



DISPLACEMENT RESEARCH &
ACTION NETWORK

THE STATE OF HYDROPOWER PROJECTS TODAY

Lessons from the Past for the Course Ahead

Co-sponsored by:

Department of Urban Studies and Planning and Samuel Tak Lee Lab, MIT

Department of Civil and Environmental Engineering, MIT

Abdul Latif Jameel World Water and Food Security Lab, MIT

MISTI Brazil, MIT



DUSPMIT

Massachusetts Institute of Technology
Department of Urban Studies and Planning

77 Massachusetts Ave.
Cambridge, MA, USA 02139

Edited and compiled by:
AURORA KAZI BASSETT
DIANA XYLINA BELL

ABOUT THE DISPLACEMENT RESEARCH AND ACTION NETWORK

The Displacement Research and Action Network (DRAN), an initiative of the Program for Human Rights and Justice at MIT, is the first-ever global network on displacement and land rights. It brings together academics, practitioners and policy makers to build new evidence and theory on the increasing incidence of internal displacement around the world due to development, conflict or climate disaster. DRAN's extensive work on development-induced displacement has lent it expertise in the area, employing methodologies such as mapping, impact assessment and community informed surveying to evidence the growing global development-induced displacement crisis and the need for innovative solutions to secure the land rights of historically marginalized communities. The founder of the network, Professor Balakrishnan Rajagopal, was also a human rights advisor to the World Commission on Dams in 2000.

DRAN is housed in the Department of Urban Studies and Planning at MIT and includes a network of affiliated faculty with expertise on human rights, social and eviction impact assessment, resettlement, property rights and land law, negotiation, environmental impact and planning, infrastructure planning. DRAN also draws on the wider expertise at the Institute in food and water systems engineering, technology policy and climate change.

TABLE OF CONTENTS

Introduction	4
Welcome	6
Presentation: The State of Large Hydropower	8
Keynote Lecture: Michael Cernea	13
Plenary I: The Return of Large Hydropower Projects	14
Kevin Gallagher	15
Peter Bosshard	17
Mohan Das Manandhar	18
Flavia Braga Vieira	19
Larry Susskind	20
Plenary I Discussion	21
Plenary II: Current Dilemmas	22
Atif Ansar	23
Reazul Ahsan	24
Elfatih Eltahir	24
Miloon Kothari	25
Ryan Schlieff	26
James Wescoat, Jr.	27
Plenary II Discussion	28
Conclusion + Recommendations for the Road Ahead	29
Participant Biographies	30

LIST OF FIGURES

Figure 1: International Development Bank Safeguards in Latin America	15
Figure 2: Big Debts and Dams	23
Figure 3: International Accountability Project's Early Warning System (EWS)	26
Figure 4: The Indus River Basin as a Complex System	27

***Note on the document format:** This document is a summary of the notes from the May 6th, 2016 workshop compiled by members of DRAN. In the first section, Professor Rajagopal's remarks and the keynote address by Mr. Cernea, are direct reports of their presentations. The Plenary I and Plenary II sections are summaries of the presentations, compiled by DRAN.

INTRODUCTION

On May 6th, 2016, the Displacement Research and Action Network (DRAN) of the Massachusetts Institute of Technology (MIT) hosted a one-day workshop titled, 'The State of Hydropower Projects Today: Lessons from the Past for the Course Ahead'. This workshop brought scholars and practitioners together from across the globe to share insights and concerns about the state of contemporary hydropower development and its impact on vulnerable communities and environments. The workshop was structured around two plenary sessions and a keynote lecture; Plenary I was titled 'The Return of Large Hydropower Projects: Why and What Lessons from the Past Have We Learned?' and Plenary II was titled 'Current Dilemmas: Costs, Impacts and Alternatives.' Opening Remarks and the first Presentation were given by Professor Balakrishnan Rajagopal, Founder of DRAN, followed by a keynote lecture by Michael Cernea, former World Bank Senior Advisor for Sociology and Social Policy and internationally recognized scholar on the impacts of dams on affected communities.

This report is offered by the DRAN team as an account of the proceedings of that day as well as a contribution to broader efforts by scholars and practitioners around the globe to renew research and increase attention to the social and environmental impacts of large hydropower infrastructure projects, particularly as they relate to displacement.

The Need for this Workshop

Recent years have seen a dramatic upsurge of focus on and investment in global construction of large dam projects for hydropower generation. Investment totals for these future hydropower dams currently under construction or planned is an unprecedented 2 trillion US\$¹ (Ansar et al. 2014). This attention on hydro-projects has ballooned as it is increasingly positioned as a clean, renewable energy source and an infrastructure investment of national interest and economic viability. Yet, despite its increased attention as a 'sustainable' energy source, issues related to the social, economic and environmental consequences arising from large dams have remained largely on the periphery. The Displacement Research and Action Network is committed to exposing and exploring issues around the displacement of communities in the wake of large infrastructure development or what is called 'development-induced development' and so has particular concern about the high levels of displacement caused by large dam projects.

This is not the first time such large dam projects, defined as dams with the capacity of at least 100MW, have been at the center of development (Zarfl et al., 2014). In 2000, in response to a surge of large hydro-power projects in the 1970s, 1980s and 1990s, the World Commission on Dams (WCD) issued a report that established a safeguards framework for guiding dam construction based on the 'rights and risks approach'.² The aim of the WCD guidelines was to ensure that dam projects protected the human rights of affected communities and addressing the need for more equitable benefit sharing. These safeguard policies, while ground-breaking at their time, have had little to no effect on the implementation of large dam projects.

Since the World Commission on Dams report a substantial shift in the political and economic landscape driving hydro-projects has taken hold. As noted above, today more than ever we see dams lauded as a solution both to clean energy needs and therefore to climate change. At the global level this framing is evidenced in the United Nations sustainability goals, namely the Rio+20 targets of the UN Conference of Sustainable Development, which calls for countries to meet their growing energy demands through the use of energy resources compliant with Kyoto protocol, of which hydropower generation is seen as central. This framing is also seen in the World Bank's consistent lauding of hydropower as the world's largest, most scalable and 'least cost' method for generating renewable energy (Rex et al. 2014).

1 Assuming average construction costs of large dams at 2.8 million US\$ per MW (Ansar et al. 2014)

2 See World Commission of Dams Report 2000.

At the same time as hydropower is lauded as a solution we have witnessed a substantial shift and expansion in the institutions offering financing for such large-scale projects, with Southern-led development banks taking center stage. These changes in the last decade and a half point to a clear and urgent need to better understand the nature of contemporary developments and, most critically, their impacts on the social, environmental and economic realities of affected communities.

In contrast to the decades before, a broader spectrum of renewable energy solutions is being considered today. These alternatives, such as micro-hydro, solar or wind energy generation, hold the promise of being less invasive and destructive infrastructure investments in comparison to what has been experienced with large hydropower construction.

To address these complex themes DRAN convened a workshop to bring together scholars, non-governmental organizations and other international experts to discuss a variety of the issues encompassed in the expansion of hydropower infrastructure, particularly large projects. The focus of the workshop was to explore hydro-projects' impact on communities including the questions of access to energy, benefit sharing and the mitigation of social and environmental consequences.

Opening Remarks and Presentation

BALAKRISHNAN RAJAGOPAL

**Associate Professor of Law and Development
Head of the International Development Group, DUSP, MIT**



Welcome

Welcome all, to the Displacement Research and Action Network workshop on the status of hydro-projects today. First I must start with thanks: Thanks to all speakers and participants, in particular. Thanks to the DRAN Hydro research team, Lucretia Bertelli, Vishnu Prasad, Megan Patrick and others. Mohan Manandhar and Aurora Bassett deserve special credit for driving this research group. Additional organizational credit is due to Aurora along with Phil Sunde. Many thanks to our sponsors: The Department of Urban Studies and Planning (DUSP), Department of Civil and Environmental Engineering (CEE), Abdul Latif Jameel World Water and Food Security Lab (J-WAFS) and MIT International Science and Technology Initiatives (MISTI) Brazil for their generous support. Finally, thank you to all who continue to fight against displacement and for better data, research and more substantive conversations about hydro-projects around the world.

While DRAN's home is in the Department of Urban Studies and Planning, we draw on faculty and students from across MIT, area schools, and select schools from elsewhere including the global south. Our partners are major UN agencies, and international networks of civil society groups. This workshop is part of DRAN's continued commitment to bring together diverse groups to study displacement and land rights, including displacement due to development, climate change or disasters, and conflict. We are also very sincerely committed to action, that is, to working with communities and civil society to fight for better policies and laws that protect human rights and enhance wellbeing.

The study of mega projects, especially hydropower projects is a major part of our research focus. This is vitally important work in an era when mega projects are back in vogue as key development projects around the world. After going into a decline during the 1990s and early 2000s, dam building has been picking up momentum. Indeed, in the past decade, since 2004, there has been an upsurge in hydropower investment. It is estimated that about 3,700 major dams have either been planned or are now under construction, mainly in the developing countries of Asia, Africa and Latin America (Zarfl et al. 2014). We have brought together a group of scholars and activists to this workshop because we want to ask why this uptick has occurred and also whether any lessons have been learned from the exhaustive and detailed lessons on dams we have from the past. At the very center of previous research and knowledge from the last surge in hydro-projects is the still relevant work of the World Commission on Dams with which I was associated as Human Rights advisor.

Of course, our goal is not simply to reminisce about the past, we are also called to bring together what new knowledge tells us about the wisdom of dam building in today's world. The central question is: What are the true costs of dams? Not merely financial costs, but environmental and social, including human rights of those displaced who number literally in the millions. What less damaging alternatives to dams exist that can address our energy demands and other needs which are critical to development?

The new rise in dam building is driven by an often assertive and muscular developmentalism, which can be quite violent against those who raise questions about the true costs of development, in particular dams. In recent months, several indigenous activists and environmentalists have tragically been killed for their activism against dams. In a widely condemned incident, Berta Isabel Cáceres Flores, a Honduran environmental activist and indigenous leader of the Lenca people, was killed for her opposition to the Agua Zarca Dam on

the Gualcarque River. The Peruvian activist Hitler Ananías Rojas Gonzales, was killed for leading the opposition to the Chadin 2 Dam on the Marañon River. In Arunachal Pradesh, India, only a few days before this workshop, two Buddhist monks were shot and killed by police as they protested the arrest of a major activist opposed to dams. As dam building becomes more and more re-entrenched as core development strategy, the world becomes an increasingly dangerous place for those who oppose.

