



# Failed Mechanism

How the CDM is subsidizing hydro developers  
and harming the Kyoto Protocol

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**FIVE YEARS AGO** International Rivers started monitoring the Kyoto Protocol's Clean Development Mechanism, concerned that funds marked for climate change mitigation would be used to encourage construction of otherwise uneconomic large hydropower projects, taking limited funds away from renewable energy projects in real need of support, and subsidizing the social and environmental impacts that large hydropower often produces. What has actually happened is worse than we expected. The CDM is blindly subsidizing the destruction of rivers, while the dams it supports are helping destroy the environmental integrity of the CDM.

Hydro is now the most common technology in the CDM, making up a quarter of all projects applying for approval, or already approved, by the mechanism's Executive Board (EB). Very few, if any, of these hydro projects can realistically be assumed to require carbon credits to be built. More than a third of the hydros approved ("registered") by the EB were already completed at the time of registration and almost all were already under construction. In China, the world's most prolific dam-builder, the majority of large hydro projects nearing completion are now applying for CDM credits. Yet there has been no substantial increase in the number of hydros under construction compared to recent years when hydros did not receive any credits. Most credits that may be generated by these projects should therefore be considered to be "hot air"—fake credits which will increase global greenhouse gas emissions.

The concept of "additionality" is essential to the climate effectiveness of the CDM and, by extension, the Kyoto Protocol. An "additional" project is one which is only able to be built because it receives carbon credit income. Every carbon credit generated by a CDM project allows a country with emission reduction commitments under the Kyoto Protocol to emit one tonne CO<sub>2</sub>-equivalent more than their reduction target. Therefore, any non-additional project allowed in the CDM will increase global emissions.

Public and private money that should be supporting decarbonization in developing countries is flowing into the coffers of hydropower developers with the only effect on emission levels being to increase them. Hydro developers are repeatedly justifying their applications to the CDM with surreal arguments, such as that completed projects will only be completed if they receive CDM revenue. Even worse is that the validation companies and the CDM's Executive Board seem prepared to endorse such Alice in Wonderland argu-

ments. Validation companies appear to focus on making sure that project developers have all their forms properly completed, rather than providing independent and thorough audits of the developers' claims.

Further, little protection has been established at the international level to prevent projects with substantial negative impacts from being registered under the CDM. Two hydro projects that International Rivers have been monitoring for many years because of their social and environmental impacts are currently seeking CDM approval. One of these projects is completed and the other is very close to completion. While there are several grounds on which these two projects could be negatively validated, including additionality and failure to conduct adequately stakeholder consultations, the means for rejecting them based on their expected impacts on people's lives and the environment are unclear.

This report provides a lens into the way the CDM is (not) working through detailed analysis of hydro in the CDM with examples from specific projects. In so doing, it sounds an alarm that the CDM needs to be changed significantly if it is to help rather than hinder international efforts in the race against dangerous climate change.

Three-quarters of the hydro projects in the CDM pipeline are in the process of applying for EB approval. There is therefore still time for the Board to reject most of these projects and send a strong signal that they will take the fundamental issue of additionality seriously and that developers of non-additional projects should not waste their or the CDM's time by applying for credits. We give specific recommendations below on what improvements are needed to the CDM's "additionality tool" for it to more effectively weed out non-additional projects.

### Hydro in the CDM – the numbers<sup>1</sup>

As of November 1, 2007, 654 hydropower projects were in the CDM pipeline (from validation onward) comprising 25% of all CDM projects and 15% of annual generation of CDM credits (known as Certified Emission Reductions, or CERs). The majority of these projects are in China—402 hydropower projects comprising 71% of the expected annual hydro CER generation.

The number of large hydro projects entering the CDM pipeline approximately doubled every six months between January 2004 and June 2007 and continues to rise. The sizes of proposed hydro projects are also increasing. Of the eight hydro projects above 200 MW, seven entered the pipeline since June 2007. Six of these are in China. One 500 MW project entered the CDM pipeline in June 2007, and an 880 MW project in Brazil (which was essentially completed in October 2005) entered in November 2007.

