



US Hydropower

Council for International Development

1500 K Street, NW, Suite 330 Washington, DC 20005
t 202.383.2536 f 202.383.2555

Clean Energy Finance and Market Barrier Issues

As governments worldwide continue restructuring their energy sectors to encourage private investment, there are struggles to create market systems that foster bona fide competition among different generation resources. The U.S. hydropower industry believes that the Clean Energy Initiative organized by the White House Climate Change Task Force should play a major role in this issue. Up to this point hydropower and other capital intensive resources have been handicapped and kept from contributing their reasonable share of long-lasting, emissions-free power to the benefit of national economies. Far less hydropower has been developed in recent years than reason would dictate, with the greatest share of new electric generating capacity being provided by thermal plants.

Despite U.S. cutting edge technology, repowering of existing plants, and innovative plant efficiency practiced by U.S. private developers the rapidly developing independent power producer sector is dominated by thermal generation. The U.S. hydropower industry believes that the multilateral community and the U.S. Government on behalf of U.S. companies will need to facilitate an industry partnership to promote U.S. exports and ensure hydropower and other non emitting technologies a level playing field in global energy markets.

Latin American and Asian markets have planned over 300,000 MW of hydropower investment which is expected to come from the private sector by 2010, yet to date only 15 hydropower projects have been financed globally on an international private sector basis. This outcome is not a consequence of any inherent deficiency of hydropower in comparison to thermal but, rather, results from structural problems in new and emerging energy markets that discount the advantages of hydropower and highlight the disadvantages. Greater rationality in financing would result in hydropower competing more effectively with thermal alternatives.

The US Hydropower Council for International Development has identified the following issues as being the areas where constructive changes could be most beneficial toward facilitating new hydropower project development.

1. Disparity in Debt Repayment Terms

With movement toward more price-competitive electricity markets in the world, hydropower projects are forced to compete on a short-term price basis with other technologies. While hydropower has the advantage of having most costs fixed over a project's operating life, it has the disadvantage of having higher initial development costs than thermal alternatives. Hydropower has both higher construction costs per unit of capacity and higher interest during construction due to longer construction periods. However, hydropower projects have far less operating risk, and will almost always have very low operating costs which are little affected by inflation, volatile and uncertain future fuel prices, or other external changes. Hydropower's advantages are not fully

recognized by the market. Nuclear projects already enjoy 15 year debt financing, yet hydropower does not attract longer-term financing and is forced to compete on 7-10 year financing.

Longer repayment terms are justified given the long useful lives of hydropower projects and their minimal operation and maintenance expenses. Debt repayment terms of 15 to 20 years beyond the date of commercial operation are needed to make most hydropower plants competitive in the early years of operation (during debt repayment). Longer debt terms reduce the political and financial problems that result when power sales tariffs must be front-loaded with high rates during the debt repayment period and much lower rates after the debt is retired. With longer term financing, many sound hydro projects can compete, over a useful life of 50 years or more, against any alternative technology.

The finance term problem has been addressed in some cases by using very complicated debt structures that includes World Bank guarantees for foreign currency debt during the last few years of an extended loan repayment period. Simpler structures (with lower transaction costs) are needed.

One option would be to modify the current Organization for Economic Coordination and Development (OECD) consensus agreement relating to Export Credit Agency (ECA)-supported debt and add hydroelectric power projects to the special consensus on nuclear power projects. This already allows 15-year repayment terms, subject to a slightly higher (appropriately so) loan costs. This could readily be achieved with the support of the US Export Import Bank representative at OECD ECA negotiations and/or through the US's permanent representative at the OECD in Paris.

Another option is to establish dedicated long-term debt funds, with the backing of multilateral lending institutions, to lend for hydropower projects. Local currency debt could be managed by local development banks (e.g., the Development Bank of the Philippines, and the Development Bank of Brazil (BNDES)) and the foreign currency managed by International Finance Corporation or other lenders. Risk would be spread over a number of projects and countries, to reduce the premiums. Strict technical and financial reviews of projects would be needed to avoid abuse. In general, we believe that multilateral support is clearly justified and necessary in order to offset the bias that favors thermal generation over renewable hydroelectric generation.

2. Additional Financing Support

Hydropower plants face the burden of securing financing for local costs, which can be from 40 to 70% of the total project cost. These costs are not generally eligible for ECA-supported financing. Alternative mechanisms need to be identified.

To the extent that ECAs remain a primary supporter of national exports, and the OECD consensus agreement limits local cost support to 15 percent of total export costs, additional support should be sought from other entities such as bilateral and multilateral development agencies. (It should be noted that local development banks and local capital markets-with a few exceptions such as in China and Malaysia-are not able to supply long-term local currency financing for hydropower projects.)

Much needs to be done to focus and educate bilateral and multilateral development agencies on the special needs and benefits of hydropower projects. A significant concern is that the Overseas Private Investment Corporation (OPIC) and the International Finance Corporation (IFC) will not consider greenfield hydropower projects ... and this refusal is simply because they lack understanding of hydropower and its advantages.

