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Press release

Large hydro-electric dams unviable and seriously damaging to emerging economies

New research from Oxford University reveals severe cost and schedule overruns for large hydro-electric dams

Saïd Business School, University of Oxford

The evidence is conclusive: large dams in a vast majority of cases are not economically viable. Instead of obtaining hoped-for riches, emerging economies risk drowning their fragile economies in debt owing to ill-advised construction of large dams.

After a decade-long lull, the construction of large dams has accelerated. Emerging economies of Brazil, China, Ethiopia, Indonesia, and Pakistan among others are rushing to build mega-dams on an unprecedented scale. Yet since 2000, when the World Commission on Dams published its findings, no systematic, global, and independent research has been carried out on the outcomes of large dams. New research from Saïd Business School, Oxford has now produced an authoritative investigation of whether large dams work or not, based on the most extensive dataset of its kind.

The study is based on data from 245 large dams in 65 different countries. The findings show the construction costs of large dams are on average +90% higher than their budgets at the time of approval, in real terms. This result is before accounting for negative impacts on human society and environment, and without including the effects of inflation and debt servicing; including these items, costs and cost overruns are much higher.

The study also found that the magnitude of cost overruns has not declined over time. Dam budgets today are as wrong as at any time during the 70 years for which data exist. Dam planners seem to not learn from the past. For example, Brazil's Itaipu dam, built in the 1970s, suffered a +240% cost overrun that impaired the nation's public finances for three decades. Despite producing much-needed electricity, Itaipu will likely never pay back the costs incurred to build it. Regardless, Brazil is currently building the controversial Belo Monte hydroelectric project, which has proved non-viable even before opening and awaits a fate like Itaipu's. China, Indonesia, Pakistan and other nations show similar amnesic behaviour regarding the building of dams.

Costs aside, mega-dams also take an inordinately long time to build - 8.2 years on average and often more than 10 years. The Oxford study shows that these long time horizons leave dam projects particularly ineffective in resolving urgent energy crises and especially vulnerable to currency volatility, hyperinflation, political tensions, swings in water availability and electricity prices, a combination of which constitute the typical dam disaster, which is your typical dam project.

Professor Flyvbjerg commented on the causes of the highly inaccurate budgets for dams, 'Experts making forecasts about megaprojects can be usefully grouped into "fools" or "liars". Fools are the reckless optimists who see the future with rose-tinted glasses. These forecasting fools ignore hard facts and uncertainty, betting the family silver on gambles with very low probability of success. Liars deliberately mislead the public for private gain, fiscal or political, by painting overly-positive prospects of an investment, just to get it going. The systematically poor outcomes of large dams suggest that "fools" and "liars" have been at the helm,' says Flyvbjerg.

Dr Atif Ansar, fellow researcher added: 'Proponents of mega-dams tend to focus on rare stories of success in order to get their pet projects approved. The purported success of the Hoover dam in the USA, for example, is an often-heard argument in favour of building new large dams. Instead of relying on the outcome of just one project, decision makers should consider evidence for the entire population. In the case of large dams, the probability of failure dominates.'

'If leaders of emerging economies are truly interested in the welfare of their citizens, they are better off laying grand visions of mega-dams aside,' Ansar continued. 'Proponents of mega-dams express concern that renewable water resources could be wasted if mega-dams are not built. Our research shows that as a general rule of thumb, many smaller, more flexible projects that can be built and go online quicker, and are more easily adapted to social and environmental concerns, are preferable to high-risk dinosaur projects like conventional mega-dams,' concluded Flyvbjerg.

For copies of the study, more information, or to speak with Professor Flyvbjerg or Dr Ansar, please contact the press office:

Clare Fisher, Head of Public Relations, Saïd Business School
Mobile: +44 (0) 7912 771090; Tel: 01865 288968
Email: clare.fisher@sbs.ox.ac.uk

Josie Powell, Press Officer, Saïd Business School
Mobile +44 (0)7711 387215, Tel: +44 (0) 1865 288403
Email: josie.powell@sbs.ox.ac.uk or pressoffice@sbs.ox.ac.uk

Notes to editors

1. About the research

The study will be published on 10 March 2014 in Energy Policy, the leading scholarly journal in the field. Copies of the study are available from the press office.

2. About Professor Bent Flyvbjerg

Professor Bent Flyvbjerg is founding chair of Major Programme Management at Saïd Business School, Oxford University. He is the most cited scholar in the world in megaproject management and his work has been featured by Harvard Business Review as "Ideas to Watch". Flyvbjerg's books and articles have been translated into 19 languages and his research has been covered by

Science, The Economist, The Wall Street Journal, The Financial Times, The New York Times, The BBC, and many others. He has worked as advisor to government and business, including the UK and US governments and several Fortune 500 companies. Flyvbjerg has received numerous honours and awards. He was twice a Fulbright Scholar and holds the Knighthood of the Order of the Dannebrog. Flyvbjerg was Principal Investigator for the dams study.

<http://www.sbs.ox.ac.uk/community/people/bent-flyvbjerg>