

**Evaluation of the joint initiative of the World Commission on Dams and the
United Nations Environment Programme on the environmental, social and
economic impacts of large dams**

Jeffrey Thornton

February 2001

Contents

Executive summary.....	5
A. Project details	5
B. Background	5
C. Findings of fact.....	5
D. Evaluation indicators.....	6
E. Performance of the project	6
F. Lessons learned	9
G. Conclusions	10
H. Recommendations	10
I. Background	10
II. Overview of the project.....	11
A. Statement of the problem	11
B. Project goals and objectives	11
C. Project implementation	12
III. Project results	12
A. Project outputs.....	12
B. Evaluation indicators.....	14
IV. Technical review	26
A. Thematic review and issue papers.....	26
B. Case studies	28
V. Lessons learned	29
A. WCD process.....	29
B. Management and conduct of UNFIP projects	30
C. Leadership role of UNEP in global water resource issues	30
VI. Conclusions	31
VII. Recommendations	31

Annexes

I. Preliminary identification of projects to be conducted by UNEP as follow-up to the WCD initiatives	34
---	----

II.	Environmental flows for river ecosystems: an international working conference on assessment and implementation, incorporating the Fourth International Ecohydraulics Symposium, 3–8 March 2002, Cape Town.....	35
III.	Draft list of follow-up initiatives currently known to the WCD secretariat	37
IV.	Response of the evaluation mission to comments provided by UNEP on the preliminary draft of the UNEP project review and evaluation.....	40

List of abbreviations and acronyms

ADB.....	Asian Development Bank
AusAID.....	Australian Agency for International Development
BMZ.....	Federal Ministry for Economic Cooperation (Germany)
CIDA.....	Canadian International Development Agency
CITES.....	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COFACE.....	Compagnie Française d'Assurance pour le Commerce Extérieur
DEPI.....	Division of Environmental Policy Implementation
DEWA.....	Division of Early Warning and Assessment
DFID.....	Department for International Development (United Kingdom)
DTIE.....	Division of Technology, Industry and Economics
ECGD.....	Export Credits Guarantee Department (United Kingdom)
EMINWA.....	environmentally sustainable management of inland waters (UNEP)
FAO.....	Food and Agriculture Organization of the United Nations
GEF.....	Global Environment Facility
GMSR.....	Greater Mekong subregion
ICARM.....	integrated coastal area and river basin management
ICID.....	International Commission on Irrigation and Drainage
ICOLD.....	International Commission on Large Dams
IETC.....	International Environmental Technology Centre
IHA.....	International Hydropower Association
IHP.....	International Hydrological Programme
IRN.....	International Resource Network
IUCN.....	World Conservation Union
IWRA.....	International Water Resources Association
JBIC.....	Japan Bank For International Cooperation
KfW.....	Kreditanstalt für Wiederaufbau
MEDU.....	Coordinating Unit of the Mediterranean Action Plan
MRC.....	Mekong River Commission
NOFA.....	Norwegian Aquaculture Society
NORAD.....	Norwegian Agency for Development Cooperation
NVE.....	Norwegian Water Resources and Energy Directorate
OECD.....	Organization for Economic Cooperation and Development
PAP/RAC.....	priority action programme/regional activity centre
SBSTTA.....	Subsidiary Body on Scientific, Technical and Technological Advice
SEA.....	strategic environmental assessment
SIDA.....	Swedish International Development Authority
UNEP.....	United Nations Environment Programme
UNESCO.....	United Nations Educational, Scientific and Cultural Organization
UNFCCC.....	United Nations Framework Convention on Climate Change
UNFIP.....	United Nations Fund for International Partnerships
US-Exim.....	Export Import Bank of the United States
WCD.....	World Commission on Dams
WCMC.....	World Conservation Monitoring Centre
WHO.....	World Health Organization

Executive summary

A. Project details

Project title:	Joint initiative of the World Commission on Dams and the United Nations Environment Programme on the environmental, social and economic impacts of large dams	
Project No.:	MT/1100-99-06 (UNFIP project No. UNE-GLO-99-071)	
Duration:	18 months	
	Commencing:	July 1999
	Completion:	December 2000
	Refined:	February 2001
Location:	Global	
Implementing partner:	United Nations Environment Programme P O Box 30552, Gigiri, Nairobi, Kenya	
Associated implementing partner:	World Commission on Dams 5 th floor Hycastle House, 58 Loop St. P O Box 16002, Vlaeberg, Cape Town, 8018 South Africa	
Project cost:	United Nations Foundation Trust Fund	\$ 800,000
	Counterpart (United Nations Foundation)	\$1,800,000
	Environment Fund (in-kind)	\$ 50,000

B. Background

1. This project formed the United Nations Environment Programme (UNEP) contribution to a much larger undertaking by the World Commission on Dams (WCD). Outputs of the UNEP work programme were used as inputs to the WCD project, which was completed in partnership with UNEP. Activities under the UNEP contribution were initiated and completed within a period of approximately 18 months, from June 1999 to December 2000—later extended to February 2001, to meet the WCD work-programme requirements. This evaluation report is the final work element in the UNEP contribution to the project. It was prepared by an independent consultant during February 2001.

C. Findings of fact

2. The evaluation established the following findings:

- (a) The UNEP project formed an essential element of the WCD work programme;
- (b) The outputs of the UNEP project were fully reflected within the WCD report, *Dams and Development: A New Framework for Decision-making*, published in 2000 by Earthscan Publications Ltd.;
- (c) The UNEP project successfully established linkages between WCD and a number of agencies and organizations, including the United Nations Foundation, that provided portions of the project funding;

(d) The project was fully responsive to the UNEP mission, providing an opportunity to demonstrate UNEP leadership in water resources management—in particular, freshwater resources—as well as taking advantage of the prestige enjoyed by UNEP in the industry and environment world;

(e) The project successfully delivered all the proposed outputs.

D. Evaluation indicators

3. The findings of the evaluation are set out in tabular form below.

Table 1

Project rating scores (1 = excellent).

Attribute	Score
Timeliness as per the project document and subsequent revisions	1
Achievement of results	2
Attainment of outputs	1
Completion of activities	1
Project executed within budget	1
Impact created by the project	2 ^a
Sustainability	3 ^a
Average score	1.6

^a The immediate impact of this project is high; the long-term impact and sustainability of the programme to which it contributed have yet to be determined, however, in particular following the Third Forum to be convened by WCD in Cape Town in late February 2001.

E. Performance of the project

4. A summary of the assessment of the project's performance under the parameters: appropriateness and relevance; effectiveness and efficacy; sustainability; and impact, is provided in the following subsections.

1. Appropriateness and relevance

5. Where the project's appropriateness and relevance are concerned, the assessment findings may be summarized as follows:

(a) The project budget and work plan were appropriate to the outputs generated;

(b) The project focused on the freshwater area of concentration identified by the Governing Council of UNEP;

(c) The project was conducted under the element on caring for freshwater, coastal and marine resources of the sustainable management and use of natural resources subprogramme approved in the 1998-1999 UNEP programme of work;

(d) WCD conforms to the target beneficiaries identified in the 1998-1999 UNEP programme of work;

(e) The launching of a dialogue on dams is consistent with national-level action plans worldwide;

(f) Linkages to conventions, protocols and agreements were identified where they already existed and, where they did not, ways of establishing such linkages were proposed, this finding being an output of one project activity;

(g) Creation of a body such as WCD to facilitate environmental problem-solving has proved to be a successful technique for resolving environmentally based disputes;

(h) The endorsement or adoption, as applicable, of the WCD programme output, *Dams and Development: A New Framework for Decision-making*, by a range of stakeholders demonstrates that this project has been both meaningful and relevant in its approach;

(i) The assumption that stakeholders would support a process of dialogue was borne out by the project.

2. Effectiveness and efficiency

6. Under this parameter, the evaluation concluded as follows:

(a) The project outputs were completed within budget and delivered on time;

(b) The project was completed by UNEP, WCD, the World Conservation Union (IUCN) and other consultants within a collaborative framework consisting of workshops, regional consultations, and forums of stakeholders convened by WCD;

(c) The WCD secretariat, backstopped by staff from UNEP and the United Nations Office at Nairobi, supported the timely execution and completion of the project; concerns were expressed, however, about routing delays in funds transfers from the United Nations foundation, via the United Nations Fund for International Partnerships (UNFIP), the Office at Nairobi and UNEP, to WCD and these in turn spurred the production of appropriate informational materials for use in future projects;¹

(d) The work products were commensurate with the funds allocated, and were completed within budget.

3. Sustainability indicators

Where its sustainability was concerned, the project was assessed as follows:

(a) The project contributed significantly to capacity-building, policy development, and raising of awareness of the impacts of large dams on the environment;

(b) WCD formed an effective body within which policies and guidelines were developed; given that this body ceases to exist on 31 March 2001, however, a successor body or other framework should be established to move the initiative forward to the stage of implementation;

(c) Elements of the WCD policies and guidelines have already been implemented by national Governments participating in the WCD process;

(d) Broad-based participation in the WCD process underpinned the UNEP project;

¹ This project was one of the first large matching-grant projects that UNEP executed through the United Nations Foundation, and, as such, was subject to some teething troubles that have benefited subsequent projects.

- (e) The UNEP project and WCD process included elements of relevance to numerous national and regional plans of action for the development of water resources;
- (f) The UNEP project and WCD process are consistent with the objectives of the United Nations Convention on the Law of the Sea and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities;
- (g) The UNEP project and WCD process contributed to refinement of the UNEP process for the environmentally sustainable management of inland waters (EMINWA), the regional seas programme, and similar initiatives in inland river basins being implemented under the Global Environment Facility (GEF);
- (h) Stakeholder participation was an essential element of the WCD process supported by the UNEP project;
- (i) The UNEP project both facilitated and supported fulfilment of the WCD mission;
- (j) The WCD secretariat collaborated well with the UNEP project manager and the United Nations Office at Nairobi funds manager in the management of the project;
- (k) The project was successfully and favourably evaluated;
- (l) The staff from WCD, UNEP and the United Nations Office at Nairobi were adequately trained for the conduct of this project, as demonstrated by the quality of the outputs and project reports;
- (m) Counterpart funds were provided to the WCD project from a wide variety of sources, including both public and private sector entities, as well as donor organizations, including the United Nations Foundation.

4. Impact indicators

7. With regard to impact, the assessment found as follows:

- (a) The UNEP project strengthened collaboration between IUCN and UNEP, as well as between UNEP divisions, although some divisions were less willing to provide assistance than others—the Division of Technology, Industry and Economics, and the Division of Environmental Conventions were exceptionally helpful;
- (b) The project provided an opportunity for UNEP to facilitate interactions with other United Nations bodies;
- (c) The completion of the UNEP project and the WCD work programme provides a tremendous opportunity for UNEP to move the policies and guidelines into an operational phase;
- (d) The role of UNEP in international finance and insurance was highlighted;
- (e) While the visibility of UNEP was raised in the process, there was an apparent lack of media promotion by UNEP; hence, in media reports there was little mention of the key role played by UNEP in this project;
- (f) The project as a whole greatly enhanced communications between stakeholders, including non-governmental organizations, Governments, and other agencies;

(g) The policies and guidelines are eminently reproducible but must be translated into operational programmes; this latter requirement provides a significant opportunity for UNEP;

(h) Information generated by the UNEP project was essential to the development of the WCD policies and guidelines that are being used by Governments;

(i) The project was, in part, conducted by interns and thus contributed to their educational development; at the same time, capacity-building is a major future opportunity identified through the project;

(j) The project was compatible with the GEF international waters projects currently being implemented by UNEP, as demonstrated during the project workshops completed as outputs of this project;

(k) The WCD process empowered all stakeholders affected by dam projects;

(l) The WCD process was supported by the World Bank, the Food and Agriculture Organization of the United Nations (FAO), and the World Health Organization (WHO);

(m) The project contributed to the formulation of policies and guidelines being considered by organizations such as the World Bank, regional development banks, and bilateral donors for incorporation into their operation procedures;

(n) The project contributed to the formulation of policies and guidelines being considered by private sector organizations such as power companies;

(o) The project provides an opportunity for UNEP to create synergy between and among different United Nations bodies.