Figure 1: Annual Expected CER Generation by Project Type

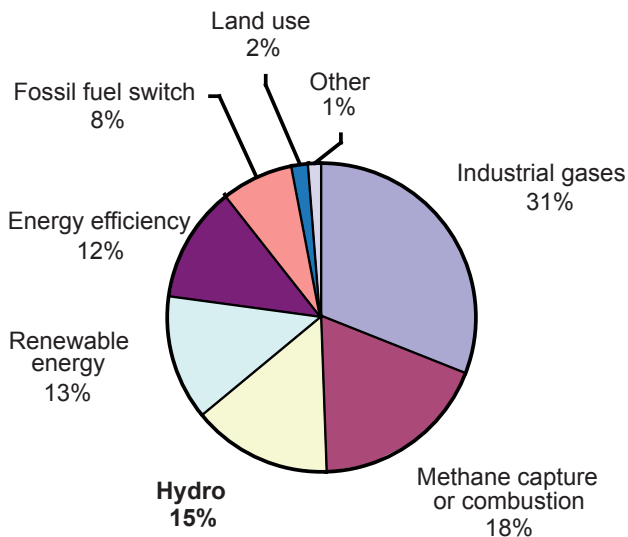


Figure 2: CERs Generated by Hydro Projects by Region (Expected credits through 2012)

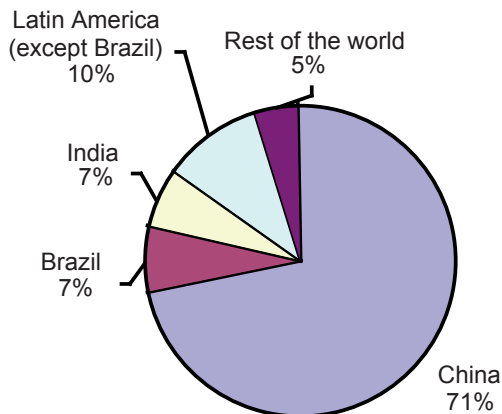
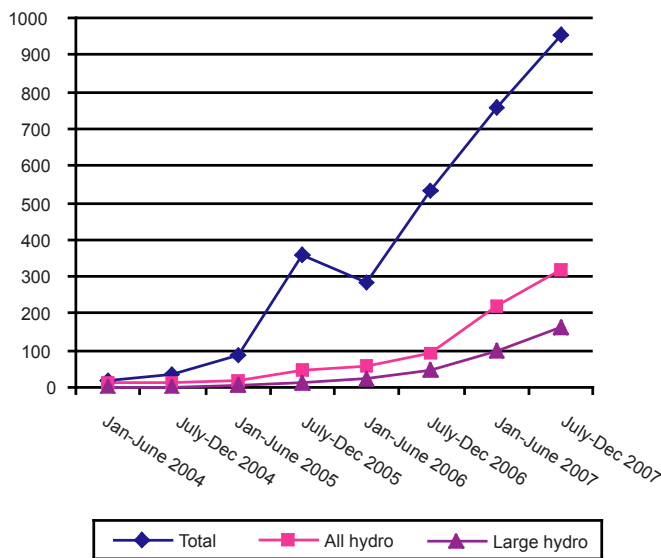


Figure 3: Projects Entering CDM Pipeline



## The majority of hydro projects in the CDM pipeline are non-additional

Evidence strongly suggests that the great majority of the hydros in the CDM pipeline are “non-additional.” In the absence of an accurate mind-reading device to learn the intentions of the project developer, the CDM has developed rules and norms to test the likelihood that a project is additional. The *“Tool for the demonstration and assessment of additionality”*, the tool most commonly used for CDM projects, is based on three indicators of project additionality:

- low financial assessments without carbon credit sales, such as a low project internal rate of return (IRR);
- other barriers that make it difficult for a project to go forward without additional support; and
- all projects must prove that they are not common practice in the region of the project.

The problem with these indicators is that IRR numbers can easily be manipulated, every project has to overcome barriers, and “common practice” has been weakly defined.

Hydro projects clearly illustrate the severe problems with the CDM’s additionality testing procedures. Hydropower is a mature technology with over a century of development and is already common practice wherever there are hydropower resources. It contributes a significant portion—in many cases the majority—of grid capacity in developing countries. Further, hydropower is supported by deeply entrenched interests in governments and the private sector, with the result that, as concluded by the World Commission on Dams, many hydro projects are built even when they are far from the least cost option.