With this urgency in mind the issues we hope to discuss in this workshop include the following:

- a) **Hydropower and Sustainable Development:** Sustainable Development Goal 7 calls for, “Access to affordable, reliable, sustainable and modern energy for all”. Does the investment in large hydropower projects increase access to energy to those who need it the most? What are the alternative renewable sources for increasing access to electricity that are less invasive for communities and the environment?
- b) **The Political Economy of Hydropower:** What is the latest research about the political economy of dam building? Who are the main financiers and builders? Has this landscape changed since the last surge of dam building?
- c) **Hydropower Compensation and Relocation:** What role do international funders and development agencies play in the mitigation of negative effects of dams? In particular, how have resettlement policies evolved?
- d) **The Social and Environmental Costs of Hydropower:** What do we know about the social and environmental costs of dams? What are the human rights consequences, such as displacement, health impacts, loss of access to natural resources or impact on transboundary conflict? How has our knowledge of impacts grown or changed since the World Commission on Dams process?
- e) **Hydropower Benefits:** Who reaps the benefits of hydropower? We know that most hydropower investments are made in developing countries of Asia, Latin America and Africa, where exclusionary politics often prevail—what would real benefit sharing with communities look like? How are benefits and costs negotiated and who has a seat at the table?
- f) **Hydropower Planning and Implementation:** What steps can be taken to better address and diminish the negative impacts on people and the environment? How can local governments and communities, especially indigenous people, become more fairly involved in the planning and implementation process of hydropower projects?

To address these and other issues, we gathered a fantastic group of speakers as well as our honored keynote speaker Michael Cernea.

Presentation: The State of Large Hydropower

My own contributing remarks to this workshop can be separated into two categories. First, an examination of current arguments for the revival of dams in which displacement issues, along with the human rights issues that arise from the construction of dams, have taken a backseat. Second, an analysis of what lessons we can learn from the World Commission on Dams process and the outcome or impact of that process.

First we should acknowledge and examine the rationale used for dam-building. Among others, the following three arguments are used to promote building hydropower projects with large dams taking prominence:

- a) Large hydropower infrastructure is essential to ‘ensure access to affordable, reliable, sustainable and modern energy for all’, as described by Sustainable Development Goals (SDGs) Goal 7—that dams are necessary to foster human development.
- b) The economic growth of rapidly growing and urbanizing developing countries will draw benefits from hydro projects—that dams are necessary to ensure economic development.
- c) The provision of a clean and sustainable energy source—that dams are a necessary solution to the threat of climate change.

These potential benefits are called into question by recent research studies, which show these arguments do not hold true.³

Regarding economic growth, a recent study shows that there is no correlation between future hydropower dam construction and the economic condition (GNI) of a country.⁴ In addition, there have been studies on the overrun costs of large hydropower projects suggesting that budgets are systematically biased below actual costs (i.e. excluding inflation, substantial debt servicing, environmental, and social costs) and behind the actual schedule of completion (and thus take many more years to complete than estimated).⁵

Implementation of hydropower projects (specifically hydropower projects with large dam construction) can also lead to unequal distribution of benefits. Most of the recent and planned investments in hydro are being supported by external financing institutions and are taking place in developing countries of Asia (China, Nepal, Laos, Cambodia), Latin America (Brazil, Peru, Mexico), Africa (Tanzania, Ethiopia). These countries share a similarity in that they all suffer from weak governance and exclusionary political practices, resulting in a political elite and few powerful groups capturing and extracting benefits from the large projects.

Along with the disparity in benefits there is the important and critical issue of displacement and land rights. The costs of displacement fall invariably on those who are at the bottom of the social ladder in these countries. The people who are displaced are more often than not ethnic and, or, racial minorities, indigenous peoples, low caste groups, and the rural poor who have little voice in decision making. I have called the disproportionate negative impact on minorities, ‘development cleansing’ – a kind of ethnic cleansing by means of displacement and marginalization.⁶

3 For example, on access to energy, Kim et al. show that in 888 multilaterally funded energy projects, in 128 countries by nine major international agencies during the 2008–2011 period, energy access was a secondary consideration and only 4.5% of total funding of USD 104.2 billion was spent to promote projects with a significant energy access component. Sung Eun Kim, Johannes Urpelainen. “International Energy Lending: Who Funds Fossil Fuels, Who Funds Energy Access for the Poor?” In *International Environment Agreements: Politics, Law and Economics*. Vol 13. Issue 4. Pp 411- 423 Nov 2013

4 Christiane Zarfl, Alexander E. Lumsdon, Jürgen Berlekamp, Laura Tydecks, Klement Tockner. “A Global Boom in Hydropower Dam Construction.” *Aquatic Sciences*. Vol 77. Issue 1. Pp 161 – 170. Oct 2014

5 Atif Ansar, Bent Flyvberg, Alexander Budzier, Daniel Lunn. “Should We Build More Large Dams? The Actual Costs of Hydropower Megaproject Development.” *Energy Policy*. Vol 69. Pp 43-56. Jun 2014

6 Balakrishnan Rajagopal, “The Violence of Development”, *The Washington Post*, August 9th, 2001

The social cost incurred by dams in violating human rights of the displaced people has to be independently acknowledged. Dreze and Sen (2014) are particularly useful in examining the harsh reality of those displaced by mega projects. They note how people who were displaced by power plants in Uttar Pradesh, India are compelled to live in slums without electricity while the air conditioners of Power Corporation Headquarters are switched on throughout day even in deserted rooms.⁷

Furthermore, the displaced get trapped in a more and more vulnerable situation if they are from marginalized and excluded communities because of their at best limited access to state structures and protections. Susskind and Anguelovski's (2008) cross-country study, published by MIT's Program on Human Rights and Justice, illustrates the grim reality of land claims of Indigenous Peoples with case studies of mega projects.⁸

Combined, these factors illustrate the need for further discussion of public accountability, of the state, and of citizens' rights. Overall, global estimates of displacement due to dams are in the millions: in India, at least 50-65 million people have been displaced due to dam projects alone since 1950 when India became a republic after British colonialism.

Beyond the financial concerns about dams we must remember the human lives which are impacted. My work as a human rights advocate and scholar leads me to note the number of crucial human rights claims that arise in the hydro project context:

- Rights to development and self-determination: including Permanent Sovereignty over Natural Resources (PSNR), forest rights, indigenous rights;
- Right to life and livelihood;
- Right to culture, land and sovereignty;
- Right to adequate housing;
- Rights to assemble, associate, protest, speak;
- Right to participation;
- Rights of vulnerable groups;
- Rights to remedy.

In my own writing the Narmada Valley Project of Gujarat, India has served as a rich case study of the intersection between various rights: the inadequacy of remedies, including judicial ones; the large impact of global institutions (for example World Bank's Policy on Information, and its Complaints Panel); and the impact of regional banks like Asia Development Bank (ADB) or World Bank's (WB) resettlement and safeguard policies.

It is clear that in this time of rising interest and investment in dams we must be vigilant to protect the human rights of those affected. But just how do we go about doing so? This brings me to the second category of my remarks: what lessons regarding the human rights and legal implications of hydropower projects can we learn from the World Commission on Dams (WCD) process and its impact?

The World Commission on Dams was a multi-stakeholder body established by the World Bank and International Union for the Conservation of Nature (IUCN) in Gland Switzerland in 1997. Its secretariat was based in South Africa and was led by Kader Asmal, the South African Water Minister and by Achim Steiner, the Under Secretary General of the UN and head of UNEP (the UN's Environmental Programme).⁹ The WCD's knowl-

7 This is common process in India.

8 Lawrence Susskind and Isabelle Anguelovski, "Addressing the Land Claims of Indigenous Peoples" Program on Human Rights and Justice, MIT, 2008.

9 Achim Steiner stepped down as UNEP Under Secretary General shortly after the workshop, in June 2016

edge base drew on research as well as regional consultation conducted for over three years. WCD boasted strong non-governmental organization (NGO) and social movement (SM) participation as well as Southern and Northern participation. The Commission's major product was a report, submitted in 2000. This report laid out a 'risks and rights' framework for the design, planning, and construction of dams, along with several core principles.

The report was by and large ignored by dam building countries.

As we enter a new era of hydro-projects we must look at the successes and failures of rights-based responses which have come before. The World Commission on Dams took place a decade and a half ago, and much in the world has changed but we can learn lessons from the past, as well as be prodded to ask important questions. I believe the lessons we can learn from WCD are 1) lessons of political economy, 2) lessons of human rights and law, and 3) lessons of process, legitimacy and implementation. I will lay out these lessons below and suggest some questions these lessons lead me to ask about today's dam-building.

1. Lessons of political economy:

- The source of financing for projects is vitally important – At the time of WCD the share of World Bank and Western capital behind hydro-projects made it possible to generate a western NGO response (driven by solidarity with social movements and NGO activism from the South). What are the implications of divergent sources of financing by countries where civil society space is limited or shrinking, such as in China?
- The changing nature of statehood required to critically address large projects like dams—The WCD arose during the 1990s, when statehood was atrophying or being challenged from two directions: neoliberalism and a shrinking public sector on one hand and the pressure to democratize and share power (both vertically and horizontally within states) on the other. Neoliberalism and shrinking government included the weakening of public works departments and large state owned enterprise. Meanwhile, democratizing and power sharing was often enacted through decentralization in places such as India and Colombia. In this climate large dam building was politically untenable and, in fact, the data shows a sharp decline during precisely this period.

Today the nature of statehood seems different: an authoritarian, centralized state seems ever more popular (e.g. Ethiopia, Cambodia, Turkey). And even so-called democracies (e.g. Brazil, Pakistan, India and South Africa) have perfected the art of maintaining authoritarian state capacity for large projects even in the midst of clamoring for a dispersal of stateness.

The space for the sort of conversation that the World Commission on Dams generated and contributed to seems much harder today given this nature of statehood.