F. Lessons learned

8. This project provided three valuable lessons for UNEP:

(a) The WCD process of empowering communities, community-driven issue identification, directed but impartial technical evaluation, broadly-based participation and decision-making within a well-defined issue-orient framework, a predetermined time frame, and a focus on commonalities rather than differences is an effective means of achieving consensus in polarized environmental debates;

(b) The need to understand the institutional vagaries of programmes and institutions in advance eliminates a significant level of organizational angst; hence, the preparation of fact sheets by UNEP and the United Nations Office at Nairobi on the United Nations Foundation/UNFIP process as an aid to future projects;

(c) An institutional focal point, and appropriate mechanisms within the focal institution, to move policies and guidelines, developed through short-term projects such as the WCD project, into the longer-term operational phase, is an essential element in institutionalizing and operationalizing such policies and guidelines—developing such a focal point and creating a climate conducive to the continuity of initiatives such as those developed through the WCD process is an essential element of project planning and programme development.

G. Conclusions

9. Overall, the project ranks very highly indeed, with the full number of products being delivered on time and within budget. Given the time limitations within which the project operated—it being only a portion of a much larger work effort being undertaken by WCD—there were some concerns that arose during the execution of the project, and some variability in the quality of the products, but these were generally within acceptable limits. More importantly, these concerns did not detract from the overall quality of the WCD final report, *Dams and Development: A New Framework for Decision-making*, published in 2000 and received by the world community with acclaim. In this regard, the entire project team should be commended for a job well done. This success creates specific opportunities for UNEP to move the initiative forward into implementation.

H. Recommendations

10. The evaluation mission recommends:

(a) That UNEP consider adopting the WCD process when necessary to resolve environmental conflicts in other areas where similarly polarized positions exist;

(b) That UNEP subsume into its organizational structure the WCD secretariat, or successor organization, as a means of ensuring that the policies and guidelines generated through this project are made operational—positioning this unit within the Division of Technology, Industry and Economics would build upon existing strengths that this Division has developed in recent years;²

(c) That UNEP, in operationalizing the WCD policies and guidelines, consider creating regional centres of expertise to promote the environmentally sustainable development of water resources, and support regional initiatives in capacity-building and institutional strengthening;

(d) That UNEP develop and conduct capacity-building programmes to support institutions and communities in the implementation of the WCD policies and guidelines;

(e) That UNEP encourage, through the Division of Environmental Conventions, consideration by the convention secretariats of the policies and guidelines developed through this project, insofar as they are applicable—the degree to which the WCD project relates to the Conventions was identified as a project output;

(f) That UNEP promote the policies and guidelines through the International Environmental Technology Centre (IETC) and the Division of Technology, Industry and Economics and through its implementation of international waters projects under GEF;

(g) That UNEP give due consideration to creating a division of freshwater, or a freshwater team within the current division structure, that will give equal recognition to this area of concentration identified by the UNEP Governing Council.

I. Background

11. During June 1999, UNEP entered into an agreement with WCD for the conduct of a programme of activities relating to the preparation and publication of guidelines and policies on the construction, operation and decommissioning of large dams. Large dams are those constructed waterbodies, also known as reservoirs or impoundments, which have a volume of 3 million cubic meters or more, or are 15 metres or

² 1999 report of the UNEP Division of Technology, Industry and Economics: this document outlines the principal areas of activity of this division, which mesh well with the WCD approach and the mandate of this now defunct body.

more in height. The activities to be completed under this agreement were an integral part of the preparation of a published framework on the management and operation of large dams being compiled by WCD. These activities were to be carried out over a period of approximately 18 months, up to and including December 2000, by WCD in collaboration with UNEP and IUCN—the latter operating through a subproject of five months' duration agreed upon between UNEP and IUCN in September 1999. The project was scheduled for final completion during February 2001.

12. As of February 2001, the 12 activities identified within the project were essentially complete; the present review and evaluation is one of the last of the tasks to be completed. This report is based on a review of documents, records, and published materials held by UNEP in Nairobi and by WCD in Cape Town, and on conversations with project staff employed by UNEP and WCD. It summarizes the results of the project and sets forth recommendations with respect to the conduct and execution of this and similar projects being undertaken by UNEP. The evaluation was completed by an evaluation mission, conducted by Dr. Jeffrey Thornton, an independent consultant,³ to UNEP and WCD from 2 to 10 February 2001.

II. Overview of the project

A. Statement of the problem

13. Providing freshwater and power to sustain human populations and economic activities, especially in those areas lacking in available surface water supplies, has resulted in the creation of artificial lakes throughout the world. In recent years, as the impacts of these artificial structures have become increasingly well known, proposals to create additional water supply capacity through the construction of new dams have come under renewed scrutiny (and, often, opposition) from communities and corporations. This notwithstanding, demands for water and water power are such that new construction continues.

14. The challenge, therefore, is to develop a framework within which such construction, as well as the subsequent operation of the structures, can take place with reduced or minimal impacts on both people and the environment. Simply put, the challenge is to balance the needs of communities with the need to maintain the structure, function and ecological integrity of our limited aquatic ecosystems.

15. WCD has accepted that challenge and has undertaken this project as a means of facilitating debate and formulating a framework for reconciling the many conflicting interests and demands inherent in creating a balance between humans and their environment. In so doing, WCD, in cooperation with UNEP and other partners—representing both industry (e.g., corporations, financial institutions, and governmental organizations) and communities (e.g., non-governmental organizations, community groups, and affected community groups)—has pioneered a process that, if successful, will stand as a model for future environmental conflict resolution worldwide.

B. Project goals and objectives

16. The joint initiative of WCD and UNEP on the environmental, social and economic impacts of large dams (referred to in this report as “the UNEP/WCD project” or, simply, “the project”) was intended:

³ Dr. Jeffrey A. Thornton is managing director of International Environmental Management Services Ltd., a non-stock, not-for-profit corporation chartered in the State of Wisconsin in the United States of America. Dr. Thornton is a licensed professional hydrologist, and is employed as a principal environmental planner by the Southeastern Wisconsin Regional Planning Commission. He has extensive knowledge of lakes and reservoirs throughout the world, and has worked for many years to extend the principles of integrated catchment (or watershed-based) management to communities both in the Milwaukee metropolitan area and throughout the world, especially in Africa and Latin America. He holds a doctorate in tropical resource ecology from the University of Zimbabwe, a master's degree in business administration from the University of South Africa, and is a North American Lake Management Society (NALMS) certified lake manager.

- (a) To assist WCD in a global review of large dams and alternatives, and develop a decision-making framework;
- (b) To facilitate information gathering and analysis leading to an environmentally-sound approach for the construction and operation of large dams;
- (c) To enable outreach to stakeholders and interest groups and create linkages with international and regional organizations;
- (d) To support the global dissemination of guidelines and policies with respect to large dams; and
- (e) To review and document the WCD process as a model for addressing other global policy issues and conflicts.

17. Achievement of these goals would contribute to fulfilling the mandate of UNEP relating to promoting sustainable utilization of the world's freshwater, as set forth in chapter 18 of Agenda 21, and further enhance and refine the EMINWA process.

C. Project implementation

18. The UNEP/WCD project was implemented from Cape Town by WCD with support from Nairobi-based UNEP staff. Elements of the project were also executed as a subproject by IUCN, based in Gland, Switzerland, with additional support from WCD and UNEP staff. Project management services were provided by UNEP with the support of the United Nations Office at Nairobi. In carrying out the project activities, the staff of these organizations were assisted by experts selected through a rigorous process of peer-nomination and selection conducted by WCD.

19. The project was implemented as an element of the WCD work programme, which provided the context for the project, and also imposed certain constraints related to upon activities subject to an external timeline. Accordingly, WCD had to complete its work within an 18-month time frame, or within a period of two years from its inception, after which the plan was for the Commission to be dissolved.⁴

20. It should be noted that, although this evaluation is only of the UNEP/WCD project, consistent with the terms of reference of the evaluation mission, frequent reference is made to the WCD approach, process, and outputs. It is necessary to examine the UNEP/WCD project within the larger context of WCD as a whole, given its close integration within the overall WCD work programme. As a result, the final outputs of the project were "as one" with the WCD final report. This degree of programme support, and the high level of integration between programme elements represent a major strength of this project.

III. Project results

A. Project outputs

21. Table 2 summarizes the planned outputs to be delivered by the project and the specific areas to which they relate. Based upon these indicators, the project has fully achieved its objectives.

⁴ The future of WCD or any successor organization is a subject to be discussed at the Commission's Third Forum, to be held during February 2001—see the recommendations set forth at the end of this report: continuation of the WCD initiative into its operational phase is strongly recommended.

Table 2

Planned outputs and products to be delivered by the project.

Output	Area to which proposed product relates	Product^a
Four case studies	Pakistan	Tarbela dam, Indus river basin, Pakistan
	Thailand	Pak Mun dam, Mun-Mekong river basin, Thailand
	Brazil	Tucuruí dam, Tocantins river, Brazil
	Zimbabwe	Kariba dam, Zambezi river, Zambia/Zimbabwe
Five thematic reviews	Social and equity issues	<ul style="list-style-type: none"> • Social impacts of large dams: equity and distribution issues • Dams, indigenous people and vulnerable ethnic minorities • Displacement, resettlement, rehabilitation, reparation and development
	Environment impacts	<ul style="list-style-type: none"> • Dams, ecosystem functions and environmental restoration • Dams and global change
	Institutional framework	<ul style="list-style-type: none"> • Economic, financial and distributional analysis • International trends in project financing
	Options and alternatives	<ul style="list-style-type: none"> • Electricity supply and demand management options • Irrigation options • Water supply options • Flood control and management options • Operation, monitoring and decommissioning of dams
	Decision-making framework	<ul style="list-style-type: none"> • Planning approaches • Environmental and social assessment for large dams • River basins—institutional frameworks and management options • Regulation, compliance and implementation • Participation, negotiation and conflict management
Three issue papers ^b	Biological diversity	Don McAllister, John Craig, Nick Davidson, Simon Delaney and Mary Seddon, <i>Biodiversity Impacts of Large Dams</i>
	Ecosystems	Matthew McCartney, Caroline Sullivan and Mike Acreman, <i>Ecosystem Impacts of Large Dams</i>
	Mitigation and convention linkage	John Bizer, <i>International Mechanisms for Avoiding, Mitigating and Compensating the Impacts of Large Dams on Aquatic and Related Ecosystems and Species</i>
Cross-check survey of 150 dams		Christopher Clarke, <i>Cross-Check Survey^c</i>

Other issue-related documentation		Asheline Appleton, <i>Dams and Biological Diversity—Establishing Strategic Linkages Under the Conventions</i> Albert Mumma, <i>An Analysis of the Linkages Between the UNFCCC Legal Regimes and Dams</i>
One regional consultation	Africa and West Asia	WCD (1999) <i>Large Dams and Their Alternatives in Africa and the Middle East: Experiences and Lessons Learned</i>
One forum	Cape Town, South Africa	WCD (2000) <i>Second Forum Meeting: Summary of Plenary and Workshop Discussions</i>
Recommended policies and guidelines		Chapters 8 (seven strategic policy priorities) and 9 (25 good practice guidelines) in: WCD (2000) <i>Dams and Development: A New Framework for Decision-making</i>
One published report		WCD (2000) <i>Dams and Development: A New Framework for Decision-making—An Overview</i>
One report on a United Nations-based workshop		Proceedings of the UNEP international workshop on ecosystem impacts of large dams, 4-6 December 2000, Nairobi ^d
One evaluation report		The present document

^aThe documents cited were either completed and published as of February 2001 or were in the final stages of preparation prior to publication.