It is commonly understood that the CDM Executive Board has been lenient on additionality in order to get the CDM market going, but that they are now becoming stricter. International Rivers’ evaluation of new hydro projects being proposed and registered under the CDM shows that the rules are still much too weak, that business-as-usual projects are still easily able to register under the CDM, and that the EB’s failure to apply functional additionality criteria has encouraged developers of non-additional hydro projects to apply for CDM approval.

### **Most hydro projects currently under construction in China are in the CDM pipeline**

The majority of large hydropower projects being built in China are currently registered under the CDM or are

going through the validation process. As of November 1, 2007 there were 402 hydropower projects in China in the CDM pipeline, of which 236 are large-scale as defined by the CDM (>15 MW). The largest of these projects is 500 MW. Chinese hydro projects in the pipeline now represent 15% of all CDM projects and 8.3% of total annual expected CERs. In total, these projects add 11.8 GW of new capacity.

From 1998 to 2006, China has added new hydro capacity at an average annual rate of 7.7 GW per year. According to China’s State Council, hydro will expand at a rate of 7-9 GW/year up to 2020.<sup>2</sup> The projects in the CDM pipeline would contribute 5.1 GW of new capacity in 2007, more than half of the estimated 9 GW of hydropower capacity expected to come on-line in China in 2007.<sup>3</sup> If one assumes all of the projects applying to the CDM to be additional, this would also mean assuming that business-as-usual hydropower additions in China would have dropped by 65% from the 11.2 GW capacity that came on-line in 2006. This is to say the least an unlikely scenario. A major drop in business-as-usual hydro expansion would be contrary to Chinese policy and economic and investment trends. A review of the CDM Project Design Documents (PDDs) for 70 (40%) of the 15 MW to 200 MW Chinese hydropower projects which came on line or were under construction in 2007 found no evidence that China’s ability to finance new hydro plants had suddenly plummeted. The apparent collapse in Chinese hydro developers ability to implement projects without carbon finance can only be explained as an artifact of creative PDD writing.

Another indication that these projects are non-additional is that of the Chinese hydropower projects submitted for CDM validation or currently registered, 77% are expected to start generating credits within a year of their validation comment period and 96% within two years. Large hydro projects typically take 4-8 years to build (on top of several years of project preparation). This means that almost all, if not all, of the Chinese hydropower projects in the CDM pipeline started construction prior to beginning the CDM validation process. Some PDDs mention that the CDM was considered prior to, or close to, the beginning of construction. Still, consideration of the CDM does not logically mean that the project would not have gone ahead without the CDM. Since construction began well before CDM registration, it is clear that these projects still would go ahead even if they were not successfully registered as CDM projects.

Each of these arguments alone should cause serious doubt about the additionality of the portfolio of hydro projects being developed in China. Taken together, there should be no question that the majority of these are non-additional.

### ***Register under the CDM first? Or build first?***

We would expect that if CER generation were necessary for a project to go forward, that the project developer would register the project under the CDM before beginning project construction. As of November 2007, 35% of all large hydro projects already registered under the CDM were completed before project registration. 89% were expected to be completed within a year following registration and 96% within two years. This means that almost all, if not all, of the developers of these projects decided to pursue CDM registration well after project construction began.

Many project developers argue that even though they started project construction before CDM registration, the decision to develop or finance the project was based on the expectation that the project would generate CERs under the CDM. How believable are such claims? If registration were certain, then this argument would be reasonable. But registration is far from certain. Official project validators have rejected large proportions of projects requesting validation.<sup>4</sup> 1.7% of projects that have requested registration have been rejected by the CDM Executive Board; and in these early stages of the CDM, the policies of the CDM Executive Board have been evolving, are expected to become stricter, and are not yet perceived as predictable.

### ***Additionality – a fundamental problem with the CDM***

Solving the problems with additionality testing goes beyond the development of more accurate or more stringent testing criteria. The underlying concept of testing for additionality on a project-by-project basis is untenable. Project development decisions are based on a many complex factors and in many cases assessing a PDD's additionality claims depends solely on whether to trust the statements provided by project developers regarding the importance they or their financiers have placed on various factors. Let's take a look at the additionality claims used by hydropower developers.

