



Regional Small Hydropower Competence Center Bandung, Java / Indonesia

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REPIC

Renewable
Energy
Promotion in
International
Co-operation

Actual energy mix in Indonesia

- **Non-renewable installed capacity** **23.7 GW** **80.2%**
 - Oil 18.2 GW 61.7%
 - Coal 4.1 GW 13.9%
 - Natural gas 1.4 GW 4.6%

- **Renewables** **5.8 GW** **19.8%**
 - Hydro 4.2 GW 14.3%
 - Geothermal 1.1 GW 3.7%
 - Biomass 445 MW 1.5%
 - PV 8 MW 0.0%
 - Wind 1 MW 0.0%

- **Share of Mini/Micro Hydro** **84 MW** **0.3%**

Hydropower Potential

- Indonesia: 3rd highest hydropower potential in Asia!
- Current Production
Small Hydropower (SHP) 0.055 TWh/a
- **Untapped SHP Potential 75 TWh/a**

Source: Hydro Atlas, Hydropower & Dams

Local Manufacturing travelling on the learning curve



Up to 100 kW



Hydraulic Laboratory University of Applied Sciences, Zurich

- Former training equipment for hundreds of Swiss engineers
- Equipment still in good condition and consisting of
 - Pelton turbine unit
 - Francis turbine unit
 - Different types of pumpes
 - Measurement weirs
 - equipment
 - Gates and actuators



Project Idea – Regional Small Hydropower Competence Centre I

- Installation of the equipment of the hydraulic laboratory in Bandung, Java / Indonesia, making it available for
 - Local producers of SHP equipment can test and improve the quality of their products
 - Local development of equipment for higher capacities (up to 1 MW)
 - Practical trainings for producers and planners
 - Test equipment for Indonesian students



Project Idea – Regional Small Hydropower Competence Center II

- Establish a know-how exchange platform for the different stakeholders
 - Planners & operators of MHPs
 - Different small and medium-sized producers of MHP equipment
 - Jasa & Produksi, responsible for O&M of the power plants of PLN (Indonesian Electricity Utility)
 - ASEAN Center for Energy
 - UGM University Yogyakarta and Institut Teknologi Bandung ITB
 - Engineering companies





Operation & maintenance of the competence center

- PT Entec Indonesia is interested in operating and maintaining the Small Hydropower competence centre. In return it may use it with priority for trainings, tests and development of their own products.
- The laboratory equipment is available for all stakeholders. A low usage fee for the additional expenses of PT entec may be applied.
- PT Entec will assist and support users on request

Expected results

- “Living” network of different stakeholders enables know-how and experience exchange
- Local producers use the services of the hydro laboratory, improve the quality of their products and get in contact with potential costumers
- New products for the range of up to 1 MW are developed and a better exploitation of the Small Hydropower potential in the range between 100 kW and 1 MW
- Technical trainings take place in the competence center and allow also international exchange with players from other countries

Achievements... (I)

Hydro lab equipment is dismantled and transferred to Indonesia



Achievements... (II)

- Several trainings and workshops took place with equipment of the hydro lab
 - Turbine design: workshop for producers from different countries like Ethiopia, Afghanistan, Laos, Philippines,
 - Training for Teachers of TEDC



Achievements (III)

- The Indonesian Energy Minister visited the area of the competence centre and fully supports the idea



Current situation (I)

- The reconstruction of the competence centre is delayed due to following reasons:
 - The resources of PT Entec Indonesia were limited due to other urgent projects
 - The narrow budget did not allow to send international staff for support
 - The issuance of a construction permit took much longer than expected
- Nevertheless, trainings and workshops were already conducted with the available equipment and in an already implemented Pico hydropower testing facility

à New national and international stakeholders got informed about the new project and showed their interest

Current Situation (II)

- Technical questions have been clarified and the reconstruction has been planned
- The operational concept of the competence centre was changed:
 - à Integrated Public Private Partnership (PPP) with
 - Technical Education Development Centre (TEDC), Bandung
 - State owned engineering educational institution (Politeknik)
 - PT. Entec Indonesia
 - ASEAN Centre for Energy (ACE)
 - Association of southeast Asian Nations (ASEAN)

PPP - Outlook

- TEDC
 - Makes available premises for the construction of the centre
 - Development of suitable training curricula, training courses and overall operation, maintenance and management of the facility
- PT. Entec
 - Responsibility for implementation of re-construction
 - Training of the staff
 - Development of the curricula
- ACE
 - Support and backing up the partners activities
 - Financial support
 - Promotional activities in ASEAN partner organisations and networks

Conclusion

REPIC's financial contribution allowed the initiation of this project and made the use of all these synergies possible!

