



Implementation of the WCD recommendations within German Development Cooperation

Experiences of GTZ and KfW



Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH

On behalf of:



Bundesministerium für
wirtschaftliche Zusammenarbeit
und Entwicklung



IMPRESSUM

**Published by:**

Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH
Postfach 5180
65726 Eschborn

Division 44 – Environment and Infrastructure
Sector Project "Implementing recommendations
of the World Commission on Dams"
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Phone (06 11) 6 09 90 12
Internet: <http://www.engler-schoedel.de>

Lithografie:

Spiecker Design & Produktion GmbH, Frankfurt
Phone (069) 97 99 16 - 0

Print:

Wetzlardruck GmbH, Wetzlar
Phone (0 64 41) 959 - 0

Cover Photos:

Front: Dam, South Africa; Source: UNEP/DDP
Back: Marsyangdi River, Nepal; Source: KfW

Border Photos:

1. Children, Nepal; Source: KfW
2. Dam; Source: UNEP/DDP
3. Second DDP Forum Meeting; Source: UNEP/DDP
4. Fishermen; Source: UNEP/DDP

June 2004



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CONTENTS

- **5** Preface
- **6** The Context
- **10** The WCD: Process – Findings – Reactions
- **18** The WCD Recommendations and Their Role in the Work of GTZ
- **28** Implementation of WCD Recommendations at KfW
- **36** Outlook
- **38** Profile
- **39** List of Abbreviations
- **39** Further Information

PREFACE

» There are presently some 45,000 large dams in the world.¹ About 22,000 of them, i.e. nearly every second dam, are located in the People's Republic of China. While there are very few suitable locations for new dam projects left in industrialized countries, emerging nations are still engaged in numerous dam planning projects.

In many countries, dams provide reliable supplies of electricity and water. At the same time, however, large dam projects are at the root of intense social conflicts. The destruction of ecosystems and the displacement of people from their home towns and villages have led to much distress and protest, resulting in expensive delays in planning and construction activities. The World Bank and other major development banks have largely ceased financing new projects.

In 1998, the situation had become so critical that it provoked the establishment of the World Commission on Dams (WCD), the purpose of which was to involve critics and proponents of dam projects in the drafting of mutually acceptable recommendations on the decision-making, planning, construction and management of dams. After two-and-a-half years of intensive endeavor, that goal was achieved. In a unique international process, WCD succeeded in developing a comprehensive framework for dealing with new and existing dams. As anticipated, the Report met with both praise and skepticism. Would it actually help solve real problems?

In 2001, the Dams and Development Project (DDP), acting under the auspices of the United Nations Environment Program (UNEP),

assumed the lead in promoting further dialogue among the various interest groups concerned. The overall objective of the DDP is to spread the core messages of the WCD report and to facilitate their implementation.

The German Government was one of the first to accept the WCD's recommendations. The German Federal Ministry for Economic Cooperation and Development (BMZ) gives its support to WCD and DDP because we believe that dialogue between all interest groups is the only way to resolve conflicts over dam projects. The WCD report fully meets our expectations. It provides a viable, useful frame of action with the capacity for ensuring the sustainability of future dam projects.

As far as German development policy is concerned, dam projects remain an option within the scope of a sustainable energy and water policy. They can make important contributions toward a country's economic development and toward good climate policy. However, future dam projects must meet the criteria of the World Commission on Dams and must provide a real benefit for the country, especially for the population affected immediately. Together with our partner countries and international organizations, we intend to work toward implementing the WCD recommendations at both the international and the national levels.



Dr. Uschi Eid
Parliamentary State Secretary, Federal Ministry
for Economic Cooperation and Development



¹ According to the International Commission on Large Dams (ICOLD), a dam with a height of at least 15 m or an impounded volume of at least 3 million cubic meters is referred to as a large dam.



» Katse Dam, Lesotho.
Source: UNEP/DDP



THE CONTEXT

What good are dams?

» The world's fresh water is distributed very unequally. In particular, the dry belts flanking the tropics suffer droughts lasting for many months each year because they have only short, if intense, rainy seasons. In such areas, impounding dams often constitute the only means of storing sufficient surface water for human consumption, agricultural irrigation and industrial purposes to last through the long annual dry spells. Traditional methods of exploiting groundwater and rain water rarely suffice to cover the needs of large towns and cities. Approximately 12 percent of all existing reservoirs² presently serve to secure the supply of water to urban areas. Some 12 to 16 percent of all food produced around the world depends on irrigation water from dam projects.

As part of the ongoing climate debate, and in consideration of the world's finite fossil fuel resources, the use of hydropower for generating electricity has once again become the focus of interest. According to the International Energy Agency (IEA)³, global power consumption can be expected to double by the year 2030. Much of that increase will take place in developing countries, where nearly two billion people still have no access to electricity. At present, hydropower accounts for 19 percent of total global power generation.²

» **There are already 24 countries – including Brazil, the Democratic Republic of the Congo, Zambia and Norway – that cover more than 90 percent of their electricity requirements with hydropower.**

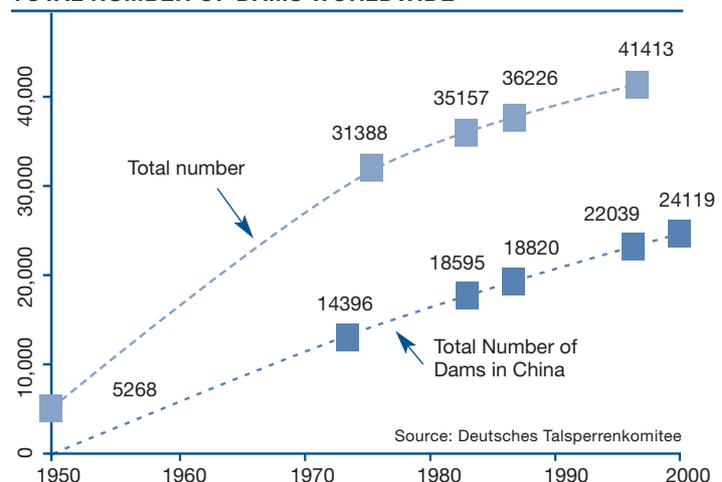
In the course of global efforts to reduce greenhouse gas emissions, dams could experience a revival. By drawing on renewable energy, they make a substantial contribution toward climate protection. With the exception of a few dams in tropical locations, they cause only very minor amounts of CO₂ emissions.

Many dams serve more than one purpose. In addition to providing water for drinking, irrigating and generating electricity, backwater measures can also help prevent flooding and make rivers navigable. Almost every third dam completed in the last four years has been designed as a multi-purpose dam.⁴

Despite all these positive effects, many dam projects have fallen into disrepute because of their various drawbacks.

» **According to WCD data, between 40 and 80 million people around the world have had to be resettled to make room for impounding dams and reservoirs. This has robbed many people of their livelihoods.**

TOTAL NUMBER OF DAMS WORLDWIDE



2 World Commission on Dams (ed.), 2000: Dams and Development: A New Framework for Decision-making. Earthscan Publications Ltd., London

3 International Energy Agency: World Outlook 2002

4 International Commission on Large Dams (ICOLD): World Register of Dams 2003



An estimated 60 percent of the world's 225 major river systems are interrupted and impeded by dams.² The result: loss of ecosystems, and hence reduced natural diversity. Altered tidal cycles, deteriorating water quality, and the large-scale diversion of water for irrigation purposes are among the root causes. Such ecological disruption of river systems has particularly negative impacts on fishing activities. Numerous fish species find no suitable habitats in impounded rivers. Dams also prevent migratory fish from reaching their spawning grounds, often resulting in a dramatic loss of population in dammed-up rivers.

