Technology Fact Sheet for Mitigation

Technology 5: **Hydro Power Plant with high capacity** [i]

Subsector	Energy supply
Sector GHG emission (tCO_2-eq)	6,399,000 tCO_2-eq from the energy supply subsector in 2006
Technology Name	**Hydro Power Plantwith high capacity**
Background/Notes, Short description of the technology option sourced from ClimateTechWiki, Seminars, etc	Hydro power plants capture the energy released by water falling through a turbine and convert this into mechanical power, which drives generators to produce electricity. About 20% of globally supplied electricity is generated by hydropower and in some countries it provides more than 50% of electricity supply. Hydropower can achieve significant GHG emission reductions as it, depending on the energy mix of the country concerned, could replace fossil based technologies for electricity production.
Implementation assumptions, How the technology will be implemented and diffused across the subsector?	About 90 percent of the electrical power generated in Mongolia is produced by coal CHP in Mongolia. It is planned to build hydropower plants in Orkhon or Selenge rivers with 300 MW of capacity to improve the structure of Mongolian central energy system.
Reduction in GHG emissions	GHG emissions are expected to be reduced by1.458.000 tCO_2eq/year.
Impact Statements - How this option impacts the country development priorities	
Social development priorities	• Improved operational conditions of the Central Energy system; • Reduced electricity imports; • Improved energy regime of the Central Grid during peak load
Economic development priorities	-Introduction of the technology has the potential to reduce coal consumption by 1.08 million tons per year; -Production cost of electricity will be reduced.
Environmental development priorities	Reduced air pollution: the technology does not emit any local air pollutants, such as NO_X, CO or particulate matter, thereby helping to improve air quality.
Other considerations and priorities such as market potential	-
Costs	
Capital costs	Investment cost for construction of a Hydro Power Plantwith 300 MW capacity is 750,000 USD.

	Based on 2000-2500 USD/MW (web: climate technology wiki)
Operational and Maintenance costs	Hydropower projects involve large up-front investment costs, most of which are related to financing the dam and plant construction. The capital required for large dam hydro plants depends on the effective head, flow rate, geological and geographical features, the equipment (turbines, generators, *etc*.) and civil engineering works, and whether water flow is constant throughout the year. Total Operational and Maintenance costs Hydropower Plant is 20.62 million USD -Annual electricity production of hydro power plant is to reach 1800.0 million kWh; -Electricity generation cost will be 0.011 USD/kWh
Cost of GHG reduction	GHG emission reduction cost will be 14.15 USD/tCO_2-eq

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