^bThese issue papers constituted the outputs set forth under the subproject MT/1100-99-71, to review the impacts of large dams on the aquatic environment, implemented by IUCN.

^cAlthough the survey covered some 150 dams, an inventory of about 125 dams, for which data were available, was published.

^dA United Nations-based workshop to publicize the WCD process, planned for February 2001, was postponed to a future date to be determined. This notwithstanding, the materials prepared in support of this workshop were disseminated through the UNEP web site (www1.unep.org/icarm/dams).

B. Evaluation indicators

22. In accordance with the terms of reference of this evaluation, the project was appraised under four sets of parameters, namely: appropriateness and relevance; effectiveness and efficiency; sustainability; and impact. The evaluation's findings under these parameters are described in detail in the following subsections.

1. Appropriateness and relevance

23. UNEP is uniquely situated within the United Nations to fulfil the role it assumed within the larger framework of the WCD programme. Pursuant to its mandate to identify emerging environmental issues of concern to the international community, UNEP commissioned a number of works that directly addressed the issue of environmental impacts of large dams. In keeping with its catalytic function, UNEP made it possible for the project to be completed on time by establishing linkages both within the organization and outside it as well. Specifically, within UNEP, linkages were established between—on the one hand—the Division of Environmental Policy Implementation, from which the project was implemented, and—on the other—the

Division of Technology, Industry and Economics (more specifically, its Economics and Trade Unit), the Division of Policy Development and Law, and the Division of Environmental Conventions.⁵

24. Outside UNEP, linkages were established between UNEP, WCD, IUCN and UNFIP, the link to the United Nations Foundation Inc., a private funding organization. WCD staff reported that these latter linkages were essential for the timely completion and comprehensive coverage of the project, which, in turn, helped ensure that the final outputs of the process were well received by a wide-ranging audience consisting of industry, non-governmental, community, and governmental agencies.

25. As noted above, a significant portion of the funds provided to this project were obtained in the form of matching grants made available to UNEP by the United Nations Foundation Inc., a private charitable foundation based in the United States.⁶ The Foundation provides funds to and through United Nations agencies for projects designed, among other things, to address priority environmental concerns through the creation of global forums in which countries can formulate an integrated and effective response. In particular, the United Nations Foundation supports innovative ways to implement a variety of United Nations conventions, including the Convention on Biological Diversity, by promoting the environmentally sound management of priority ecosystems. In addition, the Foundation supports programmes in other areas, including children's health, that have cross-cutting linkages with the UNEP/WCD project.

26. The complementarities between the goals and purposes of the United Nations Foundation, on the one hand, and UNEP and WCD, on the other, are evident in the outputs generated from the project. Not only did the specific outputs, in the form of issue papers and thematic review papers on the ecosystem and biosphere impacts of large dams, address issues of human health, economic development and environmental sustainability, but the WCD report also created a framework that extended and refined the EMINWA approach, initially developed by UNEP to promote the integrated environmental management of river basins. In this respect, the project contributed directly to the element on caring for freshwater, coastal and marine resources of the sustainable management and use of natural resources subprogramme identified in the UNEP programme of work for the 1998-1999 biennium. Although the WCD programme was comprehensive in scope, the UNEP elements focused on developing countries, with WCD using its own resources to fund work relating to developed country waterbodies.

27. The WCD approach, supported by this project, was to create a novel mechanism whereby distant and disaffected parties could find common ground in the debate surrounding large dams. This approach entailed the compilation and review of a substantial volume of testimony, case studies, reviews, and other submissions, totalling more than 2,500 individual contributions. Throughout, WCD sought to include all manner of peoples and to remain sensitive to the concerns of all the different parties concerned, encompassing the views of citizens, communities, special interests—both corporate and civic, donors and aid agencies, and Governments in both the developing and developed portions of the world.

28. Press-coverage of the WCD process demonstrates that inputs were received, for example, from subsistence fishermen and farmers, and that these were given equal consideration to those of corporate tycoons. Indeed, WCD itself was composed of 12 individual Commissioners, reflecting a diversity of views and life experiences that ensured a fair and equitable consideration of all points of view on the issue of large dams.

⁵ The UNEP project manager noted that the degree and level of assistance and collaboration between divisions ranged from no cooperation to exceptional cooperation, the latter being provided by the Division of Technology, Industry and Economics (through its Economics and Trade Unit) and the Division of Environmental Conventions. WCD staff, likewise, noted that the Geneva-based Economics and Trade Unit showed great versatility in that it not only facilitated the industry-related aspects of the project but also lent expertise to the project in insurance and finance issues available from no other agency or organization.

⁶ This project can be deemed an exclusively charitable project because it is intended to enhance the livelihoods and social conditions of indigenous peoples, as well as of terrestrial and aquatic ecosystems, that are affected by the construction and operation of large dams.

29. Through the consultative process, as well as more formal gatherings in which 68 organizations from 36 countries were represented, and with funds provided by 53 financial contributors, the WCD process looks set to become a model for environmental conflict resolution in numerous other areas of human endeavour. Clearly, the completion of the final report of WCD is the starting point for a new dialogue on the subject of large dams.

30. Since the completion and publication of the WCD report, *Dams and Development: A New Framework for Decision-making*, several Governments and multilateral agencies, including the Government of South Africa and the World Bank, have endorsed the process and the outputs. Through actions such as these, as well as the broad participation of organizations such as those already mentioned, this project has proved the initial hypotheses underlying the project to be sound and supportable. In so doing, it has fully borne out the assumption that relevant stakeholders would cooperate fully to identify and analyse the full range of positive and negative impacts to the human and natural environment to be expected from the construction and operation of large dams. In this way, the effectiveness of the UNEP/WCD project was part and parcel of the success achieved by the WCD programme.

2. Effectiveness and efficiency

31. Table 2 clearly shows that the project was entirely successful in achieving the proposed outputs targeted during project formulation. The various documents, reports, issue papers and discussions were completed, for all intents and purposes, on time and within budget. The preparation of camera-ready copy, as well as final publication of all the documents indicated as project outputs within the 18-month project period is a remarkable and commendable achievement. Achieving consensus among a diverse constituency in order to generate these outputs is an even greater achievement. With funds provided through UNEP, and with its active cooperation, WCD and its partners produced a policy framework and system of design and operational guidance consistent with the stated objectives of the project.

32. The challenge now is to implement this framework and put this guidance into effect through appropriate and timely follow-up actions. The experiment in partnership that the WCD process initiated must be continued. In facilitating and expediting this continuation, UNEP can and should have a major role.

33. With a project that has so completely achieved its stated goals, it might seem somewhat ungracious to remark on any faults. Indeed, the project is an excellent example of a process in which the strengths of the partners were enhanced and the weaknesses minimized. Nevertheless, if there is a weakness to be identified in this process, it relates to the administrative structure within which the project functioned. This criticism is not targeted at any individual or unit of government, it applies to the process in general. The numerous and frequent e-mail contacts and other correspondence between partners indicate a high degree of trust, respect, and collaboration between individuals and organizations. These documents reveal an exceptional degree of teamwork both within and among all of the partners, and in particular between and among staff within UNEP and WCD. Despite the cordial and professional nature of these interactions, however, staff have expressed some frustration at substantial delays in the transfer of project funds to the project.

34. As previously noted, the funds by which the project was executed came predominantly from the United Nations Foundation: of the project's \$2.6 million, the United Nations Foundation contributed \$1.7 million. These funds consisted of unconditional or outright grant funds, and conditional or matching grant funds. The former were made available by the United Nations Foundation almost immediately and without delay during 1999. While, under the 1999 work programme, UNEP was authorized to incur certain expenses, reimbursement of these expenses was not received by UNEP until late in the 2000 financial year, despite a request for funds having been made during 1999.

35. Factors affecting the financial management of the project and the transfer of funds appear to be related to three issues; namely:

- (a) The source and limitations imposed by the source of the funds;
- (b) Changes in the transfer and reporting procedures that were effected after the agreement of the project documents but prior to the initiation of the work; and
- (c) The fact that the project represents an initial point on the “learning curve” for several agencies and agency departments.

These factors are further explored below.

36. The United Nations Foundation is established in the United States of America and, therefore, is subject to the laws governing taxation of charitable contributions. These requirements mandate that, in the case of matching grants, the donations from those donors that provide the funds to be matched by the grant must be received and accounted for by the Foundation prior to disbursement of the total amount of funds to the recipient organization.

37. This requirement applied to the United Nations Foundation grant to UNEP for this project. Donors, identified and solicited by WCD, included both domestic United States entities as well as foreign entities with interests in large dams and the environment. All these donors were requested to transfer their contributions to the United Nations Foundation so that they could be recorded and matched with United Nations Foundation funds. Contributions from foreign sources were subject to exchange rate fluctuations, bank transfer delays, and other influences—including the lack of descriptive “tags” that could identify the contribution as relating to the UNEP/WCD project—which resulted in delays in their receipt being recorded. These delays created further delays in the funds being transferred from the United Nations Foundation account to the United Nations. The mechanism within the United Nations established to receive these funds is UNFIP.

38. The agreed project document was drawn up on the assumption that advance funds would be made available to UNEP by UNFIP, thereby making the transfer of funds to WCD a streamlined process. After the agreement of the project document, it was found that, because the UNEP secretariat is a part of the larger United Nations Secretariat, the provision of advance funds could not be effected under United Nations rules. Instead, a process had to be followed whereby an allotment advice was requested from United Nations Headquarters, on a reimbursement basis. The submission of an allotment advice must be preceded by an authorization of expenditure, issued annually, that permits the organization to make payments from its own funds. This process imposed upon the project a different set of reporting and accounting requirements that also created delays in payments being effected.

39. The reporting period at the end of each quarter was constrained by an extremely tight timeline, requiring implementing partners to report expenditures within 15 days of the end of the quarter. UNEP then needed a further 15 days to review and compile all expenditure requests for United Nations Foundation funds for onward transmission to UNFIP. All these factors notwithstanding, and despite frequent staff movements within UNFIP that complicated relationships between project staff, through the good offices of all UNEP, United Nations Office at Nairobi and WCD staff involved, the necessary adjustments were made to the agreed procedures to bring the project budgets into conformity with these requirements.

40. During this project, UNEP made two advance payments from its Technical Cooperation Trust Fund prior to receiving reimbursement from UNFIP. Following authorization to incur expenses under the 1999 work programme, UNEP advanced \$476,190 to WCD and \$50,000 to IUCN from the Trust Fund; a further \$400,000 in bridging finance was transferred to WCD early in 2000 to ensure the timely completion of the project. No funds were transferred from UNFIP to UNEP during 1999, with the first reimbursement of funds advanced from the Technical Cooperation Trust Fund being received during 2000, subsequent to the second cash advance being paid to WCD. Ultimately this process was refined to include provision for a limited cash

advance and, once an authorization was received, funds transfers were relatively quickly effected. As a result, the project was reported to have been completed within budget and on time.

41. Superimposed upon the procedural refinements described above was the adoption by UNEP of a programme support charge levied against project monies; UNFIP projects became subject to a 5 percent levy while other funds became subject to a 13 percent levy. As the latter fees were implemented after the project documents had been agreed, these levies ultimately were not charged to this project in order to avoid creating an artificial shortfall in the project funds.⁷ Therefore, only the portion of the project budget provided through the Technical Cooperation Trust Fund (\$800,000) was subject to the 5 per cent programme support charge. The \$1.8 million counterpart contribution was not subject to this charge, despite the fact that the administration of these funds was not significantly different from that of the Trust Fund monies.

42. As a result of the lessons learned during this project, which represented the first large project to be executed by UNEP using funds provided through the matching grant programme of the United Nations Foundation, the financial management team implemented a number of innovations designed to obviate these and similar problems in future projects.

