A Comparative Survey of Dam-induced Resettlement in 50 Cases

Thayer Scudder with the Statistical Assistance of John Gay

(unabridged version of the methodology and quantitative analysis with all tables)

ABSTRACT

What follows is an expanded version of the statistical section from Chapter 3 of *The Future of Large Dams: Dealing with Social, Environmental, Institutional and Political Costs.* It presents a statistical analysis of resettlement outcomes associated with 50 dams in areas of the world where most future dams will be built. Living standards improved in only three of 44 cases where there was sufficient data to assess outcomes. In another five cases they appear to have been restored. In the remaining 36 cases, a majority of resettling households were further impoverished as defined by five of Michael Cernea's eight impoverishment risks.

Five factors in various combinations were associated with impoverishing outcomes. They were lack of staffing capacity, lack of finance, lack of political will, lack of opportunities available to resettling households and lack of household participation in the resettlement process. Other impoverishing factors included unexpected events and resettler inability to compete with host and immigrant populations. Improved outcomes tended to be associated with a single agency responsible for all aspects of dam planning, financing and implementation.

JEL classification system: O12, O15, O22 and O33

Key words: dams, resettlement, impoverishment, living standard improvement, living standard restoration

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Introduction

This expanded chapter includes all 18 original tables. The Qualitative Analysis of ten case studies has been deleted since that was retained in the published version of *The Future of Large Dams.* Two contrasting points are emphasized. The first is to reinforce and quantify to the extent possible the conclusions of the World Commission on Dams that the estimated global total of 40 to 80 million dam resettlers "have rarely had their livelihoods restored" (WCD 2000: 129). Furthermore, unacceptable resettlement continues today as shown by dams that have been completed during the past ten years. On the other hand, analysis of individual cases shows that there are indeed a range of available opportunities which have the potential for helping a majority of resettling households to become project beneficiaries. Such opportunities were sufficient in three of 44 cases analyzed in this chapter to raise the living standards of the majority and to restore them in another five cases. Even cases with unsatisfactory outcomes included high potential opportunities that if combined with others could have improved outcomes.

If large dams are to remain a legitimate development option, major efforts must be made to plan and implement the necessary resettlement policies. That will not be an easy task. In addition to lack of opportunities, major reasons why the record to date remains unsatisfactory and unacceptable include lack of planning and implementation capacity, lack of funds, and lack of political will on the part of governments and project authorities. Also important is lack of participation on the part of resettlers.

Introducing the 50 Dam Survey.

Lack of information provided by project authorities and governments on dam-induced resettlement is the major reason why it has been so difficult to assess outcomes. That conclusion applies even to attempts by the World Commission on Dams and the World Bank to generalize about the nature of the resettlement process. While WCD initiated a Cross-Check Survey of 150 dams to broaden its database, in only 68 (54 percent) of the 123 replies received from project authorities was resettlement even mentioned and in only 12 of those 68 cases (18 percent) were "valid resettlement data" received. [1] As for World Bank surveys, they too were inadequate for purposes of analysis since they were restricted to a still smaller number of Bank-financed projects.

Initially I did not intend to undertake my own survey. Comments by two readers on early chapter drafts caused me to change my mind. My WCD colleague Jan Veltrop pointed out that while my individual case studies could document a failed resettlement process, my broader generalizations about resettlement outcomes were at best only "informed

opinions." To correct that deficiency John Gay urged me to seek information on a large enough sample to allow statistical analysis. My search during 2002 turned up 50 cases for which there was sufficient data to code over 150 variables. [2]

The survey was designed to achieve two purposes. One was to examine outcomes for the majority of those resettled. The other was to examine the utility of the four-stage framework (Table 1) and Cernea's impoverishment model [3] for explaining why those outcomes occurred. As with the World Commission on Dams' survey, data inadequacies also illustrate the inattention that the large majority of project authorities have paid, and continue to pay, to resettlement issues.

Table 1
The Four Stage Process for Achieving Successful Resettlement

Stage 1: Planning For Resettlement Prior To Physical Removal
Stage 2: Coping With The Initial Drop In Living Standards That Tends To Follow Removal
Stage 3:Initiation Of Economic Development And Community Formation Activities That Are Necessary To Restore Or Improve Living Standards of First Generation Resettlers
Stage 4: Handing Over A Sustainable Resettlement Process To The Second Generation Of Resettlers And To Non-Project Authority Institutions

The Design of the 50 Dam Survey and the Nature of the Data Base

The 50 dam survey dealt primarily with households that were physically displaced by dam construction and reservoir formation since data were virtually nonexistent for those displaced by such associated project works as roads, transmission lines and irrigation canals or those who lost their land and other natural resources to the reservoir and the dam site but not their homes. For coding purposes 185 data items were listed. The first 42 dealt with such general issues as location, dam and reservoir size, date of completion and dam purpose, number of resettlers, nature of host government and the project authority and supporting institutions including donors, financial costs and source of funds, and NGO involvement. The next 24 items dealt primarily with resettlement policy issues including the extent to which attempts were made to reduce the numbers of resettlers, synchronization of resettlement with the construction planning and implementation timetable, political will and institutional and staff capacity to implement resettlement policy, and nature and adequacy of funding and monitoring.

Items 67 through 112 dealt with the planning process associated with Stage 1, while items 113-130 dealt with physical displacement and efforts to restore living standards (Stage 2) with emphasis on Cernea's eight impoverishment risks. Items 131 – 147 dealt with community formation and economic development (Stage 3), while items 148-156 dealt with handing over and incorporation (Stage 4). Items 157 – 175 involved an overall assessment of outcomes in each case until the time of last data regardless of the number of stages completed. Eight of the last 10 items dealt with downstream impacts, followed by length of river and date of last data.

Because of small sample size efforts at quantification have been limited to use of frequencies, means, and correlational analysis. Significance is suggested only by a value of $p<0.01$ or below while values between $p<0.05$ and $p<0.01$ suggest a possibly significant relationship. The word "suggest" is used intentionally because small sample size increases the possibility of confounding factors influencing results when relationships between two variables appears to be positive. For that reason emphasis is placed on trends where a number of possibly related results point in the same direction. An example is where increased staff capacity, funding, and political will within project authorities are all associated with improved outcomes.

Once coding began, it was obvious that data sufficient for analysis of many variables of assumed importance were unavailable in the sources used. That included data on the productivity of the reservoir fishery and the nature and use of the reservoir drawdown area - two resources that could provide important opportunities to resettlers. Because of data inadequacies and relatively recent NGO activism in regard to the 44 dams analyzed, it was also not possible to assess NGO impacts on outcomes.[4] On the other hand, of 171 of the 185 items of relevance to analysis of reservoir displacement, data were lacking for only 11 (6 per cent). Six of those items dealt with resettlement costs as a percentage of total costs and with estimated number of resettlers at different stages in the planning process. Though such data were available for less than one-third of the 50 cases, they were still sufficient in some cases to compare with results from World Bank and World Commission on Dams' surveys.

The 14 other items dealt with unavailable data that were not directly relevant to the reservoir resettlement process. In addition to eight items on downstream impacts, three others referred to numbers of households or individuals displaced due to the construction of roads, transmission lines, irrigation canals and other infrastructure as well as those who lost arable land but did not require physical relocation. Lack of data on those categories indicates the extent to which they continue to be ignored by project authorities.

Data Sources and Biases

Data Sources

Lack of data constrained my survey to 50 large dams. They are listed in Table 2 along with host country or countries, date of completion, numbers of resettlers, stage reached at the time of last data collection, and outcome. Bearing in mind the inability of the World Commission on Dams to obtain adequate data from project authorities, I concentrated on dams where specific research had been completed on the resettlement component. Three sources were especially important. Covering the largest number of projects, one source included publications and reports on the resettlement process by environmentalists, historians, and social scientists. They included 12 Ph.D. dissertations. The second source was a series of reports in 1993, 1998 and 2001 by the World Bank's Operations Evaluation Department on the resettlement component of nine World Bank-financed projects. The third source was six WCD case studies of specific dams.

