



About GTZ-MHPP

The *Mini Hydro Power Project (MHPP)* represents a continuation of German-Indonesian development co-operation in the mini hydro sector started in 1991. Indonesia is blessed with an abundance of water resources, which if properly harnessed can provide rural communities with a clean and valuable source of energy. Mini hydro potential which is particularly suitable for supplying electricity to remote rural areas, is estimated at around 500 MW of which only 21 MW have been exploited.

The first phase of *MHPP* (1991-96) focused on the introduction of MHP technology to local institutions and individuals active in micro hydro project development. In the second phase (1999-2002) the scope of intervention was broadened to include policy dialogue, scaling up MHP technology packages, and improving operation and management practices applied at schemes. The aim was through a more comprehensive approach to MHP project implementation, support economic development and improve welfare at village level.

As a result of the project, it is estimated that more than 50 jobs have been created within the engineering industries servicing the mini hydro sector. Due to the successful know-how transfer conducted throughout the nineties, local content of MHP equipment for schemes in the small to medium size range now exceeds 80%. This has resulted in investment costs in the range of US\$1,500-2,500 (01/2002) per installed kW (including transmission and distribution). As a result of the steadily increasing fuel prices in Indonesia, MHP now represents a competitive energy option particularly for remote regions where expansion of the public electricity grid is neither technically nor economically viable.

The project has developed a variety of MHP technology packages together with local manufacturers in Java and Sumatra, which have been applied in more than 100 installations over the past 10 years. These schemes presently supply over 20,000 families with a clean sustainable energy source of energy. In contrast to diesel generators usually used for power generation in remote rural areas, these MHP schemes have resulted in CO₂-emission avoidance of more than 4,000 tons per year.



Power for the future: Young inhabitant stands at the head race channel of an 80 kW MHP

MHPP Objectives

1. The fundamental requirement enabling sustainable development of MHP projects is a comprehensive technical competence to identify, plan, implement and commission schemes fulfilling certain technical standards. The first of 4 main-objectives in the current project phase (05/2002-04/2005) is to continue providing technical support and know-how to the MHP equipment suppliers and contractors facilitating *independent* implementation of projects.

2. Despite the improving economic environment for renewable energy projects in Indonesia, access to project finance through the Indonesian banking sector is extremely difficult. The second objective of *MHPP* aims to address this problem by establishing access to suitable sources of financing for MHP projects.

3. The provision of an energy source in rural areas besides improving the basic living conditions of the communities should also support economic development

contributing to poverty alleviation. The third objective of *MHPP* is therefore to support implementation of exemplary MHP projects linked to productive end-uses stimulating income generation in the respective locations.

4. The fourth objective is through various media, disseminate the experiences of the project to as broad an audience as possible at national, *ASEAN-wide* and international level.

Institutional

MHPP is a cooperation project between the German and Indonesian Governments. The *Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH*, a government-owned company, is entrusted by the *German Federal Ministry for Economic Cooperation and Development (BMZ)* with the responsibility for implementing the German contribution to the project.

The Project Holder is the *Directorate General of Electricity and Energy Utilization (DitjenLPE)* within the *Indonesian Ministry of Energy and Mineral Resources*.

The *Suisse State Secretariat for Economic Affairs (SECO)* also supports the promotion of MHP in *ASEAN*-countries through its contribution to the *Joint ASEAN Mini Hydro Program (JAMP)*. *JAMP* is coordinated by the *ASEAN Centre for Energy (ACE)*, who is supported by

the recently established *EU-ASEAN Energy Facility (EAEF)*. It is hoped that *EAEF* will facilitate the funding of mini hydro activities.

ENTECAG a Swiss consulting company with many years of experience in the field of mini hydro development in S.E.Asia is commissioned to execute both the German and Swiss contributions. Linkages between the members of *JAMP* generate many synergies enhancing the overall impact of the individual components.

Indonesian partners at implementation-level are private engineering workshops, equipment manufacturers, NGOs and technical faculties of universities active in mini hydro power.

Public Private Partnership

As foreign direct investments (FDI) are the most important source of finance for developing countries, an additional objective of *MHPP* is to identify and initiate appropriate "Public Private Partnerships" (PPP). PPPs are projects combining private business interests with developmental goals of the German government in a way that supports both partners in fulfilling their objectives more efficiently.

For German or European businesses and their sister companies abroad *MHPP* provides an infrastructure in the field, regional and sector know-how, contacts to government authorities, NGOs, other relevant institutions, as well as experience in planning, consulting and project implementation.

In exchange we would expect long-term commitments for economic engagement, transfer of know-how and human resource development from prospective European partners. We would be happy to receive your ideas.

End-Use

Silayang, West Sumatra provides an example of how income generation in remote rural areas can be supported through the provision of an energy source. Since 1996 Silayang is supplied with power from a 16 kW MHP-scheme, built with support provided by the 1st phase of *MHPP*. In late 1999 as an activity within the 2nd phase of *MHPP*, a small-scale coffee processing facility, powered by the MHP plant was commissioned and went into operation. This processing facility includes a coffee roaster, grinder and simple packaging machine.

With a difference in price of around 300% between unprocessed and processed coffee, a considerable margin remains in the village as a result of being processed locally. According to the business plan the investment costs of US\$9,000 will be repaid after 3-5 years. By 2005 it is estimated that the personnel requirement will grow from the present 5 people employed to 13.

Consultancy (accounting, marketing and coffee processing) is provided by a local NGO *Lembaga Pemerhati Wanita, Anak dan Lingkungan (LPWAL)*, operating on an arrangement whereby they receive a 15% share of the generated gross profit.

An annual 25 % of its net profit is paid into a village development fund. The savings are used for maintenance

and repair of equipment of both the coffee factory and the mini hydro plant. The development of small scale enterprises thus increases income generated by the MHP contributing to a more profitable and subsequently sustainable electricity supply. Pictures of the enterprise can be seen in the photo gallery of <http://www.mhpp.org>

Miscellaneous

Grid Interconnection Policy

New legislation governing renewable energy projects interconnected with state owned utility *PLN* was signed on the 12th of June 2002. The program known as *PSK TERSEBAR* covers projects up to a maximum size of 1 MW. Institutions eligible to participate are co-operatives, private and government companies. Purchase tariffs will be calculated at 80 and 60% of *PLN*'s announced "Electricity Base Price" (*Harga Pokok Penjualan - HPP*) for interconnection at medium and low voltage respectively.

Indonesian Manufacturers Export MHP-Packages

With a growing reputation for their competitiveness, a number of MHP equipment manufacturers supported through the project have supplied equipment for export



Export activity : Shipping of MHP-solutions...

to 6 foreign countries. The first export was made as early as 1994 with the supply of a 60 kW turbine to a hospital mission in Uganda, Africa. Presently the range of MHP products manufactured locally suitable for export includes a range of cross flow turbines and synchronous and asynchronous electronic control systems. Further orders for export in 2002 are under negotiation widening the sphere of impact of the projects technology transfer activities to Africa and other countries in Asia. An example of how local manufacturers are adapting their products to meet market demands is the recent supply of a 10 kW turbine/generator/direct drive multi-purpose milling unit shipped in 2001 to Sarawak, Malaysia.

Editorial

GTZ-Mini Hydro Power Project (MHPP)

Jl.Cisatu 193, Bandung 40142, Indonesia, Phone/Fax: +62 (22) 2032128

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