43. Among the innovations introduced as a direct result of UNEP having been involved in the WCD project was the preparation of a fact-sheet containing a set of guidelines for developing and budgeting UNFIP-funded projects. These fact-sheets clearly define such key terms as "matching grant" and outline the requirements—including overhead fees or programme support charges, reporting requirements, timelines, and procedures for changes to projects for the conduct of UNFIP-funded projects.⁸

44. In addition, UNEP has instituted more efficient accounting procedures to expedite reporting, and is adopting the same accounting software as that used by United Nations Headquarters to facilitate exchanges of data and funds. The fund managers at United Nations Office at Nairobi reported to the evaluation mission that these changes were proving most effective with ongoing UNFIP-funded projects.

45. Finally, it is the opinion of the evaluation mission that the level of funding and allocation of resources for the conduct of this project was realistic and appropriate.⁹ The evaluation mission concurs that the project was completed on time and within budget. Table 3 summarizes the financial and work programme aspects of the project.

⁷ Counterpart contributions to new projects, developed subsequent to this project and with effect from 1 January 2000, were subject to these levies as the budgetary implications could be included within the agreed project documents.

⁸ It should be noted that, because of external constraints, the cash flow from donors to the United Nations Foundation (required by United States tax laws), to UNFIP (to enter the funds into the United Nations), and thence to the implementing agency cannot be further streamlined or modified. Nevertheless, by providing partners with a clear outline of the procedures and process, the lead time for payments to occur has been shortened considerably.

⁹ It should be noted that both the UNEP project manager and United Nations Office at Nairobi funds manager have reported that their time commitments to this project exceeded those provided for in their division work programmes. Given the concerns reported above, this additional time would seem to be appropriate and justified.

Table 3

Products, budgets, and delivery dates by the project output.

Output	Product	Cost (US\$) ^a	Delivery (scheduled/ revised/ actual)
Four case studies	Tarbela dam, Indus river basin, Pakistan	130 000	3/2000 2/2001 11/2000
	Pak Mun dam, Mun-Mekong river basin, Thailand	130 000	3/2000 1/2001 10/2000 ^b
	Tucuruí dam, Tocantins river, Brazil	200 000	3/2000 2/2001 5/2000 ^b
	Kariba dam, Zambezi river, Zambia/Zimbabwe	140 000	3/2000 2/2001 9/2000
Five thematic reviews	Social and distributional issues Environmental issues Economic and financial issues Options assessment Institutional processes	300 000	2/2000 2/2001 10/2000 ^b
Three issue papers	Ecosystem impacts of large dams Biodiversity impacts of large dams Mitigation of impacts of large dams	99 750	1/2000 2/2001 12/2000
Cross-check survey of 150 dams	Christopher Clarke, <i>Cross-Check Survey</i>	100 000	3/2000 2/2001 11/2000
Other issue-related documentation	Convention on Biological Diversity Framework Convention on Climate Change	200 000	3/2000 12/2000 12/2000
One regional consultation	WCD (1999) <i>Large Dams and Their Alternatives in Africa and the Middle East: Experiences and Lessons Learned</i>	181 904	2/2000 -- 12/1999
One forum	WCD (2000) <i>Second Forum Meeting: Summary of Plenary and Workshop Discussions</i>	170 000	4/2000 -- 4/2000
Recommended policies and guidelines	Chapters 8 (seven strategic policy priorities) and 9 (25 good practice guidelines) in: WCD (2000) <i>Dams and Development: A New Framework for Decision-making</i>	100 000	8/2000 12/2000 11/2000
One published report	WCD (2000) <i>Dams and Development: A New Framework for Decision-making</i>	180 000	12/1999 12/2000 11/2000
One report on a United Nations-based workshop	Proceedings of the UNEP international workshop on ecosystem impacts of large dams, 4-6 December 2000, Nairobi	70 000	9/2000 2/2001 12/2000
One evaluation report	The present document	15 000	10/2000 2/2001 2/2001

^aAs of 31 December 2000, project funds were largely spent as budgeted; about 5 percent of the project funds remained “on the books”, reflecting accounts payable with respect to the publication of the as-yet unpublished thematic and case studies (see footnote b) and/or adjustments with respect to currency exchange rates.

^bAll thematic and case study report were in final draft form as of 5 February 2001; however, a few reports were still being finalized as camera-ready copy for publication. Final publication was anticipated no later than 20 February 2001.

3. Sustainability indicators

(a) Measures to achieve sustainability

46. This project contributed to an initiative designed to create an ongoing process whereby environmental concerns are fully integrated into decisions to build and operate dams. The mechanism for creating this process was a commission set up for a fixed term of two years. WCD ceased to exist at the end of March 2001.

47. Its closure notwithstanding, the work of WCD is only just beginning. Like all strategic planning programmes, completion of the framework plan does not mark an end to an endeavour, but is rather a starting point for implementation. Awareness has been created and a dialogue engaged, a data (knowledge) base created, and policies and guidelines established. Further work is needed, however, to operationalize and institutionalize these policies, particularly in developing countries.

48. It is precisely this issue that will be the focus of the final WCD Forum, to be convened in Cape Town at the end of February 2001. To date, it remains unclear how this most successful and innovative initiative should move forward. An opportunity clearly exists here for UNEP to continue to play a catalytic role in this dialogue by subsuming the WCD secretariat into its operational structure. Numerous similarities exist between WCD and, say, the convention secretariats housed within UNEP, and the organizational experience gained by WCD would serve UNEP very well should the Commission's secretariat be brought into the ambit of UNEP.¹⁰ Incorporation of the WCD secretariat into the UNEP structure would provide benefits associated with preserving institutional memory and facilitate implementation of an operational WCD initiative, whether or not the specific organization retained the WCD name or was continued in some other organizational guise.

49. Finally, with regard to the preservation and dissemination of the knowledge base compiled by the project, arrangements are in hand to lodge printed materials with the University of Cape Town library. In addition, electronic media will be made available in the form of CD-ROMs, and on the web site, www.dams.org, which will be maintained for a period of two years beyond the end of the project. These arrangements, plus the continued availability of the final report through the book's publisher, Earthscan Publications Ltd., should adequately ensure that the results of this project continue to influence construction and operation decisions relating to large dam projects throughout the world.

(b) Enabling environment

50. As noted above, UNEP can play a significant role in the operationalization of the project results, contributing materially to the achievement of the project outcomes. The regional base and environmental focus of UNEP should facilitate the preparation and conduct of regional courses, seminars and workshops. Based upon the guidelines and policies developed by the WCD programme, the operational programming should take place throughout the world at both the level of decision-makers and at the technical level. This potential role for UNEP becomes even more critical and important, given that WCD will cease to exist at the end of March 2001.

51. The evaluation mission foresees a tremendous opportunity for UNEP to continue and to refine the large dams initiatives begun by WCD. UNEP has the capacity to serve as an honest broker in working with international funding agencies, non-governmental organizations, communities, corporations, and Governments at all levels. With its experience in the conduct of, for example, regional seas programmes,

¹⁰ Like the operation of the GEF secretariat, the operation of the WCD secretariat within UNEP could be jointly undertaken by a number of participating agencies which, conceivably, could include the World Bank or the International Hydrological Programme (IHP) of UNESCO, for example.

UNEP is ideally placed within the United Nations system and in the global political arena to facilitate and promote the sound management of inland waters, just as it has so successfully done in the context of regional oceans.

52. Similarly, with its experience in managing the convention secretariats, UNEP is well situated to serve as a focal point in a global system of communications that would continue and extend the WCD Forum concept into the operational arena. In addition, there is the potential for substantial synergy to be created between an operational WCD and the UNEP Division of Technology, Industry and Economics, as both organizations use similar approaches and strategies in achieving progress toward the sustainable use of natural resources.¹¹

53. Therefore, using its existing partnerships developed through complementary programming and building upon its established strengths, UNEP should consider the following follow-up actions:¹²

- (a) Creation of regional centres of expertise;
- (b) Conduct of capacity-building programmes, and support to institutional strengthening and community empowerment (through related programmes such as projects conducted under the auspices of the GEF international waters portfolio);
- (c) Liaison with environmental conventions (by way of the Division of Environmental Conventions and the convention secretariats); and
- (d) Promotion of technology transfer (via the International Environmental Technology Centre—IETC—and the Economics and Trade Unit of the Division of Technology, Industry and Economics).

54. Rarely has an opportunity to advance the dialogue relating to a contentious environmental issue, and to achieve and further consensus, been so accessible. The evaluation mission strongly recommends that UNEP firmly seize this opportunity.

(b) Institutional capacity

55. Institutional capacity, relative to this project, can be viewed in two ways: first, in a narrow sense as it relates to the capacity of UNEP to undertake and execute projects of this nature, and, second, in the broader sense of the capacity of organizations and agencies to continue the work begun by WCD.

56. We have already had occasion to mention concerns about the capacity of UNEP to execute projects of this nature, especially as they relate to the rather cumbersome procedures for the transfer of funds through the United Nations to the executing agencies. As already noted in this regard, UNEP and the United Nations Office at Nairobi have now set in place measures to minimize the delays and anxieties associated with this process.

57. Beyond this, there is the larger issue of how UNEP can take advantage of opportunities arising from its adoption of a leading role in implementing the WCD policies and guidelines. With its new, policy-based

¹¹ The 1999 report of the UNEP Division of Technology, Industry and Economics states that the Division seeks to raise awareness, promote consensus, establish codes of practice and economic instruments, strengthen capacities, and exchange information to reduce human impacts upon the environment and catalyse sustainable development practices.

¹² In most cases, UNEP is already executing work programme elements in these areas; adding a component related to the construction and operation of large dams would simply build upon existing strengths within the organization (see annex I). Because of the synergies created, the incremental cost of UNEP subsuming the responsibilities and role of the WCD would probably be minimal in terms of staffing and support costs (relative to the overall UNEP work programme).

organizational structure, UNEP appears poorly suited to capitalize on the full implementation and operationalization of water resource-based (biosphere component-oriented) management policies and guidelines such as those developed by WCD. Although freshwater was one of the areas of concentration identified by the Governing Council of UNEP at its fifth special session and its subsequent twentieth ordinary session, this emphasis is not reflected in the new organizational structure of UNEP. This omission creates real barriers to integrating a WCD-type secretariat within the organization, not the least of which is the fact that the matters dealt with here cut across all the policy-focused divisions.

58. Observations by the evaluation mission suggest that, while some divisions appear quite capable of working together on such projects and happy to do so, others are reluctant to expose themselves to activities outside their own immediate area of competence. The reasons for this reluctance are varied, and include fears of loss of autonomy, concerns over budgetary commitments (or lack thereof), considerations relating to “ownership” of the project, and competition between divisions for scarce human and financial resources. In short, the fact that the new organizational structure is based upon interconnected and cross-cutting areas of concentration (especially when viewed from the perspective of the natural resource base) exacerbates the rivalries already existing within the organization.

59. Because freshwater is one of the areas of concentration identified by the Governing Council, the easiest way to overcome the constraints imposed by the current organizational structure would be to add a division of freshwater. Such a “fix” would probably be only temporary, however, as it would be necessary to incorporate into this new division staff with skills in engineering, limnology, public health, water law, environmental economics, hydrology, political science, etc. Given the fact that UNEP has just been reorganized, and recognizing the vision of the Executive Director in providing linkages between those areas of concentration demanded by the Governments which the organization serves, it might be more practical to create “programme teams” from each of the new divisions, using staff with experience and knowledge of specific biosphere components; i.e., a freshwater team, an oceans team, a terrestrial team, an atmosphere team, etc.

60. The success or failure of such a team approach would depend on the goodwill and collaboration of the current division heads, which, in turn, would require the resolution of many of the fears and rivalries identified above. Creation of such teams would, however, be the best way of utilizing the existing human and financial resources of UNEP by limiting duplication across divisional lines and capitalizing on the breadth of knowledge contained within the organization. It should also help strengthen the organizational structure of UNEP by encouraging a holistic outlook among UNEP staff and fostering inter-divisional projects: each division, through its individual members and as a whole, could contribute its strengths to a project forming part of a larger approved programme.