Table 2
The 50 Dams

Name Of Dam	Country/ Countries	Date of Completion	Number Of Reservoir Resettlers	Stage (Date) When Last Data Collected	Outcome (2)
Kariba	Zambia(1)	1958	34,000	Stage 4 (2002)	Four
Aswan	Egypt (1)	1967	50,000	Stage 4 (1999)	One
Kainji	Nigeria	1968	44,000	Stage 4 (1991)	Two
Narayanpur	India	1982	30,600	Stage 4 (1997)	Four
Shuikou	China	1993	67,000	Stage 3 (1997)	Two
Yantan	China	1992	43,176	Stage 3 (1997)	Two
Kinzua	U.S.A	1964	550	Stage 4 (1997)	Three
Katse	Lesotho	1995	1,470	Stage 2 (2002)	Four
La Grande	Canada	1995	One Village	N/A	N/A
Grand Coulee	U.S.A,	1939	2,000	Stage 4 (1999)	Three
Nam Theun 2	Laos	Planned Only	6,000	N/A	N/A
Pak Mun	Thailand	1994	1,205	Stage 2 (2002)	Four
Zimapán	Mexico	1993	2,452	Stage 2 (1997)	Four
Nangbeto	Togo	1987	10,600	Stage 2 (1997)	Four
Itaparica	Brazil	1988	26,000	Stage 2 (1997)	Four
Garrison	U.S.A.	1953	1,625	Stage 4 (2001)	Three
Fort Randall	U.S.A.	1952	95	Stage 4 (2002)	Four
Oahe	U.S.A.	1962	2,100	Stage 4 (1994)	Three
Kedung Ombo	Indonesia	1988	24,000	Stage 2 (1997)	Four
Khao Laem	Thailand	1985	11,694	Stage 2 (1999)	Four
Kpong	Ghana	1982	5,697	Stage 2 (1992)	Four
Pantabangan	Philippines	1973	13,000	Stage 2 (1988)	Four
Bayano	Panama	1976	4,123	Stage 2 (1994)	Four
Tucurui	Brazil	1984	23,924	Stage 2 (1999)	Four
Manantali	Mali	1988	9,535	Stage 2 (1992)	Four
Mohale	Lesotho	2002	2,000 est.	N/A	N/A
Pong	India	1974	150,000	Stage 2 (1994)	Four
Tarbela	Pakistan	1976	96,000	Stage 2 (1999)	Four
Morazan	Honduras	1985	3,618	Stage 2 (1995)	Four
Hirakud	India	1958	>110,000	Stage 2 (1988)	Four
Ukai	India	1972	52,000	Stage 2 (1882)	Four
Arenal	Costa Rica	1980	2,500	Stage 3 (1983)	One
Ramial	India	1988	5,000	Stage 3 (1995)	Four
Yacyretá	Argentina/ Paraguay	Ongoing Construction	>68,000	N/A	N/A
Nan Ngum	Laos	1972	3,500	Stage 4 (2001)	Four
Cahora Bassa	Mozambique	1975	>42,000	Stage 4 (2002)	Four
Aleman	Mexico	1952	19,000	Stage 4 (1999)	Four

Ceyhan	Turkey	1984	5,000	Stage 2 (2000)	Four
Kossou	Ivory Coast	1972	75,000	Stage 4 (1995)	Two
Chixoy	Guatemala	1985	1,500	Stage 4 (2002)	Four
Pimburetewa	Sri Lanka	1971	120	Stage 4 (2001)	One
Victoria	Sri Lanka	1984	29,500	Stage 4 (2001)	Two
Alta	Norway	1987	None	N/A	N/A
Sardar Sarovar	India	Ongoing Construction	>200,000	N/A	N/A
Kiambere	Kenya	1988	7,500	Stage 2 (1995)	Four
Saguling	Indonesia	1986	13,737	Stage 2 (1999)	Four
Cirata	Indonesia	1988	27,978	Stage 2 (1996)	Four
Norris	U.S.A.	1936	14,249	Stage 4 (2001)	Three
Cerro de Oro	Mexico	1989	26,000	Stage 2 (1999)	Four
Akosombo	Ghana	1964	78,000	Stage 4 (2002)	Four

(1) Though Kariba involved both Zambia and Zimbabwe, only Zambian resettlement was analyzed. In the Aswan High Dam case, analysis was restricted to Egyptian Nubians.
(2) One = Improved Living Standards for the Majority; Two=Restored Living Standards for the Majority; Three = Restored or Improved Living Standards for the Majority but Not Project Related; and Four = Living Standards for the Majority Worsened.
N/A Not applicable or relevant.

A much wider range of sources provided complementary data. These included the WCD database, other World Bank reports, NGO reports, and the internet. In March 2002 I spent several days at the former Commission's Cape Town, South Africa office going through what survey information was available for public disclosure. That included 34 of the 68 cases where resettlement occurred but only 10 cases with useful data on resettlement outcomes. Though not covering the range of data that I needed, the most useful World Bank sources were the 1999 *The Economics of Involuntary Resettlement* (Cernea, ed.), the Environment Department's 1994 *Resettlement and Development.* and the various Operations Evaluation Department's case studies.

NGO reports and the internet were most useful in providing more recent information on specific projects. Especially valuable were NGO submissions to the World Commission on Dams' consultations in Sri Lanka, Brazil, Egypt and Vietnam and the International Rivers Network's *World Rivers Review.* Usefulness of the internet for providing updated information surprised me. With only a few exceptions, a search for a specific dam accessed informative websites that were especially valuable in updating information on dams completed before 1980. Two topics were especially useful for providing information that was not otherwise available. One dealt with demand for, or provision of, reparations as in the case of indigenous people resettled due to the construction of the Garrison, Fort Randall and Oahe Dams in the United States. The other dealt with the development of tourism around major reservoirs and the competition between resettlers and immigrants over opportunities associated with dam construction and reservoir formation.

Data Biases and Significance

Because selection of cases is based primarily on data availability, the resulting sample is unique as are the results based on its analysis. There is also the issue of coder bias. Because of the need for accuracy due to the small size of the sample I did all the necessary background reading and coding. Where I had personal familiarity with a project (14 of the 50 cases), I believe the data and the coding are accurate. In the other cases, I tried to reduce personal bias by coding "no data" where I was uncertain of the correct interpretation. I use the word "interpretation" intentionally, since some interpretation, and hence possible bias, was also involved in deciding how to code a particular item. Two examples are how levels of education and living standards compared with those in other rural areas within the same country.

Two important questions concern the usefulness of results as they relate to the 50 dam sample, on the one hand, and, on the other hand, as they relate to those of the existing 50,000 large dams that have caused displacement. In regard to the first question, data analysis indicates trend consistency that supports the conclusions that follow as to the nature of resettlement outcomes and the reasons for those outcomes. In regard to the second question, what evidence was available suggests that there was no significant bias in the 50 dam survey toward worse or better outcomes. On the contrary, the global lack of attention paid to resettlement issues by governments and project authorities that is reported in broader World Bank (1994a and regional reports) and WCD (2000, Adams 1999, Bartolomé et al. 2000, and Clarke 2000) documents [5] would suggest that outcomes in other projects would not be that different.

Skeptics, however, might point out that the 50 dam survey contained a disproportionate number of very large dams in comparison with an ICOLD 1998 report covering approximately half of the world's large dams. Since larger dams do tend to cause more resettlement, might size be related to outcomes, and especially to worse outcomes? Among the 50 dams, however, we found no significant difference in outcomes between dams causing the resettlement of over 25,000 people and those causing the relocation of much smaller numbers. Indeed, perhaps the disproportionate number of very large dams such as the Aswan High Dam, Volta, and Kainji in the 50 dam sample would be more apt to attract international attention, including funding and supervision from multilateral and bilateral donors, that could lead to improved outcomes. In that case the 50 dam survey would contain a larger proportion of favorable outcomes. We found, however, no significant difference in outcomes between dams supported, for example, by the World Bank and those not so supported.

