

# Is The Global Debate On Dams Relevant?

Proponents and opponents of dams have both taken extreme and opposite positions. But does their debate withstand scientific scrutiny?

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**C**onstruction of large dams has been a controversial issue in recent years. Proponents of large dams claim that they deliver many benefits, among which are increased water availability for domestic and industrial purposes, increased agricultural production because of the availability of reliable irrigation water, protection from floods and droughts, generation of hydroelectric power, navigation, and overall regional development which improves the quality of life of the people, including women. They argue that like any other large infrastructure development or national policy, dams have both benefits and costs. However, overall benefits of the dams far outweigh their total costs, and thus the society as a whole is far better off with the dams.

In contrast, the opponents argue that dams bring cata-

strophic losses to the society, and these societal and environmental costs far outweigh the benefits they may contribute. They claim that dams accentuate income disparities since benefits go exclusively to the rich, and the poor people slide further down the economic ladder. They further claim that the main beneficiaries of dams are construction companies, consulting engineers and corrupt politicians and government officials, who work in tandem to promote them. The poor do not benefit from the dam "grave train": they mostly suffer because of them.

## WHY THIS CONTROVERSY?

The views of the proponents and opponents of dams have been diametrically opposite. Scientifically, these two views cannot be correct. An important question that needs to be asked is why in the 21<sup>st</sup> century, with major advances in science and technology, it is not possible to answer the comparatively simple question of what are the real costs and benefits of the dams in order that their net impacts and beneficiaries can be determined authoritatively and comprehensively? The sterile debate on dams needs to be resolved conclusively once for all so that appropriate water development policies can be formulated, especially in developing countries, which will maximise their overall social welfare.



*Yagisawa Dam in Japan.*

### VESTED INTERESTS

There is no question that there are many people who have a vested interest in this debate, irrespective of in which side they are. Much has been written and said about the construction and consulting companies that are associated with the planning design and construction of dams, and their financial contributions to political parties, who are the final arbiters of making decisions in democratic societies. There is no question that construction and development of large dams is a capital-intensive activity, and many people benefit economically from this process. The dam lobby is often portrayed by the anti-dam lobby as being the "fat cats", who are interested in construction of dams because of the financial benefits they obtain from their planning and construction processes. Unfortunately, the voices of many sections of the society who benefit from dams, like farmers and other sectors of the society who use the hydropower generated from the dams are seldom heard in this debate.

In contrast, those NGOs that are against dams (there are numerous pro-dam NGOs as well, but they are generally not as media-savvy as the anti-dam NGOs, and thus not as visible) mostly like to portray themselves as little "Davids" who are pitted against well-heeled "Goliaths" of the pro-dam lobby, who are highly-connected to the corridors of power. There is no question that there are many grassroots NGOs, who have made a real contribution in bringing the plights of the people who have to be properly resettled due to the construction of large development projects (dams, new towns, airports, highways, etc.) However, many of the main activists NGOs in the anti-dam lobby have now become financially powerful. Their self-portrayal as little "Davids" is more for media and publicity purposes. Some of them have already become Goliaths, thus making the fight between Goliaths and Goliaths.

In the past, involuntary resettlement was seen as a "price of progress", and the people who had to be resettled were not properly compensated for their forced displacement. By making the plight of these displaced people a major political use, the activist NGOs have played a very important role which needs to be acknowledged.

The current clout of NGOs can be realised from recent research by the Johns Hopkins Centre for Civil Society (1999). It indicates that globally, the non-profit sector has now become US\$1.1 trillion industry, employing some 19 million fully-paid employees. This already represents the world's eight largest economy (this estimate does not include religious organisations). As a global assessment of NGOs, carried out by a reputable NGO Sustainability, has pointed out (2003), the NGOs "that once largely opposed – and operated outside – the system is becoming integral to the system". They are not small anymore!

The international activist anti-dam NGOs are at present no exception to the above findings. They have become adept at playing the system to promote their own agenda, at least in terms of getting funds from the funding institutions, and generating extensive media publicity for their causes.