61. In any event, as an organization whose mission is closely allied to that of the WCD process, as identified through this project, UNEP remains the body with the greatest potential to carry forward the initiative begun by WCD.

62. To provide an organizational framework for the practical implementation of the outcomes of the UNEP/WCD project, WCD, through its various forums, has established a system by which the policies and guidelines agreed by the Commission can be implemented. Further staff support will be needed, among other things, to develop, distribute and disseminate informational materials and training courses, to enable countries to implement the process set forth in *Dams and Development*. The stakeholders are generally supportive and a group of individuals with the appropriate skills does currently exist. This group, however—the current WCD secretariat—is likely to be powerless unless prompt action is taken by an appropriate agency to maintain and ensure the momentum of the WCD initiative. Despite these concerns, and as has been noted repeatedly, UNEP has the potential to act decisively, and integrate the WCD secretariat, and its institutional memory, in some form, into the UNEP organization.

63. While the foregoing recommendation may be premature, as the whole issue is scheduled to be discussed in the third and last Forum¹³, it is up to UNEP to decide the line to be taken during the Forum, if it is to be successful in advancing the WCD initiative. Prompt action is called for.

(c) Financial sustainability

64. To date, the WCD initiative, as embodied in this project, has been largely supported by funds provided from sources external to UNEP. There is some speculation that these funds were committed with such generosity because WCD had a predefined disbandment date. Should this be true, any WCD-type initiative that lacked this element would find it difficult to raise funds for the implementation of the Commission's work. This consideration notwithstanding, currently planned follow-up activities such as the international working conference on environmental flows for river ecosystems, scheduled to be held in Cape Town from 3 to 8 March 2002—see annex II—have been successful in attracting funding from sources other than agency budgets. Likewise, the WCD secretariat itself has improved its own access to private sector funds, in addition to limited and often in-kind public sector monies. These facts bode well for the financial viability of an operational phase WCD or successor institution for at least some time. Initially, a five-year operational life might be considered, and a proposal to this effect could be voiced by UNEP at the Third Forum of WCD.¹⁴

65. The WCD initiatives have the ability to be sustainable, and this is borne out by the numbers of follow-up activities to the UNEP/WCD project that have already been proposed—see annex III, prepared by the WCD secretariat.

4. Impact indicators

(a) UNEP

66. This project enabled UNEP to play a key role in resolving a long-standing debate about the need for and the environmental consequences of large dams. UNEP was certainly an active player in the conduct of this project and the preparation of the final reports. A review of the thematic paper and issue papers clearly indicates that their content, and often their actual wording, was successfully reflected in the WCD final report. Chapters 1-3, "Water, development and large dams", "Technical, economic and financial performance", and "Ecosystems and large dams: environmental performance", contain, in large measure, the work completed by UNEP under this project. Thus, UNEP contributed materially, and substantially, to the completion of the final report.

67. In addition, chapters 1-3 lay down a significant amount of the groundwork necessary for WCD to formulate the policies and guidelines set forth in part II of its report. Indeed, strategic priority 4, "Sustaining rivers and livelihoods", and guidelines 14-16, among others, derive directly from inputs conceived and delivered under this project.

68. The indirect consequences of executing this project included:

- (a) Building of linkages between UNEP and IUCN and other agencies;
- (b) Demonstrating the unique strengths of UNEP in the field of industry and the environment;
- (c) Facilitating access to water resources information and agencies;
- (d) Accessing funds through the United Nations Foundation; and

¹³ The Third Forum is scheduled to be held in Cape Town from 25 to 27 February 2001.

¹⁴ Such a proposal could, and perhaps should, be linked to a proposal that UNEP assume the secretariat, in cooperation, possibly, with other international agencies.

(e) Communicating the role of UNEP in fostering and promoting sustainable development through wise use of water resources.

69. As stated in the project document, UNEP brought to the project a proven track record in environmental policy development. In addition, UNEP brought to this partnership with WCD a direct line to stakeholder organizations in a variety of environmental fields, as well as access to the tools and know-how of its own operation. Most importantly, this ensured that the project had access to information on insurance and finance that could not be supplied through any other participating organization. Through this partnership, UNEP made it possible for the project staff to include data and develop contacts that facilitated the completion of other portions of both the UNEP and WCD work programmes. A major part of the UNEP contribution was its ability to raise and provide the sum of \$2.65 million towards the project budget. In all respects, UNEP appears to have been an important part of the project team, with a role extending well beyond that documented in the project document itself. Seen from this perspective, the UNEP/WCD project appears to be an unqualified success.

70. In terms of communicating the role played by UNEP in water resources management, the WCD publications provide a balanced and accessible way to gauge the role of UNEP in the project. Of the eight issues of the WCD newsletter, *Dams*, UNEP received front-page coverage in two and inside coverage in a further three. This level of coverage was on a par with, and generally more extensive than, similar coverage of other project participants, such as the World Bank and IUCN. Issue No. 3 in particular, headlined “Global funding validates the WCD approach”, highlights the UNEP contribution to the project as the organization that made it possible for WCD to access United Nations Foundation funds.

71. In contrast to this coverage in the WCD newsletter, press coverage of UNEP participation in the project was scant. In large measure this would appear to be due to the failure by UNEP to provide information: a review of materials archived in the project files in Nairobi shows that few press releases were issued. There were even fewer mentions of UNEP in the press cuttings provided by WCD from its project files or reproduced in the published reports of the regional consultations.¹⁵ Both the World Bank and IUCN, in addition to a few other agencies and non-governmental organizations, received much more extensive press coverage, although—ironically—a significant proportion of the coverage regarding the World Bank appeared to be negative.

72. To some extent, an attempt to assess the impact of UNEP on the project based upon media coverage would be in conflict with the UNEP mandate to be catalytic. A catalyst is an agent that is rarely seen, but absolutely critical to the occurrence of a reaction. While the evaluation mission is sympathetic to the raising of the profile of UNEP through media exposure, project participants with whom the mission spoke were unanimous in acclaiming the important role played by UNEP. Indeed, it is for this reason, and in direct reflection of such comments, that the unique contributions of UNEP to the project have been highlighted throughout this review. Therefore, while UNEP may not have been overly successful in gaining public recognition for its participation, there is no doubt that the project would have suffered greatly without the organization’s participation.

73. Lastly, UNEP has still to complete one final task in the distribution of the WCD report; namely, the convening of an inter-agency seminar, within the United Nations family of organizations, to consider and promote the programmes of action included in the policies and guidelines emerging from this project. This could be completed either in conjunction with the Third Forum or, at a later date, in association with a scheduled or proposed follow-up activity.¹⁶ Pursuant to the recommendations made elsewhere in this

¹⁵ WCD (1998) *Large Dams and Their Alternatives: Experiences and Lessons Learned—South Asia Consultation*; WCD (1999) *Large Dams and their Alternatives in Latin America: Experiences and Lessons Learned*; WCD (1999) *Large Dams and their Alternatives in Africa and the Middle East: Experiences and Lessons Learned*.

¹⁶ As of 7 February 2001, a proposed inter-agency meeting originally set to be held on 14 and 15 February 2001, close to the Third Forum, had been postponed to a later date (to be determined).

review, UNEP should not only promote awareness of the policies and guidelines, but also take an active role in their implementation and in setting them fully in operation.

(b) Governments and institutions

74. UNEP has contributed to increased awareness of the issues surrounding large dams. Specifically, it facilitated the conduct of this project by holding one of the three regional consultations (for Africa and West Asia), and one of two forums held to date, in addition to hosting a workshop on the project during December 2000. Through the workshop, UNEP also created synergy between the UNEP/WCD project and, among others, two GEF-funded international waters projects, on the Bermejo river basin and Sao Francisco river basin; the regional seas coastal impact programme; the Cetina River basin project of the integrated coastal area and river basin management (ICARM) programme; and the UNEP-UNESCO ecohydrology partnership. Such contacts between programmes not only assist in the replication of project activities, but also encourage countries to resolve environmental problems through information sharing and regional partnerships, in full accordance with the UNEP mission.

75. While it is far too early to anticipate the full extent of the WCD process and its impact on water resources development projects worldwide, it would not be too unrealistic to assume that, in those countries where the institutional and human capacity exists, the policies and guidelines agreed by WCD will be implemented to some extent or other. Indeed, while the evaluation mission was visiting the WCD offices, discussions were taking place between WCD staff and the South African Government over the application of the policies and guidelines to proposed dam constructions projects in that country. This attests to a significant level of confidence that the policies and guidelines will be used by countries, and that an opportunity exists to assist those countries lacking the institutional and human resources to implement the recommendations. Again, as noted elsewhere, enhancing regional and national capacity to implement the policies and guidelines goes hand-in-hand with the UNEP mission to promote environmentally-sound development through partnerships and empowerment of peoples.

76. It should also be borne in mind that a number of Governments and regional organizations participated in the WCD initiative, some also providing financial support, and this augurs well for the future successful implementation of the WCD policies and guidelines at the country level.

(c) United Nations organizations

77. The UNEP project provided the means to fill a major gap in the WCD work programme. UNEP was able to provide this service thanks to its special role within the United Nations system. Likewise, as a consequence of its participation in a number of major river basin planning projects being implemented under GEF, UNEP has been able to catalyse synergy between the WCD initiatives and the GEF international waters focal area.

78. UNEP has been less successful in enlisting the support and participation of other United Nations agencies, although many were and continue to be involved in the WCD initiative, including the World Bank, WHO and FAO. UNEP has indicated that it will host an inter-agency meeting at a date to be determined to promote the WCD policies and guidelines within the United Nations family of organizations.

(d) Donor countries and multilateral funding organizations

79. A number of donor agencies, such as the Australian Agency for International Development (AusAID), the Canadian International Development Agency (CIDA), the Swedish International Development Authority (SIDA) and the United Kingdom Department for International Development (DFID), participated in the WCD process, as did such regional development banks as the Asian Development Bank and the Inter-American Development Bank. In addition, export credit organizations such as the German Kreditanstalt für Wiederaufbau also supported or participated in the process. It is still too soon, however, to assess the impact of the UNEP project on these agencies or on the United Nations as a

whole. All the same, there are opportunities for UNEP to work with these bodies to implement and institutionalize the WCD policies and guidelines in regional and national projects which use them. As noted elsewhere in this review, the opportunities for UNEP include capacity-building and institutional strengthening, especially in those developing countries which currently lack human and institutional resources.

80. Finally, just as the project is likely to have a substantial influence on the United Nations system over time, so is it likely to have a significant impact on international and regional financial mechanisms in the longer term. The fact that these institutions have participated in the process of generating the WCD policies and guidelines bodes well for their future utilization of these instruments.

IV. Technical review

81. The evaluation mission also considered the technical aspects of the three UNEP-funded thematic review papers prepared under contract by IUCN, the two issue papers, and one of the case studies, that of Kariba dam. Time did not permit a more profound analysis of the other three case studies, although all four reports were examined by the mission. In general, the quality and content of the documents reviewed was acceptable. The Kariba dam case study, reviewed in detail, was outstanding, both in terms of presentation and content.

82. It should be noted that the UNEP project provided funds for the compilation of five documents, all of which contributed to one of the larger thematic reviews published by WCD, namely that dealing with the ecosystem impacts of large dams. In addition, the UNEP project contributed indirectly to the preparation of the other 16 thematic reviews; it is for that reason that they have been included in this review, in tables 1 and 2.

83. Similarly, the four case studies were part of a series of six case studies and three country studies contained within the WCD work programme. The other studies included two river basin studies in the northern hemisphere (in the Columbia river basin in the United States and the Glommen and Laagen river basin in Norway), and country-level reviews of dams in China, India and the former Soviet Union. One further case study, that of the Orange river basin in South Africa, was prepared as a pilot project in order to refine the terms of reference for the other studies. Owing to time limitations and the fact that these latter documents were peripheral to the principal project outputs, they were not reviewed.