2. Lessons of human rights and law:

- The are limits to a human rights framework— In the 1990s, WCD approached human rights as a panacea to the problems of displacement and lack of accountability. Now there is a lot of skepticism and more sober assessment of whether human rights can fully address the problems that arise from dams. The list of human rights affected by dams (listed on page 9) outline the range of ways in which human rights can play a role in claim-making and accountability politics. But we must also acknowledge that human rights entrench statehood and limit our horizons of what's possible; they reinforce the centrality of courts and judiciary – a risky bet in a time of more authoritarian-leaning states.

Human rights can still play a major role in countering the risks inherent in dams. To do so they need

to be grounded in a politics of mobilization and they need to be tethered to an expertise of implementation, not merely norm making or claiming.

- Human rights alone are not sufficient in legal terms to address the mammoth problems that arise from dams—The focus on law around dams needs to expand beyond public international law to include private international law¹⁰, codes and indicators¹¹, currency and sovereign debt arrangements¹², as well as the law that governs project finance and project execution.¹³

The World Commission on Dams simply underestimated the legal terrain that has to be traversed to change the political economy of dams.

3. Lessons of process, legitimacy, and implementation:

- The difficult task of re-creating the legitimacy of the World Commission on Dams—In the 1990s the WCD benefitted from enormous legitimacy because of a number of compounding reasons. The first of which was its multiple sources of financing that included governments, NGOs, foundations and the private sector. The second was the high level of acceptance of the process by affected communities as well as by major international funders. The third was the boon of the multi-national team assembled by Achim Steiner. It is difficult today to imagine a similar global or regional process taking place with legitimacy, as many countries seem opposed to democratic and open conversation about the costs and impacts of dams.

The concern is that we need just such a regional or national process focusing on dams in order to generate enough space to create better policies and practices. If a legitimate process is not created it is difficult to see how we will reverse or mitigate the many negative impacts of dams, the fear is that the proverbial train will have left the station with hundreds, if not thousands of new dams.

- The need for an explicit funding structure for the implementation of the ‘rights and risks’ framework—The World Commission on Dams’ very elaborate set of policy proposals to redesign the building of dams to better align with the ‘rights and risks’ framework was never fully resourced. The suggestion of WCD at the time was that international assistance should be made available for implementation of these new policy frameworks. As we move forward today we must be explicit about the ways to pay for the implementation and support of this ‘rights and risks’ framework. There must be a commitment to fund this work.
- Community knowledge-sharing must include access to all techno-scientific information¹⁴ —The World Commission on Dams never addressed the question of how techno-scientific information regarding safety, construction, maintenance and operation etc. would be translated to enable genuine participation of communities. Too often, communities are left without the information they need to give informed consent or to contest. This is the case because project managers and implementers deem such knowledge ‘expertise’ which cannot be shared. This is a major impediment to more just projects today.

10 This would include arbitration, contracts, commercial law and *lex mercatoria*.

11 Here I am particularly thinking of the banks and lending agencies, which finance hydro-projects.

12 Meaning legal agreements, which can be reviewed against human rights standards.

13 These involve, among other laws, in-country contract law and the administrative law of public agencies.

14 We must note that the WCD did not recognize radically different epistemologies. Neither the different ways that indigenous communities may conceptualize the human-nature nexus nor the power relations embedded therein is addressed by the abstract and rational-choice idea of ‘informed consent’ ratified by the WCD.

- The 'rights and risks' framework relies on a robust civil society which may not always be present—In its repeated invocation of the phrase 'civil society' it is clear that the World Commission on Dams' policy framework assumed that the presence and strength of civil society is equal in all corners of the world. This equal spread has never been the case and our policy framework must address how implementation will work without a robust or cohesive civil society, for example in transition, non-democratic or ethnically divided countries.

These are some of the lessons we have or should have learned from the World Commission on Dams, the last attempt to improve the way we design and build dams. The lessons I have pointed to are complex and multifaceted but this is not to say that an analysis of the past means that I have all the answers. It is my assertion that incisive questions and observations, as well as answers, are the reason that workshops such as this one are so important.

KEYNOTE LECTURE

MICHAEL CERNEA

**Brookings Institute Non-Resident Fellow
Former World Bank Senior Adviser for Sociology and Social Policy**



Lecture

First, it is important to note that conferences and workshops on this topic are becoming more and more rare. We're witnessing unprecedented investment in infrastructure around the world and this boom comes with major changes in the financial architectures of the world: the result of private, not public investment. The private sector now sees infrastructure as highly profitable and this is heightened by the public-private-partnerships (PPPs), which are proliferating across the globe. There is a rise in private banks and other such entities financing projects.

Unfortunately, social issues are all too often left out of the technical aspects of planning and infrastructure is a major contributor to displacement.

To take stock of the relationship between large hydroelectric investments and displacement we must first look to the genesis of resettlement policies. These policies came about in the 1980s in the wake of the World Bank-funded Sobradinho Dam project: a large-scale displacement in Brazil where 65,000 people were displaced with no program or policies to help mitigate these impacts. In the wake of this disaster, and many others like it, there was acceptance within the World Bank that policies were needed for financial institutions to take some co-responsibility for the impacts of development projects. This led to a mandatory requirement for a resettlement plan before the appraisal and financing phase--making planning for resettlement the Bank's and not just the local government's responsibility.

We now know that 200 Million people are displaced due to development every decade; that is a shocking 20 Million annually. There is a need for 'normative frameworks' from the United Nations and others to address development-induced displacement. There are also large gaps in the literature and in our knowledge of policies and financing institutions today that ought to be addressed by studies. These gaps include:

1. An examination of private financial entities and how they align, or do not, with established policies and guidelines.
2. Legal scholars must examine how eminent domain is being used to justify and smooth the way for infrastructure.
3. We know that post-displacement reconstruction and recovery is often unsuccessful—but the how and the why of these failures must be systematized.
4. More work must be done to examine economic policies, as they are also social safeguard policies of financing and development institutions. Similarly, the norms that are intended to restrict the externalization of costs to the poor should be made more concrete, as we too often see these harmful externalizations.
5. Statistics on displacement are rarely shared or published and timely information access is important.

Importantly, we cannot be against infrastructure in general. We need to be responsible and ethical enough to include the full range of risks in proposals for development and infrastructure investments.



Plenary I participants during Mr. Manandhar's presentation

PLENARY I

The Return of Large Hydropower Projects: Why and What Lessons from the Past Have We Learned?

The issues addressed in this Plenary covered the drivers behind contemporary hydropower development, such as the changing financial landscape, as well as past lessons from the development of social and environmental safeguards to the strategies of resistance used by communities and civil society groups. Six scholars and practitioners gave presentations followed by questions and comments from the audience. The conversation that followed was facilitated by Michael Hooper, Harvard Graduate School of Design (GSD) Associate Professor and scholar of the politics of land use and issues of forced displacement.

KEVIN GALLAGHER

Professor of Global Development Policy

Boston University, Federick S. Pardee School of Global Studies

Kevin Gallagher’s research has examined the surge of hydropower projects in the corridor of the Andean tributaries of Amazon. This region of tributaries spans across the borders of Bolivia, Brazil, Colombia, Ecuador and Peru, five countries in total. His presentation focused on some of the key findings of his work, particularly insights on the changing financing landscape driving large hydropower development.

In his survey of this area it was found that (at the time of the workshop) there were over twenty infrastructure projects, eight of which were for hydropower development. The so-called Southern-led development banks¹⁵ are the institutions financing these infrastructure projects, with China Bank lending the most, followed by the Development Bank of Latin America (CAF).

Beyond the amounts loaned, Professor Gallagher’s research sought to examine Southern-led Banks’ approach to social and environmental safeguards and asked: “To what extent do these Southern-led development banks have policies or guidelines in place to safeguard sustainable project development?” (see Figure 1 for a comprehensive view of safeguards across institutions).

IDB Safeguards in LatAM: Procedural Requirements

	World Bank	IDB	US EXIM	EIB	AFD	KFW	CAF	CaDB	CHEXIM	BNDES	CDB
Ex-ante environmental impact assessments	X	X	X	X	X	X	X	X	X	X	X
Project review of environmental impact assessments	X	X	X	X	X	X	X	X	X	X	X
Industry-specific social and environmental standards	X	X	X	-	-	-	X	-	-	X	-
Require compliance with host country environmental regulations	X	X	X	X	X	X	X	X	X	X	X
Require compliance with int'l environmental regulations	X	X	X	X	X	X	-	-	-	-	-
Public consultations with affected communities	X	X	X	X	X	X	X	X	X	-	-
Grievance mechanism	X	-	-	X	X	-	-	-	-	-	-
Independent monitoring and review	X	-	X	-	-	-	-	-	-	-	-
Establishing covenants linked to compliance	X	X	X	X	X	X	X	X	X	X	X
Ex-post environmental impact assessments	-	-	-	X	X	-	X	X	X	-	X

Fei Yuan and Gallagher, Kevin P Gallagher (2015), Greening development finance in the Americas, Global Economic Governance Initiative, Boston University (forthcoming).


Global Economic Governance Initiative
www.bu.edu/gegi 

Figure 1: International Development Bank Safeguards in Latin America (slide from Professor Gallagher)

Of the projects he surveyed, Professor Gallagher identified a lack of coherence on safeguards, monitoring and governance, the three central kinds safeguard policies. This lack of coherence is particularly concerning when it comes to the social and environmental risks to local communities. Specifically, he warned that of the safeguards identified neither the Chinese nor the Brazilian banks have protections in place to mitigate, compensate or resettle people affected by displacement. The lack of protections against displacement are only one example and the conclusion is that the new financing institutions do not have the same number or kind of safeguards that were hard-fought for in Northern-led Banks such as the World Bank.

Professor Gallagher cautioned that in addition to having no displacement policies, there are no grievance mechanisms in place in many of the projects he examined. This means that as well as not having safeguards to plan for the displacement caused by projects, the systems to account for negative impacts after the fact, or grievances, are not in place. However, one parameter on which Southern-led Banks excel in comparison to Northern-led institutions is approval time. It was noted that while the approval time for institutions such as the World Bank were often over a year, newer financial institutions (such as the Asia Infrastructure and

15 Southern-led Banks are those based in middle income or developing nations or regions; that is not in Europe or North America.