For example, Hydropower will play a critical development role in meeting carbon reduction commitments to address climate change goals. Hydropower will also be a key resource in fostering sustainable development in developing countries. To facilitate this potential, the World Bank's support for hydropower needs to be more proactive and serve as a catalyst for other development lenders to the sector.

It could be quite helpful if prospective lenders in this sector reviewed and understood the World Bank's environmental guidelines. It is conceivable that this could be accomplished at the instigation of the US Agency for International Development (USAID) by their setting up a working committee from the World Bank, IFC, US Export-Import Bank, OPIC, and USAID to review and refine these environmental guidelines to develop institution-specific criteria and approaches for lending in the hydropower sector.

On a specific note, the USAID experimental loan guarantee program could be broadened to support hydropower projects within a pre-approved envelope. Similarly, the World Bank could allocate a certain amount of its guarantees (both partial credit and partial risk) for lending to this sector.

3. Ability and Willingness to Pay

In many countries, power purchasers do not have the ability (or sometimes, the inclination) to pay for generated power. India is a prime example, and Indonesia is now problematic. Additional in-country sector reform-already encouraged by the World Bank, USAID, and others-is needed. Government guarantees for power purchase agreements in financially unsustainable situations (in many states in India, for example) should be discouraged. Developers should be encouraged to avoid countries where the economic fundamentals and business ethics do not support the prospect of payment.

4. Bidding Costs and Abuses

Firm power cost bidding as a system for allocating project development rights is a significant obstacle to private sector development of hydropower. There are several problems with such a bidding system.

First, preparing bids for developing hydropower projects is extremely expensive. Typically, a government-owned utility has identified a project that it feels will be a good addition to the electrical generation supplies in its service area. Enough studies have been completed to let the utility believe that it has identified the optimum development. The utility then solicits bids for BOT (build-operate-transfer) development, with developer selection based on the minimum bid price for energy and power supply during a concession period. The project becomes the utility's property at the end of the concession.

To prepare the bid, a developer must estimate output by evaluating hydrology (water availability) and efficiencies; determine project costs (land acquisition; construction costs including access roads, transmission lines, project civil works, and mechanical and electrical equipment; operation and maintenance cost; and financing costs); determine a permitting and approval plan; prepare a detailed project implementation schedule; and arrange preliminary financing. Preparation of such bids can easily cost more than a million dollars for each developer. There is never enough detail, or assurances of correctness of project fundamentals, provided in the bidding package to allow inexpensive bid preparation.

Further, the developer and his team are given little flexibility to improve an identified project. The utility often cites the need to make competing proposals easier to compare, or to use its standards since it will own the project after the concession expires. However, these attitudes are seriously counterproductive-and squarely at odds with the goal of producing competitively priced power.

In addition, the bids submitted are usually not considered final bids by the utility, but simply starting points for further negotiations. Subsequent negotiations invariably damage the developer's position. In the Philippines, for example, very large performance bonds posted with bids are held hostage during these negotiations, and a developer who walks away risks forfeiting a very large amount of money.

Two options seem to be preferable, where projects are already identified:

--First, the potential power purchaser could select a developer for a project by competitive review of qualifications, with a target tariff already established. The selected developer would be given a project concession valid for no more than two or three years. During that time, the developer should have considerable flexibility to develop a firm price power purchase contract and present it to the purchaser. The purchaser would compare the proposed terms to its alternatives and accept or reject the contract. Negotiations could proceed if warranted. If the contract were rejected, the project could be dropped or offered to others depending on the purchaser's needs. The first developer (and his team members) would not be eligible for a second chance.

--Second, the utility/purchaser could prepare more detailed project documentation and accept all hydrologic risk and share a significant portion of construction cost (and geologic) risk.

5. Allocation of Project Risks

Where a Power Purchase Agreement (PPA) and non-recourse financing is used, hydrologic risks should be partly accepted by the power purchaser. A significant power (capacity) tariff component should be included in the contract for power and energy sales (assuming the system is not dominated by hydropower). As long as a plant is physically available for generation, the power component should be paid even when water may not be available. Ideally, the power component should cover debt service completely. Hydrologic risk associated with run-of-river projects-and per kilowatt-hour energy costs--would be reduced if higher plant factors than are often sought were used in sizing developments. Especially in areas with sparse hydrologic data, run-of-river plant factors of 30 or 40 percent make little sense. A corollary is that use of traditional government resource development agency economic assessments will result in non-price competitive sizing of site developments. As discussed earlier in connection with bidding systems, the power purchaser should share construction cost and schedule risk if competitive bids are prepared based on information from studies provided by the purchaser.

* If you have comments or questions regarding the issues discussed in this paper, please contact Debby Stone, US Hydropower Council for International Development at:

1500KStreet NW #330 Washington, D.C. 20005

(202) 383-2536 fax: (202) 383-2555, e-mail debbys@us-hydropower.org