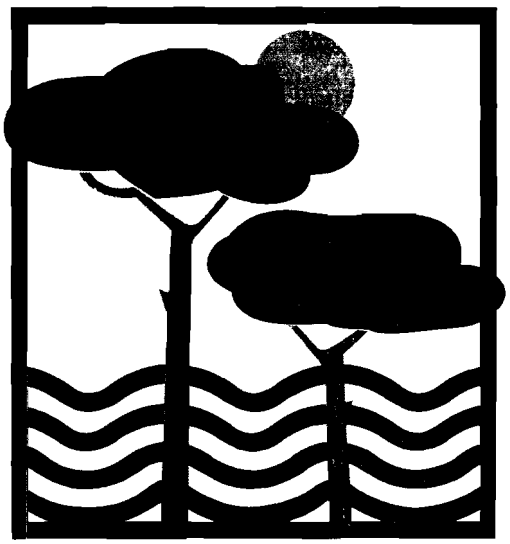
WORKSHOP TOOLKIT

ENVIRONMENT OFFICERS TRAINING WORKSHOP

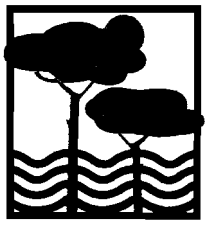
USAID



Millennium Plus One: Integrated Water Resources Management in the New Century

July 15–21, 2001
Cumberland, Maryland USA

ENVIRONMENT OFFICERS TRAINING WORKSHOP



Millennium Plus One:
Integrated Water Resources Management in the New Century

July 15, 2001

Greetings Colleagues and Friends,

It is with great pleasure that I welcome you to the Environment Officers Training Workshop for 2001, which will cover a wide range of cutting-edge environmental issues of interest to all our missions. Water resources management is the central organizing theme of the event and will be the lens through which we look at most of the critical problems and exciting solutions facing the world's ecosystems and the people they support.

Although the workshop is sponsored by the Global Bureau Environment Center and its Office of Environment and Natural Resources, principal responsibility to put the event together rested with the USAID Water Team. More specifically, an active and highly motivated Steering Committee—which mirrors the multi-sector, multi-bureau, multi-office nature of the Water Team itself—has worked diligently for the past 10 months to bring the workshop to fruition.

As the Water Team leader, I would like to take this opportunity to thank the Steering Committee members for their untiring efforts and high professional standards, and to thank you, the participants, for finding the time and having the interest to come here this week. I hope that you all find the material presented to be stimulating and compelling, that you have a good and fruitful time this week among your brethren, and that you go away satisfied and enriched.

Cheers,

Alan Hurdus

Alan Hurdus

Environment Officers Training Workshop

Millennium Plus One: Integrated Water Resources Management in the New Century

July 15–21, 2001 Cumberland, Maryland USA

Background

Enormous environmental challenges face the planet in the new century, and USAID Missions will increasingly find themselves confronted by issues that cross-programmatic lines, and require a more integrated approach.

This summer, the Global Bureau's Environment Center will sponsor a comprehensive environment training workshop targeted to all of the Agency's environment officers and other interested staff. The workshop will address a range of important issues in the environment sector as well as personnel concerns, future programmatic directions, new Agency leadership priorities, and other issues of interest to participants.

As a unifying theme, the Training Workshop will highlight the critical issue of water resources management, which provides important examples of integrated approaches to environmental management, and is emerging as one of the most urgent global issues faced by developing countries in the 21st Century.

Water is a vital resource for every ecosystem, society, and individual on earth and is a key element of every sector in which USAID works. Health, environment, agriculture/food security, economic development, democracy and governance, and natural disaster response and mitigation all have strong linkages with, and dependencies on, how water is allocated and used.

Water issues will be explored in depth in their own right in this Workshop, as well as in relation to a variety of other sectors of environmental management including biodiversity, energy, sustainable agriculture, and urban development. Other emerging, innovative and integrated areas within the environment sector will also be discussed throughout the week to round out the sessions offered.

Although the challenges are great, there are also many exciting approaches and innovative tools available to deal with water and other natural resources in a more effective and integrated way. Come join us in Cumberland for a stimulating week of information sharing, discussion, and exposure to practical tools and strategies related to integrated environmental management in the new millennium and cutting edge advances in the field of water resources management.

Environment Training Workshop Objectives

1. Review the latest thinking about the environment, particularly how cross-cutting approaches, including integrated water resources management (IWRM), can be used to improve current programs and design new programs in USAID portfolios.

2. Explore key concepts and technical tools to support USAID environment programs.

3. Examine critical environmental issues facing USAID, including those related to water resource management, and develop approaches for addressing them programmatically.

Agenda for the USAID Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Management in the New Century (15-21 July 2001, Cumberland, MD)

Time	Sunday 15 July	Monday 16 July	Tuesday 17 July	Wednesday 18 July	Thursday 19 July	Friday 20 July	Saturday 21 July
7 am		*Registration Continues*	*Optional Topical Breakfast Tables*	*Optional Topical Breakfast Tables*	*Optional Topical Breakfast Tables*	*Optional Topical Breakfast Tables*	
7:30 am							
8:am			Opening Plenary (8:00- 8:30)	*Workshop Group Photo & Opening Plenary*	Bilaterals in a Multilateral World (8:00- 9:00)	Agency Administrative Briefing and Monitoring Mitigation (8:00- 9:30)	*Departure*
8:30 am		Official Opening: USAID Introductions, Workshop Objectives, and Agenda (8:30- 9:30)	IWRM Concurrent Sessions Block 1 (8:30-10:00)	Emerging Environmental Issues Concurrent Session Block (8:30- 10:00)			
9 am			1 2 3 4 5	1 2 3 4 5	Poster Session (all Day) / Tools and Technique s Block 1 (9- 10)		
9:30 am		New Directions for USAID and Prospects for the Envrionment Sector (9:30- 10:30)			1 2 3 4 5	Break	
10 am			Break	Break	Break	Tools and Techniques Sessions Block 4 (10:00- 11:00)	
10:30 am		*Break*	IWRM Concurrent Sessions Block 2 (10:30-12:00)	*Site Visits (Box Lunch)* (10:30- 5:00)	Tools and Techniques Sessions Block 2 (10:30- 11:30)	1 2 3 4 5	
11 am		Peering into the Future: Water in the 21st Century Speaker: Peter Gleick (11:00- 12:00)	1 2 3 4 5		1 2 3 4 5	Regional Small Group Preparation for Presentations (11:00- 12:00)	
11:30 am					*Lunch* (11:30- 1:00)		
12 noon		*Lunch* (12:00- 1:30)	*Lunch* (12:00- 1:30)			*Lunch* (12:00- 1:30)	
12:30							
1 pm							
1:30 pm		Integrated Water Resources Management: Concepts and Practice Speakers: Peter Rogers and Frank Rijsberman (1:30- 2:30)	IWRM Concurrent Sessions Block 3 (1:30- 3:00)		Regional Small Group Discussion Session #2 (1:00- 2:30)	Regional Small Group Presentations and Discussion (1:30-3:30)	
2 pm	*Registration Begins*		1 2 3 4 5				
2:30 pm		*Break*			*Break*		
3 pm		Competition for a Scarce Resource: Threats and Opportunities for Water Sector Panel Speakers: Aaron Wolf Roland Steiner (3:00- 4:00)	*Break*		Tools and Techniques Sessions Block 3 (3:00- 4:00)		
3:30 pm			Regional Small Group Discussion Session #1 (3:30- 5:00)		1 2 3 4 5	*Break*	
4 pm		Worldwide Overview of Water Related Agency Activity (4:00- 4:30)			*Networking and Free time*	Closing Remarks: Integrating IWRM Evaluation (4:00- 5:00)	
4:30 pm	Get Acquainted Session	Networking, Free Time and Dinner	*Networking, Free Time and Dinner*	*Networking , Free Time and Dinner*	Global Water Partnership Dinner Speaker Margaret Catley-Carlson	*Networking, Free Time and Drinks*	
5:00 pm							
5:30 pm	*Drinks /Dinner*						
6 pm							

