

Keywords:

Hydropower dams, environmental and social standards, renewable energy, social responsibility, green economy

Policy pointers

The Hydropower

Sustainability Assessment Protocol (HSAP, 2011) provides an independently certified assessment and monitoring tool to assess individual dams' sustainability following the recommendations of the World Commission on Dams (2000).

The HSAP can be

repeated at intervals, building better standards beyond the initial financing agreements. It is affordable, particularly where major private investments look for rates of return of 20 per cent or more on multi million (and billion) dollar investments.

Banks, particularly those

not signed up to the Equator Principles, should make more use of the HSAP when assessing finance for hydropower proposals.

EU member states

allocating carbon credits to individual hydropower dams under EU Linking Directive (2004) should use the HSAP assessments process to ensure 'respect' for the World Commission on Dams criteria and guidelines.

Renewed hydropower investment needs social and environmental safeguards

The 50,000 large dams in the world respond to a range of development and security needs, providing power, water storage and flood protection. Yet balancing their benefits against their social and environmental costs has long been controversial. A resurgence in hydropower investment has seen new actors, notably Chinese and private banks, changing the global landscape for financing dams, leading to fewer measures to protect social and environmental values. New financing tools, such as carbon trading, are also playing their part. As the 'finance landscape' for hydropower widens, improved tools to ensure sustainability must become a mainstream approach, especially to encourage Asian finance institutions to participate in mechanisms like the Equator Principles — now the main framework used to assess and manage environment and social risk in dam project finance transactions, outside of multilateral safeguards.

Large dams¹ built for hydropower, irrigation or flood control are both lauded and castigated. In India, Nehru famously applauded them as "the temples of modern India", whereas political activist Arundhati Roy declared them obsolete, uncool and undemocratic, saying "They're a government's way of accumulating authority (deciding who will get how much water and who will grow what where). They're a guaranteed way of taking a farmer's wisdom away."

Similar fault lines exist elsewhere, such as in Brazil or Ethiopia. Indeed, the debate surrounding how benefits and impacts from dams are distributed is perhaps as significant today as it was in the late 1990s and early 2000s, when many major bilateral and multilateral donors withdrew from funding large dams due to their controversial and highly polarised nature.

Many observers felt that those controversies, and the resulting slowdown in construction during the late 1990s (see Figure 1), presaged a stagnation of hydropower investment. Three factors combined to turn this around:

- 1) The decision by China not only to accelerate dam construction at home but to finance projects in Asia, Africa and more recently in Latin America
- 2) The global push to reduce greenhouse gas emissions from electricity generation, now representing one-third of man-made emissions, and
- 3) The rising price of oil and gas that made hydropower an attractive investment for private investors and banks aiming to meet the global growth in electricity demand, especially in emerging economies.

Hydropower's environmental and social challenges

Large dams bring very specific social and environmental impacts that require tailored, targeted and context-specific responses. Population displacement, reduction/alteration of downstream flows, or creation of a significant barrier all pose unique challenges in a river system that are often

not specifically provided for in national environmental or water legislation.

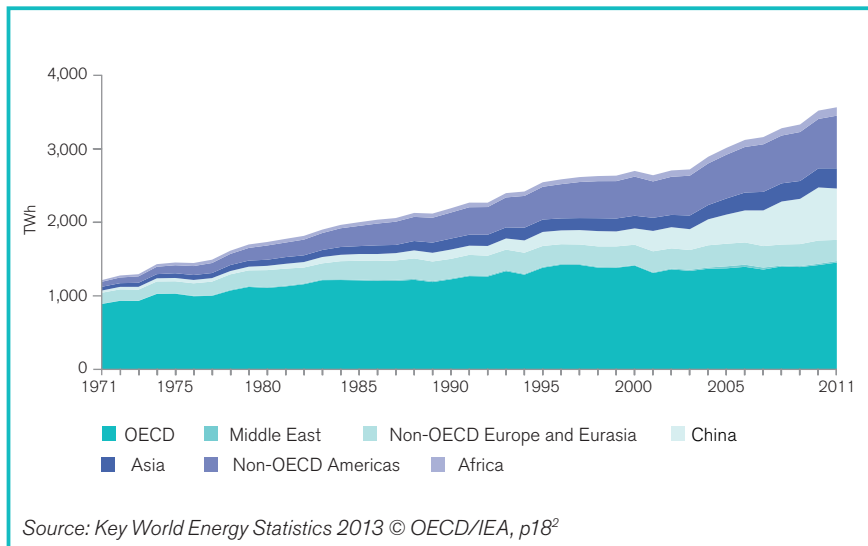
Historically, much of the opposition to large dams has focused on individual projects, often funded

With diverse actors supporting dams, a more mainstream approach for ensuring sustainability is needed

by the World Bank or other multilaterals. Public pressure resulted in those institutions ratcheting up their investments in social and environmental due diligence (both in preparatory studies and in environmental and social management plans). The World Commission on Dams (WCD, 2000) proposed a new framework for decision making and encouraged all actors to adapt its proposals to local contexts. Certainly, the main progress on addressing social and environmental impacts has come from multilateral and OECD donors and financiers who have attached conditions to funding, due to interests of their members and through pressure from local communities and NGOs. The World Bank led the development of such safeguarding approaches. Although questions are often raised about the time, money and effort required to meet all requirements, and about the delays and costs to projects, these approaches currently set the highest standards applied to projects in developing countries.