Investment Bank, the multilateral financial institution created to invest in Asian infrastructure) regularly meet the 6-month approval time guideline they promise.

In addition to financing driven by state and intra-regional development banks for infrastructure projects, Professor Gallagher noted that there has also been an increase of company-led finance. This kind of private funding raises further questions about accountability and redress for possible negative impacts as these institutions are more beholden to shareholders than to ideals of ending poverty, etc. held by institutions such as the World Bank.

Professor Gallagher's research indicates a shifting landscape of financing for large hydroprojects, from Northern-led international financing institutions (IFIs) such as the World Bank to Southern-led IFIs such as the Asia Infrastructure and Investment Bank. For developing nations building infrastructure this shift is accompanied by shorter approval times but also by less clear and strong safeguards and grievance mechanisms.

PETER BOSSHARD

International Rivers Interim Executive Director and Senior Adviser¹⁶

International Rivers has worked since 1985 on its mission to 'protect rivers and the rights of the communities that depend on them'. They do so by working with a global network of dam-affected people and civil society organizations focused on the promotion of human rights and the protection of the environment. Peter Bosshard, the Interim Executive Director, discussed this work and the key issues International Rivers has identified in the large-dam hydropower development and its impacts.

Today hydropower represents 16% of the world's electricity and thus undoubtedly has an impact on global energy needs. However, the far greater impact of these projects is not on energy but on displacement: according to the World Commission on Dams from 40 to 80 million people have been displaced due to hydropower projects.

Globally we have seen a recent increase in demand for hydropower projects. There are many reasons for this uptick including a surge in Chinese demand both for energy and investment, and growth in global energy demand. These demands have come at the same time as an increase in new equipment and technology suppliers and financiers for these large-scale hydropower projects. To add to demands and technological advances there is the fact that many see hydropower as a response to climate change, as a clean energy shift from fossil fuels.

Mr. Bosshard sought to complicate this notion of large dams as a clean and harmless option. He noted that reservoir dams can cause huge displacements. Just as one example: Niger's World Bank-funded Kandadji dam which is still uncompleted but which has caused displacement that is beyond the 32,500 people developers anticipated and may even be over 60,000 people displaced from their homes and livelihoods. These dams are damaging to the very people they purport to assist. To add insult to injury this disservice goes beyond displacement. Massive delays in the construction of these projects is the norm and the energy they are built to create often takes years, if not decades, to enter the grid.



Rivers for Life meeting in Thailand, International Rivers

Interestingly, climate change has been both an incentive and a challenge for large dams because while hydropower may seem like a solution to climate change it is also made less effective and less reliable because of it. Predicting the flows and quantity of water with a changing climate is challenging, and larger and larger dams are needed to handle potential floods even while there continue to be threats that droughts will leave those large reservoirs dry.

Mr. Bosshard concluded, however, that there is hope. Both wind and solar energy are taking off with new technological advances and increased global commitment to cleaner energy. These leaps in technology mean that if we are able to slow the most destructive and displacement-heavy hydropower projects, other green energy sources will no-doubt make hydropower an even less convincing investment in the coming decades. In the meantime, it is crucial to the mission of International Rivers that the fight against dams is not against all dams, instead it is a fight for smart dams that will meet expectations with minimized displacement and environmental damage.

¹⁶ Mr. Bosshard has since stepped down from the role and is now the Finance Program Director at the Sunrise Project. There he is involved with a campaign to accelerate the shift from fossil fuels to clean energies.

MOHAN DAS MANANDHAR

DRAN Adviser on Nepal

Senior Adviser of the Institute of Social and Environmental Transition - Nepal (ISET-Nepal)

Mr. Manandhar is a policy expert in the areas of inclusive development and hydropower development in Nepal. Speaking as the DRAN Adviser for Nepal, Mr. Manandhar discussed the topics of exclusion and displacement in hydropower development. He focused on how the political landscape informs and determines infrastructure investments, how large interventions are managed and how impacts are experienced by affected communities.

Mr. Manandhar described the political structure in Nepal as highly exclusionary. The political landscape is built on strong kinship networks, with a small minority of people controlling almost all political and civil society institutions. This concentrated power is compounded by the fact that excluded and displaced populations are often both physically and culturally remote. The population of Nepal is concentrated in the Kathmandu Plateau and communities that live in the highlands, where hydropower projects are planned, have fewer social protections or government services. These communities are the most directly affected by such projects though they do not always reap the benefits as resettlement and rehabilitation programs are sluggish and compensation systems are not always robust.

One of the largest risks of hydro-projects is that although benefits are inequitably shared, risk is national. The economic risks of such large projects are carried by the economy as a whole. Large portions of the Nepali national public budget are devoted to projects including hydropower, meaning a risk not only to individuals who are displaced but also to the national economy. This means that if projects fail or are delayed the whole economy is susceptible to recession.

The risk of large projects, shared across the nation, is undertaken for a resource that is almost entirely exported outside of Nepal. The fact that energy is sold to neighboring nations such as India instead of being directed to meet domestic needs means that the benefits to the people of Nepal are even more diffuse. Given Nepal's geographic suitability for hydropower generation, moving forward there is a great need for financial integration with neighboring countries who have longer histories with hydropower construction and which are also economic giants. It is paramount that Nepal remain sensitive to equitable benefit sharing negotiations to ensure that financial and energy benefits are not disproportionately gained by these neighboring partners.

Mr. Manandhar concluded with recommendations for the future. In looking towards solutions or strategies to address the politics of exclusion and displacement in Nepal, and in other nations with similar landscapes, professional training and research must be expanded to capture the socio-political as well as the economic structures that underpin major infrastructure and hydropower projects. Gaining clear knowledge about these structures is of utmost importance to ensuring hydropower projects meet the myriad needs of a nation's people.



Photograph of Nepal from Mr. Manandar's presentation

FLAVIA BRAGA VIEIRA

Professor of Sociology at the Federal Rural University of Rio de Janeiro

Professor Vieira has worked with and researched Brazil's Movimento dos Atingidos por Barragens (Movement of People Affected by Dams or MAB) for several years. Speaking in her professional role as a sociologist she provided an examination of MAB's history of resistance. This history is useful in exposing patterns of state and society relationships in the context of hydropower in Brazil, lessons which may apply to other groups resisting hydro-projects around the world.

Hydropower projects had historically been privately funded in Brazil through the 1950s until the 1960s-1970s when planning became nationalized under a technocratic centralism of military rule. At this time large state companies became involved in these kinds of infrastructure projects and their stated goal was to address regional inequality.

It was also in the 1970s that civil society resistance began to grow at the regional and local level. Those civil society spaces including environmental, labor and democratization movements joined forces in the 1980s. In 1991 there was the first national congress which signalled the beginning of MAB as a formal national movement. Ironically, at the same time that these movements came together, neoliberalism and privatization emerged, and there was an attempt to use the judiciary to criminalize MAB. These were embattled times for MAB but there was a sea change in 2003 when President Luiz Inácio Lula da Silva (commonly known as Lula) was elected.

President Lula's government was characterized by a commitment to dialogue between the government and civil society. This dedication to movements such as MAB meant discussion but also collaboration between the government, and an expanded space for civil society. President Lula's government began internal examination of hydropower projects and as an example, Professor Braga Vieira noted an attempt to set up a multi-ministerial working group to examine the role of dams. In addition to working closely with President Lula's administration, civil society came together to increase their own capacity, starting, for example, a graduate course in government universities specifically designed for social movement and union leadership. There was a great deal of cooperation between different movements and MAB formed an unlikely alliance with the unions in the power sector companies. The work on the national and local level led, in 2010, to a national law and guidelines and a socioeconomic register to record and report compensation for communities in the wake of large projects.

The story of Brazil illustrates the power of civil society, particularly when groups come together across sectors. In this historical case we see that pressure on the state brought about real normative changes. Today, however, Professor Vieira cautioned, we are in a new era of hydropower in Brazil. After the end of President Lula's term in 2011 there has been a return to more neoliberal policies, in particular there has been a marked rise in the use of Private-Public-Partnerships (PPPs) for large infrastructure projects. There has also been a shift to smaller dams which have not been as vilified as large dams. There is an urgent need to draw more attention to and research on the impact of these kinds of smaller dams as they have not been in the spotlight before.

MAB's story shows us both the power and the precarity of civil society movements against dams. When it is strong, civil society is able to make alliances across industries, social movements and with the state: it is able to be a voice for the people most affected by these projects. A weakened, embattled civil society cannot be a check and balance to other forces. Professor Vieira concluded that we must continue to empower civil society to do this good work, for when civil society cannot act as a watchdog, the negative impacts are grave. A vision for the future without a robust civil society is far less positive for the people and environments of our world.

LARRY SUSSKIND

Professor and Head of the Environmental Policy and Planning Group, DUSP, MIT

Professor Susskind's research focuses on the theory and practice of negotiation and dispute resolution, particularly within the context of complex multi-party negotiations. Both as a practitioner and professor he has used negotiation to build consensus around issues of climate change adaptation and renewable energy policy. Professor Susskind has engaged in dispute resolution in the context of large hydropower projects, particularly in the Chilean context where he has led negotiations and capacity building programs aimed at improving governance in the water and electricity sectors and at increasing the respect of the rights of indigenous peoples affected by hydropower projects¹⁷.

Professor Susskind argued that at the heart of every hydropower project is a negotiation of power. This negotiation is characterized by uncertain information, with, for example, groups from project engineers to investors, community members or government officials having access to different kinds and quality of information. Information is made more uncertain by the fact that some information is difficult to predict such as droughts or floods. Professor Susskind emphasized that in order to address this uncertainty there must be more explicit framing of the gains and losses for different stakeholder groups. The dispute between whether or not to build a dam cannot be boiled down to an overall costs and benefits equation, instead it is a negotiation between multiple actors with their own definitions of what the costs are to them, and their own definitions of what benefits them. To add to this landscape there is often a skewed distribution of costs and benefits and certain groups bear the costs while other gain most of the benefits.

