

Technology Fact Sheet

Small-scale hydropowerⁱ

1) Technology status

There are 400 small-scale hydropower stations across Vietnam, with nameplate capacity ranging from 5 kW to 30 MW, accumulating a total of 1000 MW (2009). In addition, thousands of super small-scale stations on rivers and streams, with capacity ranging from 0.2 to 5 kW, have been or are going to come into operation to dispatch electric power to households in remote areas.

Small-scale hydropower technology are very developed and commercialized in Vietnam. Nonetheless, this kind of power generation has a number of technical limitations; for example, the turbine water column needs to be lower, operation and maintenance (O&M) costs are high, or lack of maintenance services after project completion, etc.

2) Socio-economic benefits

Developing small-scale hydropower in rural and remote areas where hydropower potential is high and electric dispatch from the national grid is not viable can produce social and economic benefits by:

- Providing jobs through construction and operation of the hydropower plant to local population.
- Promoting and creating new economic activities, providing job opportunities and enhancing income in areas that are supplied with electricity.
- Facilitating irrigation and drainage, improving productivity and enhancing product quality.
- Improving quality of health service, education and freshwater supply in the area.
- Reducing fossil fuel and oil import expenditure.

3) Environmental benefits

- Small-scale hydropower produces no carbon dioxide during operation, thus significantly contributing to GHG emission reduction efforts.
- In contrast to large-scale hydropower plants, small-scale plants barely alter the river flow, hence it has few effects on the environment.

4) Application potential

Research by the Power Engineering Consulting JSC 1 (PECC1) shows that hydropower potential in Vietnam varies widely. A 5-30 MW hydropower plant can produce 3000 MW, mostly in northern mountainous provinces, central Vietnam or on Central Highlands.

5) GHG emission reduction potential

Vietnam has the potential to produce about 2000 MW of electricity by small-scale hydropower instead of 1200 MW of coal-fired thermal power, therefore reducing 120 million tonnes of CO₂.

6) Barriers

Despite high small-scale hydropower potential, Vietnam still has to face many difficulties in developing this kind of energy, including:

- Operating time varying seasonally; in the dry season, several plants can only operate for a few hours a day.
- Many small-scale plants lack budget for management, repairing and operation, risking termination of operation.
- The majority of equipment is low-quality, made in China or domestically produced, while repairs and maintenance services are beyond local technical capacity.
- Electric power transmission costs are high, especially in remote areas.

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