Evaluation Summary

Yichang small hydraulic project

Country: **China** | Sector: **Energy**

Evaluator: **EGIS**
Date of the evaluation: **August 2014**

Key data on AFD's support

Projet numbers: CCN 3017

Amount: €40 million in sovereign loan, including 100,000€ grant

Disbursement rate: 100%

Signature of financing agreement: June 2008

Completion date: June 2012

Total duration: 4 years

Context

The Yichang project was perfectly aligned with **the strong Chinese focus on renewable energy**.

It involved three individual sub-projects, each in a separate valley, the construction of four new small hydropower plants and the rehabilitation of four existing small hydropower plants.

The project followed an earlier AFD-funded small hydropower project in Wuxi county, Chongqing municipality.

Actors and operating method

Project ownership: Hubei Province

Project ownership delegate: Yichan Municipality

Mastery of work: Hubei Chuyao Water Resources & Hydropower Engineering Co. Ltd

Objectives

1. **To provide** reliable, socially acceptable and affordable access to a new renewable source of energy/electric power in China
2. **To support** local economic development
3. **To substitute** fossil fuel-based power locally with hydropower, thus reducing greenhouse gas emissions

Expected outputs

- **58 MW** of additional capacity
- **100 and more** jobs created indirectly by the project
- **131,000 t/year** CO_2 emissions avoided

Performance assessment

Relevance

The project is highly consistent with China's renewable energy and greenhouse gas (GHG) policies. It is highly relevant to the three hydropower company beneficiaries. It is relevant to local inhabitants. It is consistent with national standards, but there is no evidence of its consistency with international practices.

Effectiveness

53.6 MW of new capacity have been added (versus the 58 MW target) and 31.3 MW have been rehabilitated. Hydro units are now able to operate at rated power when sufficient water is available. **The project met Chinese social and environmental standards** (but there is no evidence of it meeting international standards).

4 MW of new capacity were not built, it appears that AFD was not aware of this. **The project provided 100 local ongoing skilled jobs**. There is a high probability of operating successfully for their design lives.

Efficiency

100% of AFD funds have been spent, but the actual level of co-financing contribution is not clear. The project had **timely and cost-effective preparation and implementation** and had **appropriate and effective institutional arrangements and monitoring**.

Impact

The project had **wider positive economic and social impacts**:

- 100 local skilled jobs were created to operate the hydropower stations,
- indirect jobs were created but are difficult to assess (development of fish farms, etc.),
- and roads that enable commercial exchanges have been built.

The project was built to Chinese ecological standards, not to international standards.

The project has a reduced global impact due to a planned 4 MW hydropower plant not having been built: the GHG emissions reduction will be 7% less than that originally envisaged.

Sustainability

Small hydropower plants have been soundly designed, constructed and operated. Only minor operational and monitoring issues appeared. The project office seems to have **maintained small hydro development expertise which could be readily applied to any new small hydropower developments** that it may undertake in the future.

Added value of AFD's contribution

AFD funding certainly helped to get small hydro plants built, but it is likely that they would have been built within a few years anyway in absence of AFD funding. **AFD loan funding brought forward by several years the Yichang project.** AFD grant funding was useful but no evidence was founded that it led to hydro power plants being built to anything beyond good Chinese small hydropower standards. AFD intervention led to lower cost funding than was available in CNY/RMB. No evidence was available of any best international technical practice having been followed in terms of power plant's MW or GWh outputs, mechanical or electrical efficiency.

Conclusions and lessons learnt

The project was perfectly aligned with Chinese national renewable energy policies and AFD's China operations strategy. It met the funding needs of the project beneficiaries, in particular the three companies building new or refurbished small hydropower plants.

The hydropower stations appear to be built to good Chinese small hydropower standards using standard equipment, to be capable of operating at their design outputs when sufficient water is available, and to have a **high probability of operating successfully for their design lives** with regular scheduled and occasional unscheduled maintenance. **The project provided jobs to local people, improved local roads, and some enhanced fish resources.**

AFD should better define its criteria for supporting projects in China to reduce the risk of funding projects that would likely have been funded anyway by China. **AFD should ensure that its staff visit all proposed infrastructure sites before, during and after construction** to check key details of equipment design and tender specifications, and operations and maintenance (O&M) status. **AFD should also retain suitable international technical consultants** reporting directly to AFD to review large infrastructure projects :

- design optimization
- environmental and social safeguard policies
- alignment with international best practices in specification, tendering, tender evaluation, construction and commissioning
- and post-commissioning ongoing O&M practices.