Professor Susskind contended that the new framing of gains and losses must move beyond solely financial measurement. There are many losses which cannot be quantified or measured in economic terms. The only way to reach consensus on such projects is to engage in a negotiation in which all groups, including marginalized ones such as indigenous groups, are brought to the table to participate in decision making. All too often, tools such as environmental impact assessments (EIAs) are not used as a beginning of a decision process but are instead created after the fact, to simply justify what has already been decided by policy makers. Ideally EIAs, and other such documents, ought to be a tool for beginning collaborative decision-making where all groups have equal access to documents and information.

Professor Susskind concluded that the goal of consensus building is figure out how we can maximize social and environmental benefits, not just how we can minimize negative impacts.

17 Susskind, Larry et al, Journal of Energy & Natural Resources Law Vol 32 No 4 2014, "The Future of Hydropower in Chile."

Plenary I Discussion

In reflecting on panelists' contributions regarding the resurgence of large hydropower construction and lessons from the past, the discussion following Plenary I moved to a dynamic exploration of what constitutes truly just compensation, where decision making power should be located (given vested interests and inequities), and what role civil society and academics can play in examining (and addressing) the issues at hand. Professor Michael Hooper facilitated the discussion through a mix of questions posed directly to panelists and questions fielded from the audience.

Central in the conversation was the question of how there can be truly 'just compensation' in arenas with such variations in power. Professor Susskind pointed out that often compensation today amounts to repayment for destruction and not to more holistic compensation. Professor Gallagher spoke of some best practices of Southern-led projects like the China-financed mineral mining project in Peru where a whole community was moved successfully. This success was made possible by the high demand for the minerals which created a willingness, on the part of the financing institutions, to meet the needs of the community.¹⁸ Professor Viera expanded on the idea of how to capture intangible assets in compensation models, for instance through attention to communities' relationships with local environments and ecosystems and recognition of existing networks and the social fabric. Mr. Bosshard noted that often by the time Environmental Impact Assessments and Social Impacts Assessments have been completed it is too late. There is a need to move the necessary debates on what a project's impacts could be and whether it is worth pursuing, further upstream, meaning well before construction is ready to begin and loans have been signed for.

In the many conflicts over compensation, Mr. Bosshard pointed out that communities without much power have benefited from 'action-oriented' academics who provide data and information that can empower civil society. He lamented that, writ large, research and projects today continue to reflect trends of the past, when large hydro-projects were positioned as the only option for green and large scale energy generation. Today we have some viable alternatives: micro-hydro, wind and solar. To make these alternatives thrive, Mr. Bosshard suggested more investments in local civil society and academia are needed to 'expose the hidden costs' and 'expose the past'.

Where to locate decisions such as accountability around safeguards is complex as multiple actors are implicated and have different constituencies. The state has its responsibility to its citizens, financing institutions their responsibility to the state and investors and multilateral organizations their responsibilities to multiple states. Moreover, as noted by Professor Susskind, from an ecological perspective, river basins rarely- if ever- confine themselves within the constructed borders of nation states. This means that those making decisions about projects must also be drawn from outside nation state borders.

Professor Rajagopal concluded the conversation with the following analysis: The failed model of development is clear in these major investments: large hydro is expensive, perpetually overrunning expected costs. Yet the actors involved have a vested interest in making projects happen, as they benefit from the construction and bidding processes, etc. Large dams are seen as 'monuments to our vanity', essentially as infrastructure projects for show, when in reality they are monuments to a failed model.

¹⁸ This case is discussed in Boston University's Global Economic Governance Initiative report, "China in Latin America: Lessons for South-South Cooperation and Sustainable Development" (Ray, Gallagher et al, 2015).



Photograph of a dam in Nepal

PLENARY II

Current Dilemmas: Costs, Impacts and Alternatives

Plenary II's examination of costs, impacts and alternatives brought a critical look at the scope of human rights violations that can impact dam affected communities, including often overlooked health impacts. The presentations also led to inquiry into the social, financial and environmental sustainability of these projects and propositions for strengthening resettlement and benefit sharing policies. In doing so, presentations brought to light the true costs of large dams, and asked: how can we measure those costs and create a critical evaluation of the worth of these projects in light of such considerations?

Professor Gabriella Carolini, Assistant Professor in MIT's Department of Urban Studies and Planning, facilitated a dialogue that followed the presentations of the six scholars and practitioners participating in Plenary II. Professor Carolini's own work focuses on the relationship between the social and fiscal responsibilities of the public sector and reforms in planning for vulnerable urban and peri-urban populations in Sub-Saharan African and Latin America, particularly as it relates to water, sanitation and community health projects.

ATIF ANSAR

Fellow at Keble College, Lecturer at the Blavatnik School of Government
Associate Fellow of the Said Business School, University of Oxford

Professor Ansar presented his team's work examining approximately 250 hydropower projects that were built between 1934 until 2007. The data showed that large hydro-projects are almost never economically viable (defined as gaining a return). Final costs for dams examined were on average 96% higher than original estimated costs (incidentally, the only other projects that have higher overruns, historically, are the Olympic Games). In addition to persistent cost overruns, this research revealed that hydropower projects run over schedule in 8 out of 10 projects, with an average delay of 44%, or 2.3 years longer than anticipated. These delays contributed to the average of 8 years it takes to complete construction of major hydropower dams, suggesting that these projects do not help with immediate need, a rationale often used to justify undertaking such projects (see Figure 2 for an example of debt for two dams).

Sunk Costs & Debt

Big dams and debt		
Total stock of public net external debt (US\$)		
Year	Colombia	Pakistan
1968		3,252.40
1970	1,296.60	
1977	2,699.60	
1984		9,692.80
Debt increase	1,403	6,440.50
Cost of mega-dam over the relevant period (Year-of-Expenditure US\$MM)	Chivor dam	Tarbela dam
	168.7	1,497.90
Cost of dam as percentage of debt increase over the relevant period	12%	23%

Figure 2: Big Dams and Debt (slide from Professor Ansar)

Professor Ansar's research pointed to the ways that inflation and economies of scale may be hiding the real costs of non-linear exposure in large hydro-projects. This is a global phenomenon although there are regional differences with projects in poor countries tending to suffer from longer delays. In order to make a more accurate argument for undertaking such projects Professor Ansar posits that we need to make forecasts of cost and time which are more accurately aligned with what we have consistently seen from projects as far back at the 1930s: cost estimates must be much higher and construction schedules longer. All too often if these more accurate estimates were made it would be politically and economically unfeasible to undertake such large projects. The data show we can be quite certain of these higher costs and longer building times.

The take-away is: "Big is Fragile." Large hydropower dams are often the costliest of infrastructure investments in terms of overruns in time and in monetary terms. Smaller projects are often more flexible, in that they are able to be built even with setbacks that would cripple large dams, and they come online faster than the large projects--ensuring that power is getting to people when it is promised.

REAZUL AHSAN

Researcher at MIT-UTM Malaysia Sustainable Cities Program

Dr. Ahsan presented documentary clips of his research with an indigenous community, the Orang Asli, who were displaced by dam building in Malaysia. The documentary relied heavily on interviews with members of the community, who were displaced over sixteen years ago and still have not been officially resettled. The interviews offer a first hand account of the often devastating social impacts of dam building as this community struggles to maintain its cohesion and culture. One of the most important themes raised in the interviews was the centrality of land, for the many ways land is used: for a secure home, for secure livelihoods from farming and for more intangible needs such as connection to place. Stable community ownership of fertile land was thus the key demand of those displaced.

ELFATHI ELTAHIR

Professor of Environmental Engineering, Department of Civil and Environmental Engineering, MIT

The Eltahir Research Group at MIT uses a variety of data to create models that simulate regional climate and hydrology systems. They then use these models to reveal how infectious diseases such as malaria are spread. Professor Eltahir explained that the goal of this kind of research is to create better environmental management systems that control for factors such as mosquito breeding areas. Their work has naturally led to re-searching the potential health impacts of large hydropower dams, which obviously change hydrology systems and create new environments. Their work, as well as several other studies of the African continent, suggest that malaria declines as you build fewer dams.¹⁹ This means that dams are likely contributing to the creation of habitats for disease vectors such as malaria-bearing mosquitos.

This research exposes an aspect of dam impacts which is often not included when weighing the costs and benefits of large hydroprojects. However, Professor Eltahir reflected that it is important to note the necessity of some hydro-projects. It is not as simple as dams creating environments that increase disease and therefore not building dams will mean fewer diseases. In some cases dam projects contribute to good health by offering access to energy and irrigation. For example, Africa ranks the lowest in irrigated lands with only 6% of the continent irrigated. This low irrigation rate is at least part of an explanation of the very low productivity of agriculture in the region. The ensuing poverty and food insecurity certainly contributes to poor health—in this example we can see dams as, in fact, contributing to good health.

He concluded that in order to better understand whether dams contribute more to health or to disease we need more extensive and better quality data. For example, looking at the Koka reservoir, a project in south-central Ethiopia, there is a need for better data on the relationships between hydrology, entomology and disease burdens. More than just allowing us to make better arguments either for or against dam building, better data would make it possible to better plan the location of dams, the resettlement villages, the management of areas prone to be breeding grounds, etc. in order to meet the needs of the community as well as minimize the impacts of diseases like malaria.

19 See for example, Kibert et al, 2016.

MILOON KOTHARI
DRAN Senior Adviser
Former United Nations Special Rapporteur on Adequate Housing

Miloon Kothari is the Senior Adviser to DRAN and previously served from 2000 to 2008 as the United Nations Special Rapporteur on the Right to Adequate Housing with the UN Commission on Human Rights and the Human Rights Council. He spoke about the state of hydro-projects and their impacts on displacement in the Indian context.

Mr. Kothari shared that according to the National Human Rights Commission's (NHRC) 2012 report there are between 75 and 80 million people who have been displaced by hydropower projects in India. This number includes 21 million people who identify as dalit or tribal, people who are among the most marginalized in the nation.

The Parliamentary Standing Committee reports that only around a third of these people have been resettled. There have been some successes, with a major Maharashtrian dam halted in large part because of successful protest movements. However, protests are impossible in the Northeast of the country where there has historically been a high level of suppression.