In the past, the people affected by resettlement programs and environmental destruction were rarely able to participate in the decision-making processes. Projects were planned and implemented "over their heads". In many cases, their compensation was not only inadequate, but also incommensurate with their needs.



Source: Brand X Pictures



Critics of dam-building projects also take exception to the poor overall economics of many projects. Performing a random analysis of 81 large dams, the WCD found that, on average, the actual costs exceeded the original estimates by 56 percent.²

>> On balance: dams can be a good option – it all depends on how well they are planned, built and operated.

TOTAL HYDROPOWER CAPACITY INSTALLED IN SELECTED COUNTRIES

Country	Installed Capacity (GW)	Share of Net Consumption
Canada	66.9	70.6%
Brazil	59.0	84.4%
USA	98.9	7.5%
China	70.0	18.2%
Russia	43.4	20.6%
Norway	27.0	124.6%
Japan	21.6	9.2%
Sweden	16.4	55.9%
India	24.5	14.9%
France	20.8	16.3%
Venezuela	13.2	83.0%
Paraguay	7.4	102.9%
Austria	8.0	75.5%
Switzerland	10.4	69.4%
Others	206.2	14.2%
World	693.7	19.3%

Source: Energiewirtschaftliche Tagesfragen, May 2003



“Dam the dams” – worldwide protests

Frustration on the part of resettled people, massive environmental degradation and doubts about the macroeconomic benefits of some projects have given rise to growing protest. With the support of international non-governmental organizations (NGOs), people in some places have rebelled against planned projects. Frequently, this has led to interruptions and delays in the planning and construction activities, with expensive consequences for the investors.

Due to such conflicts and the accompanying public criticism, international financial institutions have found it increasingly difficult to become involved in the construction of additional large dams. While the World Bank financed an average of some eight new dam projects each year between 1970 and 1985, that figure dropped to three per year in the course of the 1990s. At the same time, all bilateral and multilateral development cooperation (DC) organizations adopted stricter

environmental and social standards. Albeit, the old problems persisted. In 1996, the World Bank evaluated 50 dam projects that it had financed and came to the conclusion that only a quarter of those projects satisfied its own current ecological, social and economic standards.⁵

>>

**1st “International Day of Action against Dams”,
14th March 1997.
Curitiba, Brazil.**

Source:

Photo courtesy of IRN



⁵ IUCN – The World Conservation Union and the World Bank Group, July 1997: Large Dams. Learning from the Past, Looking at the Future, Workshop Proceedings. IUCN, Gland, Switzerland and Cambridge, UK and the World Bank Group, Washington, DC.

COMMISSION MONDIALE DES BARRAGES
世界大坝委员会
COMISION MUNDIAL DE REPRESAS
اللجنة العالمية للسدود
DCEMEPHAN KOMICCER
BO H30THAM

A New Framework for
Decision-Making

THE REPORT OF THE
WORLD COMMISSION ON DAMS

London, 16 November 2000



» Official Presentation of the WCD Report, November 2000, London.
Source: UNEP/DDP



THE WCD: PROCESS – FINDINGS – REACTIONS

How the World Commission on Dams came to be

>> The evaluation conducted by the World Bank provided impetus for the World Bank and the International Union for Conservation of Nature and Natural Resources (IUCN) to organize and host a workshop in the Swiss town of Gland in April 1997. That workshop gave rise to the idea of establishing a “World Commission on Dams”. The new organization became operative in May 1998. Its mandate was

- to review the developmental effectiveness of dams and to assess alternatives for water-resource and energy development, and
- to develop internationally accepted criteria, guidelines and, wherever possible, standards for decision-making in the planning, design, construction, monitoring, operation and decommissioning of dams.

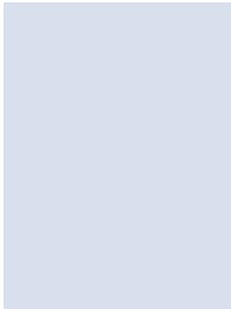
The twelve commissioners, who spent two-and-a-half years holding hearings and consultations, performing case studies, and analyzing more than 100 major projects, could hardly have been more disparate. Suddenly, environmental activist Medha Patkar found herself sharing table space with dam-planning engineer Jan Veltrop, honorary president of the International Commission on Large Dams (ICOLD), while Göran Lindahl, president and CEO of the global electrical engineering company ABB, sought consensus with indigenous peoples’ activist Joji Cariño. The commission was chaired by former South African minister of water affairs and forestry, Professor Kadar Asmal. A WCD forum representing 68 interest

groups served the commission in an advisory capacity.

The final WCD report – *Dams and Development. A New Framework for Decision-making* – was released in November 2000. It provides a comprehensive overview of the social, economic, technical and ecological problems and impacts of large dams, depicting their altogether positive achievements just as clearly as their negative social and ecological aspects. The recommendations derived from the analysis are summarized in the form of five core values, seven strategic priorities, and 26 guidelines. They attach special importance to environmental protection, to the rights of people affected by dam projects, and to their participation in all essential decision-making processes.

>> **One of the main recommendations is that people who are negatively impacted by new dam projects must count among the main beneficiaries of those same projects; their entitlements must be rendered legally binding.**

The World Commission on Dams was a unique experiment. For the first time ever, experience gleaned from existing dam projects was successfully evaluated independently on a broad scale. Moreover, never before had such a diversity of special-interest representatives been brought together for the purpose of making recommendations in a transparent, participative process. It was a difficult process, but it ultimately produced a framework to which all members of the commission were able to attach their signatures.

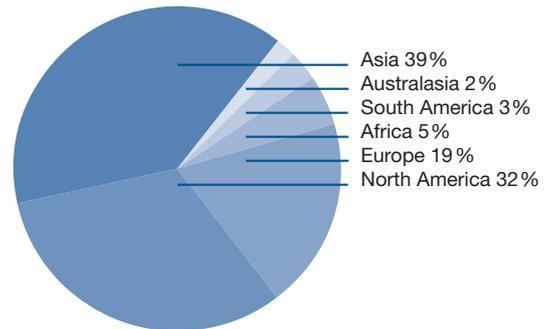


WCD Report, Cover

THE SEVEN STRATEGIC PRIORITIES OF THE WCD REPORT

- **Gaining public acceptance:** Decision-making processes and mechanisms must enable informed participation by all groups of affected people and result in the demonstrable acceptance of key decisions.
- **Comprehensive options assessment:** Before any final decisions are made, the full range of options must be assessed via a comprehensive and participatory process. Social and environmental aspects must have the same significance as economic and financial factors.
- **Existing dams:** The benefits of existing dams must be improved. Unresolved social and ecological problems with existing dams must be resolved in a manner deemed acceptable to the community.
- **Sustaining rivers and livelihoods:** Avoiding negative impacts on river ecosystems through good site selection and project design is a priority. Applica-

GLOBAL DISTRIBUTION OF DAMS



Source: ICOLD (International Commission on Large Dams), World Register of Dams 2003

tion of the tailor-made environmental flow concept can help maintain downstream ecosystems.