However, today only 5–10 per cent of the world's new dams are being financed by multilateral institutions like the World Bank. The vast majority are funded from private capital or other donors with less rigorous environmental and social safeguards. These funders include China, which has become the single largest financier of large dams globally, through its various export credit and commercial banks. Good social and environmental outcomes are less likely where there is less attention to safeguards.

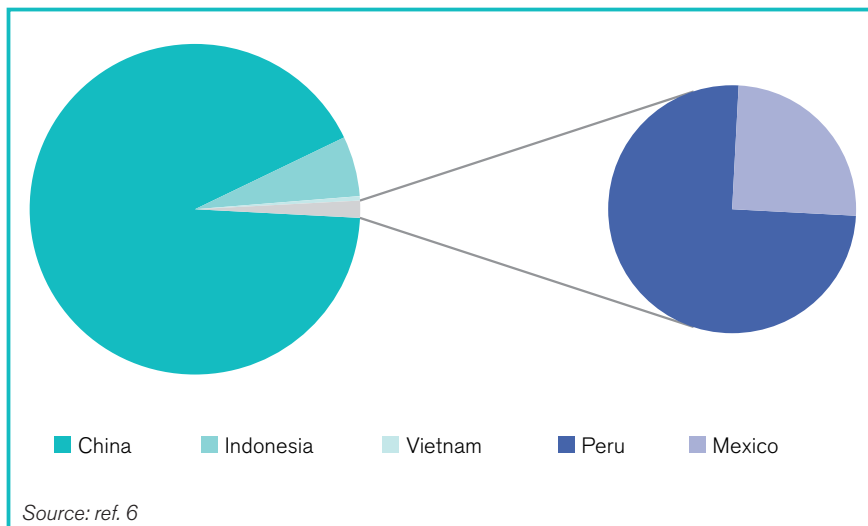
Figure 1. Hydro production from 1971 to 2011 by region



Finance through carbon trading

A new source of finance for hydropower is the global carbon market, which offers additional financing for initiatives in developing countries that cut carbon emissions. By 2012, global support for hydropower in all developing countries under the Clean Development Mechanism was valued at \$US2.0–2.6 billion per year and hydropower accounts for the largest number of Certified Emission Reductions sold among all types of initiative.³

Figure 2. Global distribution of 238 hydropower projects funded by the UK designated national authority to 31 December 2012 under the EU Emissions Trading System



The European Union Emissions Trading System that launched in 2006 is also used to finance large hydropower, though in Phase III (from 2013) this is restricted to less developed countries, and not middle-income countries (for example, BRICS). When considering carbon financing for dams, EU members must observe the EU Linking Directive (2004),⁴ which gives 'designated national authorities' a mandate to screen new schemes and allocate credits to support a certain amount of 'clean' energy projects that reduce greenhouse gas emissions. Hydro projects producing more than 20MW that apply for credits must demonstrate 'respect' for the WCD's criteria and guidelines. Proponents self-assess



Figure 3. Spider diagram for HSAP Implementation Phase assessment of Brazil's US\$8 billion Jirau Hydropower Plant (3,750MW) that is nearing completion at the Ilha do Padre on the Madeira River (Rondonia state) in Brazil.

compliance via a voluntary template, agreed by the EU in 2008, submitted to the designated national authority.⁵

World Commission on Dams guidelines

In practice, although the WCD sets out an excellent set of decision-making steps on needs assessment, and options for meeting those needs, measuring whether any individual dam meets the WCD guidelines is quite challenging. Much of the WCD's work focused on proposing processes to look at all dam and non-dam options for irrigation, energy or flood control, and to filter out 'bad' dams before too much political and financial capital had been invested in them.

For example, only two of the five environmental policy principles proposed by the WCD can be applied to individual dams. The remainder concern national or basin-scale approaches beyond the remit of individual dam developers. Put simply, the WCD recommendations were not conceived as an external assessment framework for dams, but as a process for making decisions on how best to meet energy, food and water development needs at both basin and national level.