At the moment there is a surge in the proposals for large hydropower projects in India. For example, from one state: there are currently 160 memorandums of understanding (MoUs) for such projects that have been signed in Arunachal Pradesh, a state in India's northeast. Although the signing of such a document is not a guarantee that the projects will be completed it is indicative of the increasing interest in such projects and other states in India are also proposing large scale infrastructure development projects.

The question is, what should be done and how can successes such as that in Maharashtra be replicated? At this moment of resurgence of often destructive projects we must see human rights as a mobilizing tool. We know that a rights-based approach means protecting and promoting the rights of those affected by development projects. Centering rights contrasts to the current development paradigm--the levels of corruption in these large infrastructure projects is well documented as is the planning of and prioritization of urban corridors over the rights of marginalized rural groups. These contradictions suggest that the current development model is not working, it is not meeting the needs of the most needy.

Mr. Kothari summarized that knowing the often disastrous history and impacts of large hydropower projects we should ensure that there are no more large scale dams. The case for such projects is growing weaker and weaker on economic terms and the social and environmental impacts have too often been devastating. Mobilizing around human rights means addressing the current imbalances in power and addressing discriminatory development practices. International norms give us the tools and the conceptual framework to make truly people-centered development.

RYAN SCHLIEF

Executive Director at the International Accountability Project

Ryan Schlief is the Executive Director of International Accountability Project (IAP) and a leading advocate for human rights with a particular emphasis on economic and social rights. Mr. Schlief used his presentation to share some recent work by the International Accountability Project. IAP has created a system to make information about environmental or social impacts assessments more easily accessible for activists, citizens and researchers. In 2013, International Accountability Project, along with The Center for Environmental Law (CIEL), created the Early Warning System (EWS)-(see Figure 3 below). This system is a web-based tool created to map and centralize information about all kinds of development projects, including hydroprojects, which are funded by international funding institutions. Ideally the tool will enable communities to access information about development projects as soon as that information is made available, meaning they are better informed about development taking place within their communities.

Despite the need for this type of information on proposed development projects to reach the people who will be affected, its availability has been limited. Data about funding of hydro-projects at major development finance institutions, Environmental Impact Assessment (EIAs) or Social Impact Assessments (SIAs) are all types of vital information that are not reaching a wide audience in a timely manner. Many projects have no reports available and those that do make them available often do so only at the last minute, often on the approval date. This means that communities do not have the time to contest data or raise concerns about projects before it is too late and projects are rushed through to approval.

Only releasing technical information when it can no longer be contested does not serve the interests of the people who development is supposed to serve. In addition to the information included in the too-late initial disclosures, such as SIAs, there is much that continues to be withheld indefinitely. For instance, resettlement action plans are almost never shared with initial disclosure. Withholding this information seems to suggest that resettlement information is not important. This is not the case. In fact, when International Accountability Project looked at all the work of inspection panels (those who examine approval system issues) a full two-thirds of investigations in the 22 years of data were about resettlement.

Mr. Schlief therefore emphasised that the withholding or selective sharing of information makes it very difficult for civil society or academics to work effectively. They are neither given the time nor the information to point out issues, contest information or advocate for community rights. Many approval policies for development projects depend on an informed community to raise concerns, to act as a watchdog, but untimely access to information hobbles this system. Mr. Schlief concluded that information sharing, in a timely manner, is vitally important to addressing the threats of displacement and International Accountability Project and others are working to ensure that an informed public is truly informed.

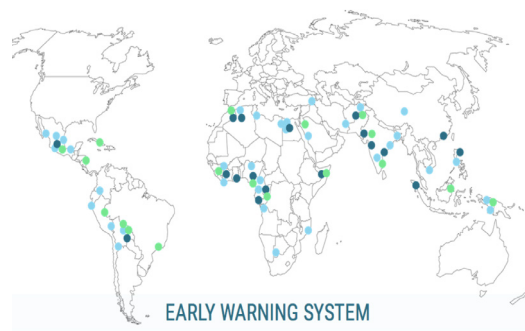


Figure 3: IAP's Early Warning System (EWS) (slide from Mr. Schlief).

JAMES WESCOAT Jr.

Aga Khan Professor of Islamic Architecture, Department of Architecture, MIT

Professor Wescoat has worked as a landscape architect and planner on hydrology projects. He is also an expert on small-scale historical waterworks of the Mughal gardens and cities. This wide-ranging experience in the water systems of today as well as historical systems makes Professor Wescoat a unique resource on thinking about the future of hydro-projects of different scales and connectivity. At this conference he presented a vision of alternatives to large hydro projects based on his work in the Indus River Basin (see Figure 4 for a map of the area).

Partnering with students and faculty of the new Center for Water Informatics and Technology (WITS) of Lahore University of Management Sciences Wescoat had been a part of an interdisciplinary team examining the Indus Basin as a place to think about new ways of managing and utilizing water. The Indus River Basin has long seen regional and provincial conflicts as well as international conflicts between India and Pakistan about dam projects. Perhaps because of the multiple scales of conflict about this kind of infrastructure there have been failed attempts to actualize projects. Professor Wescoat noted that of the 803 hydro projects planned in Pakistan, the vast majority, 90%, have not been built. Of the projects that do exist there is very little reliable or up to date data on the impacts of these projects, from large projects to microdam systems.

Wescoat's team has worked on creating a vision of off-grid micro-hydro projects in the Northern areas and the group is looking at how grid-compatible canal hydrokinetics can be implemented. They are creating a portfolio of examples that work and collecting data from these systems. The use of new technologies to gather and utilize data about the basin as a whole has the potential to make more efficient and reliable infrastructure through the whole Indus River Basin.

Professor Wescoat concluded that the Indus River Basin is an opportunity to think holistically, on the level of the Basin. He further suggested that there is real potential to think of the River Basin as a garden, an interconnected system that has to meet multiple needs, including cultural and aesthetic. Using technology to gather real time data on water flows, using micro rather than large scale dams and working on a water basin scale should be central to planning hydro projects in the Indus Basin in the 21st century.

The Indus River Basin as a Complex System



Figure 4: The Indus River Basin as a Complex System (slide from Professor Wescoat).

Plenary II Discussion

The discussion following Plenary II presentations centered on the question: What are the true costs of these projects? This discussion worked towards a definition of costs that can provide for a more comprehensive accounting of financial, environmental and social considerations. The role of information and research emerged as a crucial foundation for capturing such impacts.

The discussion noted that historically, consideration of financial costs of hydro-projects have included very little systematic analysis of cost overruns. The panelists pointed out that the research of Professor Ansar, and others, to make financial analyses more accurate is much needed. This work allows for a franker and more truthful conversation with actors who value economic arguments above all else--for those who focus on financial arguments for these projects, knowing that they are often more expensive and slower to build than has previously been acknowledged, is a powerful shift in knowledge. While it was noted that important work on this front is now taking place, there was consensus that more research is needed to help bolster examination of a broader accounting of impacts beyond cost overruns to measuring of impacts on people and on place.

In this vein the conversation moved on to discussing the environmental and very real human costs of large dam construction. These dimensions of cost have often been difficult to capture. The withholding of important information noted by Mr. Schlieff and the Accountability Project's work is a key tactic in uncovering such costs.

The discussants noted that environmental issues have not been central to decision making around large hydro-projects. We are only just beginning to look at hydrology systems as connected, that is: river basins as they exist in nature. A focus on the environment would also mean accounting for lost habitat as well as acknowledging new habitats that are formed, such as habitat for malaria-bearing mosquitoes.

The conversation concluded with the fact that there is a clear need for academics to join with civil society to make sure information is transparent and available and to, in innovative ways, help capture the impacts on dam-affected people around the globe. Community-based organizations and movements are often limited in their capacity to collect, analyze and tell compelling stories with data. In turn, academics often gain a rich source of first-hand and on the ground data on the impacts of projects as well as actions to resist them. This is a partnership that should be cultivated and expanded.



Plenary II during Mr. Schlieff's presentation

CONCLUSION + RECOMMENDATIONS FOR THE ROAD AHEAD

PROFESSOR BALAKRISHNAN RAJAGOPAL

The presentations and conversations at this workshop have both offered a glimpse of a hopeful future as well as illuminated areas of real concern. By way of closing this report the DRAN team and I have identified four areas that need further research and activism. These areas have emerged from the Workshop and we hope that pointing out the gaps in existing knowledge will encourage our own DUSP students as well as members of our Network to focus on these issues as researchers, allies and as activists.

First, more work must be done to understand the role of new IFIs (International Financial Institutions) that are increasingly Southern-led. These institutions are functioning at a much quicker speed than the Northern-led IFIs, which funded hydropower projects during their heyday in the 1990s. In particular, we need clarity on the existing safeguards, rights and resettlement policies, and grievance mechanisms required by these new IFIs. There are early indications from work such as Professor Gallagher's that these IFIs do not have the more robust safeguards that activists, civil society and groups such as the World Commission on Dams advocated for and won within Northern-led Banks. If this is indeed the case, then groups must come together to call for strong safeguards from these institutions.

This brings us to the second point, the shrinking space for civil society. Professor Braga Viera's presentation offered us an overview of MAB's work in Brazil at a time when civil society was strong and organized. Today after decades of neoliberal policies and crackdowns on civil society there is, in my view, much less space for civil society. This is of great concern as many of the safeguards required by Northern-led IFIs and advocated by WCD rely on civil society to hold governments and dam builders accountable. Without a strong civil society these safeguards are likely to work less well, if at all. What can we do to expand the shrinking space of civil society?

Third, a new line of accountability may have come from Professor Ansar's work which calls into question what was once one of the most commonly used arguments for large dams: that they are viable tools of economic development. We know today that in fact large hydropower projects are not viable due to their failure to achieve their goals. They are, almost to a case, grossly over budget and take much longer to complete than they claim.

Fourth, while large dams increasingly appear to be un-viable, the viability of alternatives to them continues to increase. There is great hope in the technological advances in wind and solar. Even within the world of hydro-projects, as suggested by Professor Wescoat, there is greater possibility for more flexible and less negative projects, such as micro-dams.

Finally, we have laid out what we see as a central role of Universities in shaping the future of hydropower projects around the world. It is a key role of universities like MIT to critically assess gaps in knowledge about hydro-projects and contribute to truly sustainable – both environmental and social - development. We have identified many such gaps and tried to dispel myths during this workshop and we expect and hope that our work on large hydro-projects will continue as a key part of DRAN.