Dam Location and Date of Completion

19 of the 50 dams were in Asia, 13 in Africa and the Middle East, 10 in Central and South America, 7 in North America, and 1 in Europe. Coincidentally that distribution roughly reflects the regions in which most future dams will be built. For the purpose of comparing outcomes over time, dates of completion were combined into three categories – before 1980, between 1980 and 1990, and since 1991. The earliest category predates

the World Bank's pioneering in 1980 the first global guidelines for development-induced resettlement. It includes 22 dams (44 per cent). 19 dams (38 percent) were completed during the 1980-1990 period while 9 dams (18 percent) were either completed (5 cases) or yet to be completed (the remaining four cases) thereafter.

Characteristics of Resettling Communities

The total number of resettlers from the 50 projects is estimated at nearly 1.5 million, the majority of whom in 26 cases (54 percent) are categorized by the various researchers as indigenous or tribal people, or as belonging to other ethnic minorities. [6] The situation varies from country to country, however. While applying to case studies in most countries, including Canada, India, Mexico, and the United States, the disproportionate number of minorities does not apply to China. Nor would it apply to Korea and Japan if case studies from those relatively homogeneous countries had been included. Data analysis does not indicate that outcomes worsen as the percentage of minority people increases, or that their homelands are intentionally sought for siting dams. Rather their predominance in the sample is due more to the location of acceptable dam sites in rugged terrain that has been colonized by minorities or into which they have been pushed over the years.

Though towns may be involved in each of the various geographical regions as in the case of the Aswan High Dam (Egypt-Sudan), Kainji (Nigeria), Victoria (Sri Lanka) and Yacyretá (Argentina-Paraguay), the large majority of resettlers were poor rural farmers. In 31 (69 percent) of 45 cases where at least some data were available, educational levels appeared to be lower than in other rural areas of the same country, while living standards appeared to be lower in 24 (53 percent). Only weakly linked to the national economy at the time of resettlement, the primary or secondary economic activities of the majority in 39 cases (78 percent) involved agricultural production for both home consumption and external markets or agricultural production combined with migratory wage labor.

Even weak linkages are important since they show that the large majority had already been incorporated within a wider political economy, an incorporation that would be accelerated by the improved access and arrival of immigrants associated with dam construction and operation. Moreover, even in the 11 cases where both primary and secondary activities were oriented toward household consumption, communities were not shut off from the outside world due, for example, to the penetration of a great world religion in all but three of those cases. The socio-cultural systems of the large majority of resettlers were potentially dynamic, open-ended systems characterized by both continuity and change. Moreover, the evidence presented here, in *The Future of Large Dams* and in the additional case studies shows that resettled households will respond to appropriate opportunities where available. It is the responsibility of governments and planners to maker sure that such opportunities are available and that whatever programs are necessary for extending them to resettlers are implemented.

Resettlement Outcomes

Four types of outcomes are analyzed. The most favorable is where a majority of resettlers raise their living standards as a result of project planning and implementation. A second outcome notes cases where project initiatives enable a majority to restore their living standards. The third and fourth outcomes noted cases where project impacts worsen the living standards of the majority. The difference between the last two outcomes is that in third a majority was still able to restore or improve their livelihoods by taking advantage of non-project related opportunities while in the fourth lower living standards have continued.

Corresponding to ICOLD's current policy and WCD recommendations, living standard improvement involved only three (7 percent) of 44 cases.[7] Restoration, [8] allowed by the World Bank's current policy, characterized another 5 cases (11 percent). [9] In the remaining 36 cases (82 percent) the impact of the project was to worsen the living standards of the majority. Furthermore in several of the eight cases where living standards have either improved or been restored, questions remain as to whether or not living standards at the time of last data collection were as sustainable in the new communities as in pre-resettlement ones. Problems for the future related to inadequate availability of arable land, resettlement on less fertile soils, and/or greater dependence on government policies or - as in the case of resettlement within an irrigation project with unreliable water delivery or drainage – on external agencies, than had previously been the case. Making the situation even more complex was the fact that a majority of the resettlers had completed the resettlement process in only 18 (41 percent) of the 44 cases analysed.[10]

To better deal with such complexities, three types of situation are assessed. They are (1) the 18 cases (41 percent) where the majority of the resettlers have reached Stage 4, with or without having passed through Stage 3, in the resettlement process that is outlined in Table 1; (2) the five cases where a majority had begun Stage 3 by the time of last data collection (11 percent), and (3) the 21 cases (48 percent) where the majority were still in Stage 2 at the time of last data collection.

Regarding the first type of situation, a successful resettlement outcome would be defined as having extended into Stage 4 the community formation and economic development activities that characterize Stage 3. In only two (11 percent) of the 18 cases were a majority able to raise their living standards because of the project. [11] While living standards also improved in four other cases (22 percent), all in the United States, improvement was not directly related to project opportunities. [12] Rather in two cases it was primarily due to national development providing job and other opportunities during World War II or the post-war years or, in the other two cases, to the successful winning of court cases against the project authorities and the government many years after removal as well as to other types of resettler initiative.

In three other cases (17 percent), project opportunities allowed a majority of resettlers to at least restore their living standards. [13] As for the remaining nine cases (50 percent),

outcomes had been unsuccessful since a majority of resettlers were unable to proceed through the third stage of economic development and community formation before reaching Stage 4. In only two of those nine (Kariba and Manantali) did Stage 3 economic development even begin. In the Kariba case Stage 3 lasted for less than a generation due to adverse resettlement and national conditions. The former included land scarcity, environmental degradation, and lack of opportunities while the latter included adverse rural-urban terms of trade, other unfavorable government policies, and the bankruptcy of the national political economy. In the Manantali case, backsliding occurred due to an inadequate land base for shifting cultivation.

To summarize in only five (28 percent) of the 18 cases where the resettlement process had been completed was a majority of resettlers able to either improve (two cases) or restore (three cases) their living standards.

The second situation involves five cases where a significant number of resettlers at least began Stage 3 but had yet to reach Stage 4. Only China's Shuikou Dam and Costa Rica's Arenal have the potential of improving the majority's living standards, [14] while China's Yantan Dam might be able to restore them. In the fourth case, India's Ramial Dam, the possibility of restoration applies only to that minority studied by the Mahapatras who received irrigated land within the project's command area. In the fifth case, Thailand's Pak Mun Dam, gains - which the World Bank believes allowed a majority to restore their living standards within a two to four year period - were not related to project opportunities but rather to employment during a period of national growth that ended with the Asian downturn in the second half of the 1990s at which time resettler impoverishment increased.

So as to enlarge the number of cases for assessing outcomes, the third situation included 21 cases where most resettlers remained in Stage 2 [15] at the time of last data collection. Due to the non-availability of later information in those cases, it was necessary to extrapolate outcomes. To measure outcomes we created an index based on five of Cernea's eight impoverishment risks: landlessness, joblessness, marginalization, food insecurity, and access loss to common property resources. [16] Each of those five variables is on an ascending scale from "problematic for a majority" to "not a problem." The resulting index ranges from the highest value that means the most positive outcome to the lowest value that shows the most adverse outcome. Means were then calculated where the overall outcome was positive and where it was adverse. The means were significantly different, with a score of 10.9 for the positive cases and 6.6 for the negative ones ($p<0.000$).

A drop in living standards immediately following Stage 1 is to be expected regardless of subsequent outcomes. In the 21 cases, however, the number of years during which Stage 2 behavior is known to have continued ranges from 7 to 30 years with an average of 13 years. Except where a major irrigation project is planned for resettlers, an inability to restore incomes during the first five years, let alone during the first ten years (15 of the 21 cases), [17] is an indicator of a failing resettlement process. In regard to Cernea's specific risks, landlessness was a problem for a majority in 20 of the 21 cases while food

insecurity was a problem for the majority in 16 of the 21 cases, and for a minority in two others.