### COMPLEX ISSUES HAVING NO SINGLE ANSWER

The sweeping generalisations of the two groups mostly do not survive scrutiny. In the cacophony of arguments, what is often forgotten is that issues involved are complex, and there is no single answer that could cover all the dams of

the world, constructed or proposed, irrespective of their locations and qualities. Nor can one view be everlasting in any country: it could change with time.

What has been forgotten in the current debate on dams is that neither the statement "all dams are good", nor "all dams are bad and thus no new ones should be constructed" are correct. Depending upon the criteria of "goodness" selected, it has to be admitted that there are both good and bad dams. Furthermore, their needs vary from one country to another, and often from one region to another, especially within large countries like Brazil, China or India, depending upon climatic, economic, social and environmental conditions. Furthermore, countries are at different stages of economic development, and thus their needs for dams also vary, depending upon their stages of development.

An industrialised country like the US has developed nearly all of its best dam sites. In contrast, much of the potential in the sub-Saharan Africa (with the exception of South Africa) has yet to be tapped. Nepal has similar level of hydropower potential as the USA has already developed. However, Nepal has developed only about 4% of its hydro potential. Thus, what may appear to be an efficient solution for the USA at the present time in this issue is unlikely to be the best for the Nepalese conditions. In the area of dams, like in most other complex development-related issues, there is simply no "one size fits all" solution.

### CLIMATIC DIFFERENCES

A major technical issue that has been totally ignored in the current debate is the significant climatic differences between developed and developing countries, especially in terms of distribution of rainfall over the year. This is an important issue, because storage is more important for developing countries, compared to developed countries.

Very few experts have appreciated the importance of climate patterns for economic development. This lack of understanding is especially difficult to understand in the case of the water experts, since one of their main concerns is precipitation. The developed countries are located in temperate zone, but developing countries are mostly found in the tropical and sub-tropical climates.

Another important issue that has received scant attention is the distribution of rainfall in the tropics and semi-tropics compared to the temperate zones. The annual rainfall averages mask the significant differences in the distribution of the rainfall patterns between developed and developing countries.

If the annual average rainfalls are compared between three cities, Sokoto in Nigeria, Delhi in India and London in England, they are somewhat similar: 57cm, 71cm and 67cm respectively. However, if their distributions over the year are considered, the patterns are totally different. For example, London, a temperate zone city, can be characterised by a low but reasonably uniform monthly rainfall rate over the year. Similarly, rainfall retained in the soil is reasonably uniform.

However, the rainfall pattern is very different for Sokoto. Nearly 36% of annual average rainfall occurs only during the month of August. Over 92% of average rainfall occurs within the 4-month period of June-September. There is no rainfall during November to March, and very little in

April and October. Not surprisingly, Sokoto has significantly lower rainfall retention rate in the soil throughout the year, compared to London. Water management strategies for London and Sokoto have to be very different, even though their annual average rainfalls are somewhat similar, and also irrigation water requirements for crops are also different. Sokoto cannot manage water without storage during the rainy months, which can then be released as required over the year during the dry months. In contrast, climatic regimes like London, with its more uniform precipitation and high soil moisture retaining rates, need for irrigation water is significantly lower.

Even the monthly rainfall figures may give a misleading comparison. For example, the average number of rainy days in New Delhi in a year is about 40. During the rainy days, rainfall does not occur uniformly over a period of 24 hours. It has been estimated that Delhi receives its annual rainfall in less than 80 hours, though these hours are not consecutive.

If the rainiest town of India, Cherrapunji, is considered, it receives its annual rainfall of 10,820mm between June and August. This immense rainfall occurs in about 120 hours. Because this large quantity of water cannot be properly stored, Cherrapunji, in spite of its very substantial rainfall is facing a water problem during the dry months of the year.

Overall, India as a country receives its annual rainfall in less than 100 hours. Because of this skewed pattern of distribution of rainfall, water management strategies in India have to be different compared to the countries in temperate climates like U.K., where the rainfall is significantly more regular and predictable.

