



Projektträger
Forschungszentrum
Karlsruhe (PTKA)



PROJEKT MANAGEMENT ORGANISATION FOR THE

Federal Ministry
of Education
and Research

Joint Project: „Water Resources Management of an Underground River in a Karst Area, Yogyakarta Special Province, Indonesia”



Study Area:

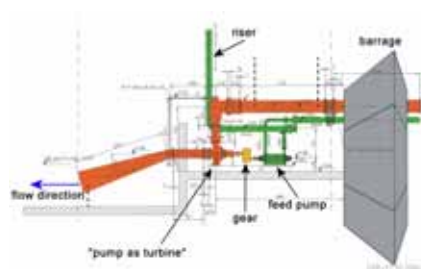
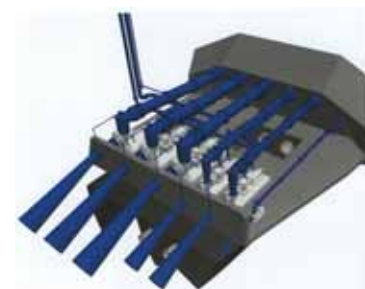
- ‘Gunung Sewu’ (thousand hills), Karst area (1400 km²) with hundreds of networked caves

Problem:

- Total exchange of the surface run off to an underground river system due to karst infiltration
- Unsuccessful attempts for effective use of the underground water resources
- Severe **water scarcity** during dry seasons for the local population

Objective:

- Improvement of the water supply for 80.000 people from present 20 lpcd to about 70 lpcd by development of the underground water resources with regenerative energies and appropriate technologies



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Contact:

Prof. Dr.-Ing. Franz Nestmann, University of Karlsruhe
Institute for Water Resources Management



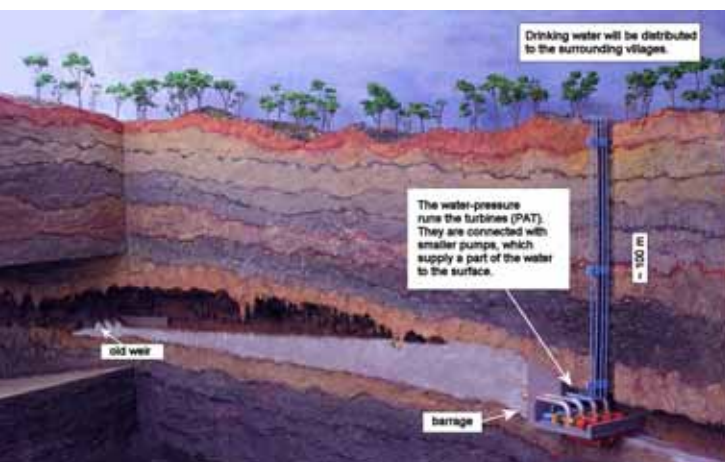
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Concept / Implementation:

- Storage of the underground river up to 15 m height by installation of a concrete barrage
- Installation of an underground micro hydro power plant
- Use of efficient and reliable ‘pump as turbine’-technology with directly coupled pumps for water delivery
- Alternative Implementation (for other sites): Underground hydro power plant with wooden pressure pipe

Capacity-Building:

- Close cooperation with Indonesian authorities and universities as well as training courses to encourage the transfer of knowledge
- Demonstration project / laboratory cave for multiplication to other sites

Outlook

- The construction work and installation of the pumping modules will be accomplished in July 2006
- Initialization of a joint project “Integrated Water Resource Management (IWRM)” with a holistic consideration of several aspects, namely:
 - Water supply
 - Water distribution
 - Water quality
 - Waste water treatment



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