Many hydro projects prove additionality through the financial additionality test. Most of these compare the internal rate of return of the project without CERs, and some also

with CERs, against a benchmark above which the IRR must be for the project to go forward. There is broad agreement, even from several validators with whom we spoke, that IRR values can easily be manipulated depending on the assumptions made and the calculation method used. Further, as mentioned above, the financial additionality test is inappropriate for many hydro projects, since new hydro projects are often built even when they are not the least cost option.

Many projects have instead, or in addition, chosen the second additionality testing option—an assessment of project barriers. Common barrier claims used for hydro projects include: the project is in a remote region; the hydro resources being used are inferior; the project ran into financial problems in the middle of construction and required CERs to acquire another loan; the project is built by a small private company with difficulty accessing financing. While each of these claims might be true for the project that it describes, how can a validator assess that these are reasons why the project would not have gone forward without the CDM? All projects have barriers, and many projects with barriers described in PDDs have been built without the help of the CDM.

All projects must also show that they are not “common practice”. The problem is that there has been little guidance regarding appropriate definitions of common practice. Here are some examples of definitions used in regions where hydropower is a high proportion of current capacity: the project is being built in a new, therefore uncommon, regulatory environment due to power sector restructuring; the project is being built by a small private firm, whereas state development has been common in the past; the best hydro resources have already been exploited and now only more remote locations or locations allowing lower capacity factors are available; all similar projects in the region are in the CDM pipeline, and therefore are excluded from the common practice assessment (used in many Chinese PDDs). Developers have also defined the boundaries of the project's region differently, including the country, state, district, or river valley. Almost any project can be shown to be not common practice if allowed to use such a range of definitions.

Validators have taken the approach of assessing whether the information made in the claims is reasonable and able to be documented, but rarely give an assessment of whether the claims made reasonably show that the project would not have gone ahead without the CDM.

The flip-side of the CDM's failure to prevent non-additional projects from registering, is that it is ineffective at supporting projects that are truly additional. The biggest hurdle for many project developers is acquiring financing. Several banks that lend for energy projects in India with whom we spoke told us that they do not take CERs into account when evaluating a project for a loan. The banks perceive the risks associated with project registration and CER generation to be too high.

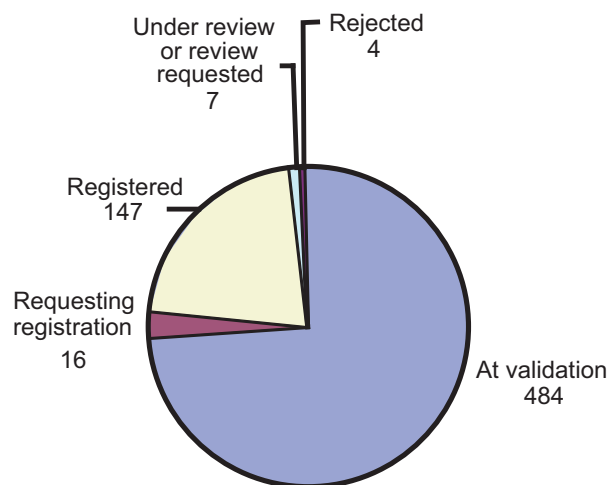
There is still time to prevent a surge of non-additional hydro projects from generating CERs. 74% of all hydro projects in the CDM pipeline are awaiting CDM approval (See Figure 4). In China, 354 of the 402 hydro projects in the pipeline are currently in the validation stage. Improving additionality testing requires that clear guidelines are set for how to calculate project IRRs (including perhaps a standard spreadsheet to be used by all projects of a certain type), what assumptions should be used in the financial analysis, and the definition of common practice. Since all projects, business-as-usual and additional, have barriers, the barriers test should be dropped. In many countries where hydropower is a substantial portion of grid capacity and of annual capacity additions, such as in China, hydropower should be considered common practice.