Because of the high seasonality of rainfall in developing countries like India or Nigeria, the critical issue is how to store such immense quantities of rainfall over very short periods so that they can be used over the entire year. In addition, the fluctuation in annual rainfalls are also high in such countries, which means that the incidences of floods and droughts are much more frequent than in the temperate zone areas. Thus, for countries of the developing world in the tropical and sub-tropical regions, cost-effective, socially-acceptable and environmentally-sound solutions are needed to store this high precipitation over a comparatively short period, so that the stored water can be used during the dry periods. Accordingly, the technical complexities of water management the developing countries of the tropics and semi-tropics face are significantly more complex than the developed countries of the temperate zones. This simple fact has been ignored in the current debate on dams.

Because of such climatic differences, developing countries must consider all alternatives available for storing water during the periods of intense rainfall so that these can be made available whenever needed. The alternatives available to smoothen out these wide inter- and intra-annual fluctuations in rainfall include dams (small, medium and large), groundwater recharge and storage, and rainwater harvesting.

The sad part of the current debate on dams is that it has become increasingly dogmatic and emotional. Many times it appears to be a debate between the deaf: participants may hear what their opponents are saying, but they do not listen. The alternatives are not either/or, as the current debate will make us believe, but rather what alterna-

tives will work best, where, and under what conditions.

For the most part, the current debate on dams or no dams is an irrelevant one. What is needed is to assess what are the societal needs for water, and then take steps to meet them in a socially acceptable way in the best manner possible. Depending on the prevailing conditions of the location under consideration, the most efficient alternative may be the construction of a large dam, or rainwater harvesting, or a mixture of these two, and/or other solutions. There is simply not one dogmatic solution that would fit all climatic, physical, social, economic and environmental conditions, for all countries of the world and for all periods in the history.

In the real world of water resources management, small may not always be beautiful: sometimes it could be ugly. Equally, big could be sometimes magnificent, but on other occasions it could be a disaster. Each alternative should be judged on its own merit and within the context in which it is to be applied. Solutions thus must be found for specific conditions.

### **ABSENCE OF EX-POST ASSESSMENT OF DAMS**

The current non-productive debate on dams has mainly thrived because of the absence of objective and in-depth ex-post analyses of the physical, economic, social and environmental impacts of large dams, five, ten or 15 years after their construction. At present, thousands of studies exist on environmental impact assessments (EIA) of large dams, some of which are very good but others are not even worth the paper on which they are printed. It should be realised that all EIAs are invariably predictions, and until the dams become operational, their impacts (types, magnitudes, and spatial and temporal distributions) are not certain, and thus remain in the realm of hypotheses. Even the very best assessment can perhaps forecast only about 70-75% percent of the identified impacts accurately in terms of time, space and magnitude.

Some have now claimed that the World Commission on Dams prepared numerous such assessments of large dams from different parts of the world. Regrettably most of these analyses are superficial and often skewed to prove the dogmatic and one-sided views of the authors who prepared these studies. They can be considered to be neither objective nor comprehensive. It is possible that among these assessments, there are a few good case studies. Unfortunately, no rigorous peer reviews of these case studies were ever carried out. Consequently, if there is some "wheat" among the "chaff", it remains indeed very well-hidden.

### **WORLD COMMISSION ON DAMS**

Much has been said and written on the World Commission on Dams (WCD). The views on the process and the report have ranged from fawning admiration to outright rejection. An objective assessment of the process and an assessment of the real impacts (positive and negative) of the WCD have yet to be made. However, some comments on the Commission itself will be appropriate here.

In terms of history, in April 1997, the World Bank and the World Conservation Union (IUCN) convened a meeting at the IUCN headquarters in Gland, Switzerland, ostensibly to discuss an internal World Bank review on large dams and the need for a more in-depth study. This review had concluded that "the finding that thirty-seven of the

large dams in this review (74%) are acceptable and potentially acceptable, suggests that, overall, most large dams were justified" (World Bank, 1996).

The participants at this meeting were arbitrarily chosen by the two sponsors. The only consideration appears to have been that the participants came from a diverse group of interests. However, why a specific person or an institution was invited and not another from the same interest group still remains a complete mystery. According to the list of participants available, 38 people attended this workshop, of which 12 (nearly one-third) represented the two sponsors alone.