Millennium Plus One:
Integrated Water Resources Management in the New Century
Workshop Agenda

Sunday July 15, 2001

2:00 PM **Registration**

4:30 PM **Icebreaker: Get Acquainted Session**

5:30 PM **Dinner**

Monday July 16, 2001

7:00 AM **Breakfast and Continuing Registration**

8:30 AM **Official Opening: USAID Introductions, Workshop Objectives, and Agenda**
Bill Sugrue, Director of the Office of the Environment and Natural Resources, welcomes training workshop participants. Alan Hurdus, Water Team Leader, will provide an overview of the objectives and agenda for the week. Included in the opening will be a video greeting/presentation from Andrew Natsios, Agency Administrator.

9:30 AM **New Directions for USAID and Prospects for the Environment Sector**
Bill Sugrue, Director of the Office of the Environment and Natural Resources. Introduction by Alan Hurdus.

10:30 AM **Break**

11:00 AM **Peering into the Future: Water in the 21st Century**
Peter Gleick of the Pacific Institute for Studies in Development, Environment, and Security, based in Oakland, California. Introduction by Dan Deely.

12:00 PM **Buffet Lunch**

1:30 PM **Integrated Water Resources Management: Concepts and Practices**
Frank Rijsberman, Director of IWMI; and Peter Rogers, Gordon McKay Professor of Environmental Engineering, Harvard University. Introductions by Chris Scott and Peter McCornick.

2:30 PM **Break**

3:00 PM **Competition for a Scarce Resource: Threats and Opportunities for the Water Sector**
Aaron Wolf, from Oregon State University; and Roland Steiner, from the Washington Suburban Sanitary Commission. Introduction by Steve Olive.

4:00 PM **Worldwide Overview of Water Related Agency Activity**
Richard Volk and Meg Findley, G/ENV USAID. Introduction by Richard Volk.

4:30 PM **Networking and Free Time**

6:00 PM **Buffet Dinner**

Tuesday July 17, 2001

6:30 AM **Optional Topical Breakfast Tables**

8:00 AM **Opening Plenary**

8:30 AM **Concurrent Technical Sessions:**

8:30 AM ~ ***Ridge to Reef: The Conceptual Watershed***

Speakers: **Chris Scott**, G/ENV Water Team, USAID
Richard Volk, G/ENV Water Team, USAID
Barbara Best, Marine Resource Advisor, USAID

8:30 AM ~ ***Small Scale Water Supply and Sanitation: State of the Art Approaches***

Speakers: **Chris McGahey**, Coordinator, Community Based Environmental Sanitation and Hygiene, ARD
Rick McGowan, Project Management Advisor, ARD

8:30 AM ~ ***Water and Energy***

Speakers: **Betsy Marcotte**, Vice President PA Consulting
Kevin James, Program Manager, Sustainable Cities Alliance to Save Energy
S. Padmanaban, Sr. Energy Advisor, USAID/India

8:30AM ~ ***Water Sector Reform***

Speakers: **David McCauley**, Director, Asia Pacific Region, International Resources Group
Peter Rogers, Gordon McKay Professor of Environmental Engineering, Harvard University
Brad Carr, Project Manager, USAID/El Salvador

8:30 AM ~ ***HIV/AIDS and the Environment – Why You Should Care***

Speakers: **Greg Booth**, Advisor for Tropical Forestry, USAID Africa Bureau, Office of Sustainable Development, ANRE Division
Mike Godfrey, Senior Technical Specialist, CBNRM, Development Alternatives, Inc.

10:00 AM **Break**

10:30 AM **Concurrent Technical Sessions:**

10:30 AM ~ ***Ridge to Reef: Management Instruments***

Speakers: **Bill Painter**, Office of Water, U.S. Environmental Protection Agency
Azharul Mazumder, Team Leader, Environment Team, USAID/Bangladesh

10:30 AM ~ ***Key Issues in Developing Financially Viable Water and Wastewater Systems***

Speaker: **Curtis Borden**, Financial Consultant, Community Consulting International

10:30PM ~ ***Water and Agriculture: Water Quality and Quantity Impacts***

Speakers: **Jeff Mullen**, University of Georgia
Harald D. Fredericksen, Senior Water Resources Specialist
Frank Rijsberman, Director, IWMI

10:30AM ~ ***Climate Variability and Extremes: Implications for Water Resources Management***

Speakers: **Upmanu Lall**, Professor, Earth & Environmental Engineering, Columbia University
Juli Trtanj, Program Manager for Climate Variability and Human Health, NOAA Office of Global Programs
Candyce E. Clark, Director, Applications Research Program NOAA Office of Global Programs
Jonathan Pundsack, Program Manager for Latin America and the Caribbean, NOAA Office of Global Programs

10:30AM ~ ***Water and Energy Resources Development***

Speakers: **Jamie Workman**, Senior Advisor, World Commission on Dams
Dennis McCandless, Board Member, U.S. Hydropower Council for International Development, East Indies Consulting Services, Inc.

12:00 PM **Lunch Buffet**

1:30 PM **Concurrent Technical Sessions:**

1:30PM ~ ***Ridge to Reef: Sharing the Basin***

Speakers: **Eduardo Mestre**, National and Regional Water Management Specialist
John Thomas, Chief, Office of Environment & Natural Resources, USAID/Morocco
M'Hamed Hanafi, Advisor, Office of Environment and Natural Resources, USAID/Morocco

1:30PM ~ ***Sanitation and Health: The Urban Poor***

Speakers: **Barbara Evans**, Urban Programs Manager, Water and Sanitation Program, World Bank
Eddy Perez, Technical Advisor and Activity Manager, Environmental Health Project, CDM

1:30 PM ~ ***Ecological and Economic Impacts of Aquatic Biodiversity Conservation***

Speakers: **Nels Johnson**, Deputy Director Biological Resources Program, World Resources Institute
Lauretta Burke, Senior Associate, Information Program, World Resources Institute

1:30PM ~ ***Valuation of Water Resources***

Speakers: **Sharon Murray**, Water Team, G/ENV USAID
Marlou Tomkinson-Church, The Nature Conservancy
Richard Huber, Organization of American States

1:30PM ~ ***Walking on Water? Mainstreaming Gender in to Mission Activities***

Speakers: **Brad Carr**, Project Manager, USAID/El Salvador
Nancy Diamond, Environmental Social Scientist, Diamond Consulting
Chris Pannkuk, Water Management Specialist, Investing in Women in Development Fellow, USAID/Armenia
Susan van Keulen-Cantella, CBNRM Specialist, USAID/Guinea

3:00 PM **Break**

3:30 PM **Regional Small Group Session: #1**
Small, region-based groups will meet to discuss issues of a regional interest.

