor 60-90%	The exploration of the geothermal energy systems could be complex. In particular, the process of confirmation of the location of the acquifer, its size and temperature is rather cost intensive, and can be in the range of 25% of capital costs. However drilling costs can be reduced due to its vast experience of drilling in the mining industry.

[i] **This fact sheet has been extracted from TNA Report – Technology Needs Assessment and Technology Action Plans For Climate Change Mitigation– Zambia. You can access the complete report from the TNA project website http://tech-action.org/**