- **Recognizing entitlements and sharing benefits:** Joint negotiations with adversely affected people result in mutually recognized and legally enforceable mitigation and development provisions. Successful mitigation, resettlement and development of livelihoods are fundamental commitments and responsibilities of the state and the developer.
- **Ensuring compliance:** Governments, developers, regulators and operators must meet all commitments made for the planning, implementation and operation of dams.
- **Sharing rivers for peace, development and security:** Dams on transboundary rivers call for constructive cooperation between countries to arrive at agreements allowing the reconciliation of conflicting interests.



Praise and skepticism: the reactions

The WCD Report found broad approval among NGOs who for years have been championing the rights of people affected by dams. The report was also acclaimed by many organizations involved in development cooperation (DC), international organizations, development banks and donor-country governments.

While most governments and special-interest representatives endorsed WCD's seven strategic priorities as policy principles, many countries with plans to build additional dams, along with much of the private sector, showed a skeptical response to WCD's 26 recommendations on procedures and instruments. They fear that strict adherence to the recommendations could put an end to all dam-building activity. For example, many countries and even the World Bank are uneasy about WCD's recommendation that veto rights be given to indigenous peoples in whose territory a dam is to be built. Some critics also think that the call for extensive rights for the affected people to participate in the decision-making process is neither appropriate nor realistic. But even though to-the-latter strict implementation of the WCD recommendations could in fact be difficult in certain situations, practical examples document that, all things considered, the recommendations actually can contribute substantially toward better planning and operation of large dams. Only the future will be able to tell which approaches turn out to be the most suitable for use in effectively implementing the strategic priorities of the WCD report. On culture-specific grounds, the answers will vary widely from region to region.

We feel that this report represents a major milestone in the assessment of economic, technical, and environmental performance of large dams ... The criteria, guidelines and standards provided in the report would be particularly useful during the planning, design, appraisal, construction, operation, monitoring and decommissioning of dams financed by the Bank.

Source: www.dams.org

**AFRICAN
DEVELOPMENT
BANK**

Praise by the German Government

» **“Hydropower will still be needed in the future. However, dam projects will have to satisfy strict environmental impact and social acceptability criteria and provide developmental benefits for the people who are immediately affected.”**

*Heidmarie Wieczorek-Zeul at the
Dialogue Forum of the WCD Report*

Germany's Federal Minister for Economic Cooperation and Development, Heidmarie Wieczorek-Zeul, welcomed the findings of the WCD Report at the German WCD Dia-

“The report provides us with solid technical recommendations, which if really applied, in a consultative and participatory way among stakeholders, can make a difference.”

Source: www.dams.org

**MARITTA KOCH-
WESER, IUCN**



**INTERNATIONAL
HYDROPOWER
ASSOCIATION
(IHA)**

“The general principles and recommendations previously put forward by our professional associations are well reflected in the overall conclusions of the WCD.”

Source: www.dams.org

**THE WORLD
BANK**

“The WCD has produced a carefully prepared and well-written report ... the World Bank shares the WCD core values and concurs with the need to promote the seven strategic priorities.”

Source: The World Bank position on the report of the WCD, www.worldbank.org

logue Forum in January 2001: “This way, confrontation between opponents and proponents of large dams can be overcome in the best interest of developing countries.” Wieczorek-Zeul underscored the fact that her ministry, which supported the work of the World Commission on Dams with approximately one million euro, intends to support the implementation of the WCD recommendations within German bilateral DC as well as in multi-lateral organizations.



**First DDP Forum
Meeting,
July 2002, Nairobi.**

Source: UNEP/DDP





The dialogue continues – the Dams and Development Project

For the global debate to take effect at the local level, dialogue must continue within the national context. This is the task assumed by the Dams and Development Project (www.unep-dams.org). Established in November 2001, the DDP operates under the auspices of the United Nations Environmental Program (UNEP). The DDP's core activities include disseminating information about WCD and its follow-up processes and initiating national dialogue on the implementation of WCD's recommendations. In the meantime, multi-stakeholder dialogues have become established in numerous countries, including South Africa, Thailand and Viet Nam.

A major forum of stakeholder representatives serves as an advisory body to the DDP. It is particularly pleasing to note that even the governments of China, India and Turkey, who initially sharply criticized the WCD recommendations, have since also joined the forum. BMZ is supporting the DDP with roughly EUR 700,000 and represents the interests of the donor countries in the 14-member DDP Steering Committee.

The WCD Report has triggered forward momentum in numerous other organizations, too. The International Hydropower Association (IHA), for example, reacted to the WCD Report by drafting sustainability guidelines for its members. In concordance with the core values of WCD, those guidelines are intended

to make new and existing hydropower plants more socially acceptable and environmentally compatible (for information, go to www.hydropower.org). The World Bank has initiated a "Dam Management and Planning Action Plan" designed to improve the planning and management of projects with World Bank involvement.



First DDP Forum Meeting, July 2002, Nairobi.
Source: UNEP/DDP





THE SOUTH AFRICAN MULTI-STAKEHOLDER INITIATIVE ON THE WCD REPORT

South Africa was one of the first countries to initiate national dialogue on the WCD recommendations. In July 2001, representatives of the government, private industry, hydroelectric power plant operators, NGOs, financial and research institutions jointly announced their broad support for the strategic priorities of the WCD report. The next job was to discuss the principles within a South Africa-specific context. A steering committee nominated for that purpose was directed to analyze the basic issues and problems in connection with South African dams. The interim results were presented at

a major stakeholder forum in July 2002. Now, based on those results, provisions are being elaborated for implementing the WCD recommendations into sector policies and planning procedures. The South African dialogue process is seen as normative with regard to similar processes initiated in other countries.



Opening of the Vorwoerd Dam, South Africa.

Source: UNEP/DDP





Germany and the WCD follow-up process

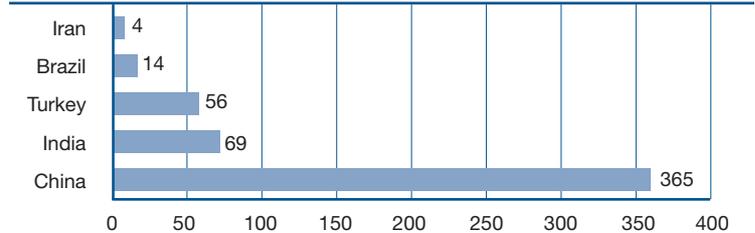
The DDP has called upon all countries with any degree of large-dam involvement to discuss the WCD recommendations within their own national contexts. Germany has no more large dams to build, but it is the home country of various major construction, hydro equipment and engineering contractors. Additionally, Germany provides loans and export credit guarantees for the financing of large dam projects.

>> Hence, Germany is and will remain a major actor, and the German stakeholders are morally obligated to review their strategies.

The WCD platform talks provide a suitable forum. Once a year, BMZ invites some 35 German interest groups to attend such talks, giving them an opportunity to discuss the WCD recommendations within the national context. The participants represent the German private sector, NGOs, DC organizations, the scientific community, and involved ministries. The objective is to arrive at a collective appreciation of what the WCD recommendations actually mean.