Universities like MIT also shape the training of future academicians and practitioners. Thus they have a responsibility to not only be knowledge-generators but also to be capacity-builders for civil society groups and activists who work with affected communities, who are seeking equitable development projects.

It is the hope of DRAN that other researchers and activists will take up this call and move us towards a more just and equitable world.

PARTICIPANT BIOGRAPHIES

KEYNOTE

MICHAEL CERNEA

Michael M. Cernea is the World Bank's former Senior Adviser for Sociology and Social Policy and an internationally recognized scholar in development sociology and anthropology. In 1974 he was invited by the World Bank to be its first in-house sociologist, working on poverty reduction projects in Tanzania, Mauritius, India, China, Thailand, Nepal, Yemen, Morocco, Mexico, amongst other countries. He then shifted his focus to the Bank's policy development and to advisory work to Bank staff and management and to various governments around the world. Mr. Cernea helped in the formation of the Bank's large community of social specialists and led it for nearly a quarter of a century. In 1979 and 1980 he was the proponent and writer of the Bank's pioneering safeguard Resettlement Policy, the first such policy internationally. He wrote or co-wrote several other Bank social policies such as the indigenous peoples' policy, the operational policy for social analysis appraisal, and the cultural heritage preservation policy. Mr. Cernea formulated the Bank's Model of Impoverishment Risks and Reconstruction (IRR) in displacement and resettlement, now used internationally. In 1997 he was appointed as the sociologist-member of CGIAR's Advisory Committee and then member of its Science Council (1998-2003). In 1991 he was elected as a Member Correspondent and in 2012 as a full Member of the National Academy of Sciences of Romania. Mr. Cernea was distinguished with the two highest awards for development anthropology offered in the U.S.: the Solon Kimball Award (1988), conferred by the American Anthropological Association, and the Bronislaw Malinowski Prize (1995) conferred by the Society for Applied Anthropology; both awards honored his work for the World Bank and his international work to articulate social policies for development, many of which were adopted over the years on an expanding international scale. He was also honored for his incorporation of social science knowledge into the design models of development investment projects. Mr. Cernea has also taught at US, European and Asian universities; in China he has been appointed Honorary Professor at Hohai University, Nanjing, and as Emeritus Professor of Resettlement at the Three Gorges University, Yichang. During the academic year of 1990-1991 he worked as a Visiting Scholar at Harvard University and Harvard's Institute for International Development. Among his many authored or edited publications are: *Putting People First: Sociological Variables in Development* (1995, 1991) translated in Japan, China, France, Mexico and Indonesia; *The Economics of Involuntary Resettlement* (1999); *Risks and Reconstruction* (2000); *Cultural Heritage and Development* (2002); *Researching Culture in Agriculture* (2006); and *Can Compensation Prevent Impoverishment? Reforming Resettlement Through Investments and Benefit Sharing* (2008).

PLENARY I

MICHAEL HOOPER

Michael Hooper is an Assistant Professor of Urban Planning at Harvard University's Graduate School of Design. He joined Harvard after working for several years with the United Nations Development Programme, including time on secondment to the Kenyan Ministry of Planning in Nairobi. Among other projects, he is currently working on forced evictions and involuntary resettlement in Africa; the politics of post-disaster reconstruction in Haiti; the management of urban informality in developing world cities and aboriginal housing policy in Canada. Mr. Hooper completed his PhD at Stanford University, where he studied urban evictions and resettlement in Tanzania. He has been a visiting research fellow at the University of Oxford and at the Nordic Africa Institute in Uppsala, Sweden.

KEVIN P. GALLAGHER

Kevin P. Gallagher is a professor of global development policy at Boston University's Frederick S. Pardee School of Global Studies, where he co-directs the Global Economic Governance Initiative and is Research Director at the Center for Finance, Law, and Policy. He is the author or co-author of six books: *The China Triangle: Latin America's China Boom and the Fate of the Washington Consensus*, *Ruling Capital: Emerging Markets and the Reregulation of Cross-Border Finance*; *The Clash of Globalizations: Essays on Trade and Development Policy*; *The Dragon in the Room: China and the Future of Latin American Industrialization* (with Roberto Porzecanski); *The Enclave Economy: Foreign Investment and Sustainable Development in Mexico's Silicon Valley* (with Lyuba Zarsky); and *Free Trade and the Environment: Mexico, NAFTA, and Beyond*. Dr. Gallagher has served as an advisor to the Department of State and the Environmental Protection Agency in the United States, as well as to the United Nations Conference on Trade and Development and the United Nations Economic Commission for Latin America and the Caribbean. Gallagher has been a visiting or adjunct professor at the Paul Nitze School of Advanced International Studies at Johns Hopkins University, the Fletcher School of Law and Diplomacy at Tufts University; El Colegio de Mexico in Mexico; Tsinghua University in China, and the Center for State and Society in Argentina.

BALAKRISHNAN RAJAGOPAL

Balakrishnan Rajagopal is currently a Professor of Law and Development and Head of the International Development Group at the Department of Urban Studies and Planning at MIT (Massachusetts Institute of Technology). He is also the founding Director of the Program on Human Rights and Justice, and the founder of the Displacement Research and Action Network at MIT. He has a law degree from India as well as an interdisciplinary doctorate in law from Harvard Law School. He served for many years with the United Nations High Commissioner for Human Rights in Cambodia, and was human rights advisor to the World Commission on Dams. He has published numerous scholarly articles in leading law and social science journals and he is the author of two books - *International Law from Below: Development, Social Movements and Third World Resistance* (Cambridge: Cambridge University Press, 2003), and *Reshaping Justice: International Law and the Third World* (co-editor, Routledge, 2008). He also publishes widely in the media on human rights and international law and issues concerning the global south in such publications as the *Boston Globe*, the *Hindu*, *Washington Post*, the *Indian Express*, *El Universal*, and the *Nation*, and is a blogger at huffingtonpost.com.

PETER BOSSHARD

Peter Bosshard is the Interim Executive Director of International Rivers, an international environmental and human rights organization. Before joining International Rivers as the Policy Director in 2002, Peter was the coordinator of the Berne Declaration, a Swiss advocacy organization. He has worked on international environmental and human rights issues for more than 20 years, and was closely involved in the World Commission on Dams process. Peter has published numerous articles on hydropower and dam issues in academic journals, industry magazines, and the popular press. He studied in Switzerland, the US and Jamaica, and has a PhD from Zurich University.

MOHAN DAS MANANDHAR

Mohan Das Manandhar is an expert in inclusive development, development management, and social inclusion. He has more than 30 years of hands-on management experience in development organizations, academic institutions, and private sector enterprises in Nepal, South Asia (India, Bangladesh, Pakistan), South East Asia (Laos, Thailand, Timor-Leste, Myanmar), and Africa (Liberia). Mr. Manandhar currently is Senior Policy Adviser at ISET-Nepal, working on government's policy reform process and on rehabilitation policy. He was a visiting scholar at the Department of Urban Studies and Planning at Massachusetts Institute of Technology (MIT), USA carrying out study on issues of displacement and exclusion in large projects with a focus on development disputes and consensus building in mediating conflict. He is also a member of Displacement Research and Action Network/MIT and is involved in study of displacement post earthquake in Nepal.

FLAVIA BRAGA VIEIRA

Flávia Braga Vieira holds a degree in Social Sciences (1998), Masters in Sociology and Anthropology (2001) and Ph.D. in Urban and Regional Planning (2008) from the Federal University of Rio de Janeiro (UFRJ). Since 2010, Professor of Sociology at the Federal Rural University of Rio de Janeiro (UFRRJ) where teaches and develops research projects and extension. At the Institute of Urban and Regional Research and Planning of UFRJ, coordinates the graduate course Energy and Society in Contemporary Capitalism. Has experience in the areas of Social Sciences and Applied Social Sciences, mainly in the following issues: globalization, social movements, environment, development, dams, education. In 2011, published the book "*Dos proletários unidos à globalização da esperança: um estudo sobre internacionalismos e a Via Campesina*" (From the united workers to globalization of hope: a study of internationalisms and Via Campesina).

LARRY SUSSKIND

Larry Susskind is Ford Professor of Urban and Environmental Planning at MIT and Head of the Environmental Policy and Planning Group in the Department of Urban Studies and Planning. He is one of the founders of the Program on Negotiation at Harvard University and Chief Knowledge Officer and Founder of the Consensus Building Institute, a not-for-profit based on Cambridge, MA that has been providing mediation and dispute resolution services in complex resource management disputes around the world for more than 20 years. Professor Susskind is the author of twenty books including (with Shafik Islam) *Water Diplomacy: A Negotiated Approach to Managing Complex Water Networks* (Resources for the Future, 2012) and co-director of the Water Diplomacy Workshop at Tufts University. He has helped to mediate water disputes, including efforts to site hydroelectric facilities in Manitoba, Quebec, and Southern Chile and in 2011 won Mediator's Without Borders Peacemaker of the Year award.

PLENARY II

GABRIELLA CAROLINI

Gabriella Carolini is an Assistant Professor at MIT, where she sits on the faculty of the International Development Group and is an affiliated member of the Housing, Community, and Economic Development Group in the Department of Urban Studies and Planning. Her research interests center on the study of dynamic relationships between social and fiscal responsibilities in the public sector. More specifically, Professor Carolini studies policy mobility within the Global South and the interplay of internationally celebrated fiscal and administrative reforms with city planning for basic services and accompanying infrastructure, ultimately to understand how public health is shaped in vulnerable urban and peri-urban communities. She is currently working on a book which presents and tests theories of how learning happens among urban development professionals in Mozambique, with a special emphasis on those working South-South Cooperation projects with Brazil. Before her appointment at MIT, she was an Assistant Professor at Rutgers and worked in various capacities with the UN Millennium Project, UN-HABITAT, Rockefeller Foundation, Center for Sustainable Urban Development at Columbia's Earth Institute, Oxford Analytica and a private management consultancy focusing on fixed income finance. She has studied and has been an affiliated researcher in universities in Brazil, France, Mozambique, and the UK, and earned her doctorate in urban planning from Columbia University, where she was a National Science Foundation IGERT Fellow in international development and globalization.