5:00 PM **Networking and Free Time**

6:00 PM **Buffet Dinner**

Wednesday

6:30 AM **Optional Topical Breakfast Tables**

8:00 AM **Workshop Group Photo and Opening Plenary**

8:30 AM **Concurrent Technical Sessions:**

8:30AM ~ ***Towards Better Environmental Governance: Property Rights, Procedural Rights and Institutional Development***

Speakers: **Peter Veit**, World Resources Institute
Owen Lynch, Senior Attorney, Center for International Environmental Law
Alex Serrano, Program Manager, Africa, International Division, CLUSA/NCBA

8:30AM ~ ***A Threats Based Conservation of Biodiversity***

Speakers: **Cynthia Gill**, Acting Biodiversity Team Leader
Bill Ulfelder, Peru Country Director, The Nature Conservancy
Katie Frohardt, Program Technical Director, African Wildlife Foundation

8:30AM ~ ***The Environment and Cities: Love or Hate Relationship?***

Speaker: **David Painter**, G/ENV/UP, Director of Urban Programs, USAID

8:30AM ~ ***Potential Consequences of Climate Change on the Water Sector***

Speaker: **Liz Malone**, Senior Research Scientist, Pacific Northwest National Laboratory

8:30AM ~ ***Sustaining Trees and People-GENV/ENR Forestry Team***

Speakers: **CJ Rushin-Bell**, G/ENV/ENR Forestry Team Leader, USAID
Peter Gore, Executive Director, TFCA, USAID
Richard Rice, Chief Economist, Conservation International

10:00 AM **Break**

10:30 AM **Site Visits (Five Options):**
Workshop participants may choose from one of five site visits within the region.

<u>Option 1</u> - LOCAL PROGRAMS FOR FLOOD PROTECTION, RIVER RESTORATION AND WASTEWATER TREATMENT
(Alleghany County Department of Public Works)
In response to several major floods in the area, Alleghany County has developed a comprehensive Flood Management Program, including construction of public works as well as other activities. George's Creek is one of the streams where a Watershed Restoration Program has been implemented that includes significant flood management components. The program includes consciousness-raising activities for inhabitants and school children, and a demonstration of geomorphological processes through a small physical model.

Alleghany County also operates two wastewater treatment facilities. One is a large-scale operation for domestic wastewater that comes from a prison that has been sited on an old industrial development. Part of the wastewater treatment is used in the treatment of groundwater to reclaim the pollution from the former industrial site where it sits. The other is a smaller, simpler facility employing an experimental wetland treatment system for about 30 houses, located in the outskirts of the town of Cumberland.

The proposed tour would include:
- Visits to two wastewater treatment plants;
- A tour of George's Creek rehabilitation/flood protection works, presentation of sensitization actions, and demonstration of physical stream model.

<u>Option 2</u> - COAL MINE OPERATION AND RECLAMATION: LOW-COST SOLUTIONS FOR MITIGATION OF WATER QUALITY IMPACTS AND LOCAL PARTNERSHIPS FOR RESOURCE MANAGEMENT
(Maryland Dept. of the Environment/Canaan Valley Institute)
The western part of Maryland has experienced extensive surface coal mining over the past 90+ years, resulting in severe land devastation and acute water quality impacts. Sporadic releases from mining ponds significantly lowered the pH of the Upper Potomac and its tributaries (to less than three in some instances), killing all aquatic and semi-aquatic fauna and flora. In accord with the federal Surface Mining Control and

Reclamation Act of 1977, the Maryland Department of the Environment has been reclaiming abandoned mines through contour land refilling, tree planting, establishing water treatment ponds, and construction of lime dosers to reduce acidity. The Upper Potomac and its tributaries are now very active trout-fishing areas.

The proposed tour will include:

- Presentations by the Maryland Department of the Environment and the Canaan Valley Institute on their missions, mining and water quality issues, approaches to problem-solving at local and regional scales, recommended solutions, results achieved, and lessons learned;
- A visit to a historic regional mining site – drainage tunnel, witness the impacts of legacy mining activities and their continued impacts on the local waterways;
- A visit to active mining site, presentation of former and current mining practices, including the acid generation process and on-site mitigation measures;
- A visit to abandoned mine with ongoing reclamation works, presentation of the treatment system, passive treatment process of acid reduction using limestone, charcoal and a constructed wetland all passively treating acid mine drainage with minimal O&M costs; and
- A presentation by the Canaan Valley Institute, created to foster and support local decision-making by Mid-Atlantic highland communities implementing locally determined solutions to environmental resources issues.

Option 3 - MULTIPLE USES AND IMPACTS OF THE JENNINGS RANDOLF DAM – From Water Quality Protection to Recreation, Fisheries, Flood Protection and Water Supply (Army Corps of Engineers/Maryland Dept. of Environment – Fish Hatchery)

Completed in 1981, the Jennings Randolf Dam is a 300-foot high earth and rockfill structure. The dam's main purpose was water quality improvement, which was achieved through a novel engineering water outflow structure. Prior to construction of the dam the North Branch Potomac River was essentially a dead river, highly contaminated by acid runoff from both active and abandoned coal mines. Currently, the dam serves multiple users to meet an every changing and growing number of demands. The water quality function of the dam has succeeded to such an extent, that waters both in the lake and downstream no have stakeholders interested in using them for other purposes. The challenges faced by the Army Corps of Engineers in managing the Dam for new user groups will be highlighted as the major current management challenge. In addition to water quality improvement the project also provides a source of water supply to Washington, D.C., offers important flood control benefits, and fosters a significant recreation industry. Immediately after the visit to the dam, the group will visit the Maryland State trout hatchery. The trout hatchery is strategically located in the spillway of the dam – with access to a large quantity of cold water (that now is of sufficient quality) needed for raising fry for the highly regarded trout fishery.

The proposed tour would include:

- A presentation of USACE's mission and of dam context purposes and management procedures;
- A tour of the dam, including spillway and auxiliary structures; and
- A visit to and presentation about a fish hatchery program downstream of the dam.

Option 4 - WATER DATA MANAGEMENT: DATA COLLECTION AND ANALYSIS FOR RESOURCE ASSESSMENT, MONITORING AND FORECASTING (U.S. Geological Survey, National Weather Service)

The USGS Water Resources Division monitors water quality and river hydrology through an extensive network of gauging and sampling stations. The collection of such data is the first crucial step in quantifying and understanding the state of water resources to support improved management. The National Weather Service (NWS) uses the same data sources for its Flood Warning systems, in close collaboration with USGS.

The proposed USGS/NWS tour would include:

- A review by USGS and NWS of their data collection network, including types of data collected, types of stations, and procedures for collection and analysis;
- A visit to an automated measurement station to demonstrate discharge measurement, water gauging procedures, automatic water sampling, and basic water quality tests. This will include hands-on sampling activities for water quality and quantity ; and
- A presentation of concepts about hydrologic data applications (flood protection, water resources availability) by USGS and NWS hydrologists.

Option 5 - DAM AND WATERSHED MANAGEMENT: RECREATION, WATER QUALITY, AND INDUSTRIAL WASTEWATER TREATMENT (Upper Potomac River Commission and Savage River State Forest)

The Upper Potomac River Commission, established in 1936, operates the Savage River Dam, an earth and rockfill structure about 180 feet tall. The facility works in conjunction with the Jennings Randolf Dam (see Option 3) to improve water quality in the Potomac River and mitigate mining impacts. It also provides some water supply for the community of Westernport, the Westvaco paper mill, and releases for whitewater/kayak activities (Savage River was host to the U.S. Olympic trials).

The Commission also operates a wastewater treatment facility at Westernport and the Savage River Dam. The facility deals mainly (98%) with the nearby Westvaco paper mill.

The proposed tour would include:

- A presentation on the Upper Potomac River Commission (organizational structure, objectives, governing powers, roles and responsibilities)
- A visit to the Savage River Dam;
- A presentation of natural resources management in the Savage River Watershed (including such topics as forestry, recreation, watershed management regulations and policies, etc.).

