

T@W Good Practice Form

Setting

Title: Construction and operation of a Small Hydro Power Plant, "Tamrash"
Country: Bulgaria
Location: Villages of Vojkovo and Hrabrino, Plovdiv Region
Start date: 01/05/2004
End date: 31/12/2004
Technology keyword(s): Hydroelectricity
Host sector: Fuel Retailer

General description

Summary: The project consists of construction and operation of a SHPP on Tamrashka River between villages of Vojkovo and Hrabrino, Plovdiv Region, Bulgaria. The project is financed through EBRD Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL) and as such received 20 % grant of the total capital costs after project completion. Project documentation was prepared and submitted by EnCon Services - the Consultant, approved by EBRD to operate and manage the facility in Bulgaria.

Aims: To produce electricity and sell it to the grid thus ensuring both economic and environmental benefits.

Summary of Results: The main result is a SHPP operating and gaining profit for the owners.

Planning Time: Construction period from 01/05/2004 to 31/12/2004

Planning issues: The hydro power plant is operational

Operation Time: 20 years

Feasibility Study: done

Technical details

Technical details: SHPP "Tamrash" was constructed on River Tamrashka in the section between 715 m and 355 m elevation without reservoir. It is designed to operate continuously at river flows above 0,200 m³/s. Turbine type is one vertical axis Pelton with 5 nozzles supplied by VA TECH HYDRO, with designed head 335 m and designed flow 1,80 m³/s. It is coupled with synchronous generator with nominal capacity 5 300 kW at 1000.min⁻¹, automatic turbine controls, spherical valve DN500 before the turbine, transformer HYUNDAI 6MVA. Designed efficiency of turbine is 86-87 % at 0,750 to 1,800 m³/s river flow.

Energy data

Energy data:	The installed capacity of the HPP is 5 140 kW and the average annual usage in a mean-water year is 2 735 hours/year.
Energy generated:	15 115 MWh/year or 54 370,5 GJ/year
Monitoring:	-

Environmental data

Environmental data:	For the period 2005-2012 calculations show that the project will generate CO ₂ emissions savings amounting to 90 917 tons. Calculations are made for this period because the emissions factors used are valid till 2012, after this year new calculations should be made.
Project GHG-emissions:	0
GHG-emission reductions:	11 365 tons/year CO ₂ in average for the period 2005-2012
“EAU, CER, ERU, AAU”:	In addition for the same period it will be saved 1 700 tons sulphur dioxide emissions and 99 tons NO _x emissions. As the project didn't apply for financing through Kyoto flexible mechanisms or EET scheme, no other calculations have been made.
Methodology:	The methodology for calculation of emissions reductions is that given in Operational Guidelines for Project design documents of JI Projects of Dutch Ministry of Economics as of May 2004.
Baseline	-
Monitoring:	Monitoring to be done by EnCon Services, validation to be done by ESBI
Contribution to Sustainable Development:	By substitution of electricity generated from fossil fuels the project contributes to emission saving targets and environmental protection goals.

Economic data:

Economic data:	The project is financed through EBRD Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL) and as such received 20 % grant of the total capital costs after project completion. Part of capital costs is provided as a loan from United Bulgarian Bank -UBB (one of the banks operating the credit line in Bulgaria) and part is project host equity.
Financing:	61,9 % UBB loan and 38,1 % own investors equity
Capital cost:	2 147 426 Euro (VAT excluded)
Operational Costs:	56 582 Euro/year for a mean-water year
Payback:	discounted pay-back - 4,75 years
Energy Production costs:	n.a.
Other savings:	n.a.

Additional Information

Printed or electronic reports or other literature available:

Title: Construction of a SHPP "Tamrash"
 Cost: -

Address for download of electronic document: n.a.

Project Web site: n.a.

Photo Library

Pictures: Each one should have a caption. The provider must own the copyright (should be confirmed)

Contact information (to be duplicated for each contact for this project):

Type of Organisation: Consultancy Company, project management

(e.g. technology supplier, service provider, host company, financing body, project management)

Technology keyword(s) specific to this organisation:

Organisation / Agency: EnCon Services

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Description of the Organisation for inclusion in the database of Technology and Service Providers: Consultancy company approved by EBRD to manage and operate the BEERECL

Other contacts:

#please only give full contact details (name, address, email, telephone) if you have confirmed that they are willing to respond to enquiries and want to be included in the database of Technology and Service Providers. These could for example be: host organisation, equipment manufacturers, financial organisations, etc.#

Please email filled out form (including pictures) to: GP@setatwork.eu

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If possible please provide pictures at 300dpi so that they can be used in printed versions of the Good Practice.