ATIF ANSAR

Atif Ansar is a Lecturer at the Blavatnik School of Government, University of Oxford and an Associate Fellow of the Saïd Business School. His research focuses on delivering major infrastructure and integrated real estate programmes cheaper, faster, and with greater sensitivity to the needs of end-users. Prior to joining the Blavatnik School of Government, Atif was a Research Fellow at the BT Centre for Major Programme Management at the Saïd Business School, University of Oxford. Building on this experience he continues to conduct collaborative research on infrastructure megaprojects with Professor Bent Flyvbjerg and colleagues at Saïd Business School. Atif teaches on the Master in Public Policy (MPP), the Masters in Business Administration (MBA), and the MSc in Major Programme Management and helps deliver executive education programmes such as the UK Government's Major Projects Leadership Academy (MPLA) for top civil servants. Atif has widely consulted for the World Bank and private sector clients. At the World Bank, Atif's work focused on infrastructure and social development. His work for the private sector has been in the area of project finance in Russia, Ukraine, and Africa and improving decision practice and outcomes of capital investment projects. Atif completed his DPhil entitled: "New Departures in Infrastructure Provision: an Ongoing Evolution Away from Physical Assets to User Needs" in 2010. Studying at Brasenose College, Oxford University, he received the Clarendon Scholarship from the Oxford University Press for his doctorate. Atif previously undertook his Bachelor's degree at the School of Foreign Service at Georgetown University where he majored in Philosophy, Politics and Economics.

REAZUL AHSAN

Reazul Ahsan currently working as a research fellow in MIT-UTM Malaysian Sustainable City Program (MSCP). His current research is about 'Development Induced Displacement' due to hydroelectric dam in East Malaysia. His current research connects him with DRAN. Dr. Ahsan holds a PhD in Urban and Regional Planning from the University of South Australia, where he also was a research associate before joining the MSCP. He has held faculty and research positions at Khulna University Bangladesh and the Asian Institute of Technology, Thailand. While at University of South Australia he conducted research on climate migration and urban changes, focusing on developing countries and also worked as a research fellow for designing age-friendly cities.

ELFATIH ELTAHIR

Elfatih Eltahir is Professor of Civil and Environmental Engineering at MIT. Dr. Eltahir earned a B.Sc. in civil engineering from the University of Khartoum in Sudan in 1985 (First Class Honors); an M.Sc. in hydrology from the National University of Ireland in 1988 (First Class Honors); and the S.M. in meteorology and the Sc.D. in Hydro-climatology, both from MIT in 1993. Dr. Eltahir's research focuses on understanding how regional land use change/land cover change as well as global climate change may impact society through changes in the patterns of water availability, extreme weather, and spread of vector-borne diseases. Together with his students, they develop sophisticated numerical models (e.g. MIT Regional Climate Model (MRCM), and the Hydrology, Entomology and Malaria Transmission Simulator (HYDREMATS)) that are used for predicting such impacts at regional scales. They test these models against satellite observations and archived datasets of hydrologic and atmospheric variables, as well as data collected in our own field campaigns. Dr Eltahir established long-term field sites to study the ecology of malaria transmission in several African villages, and improved significantly the state-of-the-art tools for planning environmental management of this disease under the current climate, and projected a less worrisome future for malaria in West Africa than suggested by previous studies. Dr Eltahir is a recipient of the US Early Career Presidential Award in 1997; and the Kuwait Prize in Applied Science in 2000 for his work on climate change. He has been elected Fellow of the American Geophysical Union (AGU) in 2008.

MILOON KOTHARI

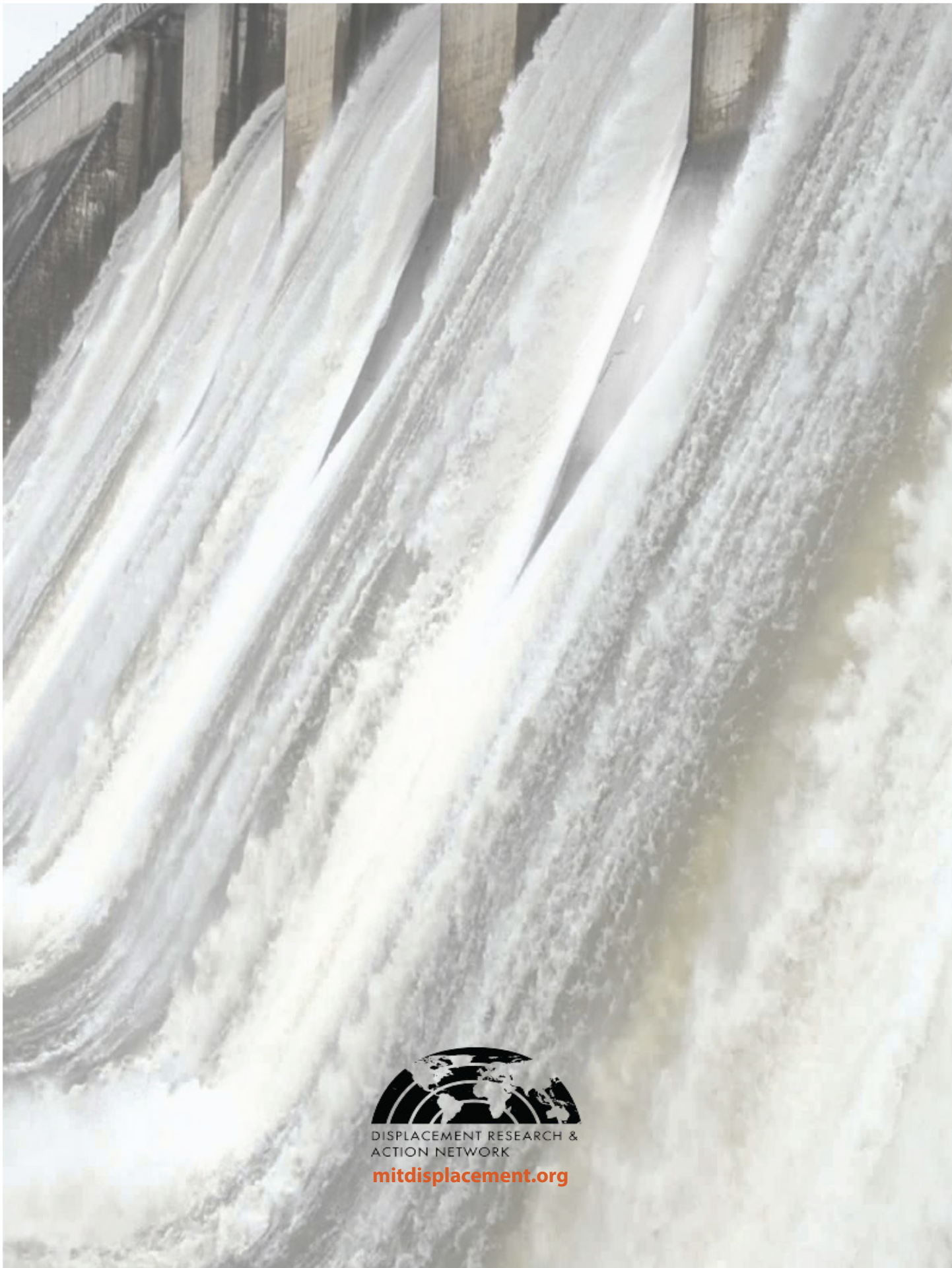
Miloon Kothari is a Senior Advisor to DRAN. He was a Dr. Martin Luther King Visiting Scholar at MIT for the academic year 2013-14, a Visiting Scholar at the Program on Human Rights and Justice (PHRJ) and a Lecturer at DUSP during 2014-15. Mr. Kothari is a leading voice at national, regional and international forums on human rights, especially economic, social and cultural rights. He is an outspoken critic of the countries and institutions that see the neo-liberal and military/security policies as a means to achieving democracy and human rights. Mr. Kothari served (from 2000-2008) as the Special Rapporteur on adequate housing with the United Nations Commission on Human Rights and the Human Rights Council. During his tenure as Special Rapporteur Mr. Kothari led the process that resulted in the UN Basic Principles and Guidelines on Development based Evictions and Displacement – the current global operational human rights standard on the practice of forced evictions.

RYAN SCHLIEF

Ryan Schlieff leads the work of the International Accountability Project (IAP) - an international organization grounded in local struggles. IAP supports community-led development plans and priorities and locally-led campaigns against large scale projects communities don't want. IAP monitors proposed projects at the major development finance institutions and reinforces community-led campaigns towards those funding the project through exchanging project information and community response options. IAP is a founder of the Coalition for Human Rights in Development - a global network of +60 local and national organizations working to ensure all development includes human rights. IAP's initiative to provide community-led research to impact global development policy, was a finalist in 2015 for the UN's Equator Prize - which 'recognizes outstanding local and indigenous community initiatives advancing innovative solutions for people, nature and resilient communities'. Ryan is a life-long activist, who has reinforced dozens of local campaigns and has led global campaigns for WITNESS, Amnesty International and now IAP. Ryan holds a Masters Degree in International Human Rights Law from SOAS. IAP has staff in NYC, DC, São Paulo, Kampala and Chiang Mai.

JAMES L. WESCOAT, Jr.

James L. Wescoat, Jr. is an Aga Khan Professor of Islamic Architecture at MIT. His research concentrates on water systems in South Asia and the US from the site to river basin scales. He has conducted research on the small-scale historical waterworks of Mughal gardens and cities in India and Pakistan. At the larger scale, Professor Wescoat has conducted water policy research in the Colorado, Indus, Ganges, and Great Lakes basins. He led a USEPA-funded study of potential climate impacts in the Indus River Basin in Pakistan with the Water and Power Development Authority (WAPDA), and contributed to a World Bank study of climate impacts and adaptation in the Indus. In 2003, he published *Water for Life: Water Management and Environmental Policy* with geographer Gilbert F. White (Cambridge University Press). He is currently conducted research on environmental effects of hydropower alternatives in the Indus basin, and on off-grid hydropower in canal irrigation systems in South Asia.



DISPLACEMENT RESEARCH &
ACTION NETWORK

mitdisplacement.org