5:00 PM **Networking and Free Time**

6:00 PM **Buffet Dinner**

Thursday

6:30 AM **Breakfast: Optional Topical Breakfast Tables**

8:00 AM **Bilaterals in a Multilateral World**
Plenary session to present information and recent developments related to various conventions, treaties, and protocols relevant to USAID programs. Franklin Moore will give a video presentation.

9:00 AM **All day Environment and Water Resources Exhibits**
Twenty-five exhibit spaces sponsored by USAID, other US Government Agencies, and/or speaker organizations will be set up for participants to browse and explore during breaks and free time.

9:00 AM **Concurrent Tools Sessions:**

9:00 AM ~ ***(A) Guide to USAID Legislation, Policies, and Procedures; and (B) Biodiversity Primer***

Speakers: **John Smith-Sreen**, Environment Officer Asia Near East Bureau USAID (Part A)
Jill Kelley, New Entry Professional (Environment) USAID (Part A)
Mary Rowen, Wildlife and Biodiversity Advisor, USAID (Part B)

9:00 AM ~ ***Public/Private Partnerships in Water and Wastewater Utility Management***

Speaker: **Allen Eisendrath**, Deloitte & Touche Emerging Markets

9:00 AM ~ ***Hydrologic Assessment: Procedures to Determine a Water Balance***

Speaker: **Verne Schneider**, US Geological Service

9:00 AM ~ ***Collaborative Problem Solving and Conflict Prevention***

Speaker: **Chris Moore**, Program Manager, CDR Associates

9:00 AM ~ ***Innovative Wastewater Treatment Technologies***

Speakers: **Bailey Green**, Oswald Green, LLC
Mario Kerby, Chief of Party, Morocco WRS ECODIT

10:00 AM **Break**

10:30 AM **Concurrent Tools Sessions:**

10:30 AM ~ ***60 Minutes of Regulation 216 and its Application throughout the Agency***

Speakers: **Mohammad Latif**, Regional Environmental Officer, E&E, USAID
Paul de Rossier, Environmental Officer, G/ENV, USAID
Carl Gallegos, Deputy Director USAID/AFR/ANRE; AFR/BEO
John Wilson, ANE Bureau Environment Officer, USAID
Jeff Brokaw, Environment Officer LAC USAID

10:30 AM ~ ***Treated Wastewater and Agricultural Reuse***

Speakers: **Bob Bastian**, Senior Environmental Scientist, Environmental Protection Agency
Martin Karpiscak, Associate Research Scientist University of Arizona

10:30 AM ~ ***River Forecasting and Disaster Mitigation***

Speakers: **Curt Barrett**, Project Manager, NOAA
Maxx Dilley, Geographer, World Bank

10:30 AM ~ ***Applications of Environmental Education and Communication***

Speakers: **Brian Day**, GreenCom, Project Director, Academy for Educational Development
Roberta Hilbruner, G/ENV/ENR Environmental Education and Communication Team Leader, USAID

10:30 AM ~ ***Tools for Sustainable Aquaculture Development***

Speakers: **Maria Haws**, Dir. of Pearl Research and Training Program, Pacific Aquaculture and Coastal Resources Center, University of Hawaii
Jim Tobey, Associate Resource Manager, Coastal Resources Center, University of Rhode Island

11:30 AM **Buffet Lunch**

1:00 PM **Regional Small Group Discussion Session #2**
The small groups from Tuesday will reconvene to continue discussions.

2:30 PM **Break**

3:00 PM **Concurrent Tools Sessions:**

3:00 PM ~ ***Biotechnology and Biodiversity: What are the Environmental Issues and USAID Tools?***

Speakers: **Josette Lewis**, Biotechnology Advisor, USAID Robert Frederick, Senior Scientist, U.S. Environmental Protection Agency
Robert Frederick, Scientist/ORD Biotechnology Liaison, National Center for Environmental Assessment, EPA

3:00 PM ~ ***Water and Wastewater Treatment Technologies Appropriate for Reuse Model (WAWTTAR): A System Design Tool***

Speaker: **Chris McGahey**, Coordinator, Community-Based Environmental Sanitation and Hygiene, ARD

3:00 PM ~ ***Water Quality Monitoring "By Whom, For What?"***

Speakers: **Ron Hoffer**, Senior Advisor for Federal and International Programs, U.S. Environmental Protection Agency
Howard J. Baston, Director, Office of the Environment, USAID/Jamaica
Vince Meldrum, Vice President of Programs, Earth Force

3:00 PM ~ ***Transboundary River Basin Management***

Speakers: **Nino Nadiradze**, Environmental Project Assistant, USAID/Caucasus
Oliver Chapeyama, NRM Policy Advisor, USAID/RCSA

3:00 PM ~ ***Ecosystem Approaches to Water Management: The Chesapeake Bay Program***

Speaker: **Carin Bisland**, Associate Director for Ecosystem Management Environmental Protection Agency

4:00 PM **Networking, Free Time, and Cash Bar Reception**

6:00 PM **Dinner Speaker**
Margaret Catley-Carlson, Chair of the Global Water Partnership. Introduction by Richard Volk.

Friday

6:30 AM **Breakfast: Optional Topical Breakfast Tables**

8:00 AM **Agency Administrative Briefing**
Jim Hester, Carl Gallegos, and Barbara Ellington-Burke will discuss in plenary important administrative, personnel, budgeting, and other concerns affecting all USAID officers in the field and in Washington.

9:30 AM **Break**

10:00 AM **Concurrent Tools Sessions:**

10:00AM ~ ***Critical and Emerging Issues in Forest Management: Field Management Tools and Techniques***

Speaker: **Alex Moad**, Assistant Director for Technical Cooperation US Forest Service, International Programs

10:00AM ~ ***Industrial Water Pollution Prevention in Latin America***

Speakers: **Alan Gagnet**, Pollution Prevention Specialist
Betsy Marcotte, Vice President, PA Consulting

10:00AM ~ ***Research, Library, and Internet Resources for Environmental Officers***

Speakers: **Stephanie DeMoss**, Research Analyst, Academy for Educational Development
Gail Wadsworth, Outreach Librarian, Academy for Educational Development

10:00AM ~ ***Stakeholder Participation: Moving Beyond "One Size Fits All" Approach***

Speakers: **Mary Rojas**, Development Alternatives, Inc.
Otto Gonzales, USDA, Foreign Agricultural Service/International Cooperation and Development Program

Scott Lewis, USDA, Foreign Agricultural Service/International Cooperation and Development Program
Sharon Murray, G/ENV/ENR Water Team, USAID

10:00AM ~ ***Reducing Agricultural Water Use***

Speakers: **Ljsbrand de Jong**, Water Resources Specialist, Africa World Bank
Todd Trooien, Natural Resources Engineer, South Dakota State University

11:00 AM **Regional Small Group Preparations for Presentations**
Final chances for Small Groups to meet, discuss issues, and prepare short read-out presentations for the afternoon plenary.

12:00 PM **Buffet Lunch**

1:30 PM **Regional Small Group Presentations and Discussion**
Opportunity for Small Groups to present discussion results to the plenary.

3:30 PM **Break**

4:00 PM **Closing Remarks**
Bill Sugrue and Alan Hurdus will close the training workshop.