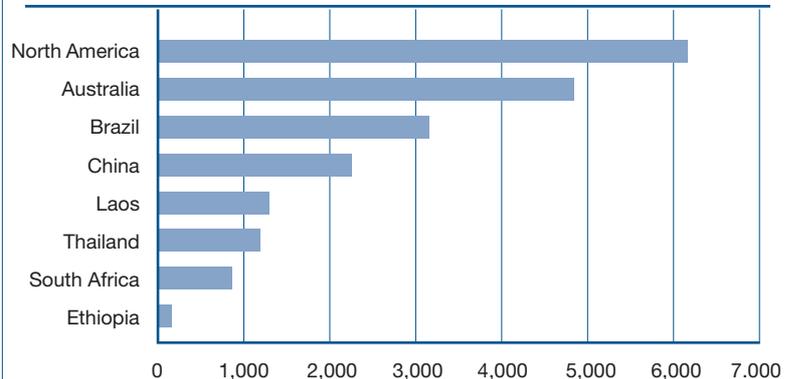


NUMBER OF DAMS CONSTRUCTED BETWEEN 1998 AND 2002 (SELECTED COUNTRIES)



Source: ICOLD, World Register of Dams 2003

WATER STORAGE CAPACITY IN SELECTED COUNTRIES AND REGIONS



Source: World Water Actions, Making Water Flow for All, Forum Edition March 2003, Marseille, p. 116

In February 2003, a number of platform participants formed a WCD Task Force in which DC organizations, NGOs and private-sector representatives participate. The Task Force formulated a joint position paper on ten crucial aspects of the WCD Report and on its implementation within the German context. The paper was presented at the fourth round of platform talks in the spring of 2004 (www.gtz.de/wcd). Its implementation is now being discussed within the different institutions and companies which are part of the process. The working group would like to see German actors give due consideration to their recommendations in the future, as this would improve projects and reduce conflicts between stakeholders.

>> Third WCD Platform Talks, February 2003, Berlin.

Source: GTZ



» Water Kiosk, Zambia.
Source: GTZ



THE WCD RECOMMENDATIONS AND THEIR ROLE IN THE WORK OF GTZ

» Acting on behalf of BMZ, GTZ has facilitated WCD's work with a project of its own. Substantial inputs have been contributed to the case studies in Pak Mun, Thailand, and Tucuruí, Brazil. In addition, GTZ has worked together with WCD in developing a procedure for the cross-section analysis of some 100 large dams. After WCD published its final report, a GTZ project underpinned a series of specific measures designed to help implement the WCD recommendations. For example, the Water Department of the Southern Africa Development Community was given advice and assistance for formulating a sector policy. In Cameroon, GTZ is providing support to a panel of experts, who are in turn advising the government in connection with evaluating the ecological and social impacts of the planned Lom Pangar Dam. A project in Pakistan aims to promote the sustainable development of hydropower. For more information, please consult the GTZ website (www.gtz.de/wcd).

Indeed, dams sometimes play an important role in a number of GTZ's water, energy and environmental projects. Within such projects, GTZ aims to implement the WCD principles in a country-appropriate manner via dialogue with its partners. GTZ cooperates not only with government institutions, but also with institutions of civil society, the private sector, the scientific community, and international organizations.

» **Many of WCD's basic recommendations come as no surprise to GTZ. On the contrary, they merely validate the correctness of GTZ's tried and proven project approaches.**

Working to sensitize the general population and decision-makers with regard to the risks and opportunities of dam-building projects is a good way to help achieve effective reforms. Individual projects can provide impetus in that direction. In the long run, however, only structural and strategic change within the environmental, water and energy sector can provide a durable foundation for implementing the WCD principles. That, in turn, requires the establishment of framework conditions conducive to development. A uniform sector policy and effective sector strategies need to be developed, a suitable legal framework must be established, capable institutions must be developed, and transparent licensing procedures must be introduced. To establish these framework conditions is where GTZ's advisory services come in. In many cases, the process of bringing about such changes takes many years and can be affected by numerous external factors. Of course, GTZ also addresses project-specific issues.

■ Advisory services to water, environment and energy policy-makers for

- developing new sector strategies and sector policies,
- planning and designing reform processes,
- drafting laws, regulations and directives, e.g. regarding the affected people's rights of participation, environmental impact assessments (EIA) and monitoring procedures,

ADVISORY SERVICES BY GTZ WITHIN THE LARGE DAM CONTEXT



- establishing mediating and moderating bodies,
- introducing knowledge management systems, and
- deciding how to implement the WCD recommendations.

■ **Strengthening of institutions**

Here, the objective is to improve the technical and managerial competences of ministries, downstream institutions, enterprises and associations. It is particularly important to build up competent environmental authorities with the capacity to ensure that the detrimental ecological and social impacts of dams are minimized.

■ **Project-specific assistance for**

- preparing feasibility studies and financing concepts,
- planning and implementing social and ecological compensation measures,
- conducting stakeholder analyses and conflict analyses,
- implementing consultation processes and public relations work.

■ **Human resources development**

HRD enjoys very high priority in all of GTZ's advisory service projects. The contributions encompass training measures for experts and management personnel in the policy-making, administrative, societal and private sectors.

CASE STUDIES

Environmental effects of dam-building projects in Paraná

GTZ, project duration: 1986-1995

Context

Brazil generates 90 percent of its electricity as hydroelectric power. With hydrological conditions conducive to the use of hydropower, and being situated relatively close to the industrial growth centers of southeast Brazil, the State of Paraná has emerged as one of the country's leading producers and net suppliers of hydroelectric power. Much of that success, however, was achieved at the cost of nature and of many people displaced as a result.

In the mid-1980s, the widening protests of resettled people and environmentalists prompted the Government of Brazil to strengthen the role of environmental authorities in connection with the licensing of new dam-building projects, the long-term objective being to minimize their negative ecologi-





cal and social impacts. This brought with it a number of new, more complex responsibilities for the water and environmental authority of Paraná State – including:

- review and evaluation of environmental impact assessments (EIAs) for dams,
- approval (licensing) of dam-building projects, and
- definition of the provisions for planning, constructing and operating dams.

However, neither the know-how nor the personnel required for such duties were available.

The project

The purpose of the services provided by GTZ was to reform and strengthen SUREHMA, the water and environmental authority of Paraná State, to such an extent that it would be able to adequately perform its future functions. Hence, the focal points of cooperation were:

- to develop the requisite human resources through a broad program of seminars and on-the-job training,
- to establish an environmental information system and a specialized library,
- to improve the infrastructure of the public authorities,
- to draw up a reference manual for environmental impact assessments (EIAs) of dam-building projects, and
- to help develop legally embodied permit-issuing processes.

Special importance was attached to getting the people more closely involved in decision-making. Prior to the project, few socio-economic data had been gathered and analyzed, and the participation of those affected had not been considered an integral part of the permit-issuing process.