This group unilaterally decided to establish an international commission to review the effectiveness of large dams and develop standards, criteria and guidelines. The group which was originally selected without much logic then became a self-appointed "reference group", and some members of the World Bank and IUCN formed an Interim Working Group. The result was the World Commission on Dams, whose "mandate" according to its own pronouncement was a report that would be submitted to the two sponsors, the reference group, and the "international community", whatever this might mean.

The Commissioners and its Chairman were selected by an opaque process. Why and on what criteria, each member was selected still remains a mystery. It is important to view WCD in an overall perspective of global development-related events of the last 25 years, especially because of the highly exaggerated claims that have been made on the effectiveness of WCD by its supporters. Sadly, it was neither a unique exercise, nor a totally new initiative, but actually a continuation of a well-established trend, but having a somewhat dubious origin.

It should be noted that WCD had a mandate, but there was no mandating authority. Basically only 26 individuals (not counting the World Bank and the IUCN staff members) took upon themselves to start a Commission. Some of the participants later decided not to become actively with the Commission itself. Because WCD had no mandating authority, its recommendations have not been binding to any party. Even one of its main godfathers, the World Bank, after initially making positive comments on the WCD process, now seem to have very little interest in changing its policies to reflect the recommendations of the WCD report.

The legitimate question that has not been asked so far, let alone answered, is who or what gave the arbitrarily selected 26 people and 12 staff members of the World Bank and the IUCN that were present at the Gland meeting the right to set up an international commission, and give it an "international" mandate? How, by whom, and through what processes WCD was made representative so that it earned the right to speak for all the stakeholders?

Under any logical criteria, WCD was not a truly representative body of its stakeholders, irrespective of the claims to the contrary. For example, WCD had NGOs who were speaking in the name of indigenous and poor people who would be displaced due to the construction of the dams. However, it never even considered having NGOs representing farmers whose agricultural production would increase because of irrigation provided by the dams. As a general rule, the number of farmers who are affected by a dam is far higher than the number of people who are displaced. It is a strange concept of democracy, transparency and rep-

resentation of all the stakeholders, when the largest stakeholder, deliberately or otherwise, was ignored, and not invited to the table to participate fully. Nor were those people invited, who would receive assured water supply, which they did not have earlier. Presumably, they are stakeholders as well.

Because the process used by WCD was seriously flawed, not surprisingly its report has had very modest impact, if any, thus far on the countries that are building dams, or on the international funding institutions that are financing dams. If the WCD was not established, would the world have been any different now, or ten years from now? My personal feeling is that it would not have mattered much, one way or another.

## CONCLUSIONS

The current controversy on dams is a dogmatic and emotional debate. To the extent it brings new issues that need to be carefully considered and addressed to, this debate should be welcomed. But where it is a debate between vested interests, any progress because of this debate is likely to be somewhat limited or even futile. The debate needs to be refocused. What is necessary to consider is the overall architecture of the water development system which will achieve the objectives that societies in developing countries desperately need: poverty alleviation, regional income redistribution and environmental conservation. Within this overall architecture, what is imperative is how best to supply the water needs of the society, cost-effectively, equitably and in a timely and environmentally-friendly manner. The world of development is complex, and there will always be many times of tradeoffs due to a major policy, programme or project. These tradeoffs should be considered objectively, accurately, honestly, sensitively and in a socially-acceptable manner. Within such an overall framework, the best solution for water development must be sought for each specific case. This may warrant construction of a dam in a specific location, but it may equally require another solution. Until the local needs, conditions and requirements are carefully assessed and considered, a solution of dam or no dam should not be imposed, especially by people who are external to the region.

The main question facing the developing countries of Asia, Africa and Latin America is *not* whether large dams have an important role to play in the future, but rather how best we can plan, design and construct them where they are needed so that their performances in economic, social and environmental terms can be maximised, adverse impacts can be minimised, and simultaneously ensure that those who may have to pay the cost of their implementation are explicitly made their beneficiaries. It will not be an easy task to accomplish, but it is an essential task that must be accomplished.

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