To summarize this section on resettlement outcomes, actual or forecast outcomes based on project-related opportunities improved or might have improved the living standards of a majority of resettlers in only three (7 percent) of 44 cases while at least restoring or possibly restoring them in another 5 cases (11 percent). Moreover, in two of those eight cases (Yantan and Kossou) uncertainty existed as to whether those project-related results were sustainable.

Outcome Changes over Time

One response to critiques of unsatisfactory resettlement outcomes is to counter that at least outcomes have improved in more recent projects. Guidelines certainly have improved over time, but have those improved guidelines been reflected in improved policies and planning? And if they have, have those improved policies and plans been reflected in improved outcomes?

To test such questions, John Gay and I analyzed how policy and planning varied over time in relationship to outcomes. Three policy relevant analyses were carried out. In the first two, policy categories were "no policy," "cash compensation only," "restoration," and "restoration with development." Cross tabulations, first with the three time periods and then with results before 1991 and 1991 and after, were not significant. When policies were broken into two categories (emphasis on physical removal alone versus restoration or development in relationship to year of dam completion), there was a possibly significant relationship ($p<0.011$) as shown in Table 3.

Table 3
Policy Improvement Over Time ($p<0.011$)

Emphasis	Mean (Yr of Completion)	N	Std. Deviation
Only Physical Removal	1968.6	13	19.1
Restoration or Development	1981.2	35	12.8
Total	1977.7	48	15.6

To analyze possible improvements in planning in relationship to outcomes over time we created an index based on capacity, funding, political will and opportunities. It showed no significant improvement in outcomes over the three time periods.

Also analyzed (Table 4) was the nature of the resettlement outcome during the three different time periods. While the results seem to suggest that outcomes during the 1980 -

1990 and 1991 – 2005 periods were actually worse than those before 1980, we found no significant evidence of changes in implementation outcomes over time.

Table 4
Resettlement Outcomes During the Three Time Periods
No Significance

	Outcome		Tota1
	adverse	positive	
1932 – 1979	13 68.4%	6 31.6%	19 100.0%
1980 –1990	16 88.9%	2 11.1%	18 100.0%
1991 – 2005	5 71.4%	2 28.6%	7 100.0%
Total	34 77.3%	10 22.7%	44 100.0%

While this conclusion might appear at odds with recent conclusions in World Bank studies, [18] in fact they are not. What the Bank is saying is that its requirement of a Resettlement Action Plan at the time of project appraisal, and Bank supervision of the implementation of that plan, has resulted in resettlers becoming less poor than they would otherwise be. The Bank's evidence suggests that is true, for, more often than not, housing and social services have improved. So have income levels and general living standards but not to the extent of either restoring or improving income levels and living standards which is the Bank's policy goal. [19]

Why Failure? Why Success?

Introduction

Analysis focuses first on the nature of the project authority. That is followed by analysis of project-affected people including resettlers, hosts and immigrants. The last two sections deal with unexpected events and impoverishment risks.

Project Authorities

Institutional Responsibility for Resettlement

Four situations were analyzed that dealt with institutional responsibility for planning and implementing resettlement. They were "no specific unit", "the project authority working alone", "the project authority cooperating with other institutions", and "other government institutions." Cross tabulation results were significant ($p<0.001$), with only project authorities working alone associated with more positive than negative outcomes (Table 5). Though the number of cases (3 negative and 5 positive) is small, making a single agency responsible for all aspects of project planning, financing, and implementation

certainly simplifies what would otherwise be complicated and potentially non-cooperative inter-institutional relationships. Furthermore, where other agencies are given unasked for resettlement responsibilities, case studies indicate inadequate commitment, funding and staffing capacity are to be expected.

Table 5
Crosstabulation on Institutional Responsibility in Relationship to Outcome ($p<0.001$)

	Outcome		Total
	adverse	positive	
No specific Unit	5 100.0%	0 0.0%	5 100.0%
Project Authority	3 37.5%	5 62.5%	8 100.o%
Project Authority & Other Government Units	18 100.0%	0 0.0%	18 100.0%
Other Government Agency	7 70.0%	3 30.0%	10 100.0%
Total	33 80.5%	8 19.5%	41 100.0%

Capacity

Capacity was defined in terms of staff expertise and numbers with funding dealt with separately. No attempt was made to generalize a specific definition of expertise or ratio of staff numbers to numbers of resettlers since conditions vary from case to case. Rather coding was based largely on comments made by case study authors. Examples are drawn from several World Bank-financed projects for purposes of illustration where the Bank made a major attempt to build project authority capacity sufficient to implement Bank guidelines. Nonetheless, in such large projects as India's Sardar Sarovar and Argentina-Paraguay's Yacyretá, resettlement "is adversely affected by failures to assign key staff" with Bank supervision in each case finding "at one point or another … staffing to be half or less than agreed levels" (1994:6/11).

In Mexico's Bank-financed Zimapán Dam, the project authority (CFE, the Federal Electricity Commission) and the Bank "tried to make Zimapán a model project for resettlement…The CFE met the new demands for the Zimapán project by creating a group of 84 professionals…The majority of them came directly from university and lacked work experience….It seems obvious that this group of young professionals had not been sufficiently prepared for the field. During informal talks, they claimed that they had not been trained in participatory methods, poverty analysis nor social situation analysis" (Aronsson 2002: 114 –116). Such lack of expertise has occurred in case after case, while lack of staff numbers can be related to such other factors as initial undercounting of resettlers and inadequate finance.

A major lack of capacity was coded in 27 (66 percent) of 41 cases where data were available and reservoir resettlement had been completed (Table 6). The outcome of the resettlement process at the time of last available data was adverse in every one of those cases (100 percent). A minor lack of capacity was coded in 10 cases (24 percent) in seven of which a positive outcome occurred (70 percent). Capacity was coded as adequate in four cases (10 percent), in three of which (75 percent) outcomes were positive. Two were Costa Rica's Arenal Dam where living standards of the majority had improved at the time of last data collection and Nigeria's Kainji where living standards appear to have been restored (Roder 1994; Ayeni et al. 1994). In the third case, United States' Kinzua Dam, planning had not been a project responsibility and living standards had improved because of development opportunities that were not project related. Ghana's Kpong Dam was the fourth case. Though the government had learned valuable lessons while implementing a failed resettlement process at Akosombo, the outcome was adverse because funds and opportunities were insufficient to implement Kpong's much-improved plans.

Table 6
Adequacy of Planning Capacity
Crosstabulation $p<0.000$

	Outcome		Total
	Adverse	Positive	
Major Lack of Capacity	27 (100%)	0 (0%)	27 (100%)
Minor Lack of Capacity	3 (30%)	7 (70%)	10 (100%)
Capacity Adequate	1 (25%)	3 (75%)	4 (100%)
Total	31 (75.6%)	10 (24.4%)	41 (100%)

Table 7 deals with capacity in more detail for the 36 cases where information was coded on staff numbers and expertise.