These changes should be viewed as temporary, however, until more significant changes can be made to the mechanism. In the longer term, the CDM should be restructured or replaced so that the need to test additionality on a project-by-project basis is avoided, which is impractical to do to any degree of accuracy.

### Projects with negative impacts

The social and environmental impacts of large dams are well known. European Union law requires that all large hydro credits entering the EU's Emissions Trading System (ETS) comply with the criteria and guidelines of the World Commission on Dams (WCD)—internationally developed standards for mitigating the harms caused by dams. Still, International Rivers has watched an increasing flow of large non-WCD compliant hydro projects enter the CDM pipeline, including several dam projects notorious for their negative impacts and violent suppression of protests. International Rivers is unaware of any large hydro project in the CDM pipeline for which a convincing case for WCD-compliance has been made.

**Figure 4: Numbers of Hydro Projects in the CDM Pipeline**



Currently there is no dependable means for preventing the CDM from registering projects with serious environmental or social impacts. The only requirements are that projects must attain host country approval based on usually very weak nationally defined sustainable development criteria, and stakeholder consultations must be performed, although few guidelines for conducting stakeholder consultations have been established.

Below we draw attention to two of the most harmful hydro projects that have recently entered the CDM pipeline. If these projects, which have been recognized by the UN or by other country governments for their human rights abuses, are able to be registered under the CDM, this will add another blow to the legitimacy of the CDM. These two projects, and others described in the subsection following them, document stakeholder consultations that are obviously inadequate. It is essential that means are created to prevent such harmful projects from being registered and that clear and auditable guidelines for stakeholder consultation be established based on international standards.

#### **Sondu Miriu Hydro Power Project, Kenya**

According to news reports, public protest over the social and environmental impacts of this 60 MW hydro project in Kenya resulted in the shooting and possible attempted murder by the Kenyan police of protest leader Argwings Odera.<sup>5</sup> The Sierra Club<sup>6</sup>, a coalition of NGOs lead by Climate Network Africa<sup>7</sup>, and the Japanese Foreign Ministry<sup>8</sup> all wrote letters to the Kenyan government expressing concern over Odera's well-being.



Damage to upstream side of Campos Novos Dam in Brazil after uncontrolled emptying of reservoir. This 880 MW completed project is seeking CDM validation.

The purpose of the protests were to demand that the developers live up to agreements they had made to the community including to mitigate the project's environmental and social impacts. The diversion of thirteen kilometers of the river was expected to take a main water source away from 1500 households. Project accounts describe that community members have suffered eye and respiratory problems from the dust caused from project construction, and that untreated water released back into the river had already led to the loss of local fish that were once abundant in the river.

The organized communities also demanded that the project developers live up to the agreements they had made with the community to provide jobs at negotiated salary rates, fair compensation for displacement for over 1000 households, health services, irrigation facilities and electricity. The discussion of environmental impacts and stakeholder consultations in the PDD fails to address many of these concerns.

In a case where a community leader's life was threatened because he spoke openly about the project in the past, any new stakeholder consultations cannot be taken as an accurate representation of stakeholder views, and therefore can not be accepted as fulfilling the requirements for stakeholder consultations.

Further, this project is obviously non-additional. The loan for the project was secured in 1997 and construction began in 1999. The project recently entered the CDM pipeline with a public comment period starting in July 2007 and is scheduled to be completed by November 2007.<sup>9</sup> The Japanese Bank for International Cooperation just signed an agreement on the Sangoro hydroelectric power plant, a newly planned 21.2 MW hydropower plant that would extend the Sondu Miriu hydropower plant by using its outfall once it is complete. The Bank would not have signed such an agreement if it were not fairly certain that the original project would be completed. The additionality arguments in the PDD describe the barriers that hydro projects face in general in Kenya. It does not address why this particular project that started construction eight years ago and is just about complete requires CDM registration to go forward. The CDM could not have been a deciding factor when the project was being prepared in the late 1990s, since the CDM was not yet functional at the time.

### ***Campos Novos Dam, Brazil***

The largest hydro project to enter the CDM pipeline is Campos Novos in Santa Catarina state in Brazil. This 880 MW project has become a symbol of the human rights abuses inflicted on communities affected by large dams in Brazil and in particular on the movement organizers protesting these abuses.