5:00 PM **Networking and Free Time**

6:00 PM **Buffet Dinner**

Monday July 16, 2001

7:00 AM	**Breakfast and Continuing Registration**
8:30 AM	**Official Opening: USAID Introductions, Workshop Objectives, and Agenda** Bill Sugrue, Director of the Office of the Environment and Natural Resources, welcomes training workshop participants. Alan Hurdus, Water Team Leader, will provide an overview of the objectives and agenda for the week. Included in the opening will be a video greeting/presentation from Andrew Natsios, Agency Administrator.
9:30 AM	**New Directions for USAID and Prospects for the Environment Sector** Bill Sugrue, Director of the Office of the Environment and Natural Resources. Introduction by Alan Hurdus.
10:30 AM	**Break**
11:00 AM	**Peering into the Future: Water in the 21st Century** Peter Gleick of the Pacific Institute for Studies in Development, Environment, and Security, based in Oakland, California. Introduction by Dan Deely.
12:00 PM	**Buffet Lunch**
1:30 PM	**Integrated Water Resources Management: Concepts and Practices** Frank Rijsberman, Director of IWMI; and Peter Rogers, Gordon McKay Professor of Environmental Engineering, Harvard University. Introductions by Chris Scott and Peter McCornick.
2:30 PM	**Break**
3:00 PM	**Competition for a Scarce Resource: Threats and Opportunities for the Water Sector** Aaron Wolf, from Oregon State University; and Roland Steiner, from the Washington Suburban Sanitary Commission. Introduction by Steve Olive.
4:00 PM	**Worldwide Overview of Water Related Agency Activity** Richard Volk and Meg Findley, G/ENV USAID. Introduction by Richard Volk.
4:30 PM	**Networking and Free Time**
6:00 PM	**Buffet Dinner**

Biographical Sketches
Monday Plenary Sessions

Dr. Peter H. Gleick

Dr. Peter Gleick is Co-Founder and President of the Pacific Institute for studies in Development, Environment, and Security in Oakland, California. Upon receiving his doctorate from the University of California, Berkeley in 1986, Dr. Gleick took a post-doctoral position at the Energy and Resources Group at UC Berkeley as a MacArthur Foundation Fellow in International Security. Dr. Gleick then received another MacArthur Foundation in International Peace and Security in 1998.

Dr. Gleick is currently upon the Project Steering Committee for the World Conservation Union—Water Demand Management in Southern Africa, and serves on the Public Advisory Committee for the California Water Plan 2003 for the Department of Water Resources. The author of several books, book chapters, and journal articles, Dr. Gleick also serves on the editorial boards of several publications, including Climatic Change, Environment and Security, and Water Policy.

In 1999, Dr. Gleick was elected as Academician of the International Water Academy in Oslo Norway, and was named one of the "90 People to Watch in the 90's" by the San Francisco Chronicle.

Dr. Peter Rogers

Professor Rogers specializes in methods for managing natural resources and the environment. His research has included investigating the use of analytic optimizing methods to incorporate birth the natural phenomena and the engineering controls; the development of meso-scale models of resource management that relate directly to macro-economic parameters; formulation of robust indices for environmental quality; and the impacts of global change on water resources.

Professor Rodgers received his PhD in Environmental Engineering from Harvard University, where he has also been a professor of Environmental Engineering and City and Regional Planning since 1967. He was appointed the Gordon McKay Professor of Environmental Engineering at Harvard in 1974.

Professor Rogers is currently Commissioner of the World Commission on Water for the 21st Century, and has also served on numerous advisory groups and commissions assessing water issues. In addition he has served as a consultant on water resources to government agencies in India, Bangledesh, Pakistan, Morocco, and Costa Rica. He has also consulted USAID, the UN, the World Bank, UNIDO, WHO, FAO, ADB, and many domestic US agencies.

Dr. Frank Rijsberman

Frank Rijsberman has 20 years experience as a natural resources planner in projects for fresh water resources, coastal zones, soil erosion, environmental management and climate change / sea level rise. Most recently, Professor Rijsberman has worked mostly in integrated water and coastal resources management, particularly the design of computer based decision support and communication systems (DSSs) used to facilitate stakeholder participation. He has worked on projects throughout the developing world, including Afghanistan, Yemen, Egypt, Burkina Faso, Nigeria, India, the Maldives, Indonesia, Mexico, Turks and Caicos Islands, Netherlands Antilles, Jamaica, Poland, Hungary. Prof. Rijsberman has consulted for UNDP, UN-DTCD, World Bank, USAID, European Union, Inter-American Development Bank, ESCAP, the Netherlands Government, French Government and OECD.

Professor Rijsberman has been involved in international developments on water policy since he co-authored one of the keynote papers at the Dublin Conference in 1992. He has consulted both the Government of the Netherlands and the Global Water Partnership on international water resources management issues. In 1998 he was appointed Deputy Director of the World Water Vision Unit of the Secretariat of the World Water Commission; and in 2000, he served as co-author/editor for the World Water Vision report and technical companion volume. From 1992-2000, he served as Managing Director of Resource Analysis, a private research and consulting firm in the Netherlands that provides technical services in the fields of water resources management, coastal zone management, and environmental management that he co-founded in 1987. In 1999, he was appointed part-time professor at IHE in Delft in 1999.

Frank Rijsberman currently serves as Director General of the International Water Management Institute, a CGIAR-supported research institute headquartered in Colombo, Sri Lanka, effective August 2000.

Dr. Aaron T. Wolf

Dr. Aaron Wolf is a specialist in transboundary water conflicts and conflict resolution, water basin technical and policy analysis, and environmental policy analysis. In addition to currently being Assistant Professor in the Department of Geosciences at Oregon State University in Corvallis, Oregon, Dr. Wolf is also the Director of the Tansboundary Frewshwater Dispute Databse Project and an Affiliate Staff Scientist of the Pacific Northwest National Lab.

Dr. Wolf is the author of several books, book chapters, and scholarly articles on topics realted transboundary water issues, and has consulted the US government and international organizations on such issues. Since 1997, Dr. Wolf has been on the organizing committee for the UNESCO/ADC Third Millenium Center for the Prevention and Management of Water Conflicts. Dr. Wolf has also worked with the United Nations University in Tokyo, Japan, by organizing and co-directing a planning workshop for stakeholders of the Salween Basin and writing and presenting background paper for Mideast policymakers in Cairo, Egypt. Dr. Wolf's advisory experience also includes consultancies with the World Bank, USAID, EPA, the Foreign Service Institute, and the Alabama Office of Water Resources.

Dr. Roland Steiner

Dr. Steiner recently accepted the position of Regional Water and Wastewater Manager at the Washington Suburban Sanitary Commission (WSSC) where he is responsible for technical and financial arrangements between WSSC and other organizations with which it shares water supply or wastewater facilities and interests. Prior to this position, he worked at the Interstate Commission on the Potomac River Basin for 17 years on issues involving water supply, water quality, and associated land resources. He focused on water resource allocation responsibilities for the Washington, DC metropolitan area. His work included coordinating projects to: develop watershed management plans, implement methods to efficiently use water supplies, forecast future water demands and analyze potential new sources of supply for the Washington, DC metropolitan area. Dr. Steiner holds Bachelors and Masters degrees in Civil Engineering from the University of Pennsylvania and Stanford University, respectively, and a PhD in Environmental Engineering from The Johns Hopkins University. In previous positions, he worked in England and Wales for national and regional water and wastewater management agencies, and taught Mathematics at the University of Baltimore. Dr. Steiner is a registered Professional Engineer.