84. It should also be noted that all these contributions represent good value for money, given the tight deadlines and the extensive amount of data that had to be gathered and analytical requirements inherent in this project. The level of funding provided was commensurate with the quantity and quality of work performed.

A. Thematic review and issue papers

85. As might be expected in documents prepared within a short time frame, there was a certain unevenness of coverage and some showed a bias towards the north temperate zone, but this probably relates either to the experience of the respective authors or to the extent of the published literature available. With issues such as dam removal, practical experience on a global scale is largely limited to North America where decommissioning of dams has occurred in recent years.

86. In general, the authors provided a range of case studies as examples to support their various points. This use of examples provides an excellent link between the theory and practice of water resources management and helps to show the range of responses likely within aquatic ecosystems, whether constructed or natural. The examples illustrate the variability that exists between climatic zones or ecoregions, underlining the truth of the environmental management maxim that “one size does not fit all”.

87. There was a tendency to focus exclusively on the negative impacts of dams and impoundments. This focus was determined to some extent by the use of the term “impacts”, which was defined in a negative sense. In line with this usage, few authors identified the positive consequences of dams. The focus was deliberate and resulted directly from the terms of reference provided to the authors. It was apparently anticipated that the positive aspects of dam construction and operation would be covered in related works being prepared under other areas of the WCD work programme. To a degree, this was borne out in the final WCD report, which presented a more balanced view of the benefits and disadvantages of dams and reservoirs.

88. Similarly, there was a tendency to include glib references to values which could not be precisely determined; for example, there were frequent references to displaced or destroyed riverine ecosystems but the value of the created lacustrine ecosystems was ignored. Such statements clearly indicate a bias toward the maintenance of natural river systems, and gloss over the fact that even natural river systems are dynamic, with an ever-changing topography comprised of pools and riffles throughout the length of the streams. Again, however, such statements were consistent with the terms of reference provided to the authors.

89. In both cases (the negative focus and biased value systems), these concerns are only apparent when the documents are viewed in isolation. Balance is provided within the final report, where numerous (17 thematic reviews) contributions are combined to create a holistic picture of the consequences, both positive and negative, of dam construction and operation.

1. Thematic review papers

90. More specifically, the three thematic review papers that were part of the overall thematic review of the ecosystem impacts of large dams contained a number of points relevant to the consideration of the impacts of dams. A common concern embodied in all these contributions is the degree to which developing countries would have the capacity to implement many of the measures summarized in these papers. For this reason, the evaluation mission recommends a significant role for UNEP in moving the WCD policies and guidelines into the implementation phase.

91. The contribution by McAllister et al. on the biological diversity impacts of large dams was, as noted, primarily focused on their negative impacts. In a sense, this is justified since the riverine biota within a reservoir basin are generally replaced relatively quickly, by lentic species, although reference is made to invasive species that may be favoured or promoted within the lake basins. One weakness of this paper is the emphasis on power supply dams. While the authors note that there may be less intrusive alternatives to such dams, they give scant coverage of water supply dams, whose purpose is to provide supplies of surface water in areas where such supplies are scarce and where there may be few, if any, alternatives to the construction of reservoirs.

92. The contribution of McCartney et al. on the ecosystem impacts of large dams makes several useful points, one being that the benefits of a dam may not accrue to the communities along the lake shore, but rather to communities at some distance from the basin. This is true for both water-supply impoundments and hydropower dams and has a bearing on equity and community issues. Their comments on decommissioning fail to deal with the need to stabilize the lake basin following the removal of the dam structure: failure to stabilize the basin can lead to significant downstream impacts. Basin stabilization is an essential prerequisite for any dam removal project and is a necessary element of the decommissioning process.

93. The contribution of Bizer, on mitigation of the impacts of large dams, forms the last of the three-part IUCN contribution. While this paper makes excellent use of case studies and examples as a means of demonstrating various mitigation and compensation options, it focuses almost exclusively on North America. As we have already seen, this is understandable, given the more extensive experience with mitigation and decommissioning of dams in that part of the world.

2. Issue papers

94. The UNEP project also supported the preparation of two issue papers. Appleton's paper examined the strategic linkages between the project and various international conventions—specifically, the Convention of Biological Diversity, the Convention on Wetlands of International Importance, and the Convention on the Conservation of Migratory Species of Wild Animals.¹⁷ Mumma's paper examined the linkages between the project and the Framework Convention on Climate Change.

95. Appleton notes that, of the various conventions that were studied, only the Convention on Wetlands of International Importance provides a mechanism to integrate the WCD programme findings into its scientific and technical programme. Linkages are possible with the Convention on Biological Diversity and the Convention on the Conservation of Migratory Species, but will require action by WCD. This presupposes that a successor organization to WCD would be in place to formalize such relationships. The potential role of UNEP in paving the way for such a successor organization, therefore, becomes more pressing, given the relationship that UNEP enjoys with the convention secretariats. One minor criticism of this paper is its inaccurate description of GEF.

96. Mumma continues the same theme, that a formal relationship would have to be established between the Framework Convention on Climate Change secretariat and a successor organization to WCD. Like the thematic reviews, this paper focuses on the negative impacts, ignoring any positive value from dams and impoundments. This paper also seems to infer some significance from the occurrence of deoxygenation in tropical lakes that is not supported by limnological studies. The paper also indicates a loss of fish species as opposed to the replacement of riverine species by lacustrine species (the former being indicated by the Pak Mun dam case study, but contra-indicated in the other three studies—see below). Unfortunately, these omissions weaken the impact of these two issue papers, although their basic conclusions, that linkages could, and should, be established between WCD and the various Conventions, are sound and supportable.

97. In summary, then, the thematic reviews and issue papers prepared under the UNEP/IUCN subproject are consistent with those prepared under other areas of the WCD work programme. They are similar in quality and content, and equally acceptable as outputs. It is clear that these papers form a significant contribution to chapters 1-3 of the WCD report, despite the emphasis, as noted, on the negative impacts of dams. This, together with the project's outputs, formed a substantial part of the overall WCD work product and represented an effective and close partnership between UNEP and WCD.

B. Case studies

98. Four case studies were prepared as outputs of this project from the following countries: Brazil, Pakistan, Thailand and Zimbabwe. The Zimbabwean case study on Kariba dam provided a fascinating insight into the factors surrounding the decision to build the Kariba dam on the Zambezi river at Kariba gorge. The evaluation mission focused on this case study specifically because of previous experience with Kariba dam—or Lake Kariba—and a familiarity with the basin gained through a perusal of the classic limnological monograph on the lake by Balon and Coche.¹⁸ This knowledge provided a measure against which to assess the present reports.

99. Even though the Kariba dam case study was produced in an extremely short time, the document can be viewed as a thorough and comprehensive review of the available information on the dam. Not only does it include a massive volume of archival and scientific data, but also a considered analysis of those data. The

¹⁷ The author notes his conclusion, drawn from conversations with members of the secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), that there is no significant linkage between this convention and dams.

¹⁸ E. K. Balon and A. G. Coche, *Lake Kariba: A Man-made Tropical Ecosystem in Central Africa*, Monographiae Biologicae vol. 24, 1974, Junk, The Hague, 767 pp.

information is presented in a clear and logical sequence, with both positive and negative aspects of the project considered in sufficient detail to illustrate why decisions were made in particular ways. Consideration was also given to the political context in which the project was conceived and built, which led to the selection of the Kariba gorge site rather than the Kafue gorge site further north. All this information made for fascinating reading—in this regard, the authors are to be commended for producing a document that is at once eminently readable and packed full of information and hard facts.

100. Of all of the African dams and impoundments that have been constructed over the last half century or so, the choice of Kariba dam must have posed a considerable challenge to the project team. While there are larger dams, or dams that have had a more severe effect on natural or man-made environments on the African continent, and there may even be impoundments that have been studied at least as extensively, if not more so, Kariba dam is perhaps the best choice. It is the stuff of legends, and, as the largest artificial lake in the world at the time of its completion, it is one of the first to have been subjected to a thorough ecological analysis. It is not widely known that the concepts of lake development following impoundment, which are now considered obvious by many practitioners, were first recorded and documented in this way, providing later dam builders and environmental scientists with a model from which to make pre-impoundment assessments.

101. Later, the introduction of the kapenta, *Limnothrissa miodon*, into the lake—to fill a supposedly vacant ecological niche and provide the basis for a lake fishery—stands in stark contrast to earlier introductions of fish undertaken on the continent. The disastrous introduction of Nile perch into Lake Victoria is one example familiar to many. The idea of constructing a great dam in the Kariba gorge was also fuelled by dreams of Central African unity, and the realities of power demands for industry. Its choice as a case study is more than justified by the paradox that its construction and operation poses, and the authors of the case study document have captured the essence of these contradictions. Curiously, Kariba dam is the only real transboundary impoundment included in the case studies and the way the two Governments concerned have dealt with the dam's operation provides an interesting side-light to the case study, given the recent history of central Africa.

102. While the evaluation mission did not have similar first-hand knowledge of the three other reservoirs included in the case studies prepared under the UNEP project, each of the case study documents showed a similar depth and breadth of research and analysis. As a general observation, the preparation of a table of projected, observed and unexpected impacts provides an extremely useful tool for summarizing a wide range of consequences, both positive and negative.

V. Lessons learned

A. WCD process

103. The development of targeted projects, with terms that are clearly specified in advance and that cover a broad spectrum of opinion within the context of a clearly defined and articulated environmental problem area, provides a model that could potentially be used to address other, equally contentious environmental concerns. This model, which both incorporates a comprehensive and informed review of these experimental issues from a scientific and historical angle and identifies areas of common agreement among contending viewpoints, thereby providing a basis for further discussion, will make progress possible in areas where there has traditionally been strife and discord.

104. By highlighting the points of agreement between parties, then searching for middle ground so that arguments are based upon fact rather than emotion, the WCD process paved the way for a resolution of the principal points of difference between parties at the extremes of the debate. For the anti-dam activists, this meant that there was a recognition that economic development and human existence requires water, and that in certain environments dams are the only means to provide that water. For the power companies and their suppliers, there was a recognition that the “business as usual” approach did in fact lead to preventable losses

to communities and their underlying ecosystems. Both sides modified their more extreme positions, and in their debate focused instead on ways of resolving the worst of the negative impacts, while ensuring that measures were in place to decommission the dams after their useful life was served and to restore the disturbed environmental structures and functions.

105. The selection of the right technical staff was an important element in this process, as, in order for the process to be effective, the choice had to be acceptable to all parties. For this reason, a rigorous process of peer nomination and selection was followed, with the entire process overseen by the Commissioners, assisted by a core secretariat consisting of a small number of individuals with specific functions.

106. The entire process was conducted within a well-defined time frame and in response to specific goals and issues of concern, which were identified through an extensive process of public consultation. This was based upon careful consideration of “grass roots” opinions and perceptions, and clearly articulated and agreed on by the Commission through summary papers produced after each of the regional fact-finding meetings. By following this procedure, it was possible to identify specific issues for the technical staff to tackle, easing the pressure of work without limiting the scope of the process—except to ensure that only the agreed issues and concerns were addressed. Furthermore, by enabling the WCD core staff—and UNEP staff, with respect to the papers produced through this project—to specify exactly what the scope and expected outputs of each work product should be, it was possible to keep the WCD process clearly focused both in terms of time and subject matter.

107. Each of these considerations—inclusiveness, empowerment of affected communities, focused goals and objectives, and limited numbers of core staff—contributed to the prompt and on-budget completion of this project. The principal lesson to be learned from this is that, with good project preparation and the identification of clear goals and objectives, it is possible to achieve broadly acceptable products of a high technical standard in a limited amount of time.

B. Management and conduct of UNFIP projects

108. UNFIP projects are subject to specific operating procedures that currently differ from those generally employed by UNEP. As a consequence of this and other procedural changes imposed upon the project subsequent to its design and development, there was significant concern amongst project partners with regard to cash-flows. This concern was further manifested in anxiety about the project's ability to keep to its schedule, timeline, as funds to conduct portions of the project were delayed. As noted above, through the good will of the partners conducting this project, these difficulties were overcome and the project was completed on time and within its budget.