Shortcomings in self-assessment

The EU voluntary template is not only weaker for being self-assessed by project developers but contains a weaker set of assessment questions

than those in the WCD criteria. And there has been no follow-up to assess real outcomes on the ground, nor any review of the system's effectiveness in delivering the kind of outcomes intended by WCD (and, by extension, the EU).

When the WCD's report was published, China did not accept its recommendations. However, a review by IIED of projects accepted for support by the UK designated national authority under the EU carbon trading scheme up until 31 Dec 2012⁶ showed that of 238 approved hydropower projects, 92 per cent were in China (see Figure 2). These must therefore be deemed by the UK authority to respect WCD criteria and guidelines. (The UK designated national authority has declined to say how many projects have been rejected as non-WCD compliant, or why.)

Hydropower Sustainability Assessment Protocol: an alternative approach

The hydropower industry, led by the International Hydropower Association, has been concerned about how to improve the sustainability of hydropower projects for the past fifteen years. A series of efforts to improve sustainability standards culminated in the Hydropower Sustainability Assessment Protocol (HSAP, 2010), developed by a forum of experts and institutions representing industry, governments and NGOs.⁷

The protocol assesses 23 criteria on a scale of 1-5, with 3 being good practice and 5 being best practice (see Figure 3). It has the advantages of giving a numerical and visual output, of being undertaken by an external certified assessor according to methods agreed by a multidisciplinary forum, and of having the possibility of review and modification as new approaches arise (which the WCD criteria lack, as the commission was disbanded in 2000). It is easily applied to individual dams, unlike WCD criteria.

The HSAP covers similar ground to WCD criteria and can be applied to individual dam projects at early stages of project design, during detailed planning, or during operation. Assessments can be repeated at regular intervals (say every ten years) and changes in key parameters can be tracked. It is an entirely voluntary tool. Some 20 assessments have been undertaken or are ongoing, and cost anything from US\$60 thousand to US\$100 thousand each.

Better assessments despite diverse financing and standards

With diverse actors supporting dams, a more mainstream approach for ensuring sustainability is needed — one that captures a much larger proportion of the world's dams and gradually encourages higher standards of good practice throughout the industry.

Most observers agree that the Equator Principles, the credit risk management framework for assessing and managing environmental and social risk in project finance transactions, do encourage increased due diligence from private banks. But their presence is extremely weak in Asia where many dams are planned or under construction. Only one Chinese bank has signed up to the principles. To overcome this limitation, banks should make greater voluntary use of HSAP as a tool for assessing environmental and social risk specifically in hydropower projects.

The EU could take a lead on this aim under the EU carbon trading system, giving an increasing EU

focus on 'results' on the ground. The BRICS are also developing their own carbon trading systems and the EU Emissions Trading System aims for partnerships to advance global carbon markets. Cooperation on advancing dam safeguards is an important aspect. The EU Linking Directive may similarly build on its commitments to WCD and require HSAP as the best available independently certified assessment tool to check that individual dams respect WCD before giving EU carbon credits in Asia or elsewhere, as the OECD has called for in the consideration of hydropower support by export credit agencies.

Monitoring outcomes

Such steps would also require monitoring of the effectiveness of WCD and HSAP in delivering good social and environmental outcomes 'on the ground'. With some exceptions (for example, multilateral support), virtually all conditions imposed on dam financing are effective until financing is committed for a particular project. If a project satisfies the criteria (on paper) then the funding schedule is agreed and implemented. There are, as WCD pointed out 13 years ago, few assessments of compliance and no sanctions for non-compliance: in most cases, the dam is built and the money is spent.

There are many opportunities for donors and financiers to increase national and regional learning to build better standards by requiring regular cycles of assessment, using for example the HSAP. These assessments are recommended by the WCD (Strategic Priority 3). They are well within the financial capacity of project developers and managers, not least where major private investments are looking at rates of return of 20 per cent or more on a multimillion dollar investment.

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Knowledge Products

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Notes

¹ By 'large' we mean dams over 15 m high, or between 5–15 m high with a reservoir exceeding 3 million m³ (ICOLD). / ² OECD/IEA (2013). Key World Energy Statistics 2013. www.iea.org/publications/freepublications/publication/KeyWorld2013_FINAL_WEB.pdf / ³ Assuming average US\$5–7 per Certified Emissions Reduction (CER) and taking CERs as reported under the Clean Development Mechanism by the end of 2012. <http://cdmpipeline.org/cdm-projects-type.htm#1> / ⁴ Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 / ⁵ See www.environment-agency.gov.uk/static/documents/Business/UK_Guidance_on_CDM_project_approval.pdf for UK designated national authority guidance / ⁶ Skinner, J and Haas, L (2014). Watered Down? A review of social and environmental safeguards for large dam projects. IIED, London. <http://pubs.iied.org/17517IIED/> / ⁷ See www.hydrosustainability.org/Protocol.aspx