Mr. Richard Volk

Richard Volk began his resource management career in 1979 while working to assist South Pacific islanders to develop and manage their nearshore fishery resources. During his initial five years of work in that region, Richard served two years as a Peace Corps Volunteer, and later was employed by the U.S.-based Foundation for the Peoples of the South Pacific. Small-scale fisheries development and coastal resources management were the target of his efforts in both the Kingdom of Tonga and in the Solomon Islands. Following a brief return to the U.S. for graduate studies in 1985-87, Richard served the American Samoa Coastal Management Program from 1988-92 as Environmental Planner. From 1992-93 he served as Chief of Party with the Island Resources Foundation for a two-year project to develop Special Area Management Plans for critical coastal areas in the U.S. Virgin Islands. Before beginning his tenure in late 1998 with the U.S. Agency for International Development, Global Environment Center, Water Team, Richard served for five years as Executive Director of the Corpus Christi Bay National Estuary Program in South Texas.

Dr. Meg Findley

Meg Findley has served as EIC's Water Resources Analyst for the past three years, working with USAID's Water Team to promote integrated water resources management. She has recently completed an Agency-wide research study to assess the breadth and scope of the Agency's water portfolio throughout all regions of the world. This work will be featured in the next bimonthly issue of the American Water Resources Association journal, *Water Resources IMPACT*. Findley has a Ph.D. in Aquatic Ecology, with special emphasis on sustainable development, from the University of North Carolina at Chapel Hill. Her areas of expertise include strategic planning in integrated water resources management; environmental impact assessment of hydropower and urban development projects; and community-based natural resources management, particularly in water quality monitoring. Prior to her current assignment with EIC, Findley worked in Laos, Cambodia, Thailand, and Indonesia.

Peering Into the Future: Fresh Water in the New Century

Dr. Peter H. Gleick
Pacific Institute for Studies in Development, Environment, and Security
Oakland, California

USAID Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Planning in the New Century
July 2001

The nature of water-resources development around the world is changing. This should not be a surprise – efforts to control and manage fresh water have taken many different forms and directions over the past 5000 years. We live on a water planet, but the reality is that the hydrologic cycle is capricious and highly variable. Humans have long sought ways of reducing our vulnerability to this variability: we moderate irregular river flows and variable rainfall by moving, storing, and redirecting natural waters.

As the new millennium begins, a distressingly large number of water problems still face us, and the way we think about managing freshwater resources and human demands for water is changing again. Traditional planning approaches and a reliance on physical solutions continue to dominate, but new methods are being developed to use existing infrastructure to meet the demands of growing populations without requiring major new construction or new large-scale water transfers from one region to another. More and more water suppliers and planning agencies are beginning to shift their focus and explore how to improve efficiency, implement options for managing demand, and reallocate water among users to reduce projected gaps and meet future needs. There are new efforts underway to reduce the risks of water related conflicts. And global climate change is forcing a reassessment of water management and planning.

In my talk today I discuss where we are and where we are going. What is the nature of the world's water problems today? What are the critical issues? And how might we address them. Enormous opportunities exist. An ethic of sustainability will require fundamental changes in how we think about water, and such changes come about slowly. Rather than endlessly trying to find the water to meet some projection of future desires, it is time to plan for meeting present and future human needs with the water that is available, to determine what desires can be satisfied within the limits of our resources, and to ensure that we preserve the natural ecological cycles that are so integral to human well-being.

Peering into the Future: Fresh Water in the New Century

U.S. AID Millennium Plus One:
Water Resources Management in the New Century

July 15-21 2001
Cumberland, Maryland

Dr. Peter H. Gleick
Pacific Institute for Studies in Development, Environment, and Security

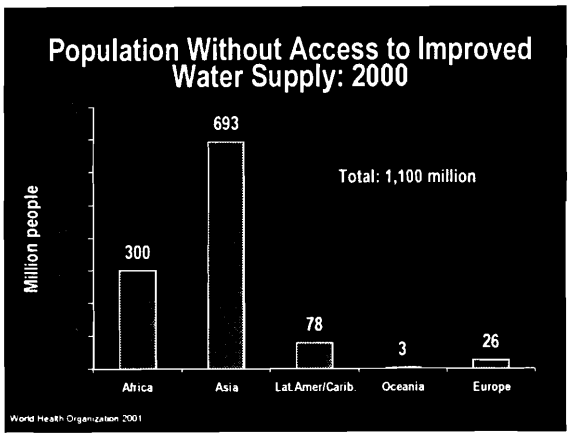
The Water "Crisis"

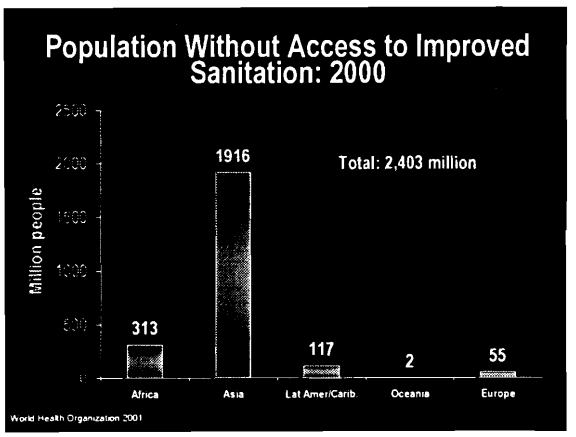
Some fundamental aspects of water development have failed.

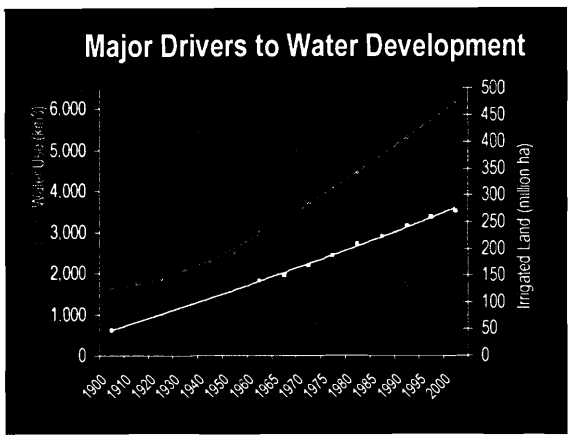
- Billions of people still lack the most fundamental basic water services.
- Millions die annually from preventable water-related diseases.
- Aquatic ecosystems worldwide are under severe threat.

The Water "Crisis" (cont).

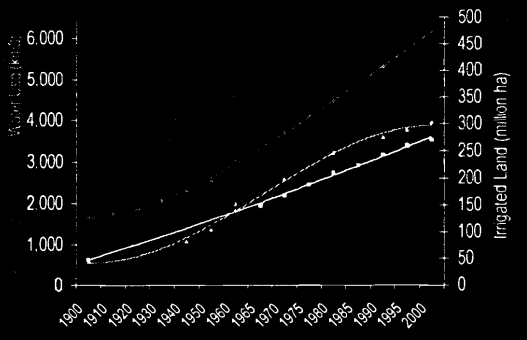
- Populations are growing rapidly.
- Agriculture, urban, and environmental needs are competing for limited resources.
- Political competition for water is growing.



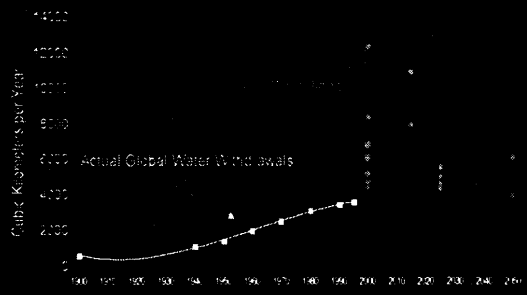




Major Drivers to Water Development



Our projections of future water use have been flawed



Gleick 2000

Slower growth in demand has important implications

- Traditional planning approaches and a reliance on physical solutions still have an important role to play.
- But non-structural approaches are increasingly being used to meet the demands of growing populations without major new construction or new large-scale water transfers.