Table 7
Numbers and Expertise of Staff
Crosstabulation p<0.001

Staff Numbers & Expertise	Outcome		Total
	adverse	positive	
Numbers and Expertise Inadequate	23 95.8%	1 4.2%	24 100.0%
Numbers Adequate but Expertise Lacking	3 50.0%	3 50.0%	6 100.0%
Expertise Adequate but Numbers Inadequate	1 100.0%	0 0.0%	1 100.0%
Numbers and Expertise Adequate	1 20.0%	4 80.0%	5 100.0%
Total	28 77.8%	8 22.2%	36 100.0%

Adequacy of Funding

The authors of the World Bank's 1994 *Resettlement and Development* consider "Timely availability of adequate funds is a severe constraint in a large number of projects; it may be the single most powerful explanatory operational variable behind the failure to implement resettlement operations well" (1994: 6/11). Moreover, resettlement cost overruns in the Bank's active projects in the mid-1990s "have generally exceeded overall project cost increases considerably" (*ibid*: 5/19). As with staffing, funding must be based on a careful analysis of the resettlement situation that in turn requires detailed pre-project demographic, epidemiological, and socio-economic surveys. While one "rule of thumb" postulates that generally speaking environmental and social costs should amount to 10 percent of total project costs, obviously that proportion will vary according to the number of resettlers, land availability and other factors. What is clear, however, is that properly planned and implemented resettlement is expensive. Estimated costs for Laos' Nam Theun 2 Project in 2002, for example, were $21,075 per household and $3,819 per capita (NTEC Resettlement Action Plan, 2002:9-1). Where large numbers are involved, as with China's Three Gorge's Project, properly implemented resettlement can become the largest single project cost.

In the 50 dam survey, funding was inadequate throughout the resettlement process in 25 (58 percent) of the 43 cases coded (Table 8). A positive outcome was achieved in only one of those 25 cases. That was in connection with the Ivory Coast's Kossou Dam where inadequate funding and a minor lack of capacity were offset by strong political backing for the resettlement process, a major attempt to implement opportunities for raising living standards, and integration of resettlement into an attempt at regional development. In two additional cases (5 percent), in both of which outcomes were adverse, funding was adequate only for physical removal. In a further nine cases (21 percent) initially

inadequate funding was increased for resettlement and rehabilitation purposes. In five of those cases a positive outcome was achieved. In the other 7 cases (16 percent), four of which had adequate outcomes, funds were sufficient for implementing the resettlement process.

Table 8
Adequacy of Funding
Crosstabulation p<0.001)

	Outcome		Total
	Adverse	Positive	
Funds Inadequate	24 (96.0%)	1 (4.0%)	25 (100%)
Physical Removal Funds Adequate	2 (100%)	0 (0.0%)	2 (100%)
Funds Increased For R & R Purposes	4 (44.4%)	5 (55.6%)	9 (100%)
Funds Adequate For R & R Purposes	3 (42.9%)	4 (57.1%)	7 (100%)
Total	33 (76.7%)	10 (23.3%)	43 (100%)

In addition to adequacy of funding, there is a possible correlation (p<0.04) between ratio of funds for resettlement purposes to total project costs with a trend toward more successful outcomes where resettlement funds rise above ten percent. Looking to the future, the origin of funds is apt to become increasingly relevant where governments must rely on international funding. As NGOs, in particular, step up their monitoring of funds provided through international agencies, export-import banks and other national parastatals, and private banks, such agencies can be expected to pay more attention to "best practice" guidelines [20] and their implementation.

Interestingly enough, in eight of the nine cases where funds did not involve major external donors, there was a significant association with lack of political will (p<0.008). Six of those eight cases involved the United States, with the other two being Mexico's Aleman and Cerro de Oro dams. The one case where political will was present involved Canada's La Grande where the only resettlement involved one downstream community.

Political Will

I have defined political will as a commitment on the part of project authorities and governments to implement a resettlement action plan that is intended to restore or improve resettler living standards. Unfortunately, such commitment has yet to characterize a majority of projects. Among a small number of recurrent implementation problems that the World Bank emphasized in its 1994 *Bankwide Review* was **Lack of government commitment to resettlement** (6/11; bold print in the Bank text). I have had similar experiences with Bank-financed projects. Though an extreme view, in one case the chief engineer, who had also assumed responsibility for resettlement, had become increasingly perplexed as to why I and the Bank were so concerned about resettler

welfare. What resettlers needed in his opinion was "sterilization." Comments by authors researching projects that have not involved the World Bank have also emphasized lack of political will as an implementation problem.

Political will was inadequate in 22 (54 percent) of 41 cases coded (Table 9). Though the presence of political will may be a necessary condition, [21] political will alone is insufficient. Though present at Kariba, along with adequate finance, the resettlement process failed there due primarily to lack of opportunities and unexpected events. A strong case can also be made that political will was present on the part of the project authority at Thailand's Pak Mun Dam. The resettlement process failed there, however, due to inadequate feasibility studies, inadequate planning, and too much reliance on cash compensation as the major component in the resettlement action plan that was implemented. [22] Political will was also adequate in connection with Mali's Manantali dam, but the resettlement process failed there because planners, on the one hand, provided insufficient land for the majority of resettlers to continue their existing system of shifting cultivation, and, on the other hand, did not provide the irrigation necessary to intensify that system.

Table 9
Adequacy of Political Will
Crosstabulation $p<0.001$

	Outcome		Total
	adverse	positive	
Inadequate Political Will	19 95.0%	1 5.0%	20 100.0%
Political Will a Response To Donor Requirements	2 100.0%	0.0 0%	2 100.0%
Political Will to at Least Restore Living Standards	7 77.8%	2 22.2%	9 100.0%
Political Will to Implement Resettler Development	3 30.0%	7 70.0%	41 100.0%
Total	31 75.6%	10 24.4%	

Opportunities

The definition of opportunities includes those that arise as a result of a specific project. They include rainfed and irrigation-based agriculture as well as farm and non-farm multiplier effects associated with a well-planned and implemented agricultural component. Also included are utilization of the reservoir drawdown area, reservoir fisheries, aquaculture, tourism, catchment management, and establishment of natural reserves. They also include project-funded training, credit and extension for employment during the construction and operations phases as well as for on- and off-farm employment outside of the project area.

Additional opportunities also include a wide range of small-scale commercial opportunities such as small general stores, such recreation facilities as tea, coffee and liquor establishments, and carpentry, masonry, and other services. Though largely temporary, project-related employment can provide savings for funding other development opportunities as has been the case with Sri Lanka's Mahaweli project and is reported for Nepal's Kali Gandaki project. Employment outside a resettlement area is also possible and important. It is more difficult to achieve, however. While project-implemented education, training, credit and extension can give resettlers a comparative advantage, job creation requires a favorable regional and national development environment as well as commitment by government, the private sector, and other agencies to create new rural and urban industries.

Implemented opportunities were coded as "inadequate"; "adequate"; and "eventually adequate but not project related" (Table 10). Of 42 cases coded, implemented opportunities were inadequate in 37 cases (88 percent). In two other cases (both in the United States), eventual opportunities were not project related (5 percent), so that adequate project-related opportunities were only implemented in three cases (7 percent). [23] Furthermore, in none of those three cases was the full range of available opportunities utilized which adds support to my overall conclusion that the potential is there for implementing a favorable resettlement outcome in more cases than the record indicates.

Table 10
Opportunities in Relationship to Outcome
Crosstabulation $p<0.003$

	Outcome		Total
	adverse	positive	
Inadequate Opportunities Implemented	31 83.8%	6 16.2%	37 100.0%
Adequate Opportunities Available	0 0.0%	3 100.0%	3 100.0%
Adequate Opportunities Not Project Related	1 50.0%	1 50.0%	2 100.0%
Total	32 76.2%	10 23.8%	42 100.0%

Project-Affected People

Numbers of Resettlers

All guidelines dealing with development-induced involuntary resettlement, starting with the World Bank's 1980 ones, emphasize the importance of avoiding or minimizing resettlement to the extent possible. Options dealing with dams include changing the site, reducing dam height, and building embankments to restrict reservoirs from flooding certain areas. Such options influenced design in only 5 (10 percent) of the 50 cases. In the Pak Mun case the site was changed and a major reduction was made in height. Such a

height reduction actually eliminated the need for resettlement in the case of Norway's Alta Dam although the reservoir had an adverse effect on the economy of the indigenous population through reduction of grazing for their herds of reindeer. The height of the Philippines' Pantabangan Dam was reduced 3.5 meters to avoid flooding a town. In the remaining two cases, Nigeria's Kainji and China's Shuikou, reservoir towns were protected by dykes.