109. Nevertheless, in order to minimize future concerns, staff from UNEP and the United Nations Office at Nairobi have already prepared fact-sheets to familiarize potential collaborators with the principal features of the United Nations Foundation/UNFIP process. The lesson to be learned here is that a complete understanding of institutional procedures cannot just be taken for granted but must be clearly articulated well before agreement is reached on the project. This lesson is already being acted upon, as part of the project's outcome.

C. Leadership role of UNEP in global water resource issues

110. This project has clearly demonstrated not only the need for partnerships in addressing the most pressing needs in the field of global water resources development and management, but also the need for a continuing emphasis on water resources issues. The integral and catalytic role played by UNEP in the completion of the WCD project clearly underlines the potential benefits to be derived by society at large from focused, short-term projects.

111. This process also clearly highlights the essential need for the creation of mechanisms to ensure that the outcomes of the project are duly acted upon. This requires both a longer term effort and concerted

endeavour to meet the human resource and institutional requirements associated with implementation. It has been noted throughout this evaluation report that further sustained efforts are required to operationalize and institutionalize the policies and guidelines developed through the WCD process. UNEP is well situated within the United Nations family of organizations to catalyse such future efforts, most likely in partnership with other United Nations organizations, such as the World Bank, UNESCO and FAO.

112. In order to achieve this outcome, however, there must be a focal point within UNEP to take a leadership role. Various options have been suggested, including incorporating the WCD secretariat into the UNEP structure, creating a freshwater division, or forming a “water team” to integrate biosphere elements across the functional divisional lines into which UNEP has been organized.

113. Each option has its advantages, and a combination of them all is recommended. The overall lesson to be learned from this is that, for leadership to be effective, it requires an appropriate and identifiable focal point within the organization.

VI. Conclusions

114. Pursuant to the terms of reference provided to the evaluation mission, an attempt was made to assess the UNEP project using a ranking system in which, on a scale from 1 to 5, a score of 1 indicates the highest mark. This grade-based analysis is presented in table 3. Overall, the project ranks very highly indeed, with the full number of products being delivered on time and within budget. Given the time limitations within which the project operated—it constituting only part of the larger effort being undertaken by WCD—some concerns arose during its execution, and there was some variability in the quality of the products, but these were generally within acceptable limits. More important, these concerns did not detract from the overall quality of the WCD final report, the report *Dams and Development: A New Framework for Decision-making*, published during 2000 and received with acclaim by the international community. In this regard, the entire project team should be commended on a job well done.

Table 4

Project rating scores (1 = excellent).

Attribute	Score
Timeliness as per the project document and subsequent revisions	1
Achievement of results	2
Attainment of outputs	1
Completion of activities	1
Project executed within budget	1
Impact created by the project	2 ^a
Sustainability	3 ^a
Average score	1.6

^aThe immediate impact of this project is high; the long-term impact and sustainability of the programme to which it contributed have yet to be determined, however, in particular following the Third Forum, to be convened by WCD in Cape Town in late February 2001.

VII. Recommendations

115. On the basis of the above review and evaluation, the evaluation mission is pleased to recommend consideration by UNEP of the following actions deemed necessary to implement and institutionalize the outcomes of the UNEP/WCD project.

1. **Adoption of the WCD process**, when necessary, to resolve environmental conflicts in other areas where similarly polarized positions exist. By initiating dialogue between parties of opposing views, it is often possible to identify areas of common agreement. Building on these common areas, often leads to consensus and resolution of the disputed issues as mutual respect and trust grow between the participants.
2. **Inclusion of the WCD secretariat (or successor organization) into the UNEP organizational structure** as a means of ensuring that the policies and guidelines generated through this project are put into practice. Positioning this unit within the Division of Technology, Industry and Economics would build upon existing strengths in the fields of international business and finance that this Division has developed in recent years.
3. **Creation of regional centres of expertise**, to promote the environmentally sustainable development of water resources and to support regional initiatives in capacity-building and institutional strengthening, as principal elements in the process of setting the WCD policies and guidelines in operation.
4. **Development and conduct of capacity-building programmes** to support institutions and communities in the implementation of the WCD policies and guidelines. In addition to creating regional centres for the delivery of programming, it will be incumbent upon UNEP to facilitate the preparation of suitable informational and educational materials to support the capacity building and institutional strengthening necessary to institutionalize and operationalize the WCD policies and guidelines, especially in developing countries.
5. **Encouragement of consideration of the WCD policies and guidelines by the convention secretariats**, through the Division of Environmental Conventions. The degree to which the UNEP/WCD project relates to the conventions was identified as an output of the project. A key recommendation was the development of formal linkages between WCD—or a successor organization entrusted with the implementation of the WCD policies and guidelines—and the various conventions, insofar as they are applicable to individual conventions. Potential linkages exist between the UNEP/WCD project and the Convention on Biological Diversity, the Framework Convention on Climate Change, the Convention on Wetlands of International Importance, and the Convention on the Conservation of Migratory Species. In the marine area, potential linkages may also be seen between the UNEP/WCD project and the Convention on the Law of the Sea and, most particularly, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.
6. **Promotion of the WCD policies and guidelines** through the Division of Technology, Industry and Economics, and through the international waters projects being implemented by UNEP under GEF. The existing relationships developed between the Division and industries, non-governmental organizations and Governments form an excellent base from which UNEP could catalyse the implementation of the WCD policies and guidelines. Similarly, the GEF projects provide natural vehicles, as demonstrated through workshops held during this project, to showcase the practical implementation of the WCD policies and guidelines.
7. **Formation of a freshwater division, or a “freshwater team” within the current division structure**, that will give equal recognition to this area of concentration identified by the UNEP Governing Council. In this way, Governments, corporations, non-governmental organizations and community groups will have a focal point within the UNEP organizational structure, equipped with the necessary disciplinary expertise and skills, to catalyse successful

implementation of the WCD policies and guidelines at the regional, national and community levels. Implementing the freshwater-team approach in conjunction with an initiative by UNEP to integrate the WCD secretariat into the Division of Technology, Industry and Economics, as set forth in paragraph 2 above, would best integrate and utilize the organization's strengths in both science and technology. The team approach would also be the best way of taking advantage of the current functional divisional structure of UNEP, by drawing on the talents and resources of appropriate staff from across the range of divisions within UNEP.

Annex I

Preliminary identification of projects to be conducted by UNEP as follow-up to the WCD initiatives

Project	Activities	Division and potential partners
Dams decision support system	Development of an environmental, social and economic database to function as a decision support system, beginning in those river basins in which dams are planned, thereby creating an information base from which to make policy decisions on dam construction	DEPI, DEWA, WCMC, and GEF
Ecosystem maintenance flows	Preparation of guidelines for inclusion of ecosystem maintenance flow requirements into national water policies and conduct of suitable demonstration projects	DEPI and GEF
Energy options assessment	Development of options assessments using the WCD procedure for river basins and countries where hydropower developments are planned	DEPI and GEF
SEA guidelines	Development of guidelines on strategic environmental assessment (SEA), to be used to assess the cumulative impacts of dams at the policy level	DEPI and MEDU PAP/RAC
Dryland management project	Conduct of a feasibility study for the utilization of dams for dryland management to achieve ecological benefits	DEPI
Ecohydrology ^a	Preparation of guidelines for the classification of ecosystems within catchment areas as an essential prerequisite to assessing their usage within the landscape, and conduct of training programmes for government officials in the use of the classification approach	DEPI, IETC and UNESCO

^aSee also the proposed inclusion of a round-table discussion on the promotion of ecohydrology through regional centres of expertise in annex II, and the proposal to focus on ecohydrology at the working conference on environmental flows for river ecosystems in annexes II and III.

Source: UNEP, January 2001

Annex II

Environmental flows for river ecosystems: an international working conference on assessment and implementation, incorporating the Fourth International Ecohydraulics Symposium, 3–8 March 2002, Cape Town, South Africa.

Target audience	Water scientists, water managers, water engineers and modellers; social specialists working with subsistence users of rivers.
Objective	Following the launch of the WCD report in November 2000, to provide a forum for an international meeting on the subject of managing flows for river health. To provide an international update for those countries already using environmental flows as a management tool and a practical introduction for those aiming to do so.
Programme	<ul style="list-style-type: none">• Four days of scientific papers, on the themes:<ul style="list-style-type: none">➤ River ecosystem functioning; social-dependence on river resources;➤ Modelling; environmental flow methodologies;➤ Rehabilitation; re-regulation of flow; maintenance of biological diversity;➤ Policy development, implementation.• One full day of workshops;• One week of training courses before the conference:<ul style="list-style-type: none">➤ Holistic approaches to environmental flow assessments;➤ Hydrology, hydraulics, fluvial geomorphology and sediment dynamics for aquatic ecologists;➤ Aquatic ecotoxicology;➤ Identification and management of blue-green algae;➤ River health biomonitoring;➤ Water policy and the implementation of environmental flows;➤ River flows for estuarine systems.
Full-day workshops	Several international institutions are taking advantage of this gathering of professionals to run focused workshops, to discuss the following issues: <ul style="list-style-type: none">• Negotiation and bargaining skills for the environmental-flows professional (United States);• Reservoir releases for optimal benefit of upstream and downstream subsistence users (United Kingdom);• Managing flows for tropical fish diversity (Mekong);• Establishing regional centres of expertise on environmental flows (World Bank and IUCN);• Fish passage in developing countries (France and Italy);• Modelling mosaics of local hydraulic conditions;• Extrapolation of point data: the issues of scale.
Regional centres of expertise	The conference can be used to begin discussion on how regional centres of expertise can be established at the global level, to help countries wishing to implement environmental flows but not knowing how to do this. A global partner is currently being sought to help launch this exercise.

Forging the social link

Most expertise on environmental flows resides in developed countries. South Africa is probably unique in using developed-world technologies on environmental flows in developing-world situations. Specifically, southern Africa specialists have created methods that provide information on and quantify how flow manipulations change river condition and how this in turn affects subsistence users of the river. This conference provides the first structured attempt to bring social scientists into the scientific discussion on flow management, usually confined to water managers, engineers and biophysical scientists. A global partner is currently being sought to help facilitate this exercise.

World Commission on Dams

It is expected that this conference will become one of the recognized follow-up activities of WCD.

Annex III

Draft list of follow-up initiatives currently known to the WCD secretariat

Organization	Nature of follow-up
Government	
Norway (NORAD)	Internal review of WCD proposals and relevance to current policy (NVE, NOFA/NORAD). WCD briefing held on 30 November 2000. Norwegian NGOs have arranged their own follow-up. WCD Forum member Even Sund is promoting the organized, formal consideration of the report and its recommendations by the relevant Norwegian authorities.
Sweden (SIDA)	Internal review of WCD proposals and relevance to current policy.
United Kingdom (DFID)	Internal review of WCD proposals and relevance to current policy. DFID supported the British Dams Society meeting held on 1 Feb 2001 in London and was represented by the Parliamentary Under Secretary of State.
Germany (GTZ, KfW, BMZ, Ministry of Development Cooperation)	Multi-stakeholder review of WCD proposals and their relevance to current policy was initiated by the Minister for Development Cooperation on 16/17 Jan 2001 in Berlin. The Minister personally chaired the meeting for the entire two-day dialogue on the WCD report. NGO/Industry working group established to advise the Minister on a review of German aid guidelines and policy dialogue with the European Union/OECD/World Bank.
France	Internal review of WCD proposals and relevance to current policy.
Japan (JBIC)	Review of WCD report as part of a wider review process by OECD countries on environmental guidelines for export credit organizations.
Lesotho	Meeting in first quarter 2001 to discuss follow-up and reaction facilitated by WCD Forum member Mr. Mochebelele.
India	WCD presentation planned for 19 February 2001 in New Delhi. Prof. Kader Asmal to attend.
Government of Sri Lanka	Internal review proposed with feedback to WCD Forum Meeting.
Government of Pakistan	Provinces provided comments at end of January 2001 – to be compiled and submitted to WCD in time for the Third Forum.
Government of South Africa	Briefing meeting held with Minister of Water Affairs during January 2001. Department currently reviewing the report. Minister of Water Affairs will make a presentation at the Third Forum.
Mesoamerica	Regional meeting for Central American Countries in Panama, March 2001, to discuss reaction and follow-up. IUCN is coordinating the process in the region.
Greater Mekong subregion (GMSR) Power Interconnection and Trade Group	Briefing and discussions in Vientiane, 5-6 December 2000. ADB requested WCD presentation at GMSR Group workshop.