THE WORLD'S LARGEST HYDROPOWER DAMS

Land	Dam	MW	Date of Completion
China	Drei Schluchten	18.200	2009
Brazil	Itaipu	12.600	1991
Venezuela	Guri	10.000	1986
Brazil	Tucuri	8.370	1984
Russia	Sayano-Shushinskaya	6.400	1990
Russia	Krasnoyarsk	6.000	1967
Russia	Bratsk	4.500	1964
China	Xiaowan	4.200	2002
China	Longtan	4.200	2001
Russia	Ust-Ilim	3.840	1977

Source: ICOLD (International Commission on Large Dams), World Register of Dams 2003

Conclusion

In the meantime additional new dams have gone into service. A recent GTZ study documents the enormous progress of the past few years. Much more consideration is now being given to environmental concerns and to the rights of the people. Much of the credit goes to the state's water and environmental authorities, but also to the fact that the people affected by dam-building projects have become much better organized. Since compensation is being negotiated on a fair basis today, there is now considerably less social conflict in the State of Paraná. The aforementioned manual drafted with the help of GTZ is now in its fourth edition and being used with much success.



Photo p. 20: Brazil.
Source: UNEP/DDP
Photo p. 21, left: Solimoes River, Brazil.
Source: Integration GmbH
Photo p. 21, right: National Park Sumaco Napo-Galeras, Ecuador.
Source: Integration GmbH





**MONITORING OF
RESETTLEMENT
MEASURES AT
THE SALTO
CRAXIAS DAM
IN PARANÁ**

Salto Craxias Dam on the Iguaçu River, which was commissioned in 1999, has a power output of 1,240 megawatts. Its construction meant that more than 3,000 people had to leave their homes. Those affected formed a number of pressure groups and proceeded to successfully negotiate compensation measures with the dam's operator COPEL, the state-owned power utility. The people themselves closely monitored the construction of homes, schools, community centers, churches, power grids and water supply systems – and every case of nonconformance was objected to immediately. In 1998, COPEL itself conducted a broad-scale monitoring program on the success of the resettlement measures. The parameters of the study were established in cooperation with CRABI, the umbrella organization of concerned individual committees. Among those parameters, social factors (e.g. social ties within the community) and socioeconomic factors (e.g. income, grocery purchases, etc.) play major roles. All resettled families were asked to complete a questionnaire – and the outcome was positive. Most of the affected people said they were satisfied with their present standard of living. The entire process is to be repeated in 2004. In the case of Salto Craxias, the ultimate success of the resettlement program is dependent not least on the strength of the concerned individuals committees, for it was they who demanded the rights to which the people were entitled.



**Kariba Dam,
Zimbabwe.**

Source: UNEP/DDP



Dams in Southern Africa: the SADC water policy

GTZ, project duration: 2002-2004

Context

Southern Africa is a region affected by both drought and periodical flooding. Twenty-two percent of its land area is desert. Most of the region's heavy rains fall within three months of the year, and much of that precipitation is lost because the soil is not sufficiently absorptive. According to some prognoses, South Africa and Malawi can be expected to suffer a continuous shortage of drinking water through to 2025, and four other countries in the region will also suffer recurrent shortages.

Due to the prevailing climatic conditions, dams play a vital role in providing the region with reservoirs of drinking water. In South Africa alone, 700 impounding dams provide for a relatively safe supply of water. However, many of those dams have had undesirable consequences for the region. The construction work engendered resettlement problems and the destruction of many river ecosystems, with after-effects that continue to this very day.

In 1992, fourteen southern African countries joined forces to form the Southern African Development Community (SADC). The member countries are interjoined by 15 shared watercourses. Consequently, SADC attaches high priority to the management of the com-



mon water resources. The SADC member countries are presently in the process of developing a regional water policy, within which the subject of dams is a topic of special importance. Moreover, SADC is elaborating a position of its own with regard to the WCD Report.

The project

GTZ provides advisory services to SADC within the context of dams as part of the SADC Regional Water Policy and for further developing SADC's position on the WCD Report. National dialogue processes are also being initiated in order to breathe new life into the debate on the opportunities and risks of dams within the region. A major regional workshop at which the SADC Regional Water Policy will be presented to a large circle of stakeholder groups is planned for 2004. The policy is to be adopted at the SADC summit meeting scheduled for August 2004. The position paper on the WCD Report will be discussed at a special workshop planned for June 2004.

A study entitled "Key Dam Issues in the SADC Region", which was conducted within the scope of the project, can be downloaded at www.gtz.de/wcd.

Conclusions

- >> **The drafting of a policy and the WCD position paper only constitute an initial step. The real challenge is to implement systematically that policy.**

While both documents are supposed to be binding for all SADC projects, they only have the character of a recommended guideline for the activities of individual member countries. On the other hand, the principles to which SADC has committed itself through its own policy and through the position paper are expected to have positive effects on the policies and legal frameworks of the member countries. The policy and the position paper are of benefit to people who suffer disadvantages because of dams, and it promotes the ecological and economic sustainability of future dam-building projects.



**Mohale Dam,
Lesotho.**

Source: UNEP/DDP





Sustainable use of hydro-potential in the headwater region of the Amazon River

GTZ, project duration: 2003-2005

Context

Sumaco Napo-Galeras National Park was established in Northeast Ecuador and along the edge of the Amazon prairie in 1994. Most of the 85,000 people who live in the fringe areas of the park belong to the Napo-Quichas Indian tribe. The region is not only known for its extraordinary biodiversity, it also has a huge potential for hydroelectric power generation. Since the 1990s GTZ has been helping the local communities develop unitized micro-hydropower plants for supplying electricity to scattered villages. The success of these activities has served to motivate the people toward even greater efforts. The communities decided to install a larger hydroelectric power plant at the edge of the national park which would generate 20 megawatts of power for the region's power grid.

The project

Following exhaustive consultations with representatives of all interest groups, and with the help of GTZ, an independent power producer named Energia Renovable y Desarrollo Sostenible (ERDESU AG) was established as a stock corporation co-owned by the provincial government, the communities, the indigenous people's association, the German industrial enterprise Wasserkraft Volk, and GTZ. ERDESU's seven-member supervisory board comprises representatives of the indigenous communities, the provincial government, and various civil-society groups.



With GTZ funding, ERDESU conducted feasibility studies to determine the best type of hydroelectric power installation and the best location for it. The choice fell on an 18-megawatt run-of-river station, i.e. a power plant with no reservoir behind it, to be located directly adjacent to the national park. In making the choice, special attention was paid to ecological and social criteria. The question of which kind of compensation measures would be both feasible and sensible was investigated. The overall planning includes reforestation and a number of micro-hydropower plants for remote communities.

Now that technically mature studies and a financing concept are at hand, ERDESU is negotiating with banks and additional international donors to secure the requisite investment financing for approximately US \$ 30 million.

Conclusions

The hydroelectric power plant planned by ERDESU enjoys the full support of the people. The decisive factor was that all major social groups were informed at an early stage and involved in all decisions concerning the



**National Park
Sumaco Napo-
Galeras, Ecuador.**

Source:
Integration GmbH



planning and operation of the plant. Moreover, the indigenous peoples' communities are shareholders and therefore participate in the profits.

» **The project is an outstanding example of how natural resources situated within a sensitive ecosystem can be utilized in a nondestructive manner. It could even assume a keynote function for larger projects.**

The project is extensively in line with the WCD recommendations.



National program for the promotion of hydropower in Pakistan

GTZ, project duration: 2002-2005

Context

Pakistan, broad swathes of which are characterized by high mountains and rugged valleys, has lots of potential for hydroelectric power. At present, though, hydropower only accounts for 35 percent of the electricity produced in the country. In the Power Policy it adopted in 2002, the Government of Pakistan confirmed its intent to increase that share. By putting its own resources to better use, Pakistan is reducing its dependence on expensive imports of oil and gas.