During options assessment for hydro-projects, the World Bank's environmental adviser also emphasized several other criteria that should be considered. These included absence of vulnerable ethnic minorities, and a high ratio of power to area flooded and numbers of resettlers (Goodland 1996). Though I am not aware of these criteria influencing choices among the 50 dams surveyed, increasingly NGOs are using them, as well as other environmental and social criteria, in their critique of dams which are "on the drawing board." As with the final report of the World Commission on Dams, their advocacy has in turn influenced the donor options assessment process as have the concerns of Goodland and others within donor agencies.[24]

One example of the lack of attention paid to resettlement by project authorities is the frequency with which the number of resettlers is under-estimated and the magnitude of that under-estimate. In the 50 dam survey estimates of numbers of resettlers at such different time periods as project identification, project approval, implementation of physical removal, and following removal were available for 20 cases. In nine of those two cases data were available on numbers of resettlers at the time of project identification as well as during implementation (one case) or after the completion of physical removal (eight cases). The initial estimate in these nine cases (73,638 resettlers) was only 52 percent of the later number (140,541). In twelve cases (one of which was among the previous nine) the number of resettlers estimated at the time of project approval (271,604) was only 55 percent of the total counted (495,590) during implementation (two cases) or after the end of removal (10 cases). In only two of the 20 cases was the final total less than the earlier estimate, while it was the same in three cases that involved relatively small numbers of resettlers (120 to 5,000 resettlers).

Major under-estimates were also reported in the final report of the World Commission on Dams and in the World Bank's 1994 review of a wider range of development projects involving involuntary resettlement. In the WCD review, "35% more people were resettled than initially planned" (2000:105). Under-estimates in the Bank's review, where "The total number of people to be resettled is 47 percent higher …than the estimate made at the time of appraisal" (1994: 2/2), were close to those in the 50 dams survey. The magnitude of such under-estimates is one reason why the financing and staffing of resettlement are inadequate.

Resettler Participation in Project Planning

We created an index of participation by the resettlers by adding together the scores for their level of participation in site selection, in choosing the size of relocating units, in selecting social services, and in choosing options for economic development. Each of

these four variables is on an ascending scale from no participation to full participation. Thus the resulting index of participation ranges from the lowest value that means no participation in any aspect to the highest value which means full participation in all four aspects. We then calculated the mean value of the participation index when outcomes were adverse and when they were positive. The means were significantly different (Table 11), with a score of 7.0 for the adverse cases and 11.0 for the positive ones. This suggests that resettler participation had a significant influence on the outcome of the resettlement process.

Table 11
Resettler Participation in Relationship to Outcome ($p<0.005$)

Outcome	Mean	N	Std. Deviation
Adverse	7.0	23	3.4
Positive	11.0	9	3.1
Total	8.6	32	3.7

Resettler Ability to Compete with Host Populations and Immigrants

One unexpected result of the 50 dam survey was that resettlers found competition with immigrants to be an even more frequent problem than their ability to compete and integrate with host populations. Inability to compete with immigrants was mentioned in 20 (43 percent) of 47 cases. Inability to compete and integrate with hosts was reported in 14 (32 percent) of 44 cases. The frequency of competition difficulties with both immigrants and hosts requires that planners pay more attention to the issues involved - issues that can be expected to require quite different approaches.

Immigrants tend to be better capitalized and more experienced individuals who arrive to exploit new project-related opportunities such as reservoir fisheries and sites overlooking the reservoir for tourist facilities and vacation homes. In India access to reservoir fisheries and/or marketing is often given by government or project authorities to outside concessionaires, while a fish marketing monopoly has been given to a single concessionaire at Laos' Nam Ngum reservoir. In Africa, small-scale immigrant fishers tend to come from established fisheries as has been the case with Mali's Manantali reservoir, the Ivory Coast's Kossou reservoir, and Ghana's Volta reservoir at Akosombo. As in the Kariba case, and currently planned for Laos' NT2 project, resettlers and hosts need to be given a competitive edge before the arrival of immigrant fishers. That is best provided by initially restricting access to such reservoir basin residents as resettlers and hosts who are provided with training and on-going extension, as well as with credit for purchasing gear.

The problem is more complex where elite immigrants seek out desirable sites along reservoir shore lines as has been the case in Thailand with a number of dams as well as

with the Kariba Dam in both Zambia and Zimbabwe. In Thailand's Khao Laem Dam the forests surrounding the reservoir are "dotted" with the illegal "resorts of well-known politicians, senior government officials, and businessmen" (*Bangkok Post*, 7 February, 1999). On the Zambian side of Kariba, similar elites have bribed chiefs or convinced local councils to give or lease them what were previously limited access communal lands under customary law. Another type of problem characterizes the Zimbabwe shoreline, as well as Costa Rica's Arenal and various reservoirs in Thailand. That is where governments designate communal lands as national parks or forest reserves. Important as such parks and reserves are for catchment and biodiversity protection, those purposes should not be at the expense of the land rights of local people. The solution there, seldom implemented, is to make use of indigenous knowledge and local participation in the management of such areas as is planned for the upper catchment of Laos' NT2 dam.

Dealing with host populations requires a planning approach that understands the extent to which resettlers can be expected to impact upon host arable lands, grazing, fuel and other common property resources, employment opportunities, and social services. The only way to offset resettler competition over such resources is to actively involve the host population in the planning and implementing of, and participation in, such new opportunities as irrigation, reservoir fisheries, wildlife management and tourism, and new industries as well as improved social services. While such an approach increases initial financial costs, it also increases the number of future beneficiaries and reduces costs associated with future impoverishment and conflict.

Unexpected Events

Ignored in most analyses, including those of the World Bank, major unexpected events had a significant impact on resettlement process outcomes ($p<0.008$). Such events may be political, economic and/or environmental. They were coded as major in 26 of 44 cases. Though their relative importance as an outcome explanation is unknown, it is interesting that only two (7.7 percent) of those 26 cases had positive outcomes (Table 12), while outcomes were positive in eight (44.4%) of the 18 cases where such events were coded as minor.

Table 12
Unexpected Events in Relationship to Outcome
Crosstabulation $p<0.008$

	Outcome		Total
	adverse	positive	
Unexpected Events of Major Importance	24 92.3%	2 7.7%	26 100.0%
Unexpected Events of Minor Importance	10 55.6%	8 44.4%	18 100.0%
Total	34 77.3	10 22.7%	44 100.0%

In the Mahaweli case, in addition to a flawed planning process (which failed to capitalize on the full range of available opportunities) and an overestimation of available water supplies, drought unexpectedly reduced yields in the first system that was settled. A worsening of civil strife also interfered with implementation of the settlement process and access to otherwise available finance, while a change in government led to a shift in national priorities that adversely affected what was still Sri Lanka's most important development initiative. In the Kariba case unexpected environmental degradation combined with inadequate government policies at the national level were instrumental in causing living standards to deteriorate after an initial period of improvement. [25]

Impoverishment Risks

Introduction

While Cernea's impoverishment risks were especially important in explaining failure, the frequency with which the most important occur is itself a condemnation of the nature of resettlement outcomes in connection with the 50 dam sample. Sufficient data for analysis was available for seven of Cernea's eight impoverishment risks, five of which we combined into a "wellbeing" index which had a significant relationship to outcome ($p<0.000$ as shown in Table 13), [26] as did each of the five individual risks. [27]

Table 13
Resettler 'Well Being' in Relationship to Outcome ($p<0.000$)

Nature of Outcome	Mean	N	Std. Deviation
Adverse Wellbeing	6.6	31	2.4
Positive Wellbeing	10.9	9	2.2
Total	7.6	40	2.9

Landlessness

Landlessness was a problem in 38 (86 percent) of 44 cases (Table 14). [28] Bearing in mind that the large majority of resettlers have been relatively poor farmers, the importance of claims to arable land that can be handed down from one generation to another is hard to over-emphasize. Looking to the future, its importance can be expected to rise as an increasing proportion of dams are constructed in the tropics, and in China and Turkey, where rural residents constitute the large majority of the population. Yet those are the countries where land scarcity can be expected to be a problem due to population increase and environmental degradation.