Construction on Campos Novos dam started in 2001 and was completed in 2005. In June 2006 a diversion tunnel collapsed caused an uncontrolled release that emptied the dam's reservoir. After extensive remedial works it began generating electricity in May 2007. It applied for CDM validation in November 2007.

In total 750 families, about 3000 people, have been displaced by the dam, many without being granted the compensation promised to them. Several more thousands of people living downstream of the dam have been affected by lower fish stocks in the river and loss of floodplain fertility. These downstream communities are not considered eligible for compensation.

A UN Human Rights Council report confirmed that ten people from a local people's movement were arrested several days prior to a demonstration planned against the dam in 2005.<sup>10</sup> There were also claims of violent suppression of protests,<sup>11</sup> not uncommon against activists fighting dam building in Brazil.

Could this project possibly be additional? It entered construction six years before it started the official process of applying for CDM registration, and started generating electricity six months before entering the CDM pipeline. While the PDD describes in length an unfriendly regulatory and investment environment in which the project was commissioned and built, it does not even attempt to argue that this project required the CDM to go forward.

### ***Some experience with stakeholder consultations***

Considering that the guidelines for stakeholder consultations include little more than that they are conducted in an “open and transparent manner”, “in a manner that allows the local stakeholders to understand the project activity”,<sup>12</sup> it’s not surprising that the consultation requirement has at times not been taken seriously. The Centre for Science and Environment in Delhi discovered two incidences when documentation of stakeholder consultations from registered projects were copied and pasted from one PDD to another.<sup>13</sup> Documentation of comments provided by stakeholders during the consultations for two registered HFC-23 projects in two different states in India were identical, including their grammatical errors. CSE found a similar example in three registered biomass projects, all at different ends of the state of Andhra Pradesh.

Researchers from the West Bengal NGO NESPON visited the site of the 96 MW Jorethang Loop Hydroelectric Project, a project that has been positively validated and was requesting registration in November 2007. They found that the stakeholder consultations were completely inadequate, both in informing the stakeholders about the design and impacts of the project, and in involving stakeholders in the design of the project and the impact assessment evaluation. NESPON found that people living in affected villages were unaware of basic features of the design of the project, the expected impacts that would affect them, and the ways that these impacts will be mitigated. Many inhabitants of affected villages were not aware of the public hearing about the project. Project documents and the environmental impact assessment had not been made available to the people NESPON interviewed, and requests to the project developer for such documentation went unanswered. NESPON and CORE, another regional NGO, mentioned several potential impacts of the project that were missing from the project documentation in their public comments to the validator.<sup>14</sup> These impacts may have been taken into account in project design and included in the environmental impact assessment if stakeholders had been consulted in these processes.

### **Thoughts on a way forward**

Several months ago in a carbon markets conference in Mumbai many of the symptoms of a failing CDM were evident. Lenders agreed openly that they do not lend to projects that are not good investments on their own, without the CDM. The risks associated with CER generation are too high for them to be taken into account in lending decisions. Heads nodded knowingly around the room in agreement that IRR numbers can be manipulated and board minutes showing that the CDM was considered in early stages of project development can be forged. One carbon buyer in the audience criticized a panelist for saying that it is possible to prove the additionality of just about any project. The buyer said he could agree to that statement if they were chatting at a bar, but that the panelist should not make such statements in a public forum. We have seen many presentations where the presenter will praise the results of the CDM on the podium, and then agree to our criticisms in the hallways.

What will be the impact on the credibility of the CDM, and the Kyoto Protocol in general, when word leaks out of the hallways? How wise is it for the main mechanism supporting climate change mitigation in developing countries to be standing on a foundation of lies? What will happen if projects that are internationally known for their high environmental and social impacts are registered under the CDM? Already high profile newspaper articles have reported that the CDM is “a boondoggle”<sup>15</sup> and “has resulted in substantial payments for emissions reductions that would have occurred anyway or could have been achieved at negligible cost”.<sup>16</sup>

### ***Recommendations for reform***

There is an urgent need to strengthen the rules of the CDM concerning additionality, social and environmental impacts, and stakeholder consultations. These changes need to be made in time to guide validators in assessing the wave of CDM projects currently in the validation stage. The number of projects in the validation stage during November 2007 is double the number that has already been registered.