For many years, GTZ has been advising and assisting the Pakistani Government in the energy sector. In the past, the focus has been on providing technical assistance to the national Water and Power Development Authority (WAPDA). Now, though, with a view to improving the framework conditions for promoting renewable energy sources – hydroelectric power in particular – GTZ is expanding its advisory services at the policy level.

» **National Park Sumaco Napo-Galeras, Ecuador.**
Source:
Integration GmbH



The project

The project consists of advising Pakistan how its hydropower can be put to good, sustainable use, both by expanding the available generating capacities and by paying more attention to social and ecological effects. The Ministry of Water and Power (MoWP) is receiving strategic advice and guidance on implementing the new Power Policy. The main objective is to establish the institutional framework required for expanding the use of renewable energy sources in general and of hydropower in particular. At the same time, the project discusses with the ministry and the various involved interest groups the available options for implementing the WCD's strategic priorities in Pakistan, and proposes appropriate measures.

Within the scope of this same project, GTZ is supporting the government of Pakistan introduce new environmental standards for hydropower projects in order to assure sustainability of the technology. The personnel at the ministries, line agencies and power utilities are receiving appropriate training, i.e. courses in which the ecological and social impacts of hydroelectric power plants are topicalized along with the corresponding avoidance strategies.

Improving the quality of training and education provided by universities and training institutes constitutes a third key area of GTZ's advisory activities. Duly trained and experienced personnel form an essential prerequisite for effective, longterm implementation of



**Ghazi Barotha,
Pakistan.**

Source: KfW





Pakistan's development plans, especially in the hydropower sector. In addition to better technical training, future curricula are expected to embody social and ecological aspects.

Conclusions

» **The ministries and public authorities in Pakistan are greatly interested in making better use of their country's hydropower. The GTZ advisory project will help improve the country's development opportunities.**

At the same time, it will accentuate the need for ecologically, socially and economically sustainable projects. GTZ will endeavor, together with its Pakistani partners, to implement the WCD recommendations in a manner appropriate to the country's needs.

ELECTRICITY PRODUCED FROM HYDRO-POWER

(net production in TWh)



0 500 1,000 1,500 2,000 2,500 3,000

Source: Energiewirtschaftliche Tagesfragen, May 2003



Ghazi Barotha, Pakistan.

Source: VA Tech Hydro





» Naga Hammadi, Egypt.
Source: KfW



IMPLEMENTATION OF WCD RECOMMENDATIONS AT KfW

» The building of dams counts among financial cooperation (FC) projects geared to promoting better material and social infrastructure in partner countries of development cooperation (DC). Basically, there are three kinds of dams: dams with large reservoirs, run-of-river stations (with little or no reservoir volume), and small weirs and barrages serving such purposes as diverting river water into irrigation channels.

Recognizing the practical benefits with regard to conflict avoidance and the sustainable operation of dam plants, KfW has intensively accompanied and supported the work of WCD from the very beginning. Independent experts analyzed the experience gained from German DC involving dam projects and placed their findings at the commission's disposal for reference purposes in formulating the WCD recommendations.

» **FC endeavors are expected to profit from the WCD recommendations in two ways: the recommendations will improve the quality of project preparations, and they will most likely facilitate the coordination of projects with counterpart authorities, the civil society and other financiers.**

It will be easier to arrange quality requirements for the planning and implementation of FC projects with partner countries or other donors, because the recommendations represent a generally recognized frame of action for such projects.

Since 1988, all of KfW's FC projects have to undergo in-depth environmental and social

impact assessments. Even before this date, attention was being paid to ecological and social factors, though perhaps not to the present extent. Until well into the 1970s, however, all resettlement matters were the sole responsibility of the partner countries. Gradually, over the two decades to follow, it became internationally accepted practice – for instance for the OECD Development Assistance Committee – to incorporate resettlement into the projects and to set quality standards for its implementation. Today, that strategy can be expanded on the basis of the WCD recommendations. For example, consideration is now being given to how those affected can participate in the benefits such projects beyond the mere securing of their living standards and income situation. Other problems also have become easier to solve, one example being the need for a minimum flow of water to sustain ecosystems downstream of dams.

Numerous different actors are involved in the dialogue on how best to implement the WCD recommendations. The governments of countries with plans to build dams carry a special measure of responsibility, of course, because they are the ones who have to investigate and clarify their own countries' specific requirements for implementing the recommendations, and it is their job to deliberate the available options for putting the recommendations into practice - perhaps by way of amending laws. However, though DC accounts for less than 15 percent of all investment expenditures for large dams in developing countries, its importance should not be underestimated.



The basic national-level decisions regarding such matters as demand coverage and power-generation alternatives are made before the planning phase of any concrete project begins. This calls for suitable sector policies, for which WCD also has recommendations to offer. FC also helps partner countries develop such sector policies.

Whenever KfW participates in the financing of a dam-building project, the respective national authorities responsible for planning and operating large dams are supported as a flanking measure. As a rule, a consultant financed out of FC funds provides assistance to an existing or still-to-be-established environmental unit within the implementing organization. In most cases, the financing consists of a non-repayable subsidy.

In processing any dam-building project, KfW follows the rule of verifying its compatibility with the WCD recommendations, even if the dam in question is so small that – like weirs – it falls short of the minimum structural height of 15 meters named by WCD as the boundary below which a dam is no longer considered an object of the WCD recommendations. Such checks also show whether or not further-ranging activities need to be planned.

The same applies to projects that had already been launched prior to publication of WCD's final report. KfW commissions internationally accredited experts to conduct the investigations. Like the World Bank, KfW also back-stops major projects with a team of experts including environmental specialists and, from time to time, sociologists and ethnologists.

» **In recent years, KfW has provided assistance for an increasing numbers of weirs, barrages and run-of-river stations. Conversely, large dam projects are presently on the decline in terms of FC. Now, however, the WCD recommendations regarding consensual large-dam projects may signalize a trend reversal.**

Many countries have major hydropower potentials which they could use to close the gaps in their power supply networks. In other countries, the greater need may be for ample supplies of water for drinking and irrigation during periods of low precipitation.



**Naga Hammadi,
Egypt.**

Source: KfW





CASE STUDIES

The new Naga Hammadi Barrage in Egypt

(KfW, project duration: study: 1993-1997, planning and bidding: 1999-2000, construction: 2002-2008)

Context

In Egypt, where no rain falls for most of the year, the Nile is the by far most important provider of water for agricultural irrigation. More than a century ago, construction commenced on seven barrages, each up to 800 meters wide, to divert Nile water into irrigation channels for selective agricultural distribution. Now, after more than 70 years in service, the Naga Hammadi Barrage in Upper Egypt has reached the end of its technical service life and operational reliability. Its water feeds an area covering 286,000 hectares farmed by more than 300,000 families. If the barrage were to break, those families would lose their main source of food and income for many years to come (until a new barrage is built). Consequently, the Government of Egypt has, on the basis of detailed studies, decided to build a new dam a short distance upstream of the existing barrage.