Table 14
Landlessness in Relationship to Outcome ($p<0.006$)

	Outcome		Total
	adverse	positive	
Landlessness a problem	32 84.2%	6 15.8%	38 100.0%
Landlessness not a Problem	2 33.3%	4 66.7%	6 100.0%
Total	34 77.3%	10 22.7%	44 100.0%

Joblessness

Joblessness was a problem in 33 (80% percent) of 41 cases (Table 15). [29] Though project proponents often use job formation as a project justification, the record shows that comparatively few project-specific jobs are available to resettlers (and those available are mostly temporary) and that efforts to train resettlers for jobs elsewhere have been fraught with problems including non-availability and, as in China, failure of industries for which resettlers are trained and to which they are assigned. Moreover, as illustrated by Thailand's Pak Mun case, jobs are no substitute for lost natural resources. Based on 1996 data, the World Bank concluded that Pak Mun resettlement was one of its most successful cases since living standards of many resettlers improved after they found employment in Bangkok and other urban areas. During the Asian crisis that followed, however, those who lost such jobs where less able to return to fishing and farming in their home villages because of the adverse effect of the project on the riverine fishery and, to a lesser extent, on agriculture. Even where jobs remain permanent, retirement benefits are apt to prove inadequate. Nor are jobs a resource like arable land that can be passed on from one generation to another.

Not withstanding serious problems with job provision for resettlers, increasing scarcity of arable land and of common property resources requires much more attention to be paid to job creation in the future. Especially important is the need to pay more attention to realizing the documented multiplier effects that have been associated with well-planned and implemented irrigation, and to the job-creating potential of multipurpose dams. More emphasis need also be paid to providing resettlers better access to temporary and permanent project-related jobs. The Kali Gandaki project, for example, was able to provide one job for each resettler household with the income received used, in at least some cases, to diversify the family's livelihood options (Cernea, personal communication). In the Lesotho Highlands case, local chiefs created registers for job seekers among resettlers who Mohale project contractors were contractually bound to hire first for unskilled and semi-skilled jobs.

Table 15
Joblessness in Relationship to Outcome
Crosstabulation $p<0.005$

	Outcome		Total
	adverse	positive	
Joblessness a problem	28 84.8%	5 15.2%	33 100.0%
Joblessness not a Problem	3 37.5%	5 62.5%	8 100.0%
Total	31 75.6%	10 24.4%	41 100.0%

Food Insecurity

Related to landlessness and loss of common property resources, food insecurity was a problem in 33 (79 percent) of 42 cases; hence ability to restore food self-sufficiency was significantly (though barely) associated with outcome ($p<0.01$).

Table 16
Ability to Restore Food Self-sufficiency in Relationship to Outcome
Crosstabulation $p<0.01$

	Outcome		Total
	adverse	positive	
Household Must Buy Food	29 87.9%	4 12.1%	33 100.0%
No Major Change (1)	2 66.7%	1 33.3%	3 100.0%
Food Self-Sufficiency Achieved	2 33.3%	4 66.7%	6 100.0%
Total	33 78.6%	9 21.4%	42 100.0%

(1) No major change refers primarily to cases where a pre-relocation household economy was not characterized by food self-sufficiency but rather relied on farm and non farm occupations to provide food security.

Marginalization

Cernea defines marginalization as occurring "when families lose economic power and spiral downwards; it sets in long before physical displacement, when new investments in the condemned areas are prohibited" (1999:17). But as Cernea also points out, "it is often accompanied by social and psychological marginalization, expressed in a drop in social status, oustees' loss of confidence in society, and in themselves" (*ibid*). What is occurring is a threat to the socio-cultural system in which resettlers' livelihoods are imbedded – a

major cause of impoverishment which planners seldom acknowledge and which is inadequately dealt with in such guidelines as the World Bank's. [30] Yet marginalization had the highest association with an adverse outcome of any of Cernea's impoverishment risks ($p<0.000$).

Table 17
Marginalization in Relationship to Outcome
Crosstabulation $p<0.000$

	Outcome		Total
	adverse	positive	
Marginalization a problem for the majority	25 100.0%	0 0.0%	25 100.0%
Marginalization a Problem for a minority	2 50.0%	2 50.0%	4 100.0%
Marginalization not a Problem	6 42.9%	8 57.1%	14 100.0%
Total	33 76.7%	10 23.3%	43 100.0%

Common Property Resources

Failure of planners to consider the importance of common property resources was also a significant variable in helping to explain adverse outcomes (Table 18). Granted the high proportion (relative to their number in the national population) of relatively poor ethnic minorities undergoing resettlement, as well as of other poor households, common property resources that provide access to arable land (as along the drawdown area of soon-to-be dammed rivers as well as in inland areas), grazing, fuel, building materials, and edible and medicinal plants can play a major role in a people's livelihood to the extent that their loss can be expected to increase impoverishment. Yet few planners make allowance for such losses. It is interesting in that minority of cases (23 percent of the 35 coded) where those responsible for planning and implementing resettlement had at least some awareness of their importance five of the eight cases involved had positive outcomes.

Table 18
Common Property Resources and Outcome
Crosstabulation p<0.007

	Outcome		Total
	adverse	positive	
Planners Unaware of Common Property Importance	24 88.9%	3 11.1%	27 100.0%
Planners with Some Awareness Of Common Property Importance	3 37.5%	5 62.5%	8 100.0%
Total	27 77.1%	8 22.9%	35 100.0%

Issues not Dealt with by the 50 Dam Survey

The number of issues dealt with during the 50 dam survey was constrained by lack of data. Two issues that could not be explored were the complexity of the resettlement process and the life styles of resettling communities. Complexity does pose major problems that need be overcome. As for the socio-cultural systems of resettlers, critics may suggest that I am mistaken to have left them out as a major constraint especially in the case of indigenous communities and communities whose life styles vary significantly from that of the political economy into which they are being moved. I do not accept that viewpoint. Regardless of culture or environmental setting, the best-documented case studies show that if opportunities are made available, along with appropriate assistance to benefit from them, a majority of resettlers will take advantage of them. Though policies must be designed to minimize what project authorities have referred to as a 'culture of dependence' on project and government largess, what evidence is available indicates that the main cause of such dependency is the lack of available, achievable and affordable opportunities or their belated availability. To cite 'dependency' as a cause for a failed resettlement process is a 'blaming the victim' excuse that has little case history justification.

Conclusion

Analysis based on the 50 dam survey documents the unsatisfactory and unacceptable impact of large dams on those who must involuntarily resettle from future reservoir basins. The chapter also documents that such outcomes are unnecessary. They are unnecessary because positive outcomes have occurred and their analysis illustrates what is required to enable a majority of a resettling population to become beneficiaries and, in the process of becoming beneficiaries, to contribute to the stream of project benefits.

Actual or forecast outcomes improved or might have improved the living standards of a majority of resettlers in only 9 percent of 44 cases while restoring or possibly restoring them in another 11 percent. While the World Bank believes that policies and planning have improved over the years, their implementation has yet to be associated with positive

outcomes in the large majority of cases. The complexity of the resettlement process is such that a number of key factors are necessary if a successful outcome is to be implemented. Among variables analyzed in the 50 dam survey, a combination of project authority staff capacity, funding and political will, implementation of adequate opportunities, and resettler participation helped explain every one of the more successful cases.