Below are some of the changes we believe the CDM must adopt in the very short term:

- Because validators are hired by the project developers, they have a conflict of interest to grant a positive validation to their client. This conflict of interest could be mitigated if appropriate validators were assigned randomly to each project, or if they were hired by the UNFCCC instead of the project developer.
- On additionality—The EB should create a set of guidelines and procedures for using the additionality tool to make it more difficult for business-as-usual projects to register under the CDM. The EB should create a set of standardized spreadsheets for different project types for performing IRR analysis to limit developer manipulation of rate-of-return numbers. The barriers test should be disallowed, since in most cases it is very difficult for validators to assess whether a stated barrier would have prevented a project from going forward if it were not for the CDM. Common practice should be clearly defined as should be how to determine the appropriate financial benchmark.

In many countries where hydropower is a substantial portion of grid capacity and of annual capacity additions, such as in China, hydropower should be considered common practice. The validators must be required to act as real auditors, judging projects conservatively and realistically regarding additionality.

- On social and environmental safeguards—International social and environmental standards have been developed by many international organizations, including by the WCD for dam and hydro projects specifically. Such basic standards should be adopted by the CDM.
- On stakeholder consultations—The CDM should adopt the WCD standards for stakeholder consultations including free prior and informed consent based on clear understandings of the impacts of the project.

In the longer term a complete restructuring or replacement of the CDM must be made to eliminate the necessity of proving additionality on a project-by-project basis, which is ultimately impossible to do to any substantial degree of accuracy.

<sup>1</sup> This analysis is based on data from Fenhann J. November 1, 2007. CDM/JI Pipeline Analysis and Database. CDMPipeline.xls. UNEP Risø Centre.

<sup>2</sup> <http://www.cec.org.cn/news/showc.asp?id=92985>

<sup>3</sup> <http://www.hdcmr.com/article/yjbg/11/01/13208.html>

<sup>4</sup> Michaelowa A. 2007. Experiences in Evaluation of PDDs, Validation and Verification Reports. Presented at Austrian JI/CDM workshop, Vienna. January 26, see slide #10

<sup>5</sup> <http://www.internationalrivers.org/en/africa/journalist-claims-police-wanted-kill-him>

<sup>6</sup> <http://www.sierraclub.org/human-rights/Kenya/action.asp>

<sup>7</sup> <http://www.foejapan.org/en/aid/jbic02/sondu-miriu/request09242001.htm>

<sup>8</sup> <http://www.internationalrivers.org/en/africa/journalist-claims-police-wanted-kill-him>

<sup>9</sup> <https://www.jbic.go.jp/english/oec/before/2006/pdf/kenya.pdf>

<sup>10</sup> Hina Jilani. 2006. UN Human Rights Council Report #A/HRC/4/37/Add.2 <http://www.ohchr.org/english/bodies/hrcouncil/docs/4session/A-HRC-4-37-Add.2.doc>

<sup>11</sup> <http://www.internationalrivers.org/en/latin-america/campos-novos-dam-builders-downplay-danger>

<sup>12</sup> Guidelines for Completing the Project Design Document (CDM-PDD), and the Proposed New Baseline and Monitoring Methodology (CDM-NM) [http://cdm.unfccc.int/Reference/Documents/Guidel\\_Pdd\\_most\\_recent/English/Guidelines\\_CDM\\_PDD\\_NM.pdf](http://cdm.unfccc.int/Reference/Documents/Guidel_Pdd_most_recent/English/Guidelines_CDM_PDD_NM.pdf)

<sup>13</sup> Center for Science and Environment. 2005. Making the cheap development mechanism clean: How? <http://www.cseindia.org/programme/geg/pdf/CDM-presentation.pdf>

<sup>14</sup> See the comments of NESPON, CORE and SANDRP at [http://www.internationalrivers.org/cdm\\_comments/date](http://www.internationalrivers.org/cdm_comments/date)

<sup>15</sup> San Francisco Chronicle "The China Syndrome" September 28, 2007

<sup>16</sup> Financial Times "We need to bring climate idealism down to earth" April 29, 2007





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