The project

Building a new dam, as opposed to rehabilitating the old barrage, offers the benefit of being able to exploit the Nile's hydropower potential for generating electricity. Four turbines with installed capacities of 16 megawatts each will produce 462 gigawatt hours of electric power annually. That will suffice to cover the average annual power consumption of more than 200,000 Egyptian families. All that electricity will no longer have to be generated

by gas-fueled thermal power plants. This will reduce the country's CO₂ emissions by 270,000 tonnes a year.

In addition to providing water for agricultural irrigation, the project will thus also produce environmentally-friendly energy. Construction work began in 2002, and the new hydroelectric power plant is scheduled for commissioning in 2008. The cost of the project, totaling some EUR 380 million, is being contributed by the Government of Egypt (EUR 190 million), the German Government in the form of financial cooperation via KfW (EUR 125 million), and the European Investment Bank (EUR 75 million).

The German Government is also providing funds to ensure that:

- the necessary resettlement and relevant compensation of some 60 families will be in line with international standards,
- the agricultural irrigation channels are developed to such an extent that the anticipated new crest level (60 centimeters higher than before) will not jeopardize any structures or agricultural production within the affected area,
- the sewers and sanitary installations in the villages of the project region are improved to preclude all relevant risks of health detriment for the local population.

Regarding resettlement and compensation, agreements were reached that go far beyond current law in Egypt. The affected families were allowed to choose between a new house or receiving compensatory payment. The payments in compensation for lost land



were rendered immediately, and the affected families are being given hiring priority for jobs offered by the construction contractor.

With an impounding head of six meters, the Naga Hammadi Barrage is not a structure that needs to be prepared in accordance with WCD recommendations. Indeed, it was already in preparation before WCD published its recommendations. Nevertheless, the Government of Egypt agreed to have an independent environmental verifier perform an after-the-fact WCD compliance check. The results showed that most of the recommendations considered applicable to the case – in particular those of relevance to the compensating process – had been taken into account. One exception to this was WCD's call for a comprehensive comparison of all options. Considering the overall circumstances, however, such a process would have produced the same results anyway.

Conclusions

» **Thanks to substantial backstopping inputs, the Naga Hammadi project succeeded in implementing many of the WCD recommendations even before they were published.**

Harnessing the hydropower of Marsyangdi River in Nepal

KfW, project duration: study: 1996-1998, planning and bidding: 1999-2000, construction: 2001-2005 (expected)

Context

In Nepal, renewable sources of energy account for a large share of the national power supply. Hydropower is a key factor in that respect, and the Government of Nepal is planning to further develop the Marsyangdi River. Following support for Marsyangdi Power Station, KfW is now promoting the Middle Marsyangdi Hydropower Plant, which will be situated some 46 kilometers upstream of the existing plant.

The project

Middle Marsyangdi is a run-of-river power plant with a 35-meter-high dam. The water enters the underground power plant through a tunnel and is returned to the river approximately 3 kilometers downstream of the dam. While the station supplies base-load power during the rainy season, it generates valuable peak flow during the dry season. With an installed capacity of 60 megawatts, it will have a theoretical annual power output of 340 gigawatt hours. In comparison with a diesel power plant, Middle Marsyangdi will reduce Nepal's annual CO₂ emissions by approximately 300,000 tonnes. Ecological and social criteria enjoyed wide scope in the detail planning, and the unavoidable extent of resettlement has been minimized as a result.

Even though the project appraisal was conducted in 1998, two years prior to publication of the WCD Report, it already allowed for many of the WCD recommendations. A sub-



sequent compliance check, i.e. a comparison of the WCD recommendations with the contents of the project planning, indicated the expedience of fields of action and activities. Hence, a stakeholder forum was formally established, and the stakeholder groups represented on the forum were involved in monitoring. Moreover, recommendations were formulated regarding the legal character of the resettlement measures, and an arbitration process was introduced. Finally, the cumulative effects of hydropower utilization on the entire river basin were investigated.

During the planning phase, hearings were held for the local communities in consensus with the WCD recommendations, in the course of which the resettlement areas were chosen and the people's specific needs were incorporated into the planning. For example, a river ford is being constructed, and an existing suspension bridge for pedestrians will not be removed until the new bridge has been completed. A legal amendment now makes it possible to compensate the resettled people with such tangibles as property in order to secure their livelihoods. The construction contract for the project was not signed until

all the people were successfully resettled. That provided a good incentive for rapid, effective resettlement policy.

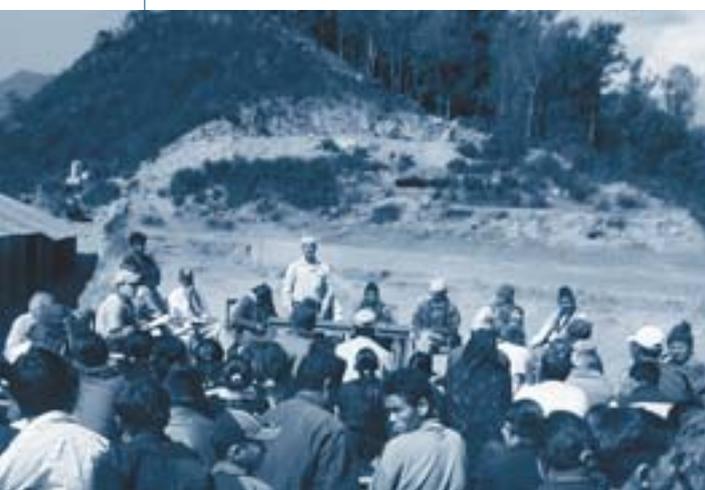
The project appraisal also included clarification of how to compensate individuals who had already suffered disadvantages attributable to the existing Marsyangdi Power Station, for which the project executing organization was also responsible.

A minimum flow of water was specified for the downstream river channel in order to minimize the negative effects on the river's flora and fauna. The full-time and part-time fishers are receiving compensation in the form of new fishery options.

A local eco-consultant was specially hired to implement the planned protective measures and monitor their success. The environmental department of the project executing organization established a coordinating office for all resettlement and compensation measures. A panel of experts including an accredited environmental expert is backstopping the project. Contract agreements between KfW and the project executing organization ensure that the protective and compensatory measures adopted are in fact implemented. KfW is reviewing this at regular intervals.

»
Kalika Milan,
Nepal.
Source: KfW

One of the measures attendant to the hydropower project aims to improve the living standards of people living in the immediate vicinity of the project. The program encompasses diverse employment-intensive investments in education, health, rural roads and the supply of water and electricity. A local independent consultant has been charged with initiating the program.





Despite the project's high level of acceptance among its target group, there have been several cases of threats and attacks against project staff and infrastructure by the underground Maoist organization. The latter, however, contends that the attacks were not directed specifically against the project, but were instead intended as acts of protest against the Nepalese Government.

Conclusions

Before construction commenced, the German partner specified a commitment to certain environmental-protection and resettlement targets as a precondition for disbursement of the FC funds. Adherence to those targets is being systematically monitored. In this way, it is actually possible to plan and execute a dam project in full agreement with the affected population.

»» **Hence, the project represents a prime example of how WCD's recommendations can be put to work.**



Ghazi Barotha, Pakistan.

