Technology Fact Sheet

Wind Power[i]

1) **Sector:** Energy

2) **Subsector:** Renewable Energy

3) **Technology Name:** Wind Power

4) **Scale:** Large scale

5) **Availability:** Short term

6) **Technology to be included in prioritization (mandatory inf.):** Yes

7) **Background/notes (short description of the technology option)**

Georgia has large untapped potential for wind power production. Achievable wind power production potential is estimated at 2GW capacity and 5TWh of annual output. Among several options of wind power technology the large scale 3MW grid connected wind turbines of world class supplier were selected as preferred option to conduct the economic and technical analysis based on WASP III and economic models. The results indicate that 12 most beneficial wind farm sites can provide around 1GW capacity and 2.8 TWh of energy output. Economic analysis conducted with 7c feed-in tariff assumption shows the return of investment between 8-12% which is below commercially available interest rates in Georgia.

8) **Implementation assumptions (how the technology will be implemented and diffused across the sub-sector)**

The cost of wind power is high compared to other generation options (e.g. more generation on existing thermal plants) and the prices on Georgian market. Therefore special support measures are needed in order to deploy and disseminate this technology. It should be supported by government through legislation, grants, subsidies, feed in tariffs or tax schemes and/or reliable access to foreign markets with higher cost of power.

9) **Reduction in GHG emissions over 10 years:** In case of gradual implementation over the ten year period, the selected projects can provide about 4.5 mln tons of CO_2 reduction.

10) **Impact statements**

- **Social development priorities:** Introduction of wind power will create additional jobs and increase employment. It will pose higher requirements on maintenance and operation personnel. Therefore this will have a positive social benefit of introducing modern technical knowledge to country. Wind power development will stimulate the technical development of grid and its operations.

- **Economic development priorities:** Site and foundation for preparation of wind power as well as electric installation and connection works will provide employment opportunities, contribute to economic activity and reduction in unemployment. Wind power in some locations can be competitive with small hydro power and, therefore,

can contribute to economic competitiveness of the country. Additional wind power has a potential to contribute to country's energy security and export potential.

- **Environmental development priorities:** Along with general benefit of GHG mitigation, in certain locations wind turbines may have less environmental impacts than alternative Hydro power plants.

- **Other consideration and priorities such as market potential:** Due to abundance of hydro power and export orientation of the system, state backed guaranteed power sale at acceptable feed in tariff may be problematic. Due to intermittent and partly unpredictable pattern of production it will be more difficult to sell the wind power. There will be a need of balancing mechanisms to compensate for the varying output of wind power plant. Therefore a more intensive involvement of balancing energy market may become necessary. Due to availability of hydro that can be easily regulated, wind is not a country priority technology and therefore, there is no support from government and market is undeveloped. Neither the pilot projects in this area turned to be successful.

11) Costs (US$)

- **Capital costs over 10 years:** Total capital cost is 1757.14 MM$, capital cost per kW is 1728$

- **Operational costs over 10 years:** Negligible

- **Other costs over 10 years:** N/A

[i] **This fact sheet has been extracted from TNA Report - Mitigation for Georgia. You can access the complete report from the TNA project website http://tech-action.org/**