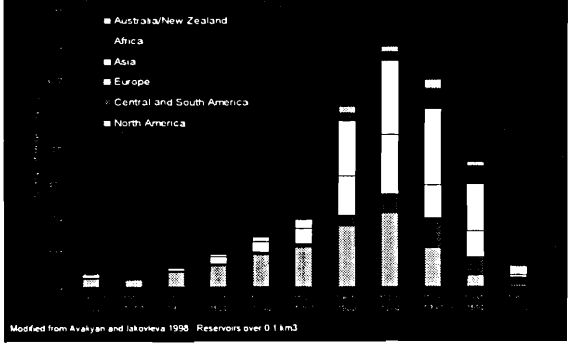
Pacific Institute 2001

Rethinking Water Infrastructure

- Water-related infrastructure has brought enormous benefits.
- Water-related infrastructure has had tremendous costs.
- Our understanding of the costs is improving, with direct implications for development directions and priorities.
- Perceptions and opinions about new infrastructure are changing.

Pacific Institute 2001

Number of Reservoirs Added by Decade



Modified from Avakyan and Iakovleva 1998 Reservoirs over 0.1 km3

The importance of communities, economics, and natural ecosystems is now being recognized.

- Evolution in thinking from
  - Stockholm 1972
  - Mar del Plata 1977
  - Dublin and Rio 1992
  - The Hague 2000
- Perfunctory community consultation is not enough.
- Real understanding and attention to ecosystems is required.

Pacific Institute 2001

The nature of water demand is changing

- Inexorable exponential growth in demand is not inevitable.
- Substantial improvements in the "productivity" of water use are possible: economically and quickly.
- Capturing these improvements requires new tools, new knowledge, and new skills.

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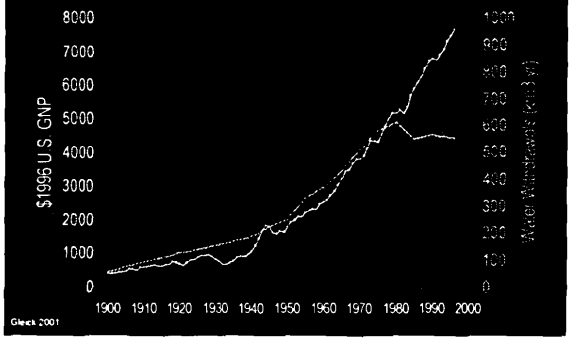
The link between water use and economic growth can be broken



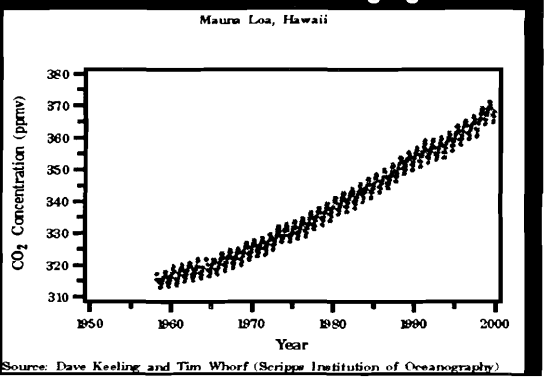
Gleick 2001

New Challenges: Climate Change

- Climate change is unavoidable.
- Some of the most severe impacts will be on water resources and systems.
- Traditional water planners are not prepared for climate change.

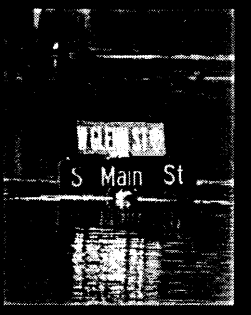
Pacific Institute 2001

The Climate is Changing



Source: Dave Keeling and Tim Whorf (Scripps Institution of Oceanography)

New Challenges: Climate Change



Mississippi River flood 2001

Associated Press 2001

We must meet Basic Water Requirements as the top priority

- Refocus on clean drinking water and sanitation/hygiene programs.
- Shift funds from large infrastructure development to innovative programs at the community level.

Pacific Institute 2001

Other New Tools and Issues

Alternative sources of water

- Community-scale systems
- Reclaimed/recycled water
- Brackish water
- Desalinated water
- Rainwater harvesting
- "Graywater"

Match water need with water quality

New Principles are needed to guide the "New Economy of Water"

- Globalisation
  - International Trade Agreements
  - Marketing and bulk transfers of water
- Privatisation
  - Transfer of public goods or services to private sector
  - Public-Private partnerships

Conclusions

Basic concepts and philosophies of water development are undergoing fundamental changes.

Aid organizations must refocus primary efforts on meeting basic human needs, not only on building large infrastructure.

Conclusions

All new large infrastructure projects must

- meet new standards for community participation, cost-effectiveness, and ecological integrity.
- compete with new opportunities for innovative smaller-scale, locally managed technical, institutional, and economic solutions.

Challenges for US AID

AID's water policies have been evolving. They should encourage:

- Pro-poor; sustainable economic growth
- Social development
- Local management and governance

Implementation will be difficult, but the rewards are great.

Integrated Water Resources Management Concepts and Practice

Dr. Peter Rogers
Harvard University

USAID Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Planning in the New Century
July 2001

This presentation reviews Integrated Water Resources Management (IWRM) as it applies to urban and industrial water management. Another presentation at this Workshop (by Frank Rijsberman) will address the water for food and ecosystem maintenance aspects of IWRM.

There is an increasing shortage of freshwater in many countries around the world. One third of the world's population live in countries experiencing medium water stress. World wide there are currently 1.4 billion people without clean drinking water, 2.3 billion lacking adequate sanitation, and 7 million die each year from water related diseases. In addition one half of the world's rivers and lakes are seriously polluted.

During the next century more than one half of the world's population will live in cities, and most of this growth will take place in the developing world. The world's urban populations have increased two and one-half times during the past thirty years, and by the year 2000, twenty-one cities are expected to have populations of over ten million inhabitants; seventeen of these megacities will be in developing countries; and the number of cities larger than five million inhabitants will rise to sixty. Over the next two decades, population growth and migration would add an estimated 1.9 billion new urban residents to the 1.7 billion inhabitants already poorly supplied with water and sanitation services. Of these new inhabitants, fully 25 percent will be living in megacities with populations of over ten million. The World Commission on Water for the 21st Century claims that addressing the problems of water scarcity for urban and industrial users would require an investment of US$150 billion per year by the year 2025 compared with the estimated US$40-45 billion expended in the year 2000.

One fervent hope is that by applying the principles of Integrated Water Resources Management (IWRM) water agencies in countries, regions, and river basins will be able to find coping solutions to these massive problems. Currently IWRM is a set of concepts and approaches to water management which have had fragmented application in many settings, but no one case stands out as a perfect example of fully integrated water management between sectors and users. The paper outlines the ideal IWRM and then shows the current limitations and applications.