Source: KfW



Construction of the Ghazi Barotha Hydroelectric Power Plant in Pakistan

KfW, project duration: studies: 1990-1991, planning: from 1992, implementation: 1996 through summer 2004

Context

The run-of-river Ghazi Barotha Power Plant in Pakistan was inaugurated in August 2003. Hence, planning and construction of the project had already been extensively completed by the time WCD published its recommendations. However, this example, too, shows that many of the relevant concerns were already being addressed before the WCD initiative was incorporated into development cooperation. In terms of the Ghazi Barotha project, this applies in particular to the resettlement and compensation arrangements.

The project

Ghazi Barotha Hydroelectric Power Plant, a run-of-river installation, diverts water from the Indus River into a 52-kilometer channel leading to the power house, downstream of which the water is returned to the river. The plant has an installed capacity of 1,450 megawatt and is designed for an annual power output of some 6,600 gigawatt hours, including 2,000 gigawatt hours of peak-demand power. In contrast with a comparable coal-fired power plant, Ghazi Barotha will reduce CO₂ emissions by 7 million tonnes annually. Various alternatives for routing the channel were weighed and analyzed, and the ultimate choice was to accept somewhat higher construction costs in order to minimize the necessary scope of resettlement and to infringe as little as possible on religious sites. The Pakistan branch of the International Union for Conservation of Nature and Natural



Resources (IUCN) has confirmed the selected dam site under environmental aspects.

The ecological and social impacts of the project were investigated in various studies conducted by Pakistani and international consultants, sometimes including the participation of local NGOs. The project was introduced to the public via newly established information centers, where staff members not only helped to involve the local people, but also served as contacts for complaints. Hearings attended by representatives of the IUCN Pakistan branch and of the World Wide Fund for Nature (WWF) were held in all 54 affected villages along the route.

Since the flow volume of the Indus is lower downstream of the dam, the possible consequences for the riparians were investigated on the ground, and individual complaints were looked into. During January dry spells, the downstream flow can be increased with no negative effects on the economic efficiency of the project.

The people living along the channel route had to be locally resettled. This involved numerous forms of compensation, e.g., land for land. A resettlement action plan was drawn up with the help of those affected, their special-interest representatives, and local NGOs. The environmental department of the project executing organization is responsible for implementing the plan with the help of a consultant. Monitoring the resettlement and compensation activities, the international donors pressed for compliance with all contractual covenants and prompted the performance of outstanding compensations in connection with the nearby Tarbela Dam.

In response to the recommendation of a team of environmental and resettlement experts, the Ghazi Barotha Development Organization (GBDO) was established as a supplementary measure. The GBDO is made up of the project executing organization, a national rural development organization and representatives of those affected. GBDO's mandate is to work in close cooperation with local NGOs and implement the integrated regional development plan. That plan envisages numerous small-scale activities in the project region to the benefit of education and health, agricultural progress, the services sector, and industry. The part of the plan dealing with infrastructure provides for the installation of a power supply grid and wastewater treatment facilities. Special programs for women are also included. As part of the Ghazi Barotha project, the plan's long-term goal is to mobilize additional resources for regional development.

Construction of the channel and the power plant created employment for some 6,000 locally recruited people. Persons affected by the resettlement requirements were given preference. Operation of the completed facility will provide roughly 1,200 permanent jobs.

Conclusions

According to the results of a project review, the decision to build Ghazi Barotha Power Station in its present form would have been taken in any case, even if the WCD recommendations had been taken into account.

»» **The plant's installed capacity not only equals that of three large thermal power stations in base-load operation, it also suffices to produce large quantities of valuable peak-demand electricity.**



» Headworks, West Sumatra.
Source: GTZ



OUTLOOK

» **“The problem, though, is not the dam. It is the hunger. It is the thirst. It is the darkness of a township. It is townships and rural huts without running water, light or sanitation. It is the time wasted gathering water by hand.”**

Nelson Mandela, speaking on the occasion of the launch of the final report of the World Commission on Dams

Dams are here to stay. Now and in the future they will figure prominently in the provision of drinking water, the prevention of flooding, and the supply of water for irrigation and power generation. However, past experience clearly shows that development opportunities can only be realized if sufficient attention is devoted to social and ecological factors in the design of relevant projects. This begins with exploring alternatives and ends with removing old impounding dams. Care must be taken to ensure that all major activities from the initial idea to the final implementation, are supported by a majority of those affected.

WCD has created a forward-looking framework. Already, some innovative projects serve as demonstrative examples of how WCD’s recommendations can be put into practice. GTZ and KfW have played instrumental roles in this, and we will continue to advocate and support expedient dam-building projects that promote developmental progress in our partner countries – as part of a sustainable overall energy and water policy. In dialogue with our partners, we will continue to advocate and promote implementation of WCD’s recommendations in our work.



PROFILE

>> **KfW Entwicklungsbank**

In its capacity as Germany's development bank, KfW Entwicklungsbank (KfW Development Bank) provides funds and expertise. It gives loans and grants to support projects and programs in developing countries. In doing so, it promotes their economic and social development.

KfW's main fields of assistance include social infrastructure, (e.g. the systematic development of educational and health care facilities, drinking water supplies and provision of housing), economic infrastructure (e.g. power supply, transport and traffic, telecommunications), establishing efficient financial systems for microfinancing and for providing loans to small and medium-size enterprises, in addition to agriculture and conservation of natural resources.

>> **Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH**

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH is a government-owned corporation for international cooperation towards sustainable development with worldwide operations. With its services, GTZ promotes complex development and reform processes and contributes toward sustainable development. GTZ's clients are the German Federal Ministry for Economic Cooperation and Development (BMZ) and various other ministries and government agencies, as well as such international organizations as the European Commission, the United Nations

and the World Bank, in addition to private-sector enterprises. In more than 130 countries of Africa, Asia and Latin America, as well as in the transition countries of Eastern Europe and the New Independent States, GTZ has more than 10,000 employees, some 8,500 of whom are local nationals. GTZ maintains offices in 63 countries. The Head Office in Eschborn, near Frankfurt am Main, has a staff of roughly 1,000.



**Buendia Dam,
Spain.**

Source: UNEP/DDP





LIST OF ABBREVIATIONS

BMZ	German Federal Ministry for Economic Cooperation and Development (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung)
COPEL	Companhia Paranaense de Energia
DC	Development Cooperation
DDP	Dams and Development Project
ERDESU	Energia Renovable y Desarrollo Sostenible
FC	Financial Cooperation
GBDO	Ghazi Barotha Development Organization
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH
ICOLD	International Commission on Large Dams
IHA	International Hydropower Association
IUCN	International Union for Conservation of Nature and Natural Resources
KfW	Kreditanstalt für Wiederaufbau
NGO	Non-governmental organization
SADC	Southern African Development Community
UNEP	United Nations Environment Programme
WAPDA	Water and Power Development Authority
WCD	World Commission on Dams

FURTHER INFORMATION

- German Federal Ministry for Economic Cooperation and Development (BMZ)
www.bmz.de
- Dams and Development Project
www.unep-dams.org
- Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH
www.gtz.de
- International Energy Agency
www.iea.org/
- International Commission on Large Dams
www.icold-cigb.org/
- International Hydropower Association
www.hydropower.org/
- International Rivers Network
www.irn.org
- Kreditanstalt für Wiederaufbau
www.kfw.de
- Urgewald
www.urgewald.de
- World Bank
www.worldbank.org
- World Commission on Dams (WCD)
www.dams.org
- World Economy, Ecology & Development (WEED)
www.weed-online.org



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