That does not mean, however, that all five variables are necessary or that their presence is sufficient to guarantee success. The resettlement process is full of impoverishment and other risks. Best results are achieved where a single project authority is responsible for both construction and resettlement planning and implementation. Adequate pre-project surveys are necessary since the global tendency to undercount the number of potential resettlers is associated with under-funding. More attention need also be paid to incorporating host populations within plans and to reducing conflicts between resettlers, hosts, and immigrants. Also important is a favorable regional and national development context as well as the absence of unexpected events at the local, national and international levels.

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[1] Cross-Check Survey, page 50. Large dams, as in the high mountains of Switzerland and the Scandinavian countries, do not always cause resettlement. However, in some of the replies to the WCD survey some resettlement is known to have occurred even though no information on resettlement was received. Venezuela's Guri Dam is one example.

[2] Several additional cases subsequently were brought to my attention.

[3] Cernea's eight impoverishment risks are landlessness, joblessness, homelessness, marginalization, food insecurity, increased morbidity and mortality, loss of access to common property, and social disarticulation.

[4] Though too recent in time to be statistically relevant during the analysis of the dams documented in the 50 dam survey, increasing NGO involvement has begun to have a major impact not just on how dams are planned and implemented but also on the options assessment process and on decisions as to whether dams currently being planned are actually implemented.

[5] Using in-house material, the World Bank's 1994 *Resettlement and Development: The Bankwide Review of Projects Involving Involuntary Resettlement 1986-1993* deals with 46 closed projects involving more than half a million resettlers and 146, involving nearly two million people, that were still active in 1993. Though all types of Bank-financed projects including resettlement were assessed, dams accounted for 63 percent of those displaced (page ix). The report not only shows the extent to which borrowers have failed to implement Bank policies, but also the frequency with which inadequate data have been collected. Based primarily on data provided by project authorities, WCD's 2000 Cross-Check Survey (Clarke 2000) reached the same conclusions in regard to data inadequacies.

[6] In two cases no data were included on the cultural status of the resettling population.

[7] Aswan, Pimburetewa and Arenal.

[8] I do not consider restoration to be a legitimate goal since what evidence is available indicates that a restoration policy tends to leave the large majority worse off than before resettlement. A restoration policy, for example, does not take into consideration the worsening living conditions that immediately follow large dam resettlement. I include restoration, however, in my outcome definition so as to allow a more detailed analysis of differing resettlement experiences.

[9] Shuikou, Kainji, Victoria, Kossou, Yantan. Though a majority of the Ramial resettlers studied by the Mahapatras may have restored their living standards, they constituted a relatively small proportion of the resettled population. What evidence is available suggests that the living standards of the majority worsened after resettlement.

[10] In four of the six other cases (NT2, Mohale, Sardar Sarovar, and Yacyretá) physical removal either had yet to occur or was still underway. In the fifth (Alta in Norway) resettlement had been avoided by changing the project's design. Canada's La Grande was the sixth. While no reservoir-induced resettlement was required, it is the only one of the 50 cases where a downstream community had to be relocated because of radical changes in expected downstream flows. The outcome was favorable. Because of project-related increases in job opportunities and successful negotiation by local leaders of project-related benefits, a majority have become project beneficiaries though not without serious reduction in common property resources.

[11] Egypt's Aswan High Dam and Sri Lanka's Pimburetewa.

[12] Resettlement also caused impoverishment in the other two cases analyzed in the United States. They were the Tennessee Valley Authority's Norris Dam completed in 1936 and the Corps of Army Engineer's Ft. Randall Dam completed in 1952. In the Ft. Randall case, the extent of impoverishment was

partially recognized 50 years later by the US government when a reparations bill was signed into law on 13 December, 2002 (*Chicago Tribune*, December 14, 2002).

[13] Nigeria's Kainji Dam, the Ivory Coast's Kossou Dam, and Sri Lanka's Victoria Dam.

[14] Arenal was coded as improving the living standards of the majority. Because of a serious reduction in arable land following removal, Shuikou was coded as restoring living standards (see Chapter 3 in *The Future of Large Dams*).

[15] 23 such were actually coded. Two (Sardar Sarovar and Yacyretá), both of which have major resettlement problems, were omitted since resettlement was incomplete due to ongoing construction activities.

[16] The other three impoverishment risks are morbidity and mortality, social disarticulation, and homelessness.

[17] In one third of the cases coded as still in Stage 2, at least 15 years had gone by which should be sufficient for a second generation of settlers to arise as required for Stage 4. However, data was insufficient for coding such a conclusion.

[18] According to the Bank's 1994 *Resettlement and Development: The Bankwide Review of Projects Involving Involuntary Resettlement 1986-1993,* "The general conclusion of the resettlement review is that the quality of the Bank's resettlement project portfolio has improved, particularly after 1991" (page 8/1), while "The Bank made significant progress during 1986 to 1993 in … [a]ssisting Borrowers in improving the circumstances of resettlers and their ability to restore their income" (ix).

[19] The *Bankwide Review* came to the same conclusion as previous OED studies "that although the data are weak, projects appear often not to have succeeded in reestablishing resettlers at a better or equal living standard and that unsatisfactory performance still persists on a wide scale" (x). The Bank's more recent (2001) *Involuntary Resettlement: Comparative Perspectives* that analyzes resettlement outcomes from seven dam projects states the unsatisfactory nature of outcomes more forcefully: "**The Income Restoration Record is Unsatisfactory**" (page 9 with bold lettering being a Bank section heading).

[20] The World Bank's 1980 guidelines subsequently influenced the regional banks, the OECD countries, and individual countries like China.

[21] Political will was present in all eight of the cases where living standards appeared to have either improved or been restored.

[22] The key component in the project authority's initial RAP was an irrigation project in a different river basin combined with improved housing and social services. That plan was dropped when the resettlers stated their desire to remain as close as possible to their pre-project sites.

[23] Aswan, Shuikou, and Arenal.

[24] See, for example, Ledec et al.'s "Good Dams and Bad Dams: Environmental and Social Criteria for Choosing Hydroelectric Project Sites." May 1999. The World Bank.

[25] While it is conceivable that unexpected events might improve outcomes, outcomes are more apt to be unfavorable simply because such events create additional uncertainty in an already stressful situation and conditions that were not anticipated by either planners or resettlers.

[26] The five were landlessness, joblessness, food security, marginality, and access to common property. The 44 cases included 18 where all four stages had been completed at the time of last data collection, five where a majority of resettlers had at least begun Stage 3, and 21 where the majority remained in Stage 2. Because a majority of resettlers in the 21 cases had been in Stage 2 for seven or more years, that was indicative of a failing resettlement process as previously explained.

[27] The other three impoverishment risks were morbidity and mortality, social disarticulation, and homelessness. In spite of increasing evidence that involuntary resettlement is associated with ill effects on health, inadequate data were available for analysis of resettlement-associated morbidity and mortality (though necessary for assessing post-project health impacts, no pre-project health surveys were carried out in 33 of the 44 cases where data existed. In only five of the 11 cases where such surveys were completed were they adequate). Least problematic of Cernea's impoverishment risks was homelessness, provision of housing being the most successful resettlement component worldwide. Housing was considered adequate in 38 (81 percent) of 47 cases and inadequate in none (in seven cases inadequate housing posed a problem for a minority of households and in two other cases resettler housing was associated with some host jealousy but no major problems). Social disarticulation arises from a loss of social capital due especially to inability or unwillingness of project authorities to resettle people in communities and social units of their choice. It proved to be a problem for a majority of resettlers in 15 (34 percent) of 44 cases.

[28] It was a problem for a majority of resettlers in 35 of the 44 cases and a problem for a minority in another 3 cases.

[29] Joblessness was a problem for a majority of resettlers in 21 (51%) of 41 cases and for a minority in 12 other cases (29% percent).

[30] The same would apply to important cultural concepts relating to time and place (Downing 1996). Where case studies do include such issues, impacts have been overwhelmingly negative, suggesting that outcomes would be even worst than those dealing largely with variables that can be more easily quantified.