Multilateral organizations	
OECD Export Credit Agency Working Party	Report presented at OECD workshop on 14 December 2000. Some ECAs already reviewed the report and indicated willingness to adopt elements from it; e.g., US-Exim, JBIC, ECGD, COFACE
OECD Development Assistance Committee	Reviewing WCD guidelines – presentation planned in March 2001
Asian Development Bank (ADB)	Regional workshop in Manila 19-20 February 2001 with participants from the Government and NGOs. Letter of support from the President of ADB on 22 December 2000 indicated they would strive to adopt the WCD guidelines.
World Bank	Review by board members held on 14 January 2001 Consultation mission to seven key member countries under way by John Briscoe and Stephen Lintner to gather reactions to the report: presentation of member country responses to the World Bank Committee on Development Effectiveness Code will be made on 15 February 2001. The results will provide the basis for initial World Bank position at the Third Forum.
African Development Bank (AfDB)	In a letter sent to the Chair on 26 January 2001, AfDB welcomed the report, and indicated that it would incorporate recommendations through new technical guidelines in the AfDB integrated water resources management policy.
UNEP	Follow-up under discussion, including a United Nations agencies workshop to be convened in Geneva to assess linkages with current United Nations agency mandates (options paper prepared by UNEP). Review by UNEP Governing Council meeting held 3-9 February 2001 in Nairobi. UNEP financial services initiative, held on 17 November 2000 in Bonn, included a briefing by WCD.
Mekong River Commission (MRC)	IUCN and MRC secretariat are currently discussing a follow-up programme for Cambodia, Lao PDR, Thailand and Viet Nam.
Convention on Biological Diversity	Formal recommendations to SBSTTA will be made during March 2001, using a paper prepared by WCD.
Convention on Wetlands of International Importance	Briefing note to scientific and technical committee and recommendations for eighth meeting of the Conference of the Parties to be held in 2002. Convention secretariat to follow up.
European Parliament	Heinrich Böll Foundation hosted a meeting for the European Parliament in Brussels on 19 December 2000 to introduce and discuss the WCD report.
IUCN	IUCN General Assembly requested the setting up of a task force to monitor WCD report implementation, and is designing projects to support implementation on the ground (global, Mesoamerica, Mekong region).

Non-governmental organizations/Professional associations	
ICOLD	Initial response from Mr. Varma was received – see ICOLD website, pending a concerted response from their working groups and national members.
Netherlands ICOLD	Invitation received to present the WCD report at the national seminar on dams, 22 March 2001.
Pakistan ICOLD	Written response received.
Turkey ICOLD	Written response received.
Zimbabwe ICOLD	WCD report presented at a meeting on 26 January 2001 to discuss follow-up and reaction.
British Dams Society	Meeting on WCD report held on 1 February 2001 in London.
ICID	Response awaited for the working group and national committees.
IWRA	Task force convened under Chair of Dr Asit Biswas.
IHA	Response awaited.
IRN Network	Comments and a statement signed by 130 NGOs were received.

Conferences	
Rio + 10	Under discussion.
World Water Forum, Japan 2003	Under discussion.
Fourth International Ecohydraulics Symposium, Cape Town– March 2002	Workshop scheduled to discuss creation of regional centres of expertise on environmental flows for river ecosystems.
Brazil Fisheries Conference – January 2001	Presentation of WCD report.
AusAID	Presentation of WCD report by Don Blackmore and Judy Henderson.

Source: WCD secretariat, January 2001

Annex IV

Response of the evaluation mission to comments provided by UNEP on the preliminary draft of the UNEP project review and evaluation

1. Mr. Backson Sibanda commented that a “lessons learned” subsection should be included, to include valuable lessons to be gleaned from the implementation of such a successful project.

Response: This section has been added to the text, immediately preceding the conclusions and recommendations. The lessons learned include the potential for replicating the WCD process, the need to clarify United Nations Foundation/UNFIP procedures prior to the project, and the need to create a “water team” within UNEP, across divisional lines, as the means of moving the WCD policies and guidelines through into an operational phase.

2. Mr. Dan Claasen commented that a comprehensive list of all publications should be included in the report.

Response: Such a publications list is included in the publication *Dams and Development*. Publications produced as a result of the UNEP project are listed in the report, in table 1. Copies of these outputs are available from the WCD web site—www.dams.org—and will be maintained on that site for a period of at least two-years after the close of the WCD project.

3. Mr. Dan Claasen commented that some detail, on how UNEP could best promote such successful projects and build on the capacity building successes of the project would be of use.

Response: The report suggests that the creation of interdivisional teams would be the best means of meeting the need of UNEP to develop, conduct and implement projects using the WCD process, and would capitalize on the existing divisional structure of UNEP as elaborated by the Executive Director in his foreword to the UNEP web site. This would also take advantage of the leadership role of UNEP within the environmental convention secretariats, and encourage the relevant environment conventions to incorporate specific actions and activities arising from the WCD process in a variety of areas of environmental concern. The team approach would also facilitate the smooth transition of projects from the policy phase to the operational phase by incorporating elements early in the process that would expedite their application in operational programmes.

4. Mr. Dan Claasen commented that the evaluation mission should formulate ideas taking into consideration this new structure of UNEP to improve the synergy between the water components of each functional programme.

Response: The evaluation mission notes that, in his foreword to the UNEP web site, the executive Director indicates that the Governing Council had identified freshwater as well as the functional areas as priorities for UNEP and that, in response, he had reorganized UNEP along functional lines. This did not correspond to the equal emphasis placed by the Council on freshwater; accordingly, it has been recommended that a freshwater division be created. This suggestion might not be very practical, however, as it might result in duplication of effort and staffing requirements within the organization. It is therefore recommended by this evaluation that a team approach be adopted, whereby biosphere specialists from each of the UNEP divisions would meet regularly to discuss projects and programmes related to their speciality; in other words, the creation of a “freshwater team” including members from each functional division could facilitate the manner in which projects are formulated, conducted, and implemented, with the lead role passing from one division to the next as the focus of the project changed and developed.

Initially, the incorporation of the WCD secretariat into the Division of Environmental Conventions, and the human and institutional resource development activities into the Division of Technology, Industry and Economics, would appear to be the best immediate approach to implementing the policies and guidelines proposed through the WCD project.

5. Mr. Dan Claasen commented that the mission should formulate a recommendation on the distribution and location of the databases been generated by the WCD project.

Response: WCD has determined that their literature holdings should be donated to the library at the University of Cape Town, Cape Town, South Africa. Their other materials would be posted on their web site, www.dams.org, and maintained there for a period of at least two-years. In addition, CD-ROMs containing their reports and documents would be distributed to key agencies and individuals identified from their mailing lists. The publisher of *Dams and Development* would also continue to offer that publication for sale through its normal commercial outlets. These actions are appropriate and sufficient to ensure the continued existence and availability of the WCD databases.

6. Mr. Takehiro Nakamura provided a number of comments of an editorial nature designed to correct and clarify comments made by the Evaluation Mission.

Response: The corrections have been made.

7. Mr. Takehiro Nakamura commented that the United Nations inter-agency workshop had been cancelled, and that UNEP intended to carry out the task of disseminating the results of WCD to United Nations agencies using the existing United Nations interagency mechanism.

Response: This intention is noted, and is consistent with the project activity under which it was developed. The evaluation mission noted, however, that a regional workshop, pursuing the designated objective of the activity, had already been held during December 2000 (as shown in table 1). Further dissemination of the WCD outputs through normal United Nations channels can be considered as beyond the scope of the UNEP project being evaluated, and should be considered as a contribution to the project's implementation phase. Dissemination of the CDs and other products developed under the WCD project is strongly encouraged by the evaluation mission.

8. Mr. Takehiro Nakamura noted that UNEP had participated in the last meeting of the WCD Forum, from 25 to 27 February 2001, the results of which should be officially published.

Response: The evaluation mission is pleased to note this participation, and concurs with the recommendation that the results of the Third Forum be published—as have the results of the first two forums convened by WCD. It is the mission's understanding that such publication is forthcoming.

9. Ms. Brygida Kubiak and Mr. Theodor Kapiga elaborated on the financial arrangements of the project, noting specific details of funds transfers and other practices utilized during the WCD project.

Response: Their comments and clarifications were most welcome, and have been fully incorporated at appropriate points in the narrative, specifically in the subsection entitled 'Effectiveness and efficiency'.

10. Mr. Strike Mkandla endorsed Mr. Nakamura's comments—see above—and noted, with respect to the organizational structure of UNEP, that the functional approach was conducive to a more holistic management of resources, a critical factor in the one-dimensional approach that had characterized the development and management of large dams to the detriment of environmental considerations and alternative strategies.

Response: The evaluation mission accepts the—increasingly urgent—need for a holistic approach to environmental management. The mission felt, however, that the lack of identifiable biosphere elements within the UNEP structure, even as programme teams, had unnecessarily confused client Governments

wishing to use UNEP services in specific environmental areas. While the reorientation of UNEP into functional areas has provided a clearer focus on those of interest to Governments, it has blurred the identification of specific elements of the organization which should be approached for action to address specific biosphere concerns. Accordingly, a team approach, with identified focal points for such areas as freshwater, land, atmosphere, and oceans, is proposed.

11. Mr. Strike Mkandla echoed the comments of Mr. Claasen with respect to the impractical implications of the establishment of a freshwater division.

Response: These reservations have been noted. The evaluation mission has elaborated the reasons for this recommendation, recognizing the concerns expressed by Mr. Mkandla, and strengthened the suggestion that interdivisional teams be created to address specific biosphere elements.

12. Mr. Strike Mkandla commented that the Division of Environmental Policy Implementation remained the logical part of the organization to be entrusted with the project follow-up.

Response: This recommendation has been noted. The evaluation mission, in reviewing the rationale provided by Mr. Mkandla, notes the good work being done by the Division of Environmental Policy Implementation and appreciates his views. Indeed, the mission has recommended that elements of the WCD project be implemented through, among others, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, as one element of a UNEP-led programme of implementation.

The recommendation that the WCD secretariat be subsumed into the Division of Environmental Conventions was predicated upon the perceived benefit associated with the continuity that key WCD secretariat staff would provide for an implementation programme. Likewise, the recommendation that the WCD follow-up activities be centred in the Division of Trade, Industry and Economics arose from a recognition that these activities involved capacity-building, institutional development and related activities that could be addressed by the industry, in the first instance, and through training materials that could be developed by IETC. Thus, the mission continues to believe that this recommendation is sound, and constitutes a feasible and practical means of handing over responsibility for the implementation phase of the project. It is precisely this type of hand-over that a team approach would facilitate.

As noted above, the mission foresees a future in which projects will pass through a number of divisions within UNEP as they move from the various stages from design to implementation. A team approach within the existing UNEP divisional structure would ensure that the experience of the Division of Environmental Policy Implementation would be closely included in this sequence of project development. In short, the evaluation mission recognizes, and highly commends, the contribution of the Division of Environmental Policy Implementation to the execution of the WCD project and fully expects the Division to continue its involvement in the future, both directly through the Global Programme of Action and indirectly through its participation in a cross-cutting freshwater team.