Integrated Water Resources Management
Concepts and Practice

Peter Rogers
Harvard University

Presented at the USAID Environmental Training Workshop
Millenium Plus One: Integrated Water Resources Planning in the New Century
Rocky Gap, Maryland, 15-21 July 2001

The Overall Water Problem

- Resources under pressure
- Populations under water stress
- The impact of pollution
- Water governance crisis

The Main Challenges

- Securing water for people
- Securing water for food
- Developing other job creation
- Protecting vital ecosystems
- Dealing with variability in time and space
- Managing risks
- Creating popular awareness and understanding
- Forging the political will to act
- Ensuring collaboration across sectors and boundaries

CONCEPTS OF IWRM

Definition of IWRM

- IWRM is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

The Dublin Principles

- Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment
- Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels
- Women play a central part in the provision, management and safeguarding of water
- Water has an economic value in all its competing uses and should be recognized as an economic good

Principle I

Water as a finite and vulnerable resource

- A holistic approach
- Resource yield has natural limits
- Effects on human activities
- Upstream-downstream user relations
- A holistic institutional approach

Principle II

Participatory approach

- Real participation
- Participation is more than consultation
- Achieving consensus
- Creating participatory mechanisms and capacity
- Lowest appropriate level

Principle III

The important role of women

- Involvement of women in decision-making
- Women as water users
- IWRM requires gender awareness

Principle IV

Water as an economic good

- Water has value as an economic good
- Values and charges are two different things
- Useful water value concepts
  - economic value
  - full value
- Useful water cost concepts
  - full supply cost
  - full economic cost
  - full cost
- The goal of full cost recovery
- Managing demand through economic instruments
- Financial self-sufficiency versus water as a social good

PRACTICE OF IWRM

WORLD BANK'S WATER POLICY

...Governments have often misallocated and wasted water, as well as permitted damage to the environment, as a result of institutional weaknesses market failure, distorted policies, and misguided investments. Three problems in particular need to be addressed:

- Fragmented public investment programming and sector management, that have failed to take into account of the interdependencies among agencies, jurisdictions, and sectors
- Excessive reliance on overextended government agencies that have neglected the need for economic pricing, financial accountability, and user participation and have not provided services effectively for the poor
- Public health investments and regulations that have neglected water quality, health, and environmental concerns.

(World Bank, 1993, p. 9)

ASIAN DEVELOPMENT BANK'S WATER POLICY

National water resources development and management should be undertaken in holistic, determined, and sustained manner to meet national development goals and protect the environment.

Planning, development, and management of specific water resources should be decentralized to an appropriate level responding to basin boundaries.

Delivery of specific water services should be delegated to autonomous and accountable public, private, or cooperative agencies providing measured water services in a defined geographical area to their customers and or members for an appropriate fee.

Water used in society should be sustainable—with incentives, regulatory controls, and public education promoting economic efficiency, conservation of water resources, and protection of the environment—within a transparent policy framework.

Shared water resources between nations should be allocated efficiently for the mutual benefit of all riparian users.

Water sector activities should be participatory and consultative at each level, leading to commitment by stakeholders and action that is socially acceptable.

Successful water sector development requires a commitment to sustained capacity building, monitoring, evaluation, research, and learning at all levels, to respond effectively to changing needs at the national, basin, project, service entity, and community level. (Asian Development Bank, 1996, Vol. 1, p. 5)

INTERAMERICAN DEVELOPMENT BANK'S STRATEGIC INSTRUMENTS FOR IWRM IDB,1997

- Cost Recovery
- Capacity Building
  - Institutional reform and innovation
  - Human resources development
- Stakeholder Participation
- Decentralization
- Private Sector Participation
- Tradable Water Rights
- River basin Councils

TIMELINE FOR IWRM

- Flood Control Act, 1936
- Federal Inter-Agency River Basin Committee, 1939
- Hoover Commission, 1949
- Green Book, 1950
- President's Water Resources Commission, 1950
- Bureau of the Budget Circular A-47, 1952
- Senate Document 97, 1962
- Water Resources Council, 1965
- National Water Commission, 1968
- NEPA, 1969
- National Commission on Water Quality, 1973
- Principles and Standards, 1973
- Principles and Guidelines, 1982
- UN Convention on the Law of the Non-Navigational Uses of International Water courses, 1997

Conferences, Commissions, and Important Documents for IWRM

- *Green Book*, 1950
- *Muddy Waters*, 1951
- *Design of Water Resources Systems*, 1962
- *Principles and Standards*, 1973
- *Principles and Guidelines*, 1982
- International Conference on Water and the Environment: Development Issues for the 21st Century, Dublin, 1992
- World Bank's *Water Policy Paper*, 1993
- Inter-American Development Bank's *IWRM Strategy Paper*, 1997
- Asian Development Bank's *Draft Water Policy*, 1996
- Global Water Partnership, 1996
- World Water Council, 1996
- World Commission on Water for the 21st Century, 2000
- World Commission on Dams, 2000
- Second World Water Forum, 2000

UN ORGANIZATIONS AND IWRM

- UNDP
- FAO
- WHO
- UNICEF
- WMO/UNESCO
  - IHP
- UNDESD
  - Intersecretariat Group for Water Resources
- UNEP
  - GEF

OTHER INTERNATIONAL INSTITUTIONS DEALING WITH IWRM

- World Bank
- Asian Development Bank
- Inter American Development Bank
- African Development Bank
- Global Water Partnership
- World Water Council
- IUCN
- IIMI now IWMI
- IFPRI
- IPTRID
- ICID
- IJC

SOME CASES

WIDELY DISCUSSED CASES

- French "Water Parliaments"
- Murray-Darling Basin
- Tennessee Valley Authority (TVA)
- Delaware River Basin Commission
- Damodar Valley Authority, India
- Potomac River Basin Commission
- Rhine Basin
- Mekong Basin Commission

SOME NEW INITIATIVES

- Nepal Strategic Water Plan
- Bangladesh Master Plan
- River Basins in China
- Nile Basin Initiative
- California Federal-State Compact
- ?

Consequences of Major Policy Shifts: Water Use in Egypt and Korea

- **Egypt 1950**
- population 20.33 million
- income per capita $203
- water available 58.8 cubic km
- cereal self-sufficiency 63%

- **Korea 1950**
- population 20.36
- income per capita $146
- water available 62.9 cubic km
- cereal self-sufficiency 67%

- **Egypt 1995**
- population 62.93 millions
- per capita income $790
- water for agriculture 47.9 cubic km
- cereal self-sufficiency 63%

- **Korea 1995**
- population 44.90 millions
- per capita income $9,700
- water for agriculture 12.6 cubic km
- cereal self sufficiency 34%

PROSPECTS FOR IWRM

- IWRM adopted by the Second World Water Forum (Hague, 2000)
- All major multilateral and bilateral agencies have endorsed it
- Many national and regional agencies have also endorsed IWRM
- Creation of new institutions and enabling environment
- More experience being documented
- More trained manpower

Managing Water for Food and Environmental Security

Dr. Frank Rijsberman
International Water Management Institute

USAID Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Planning in the New Century
July 2001

As populations rise, incomes rise, and countries industrialise – the demand for water in urban areas in developing countries will rise very strongly in the coming decades. At the same time increased environmental awareness will place more and more emphasis on maintaining a healthy environment for people as well as nature. Large-scale development of river and groundwater resources is less acceptable now than it was in the period 1960-1990, when the large majority of the world's 45 thousand large dams were built. Moreover, water infrastructure built in recent decades is getting obsolete – e.g. through silting up of reservoirs, and crumbling of irrigation networks – and there appears to be a decreasing willingness to fund rehabilitation and replacement of infrastructure. Groundwater levels are falling in key aquifers that have contributed substantially to food security in recent years through provision of water-on-demand to millions of farmers that tapped them directly through tubewells. In all these developments, as resources get scarcer, the poor and vulnerable are impacted first and suffer most.

Water for agriculture is getting squeezed as water is moved out of agriculture to be diverted to urban areas, groundwater sources dry up, and the willingness to develop new resources has declined for financial as well as environmental reasons. The consequences are visible in, for instance, Pakistan, home to the world's largest irrigation system and increasingly serious droughts. Agriculture has grown used to cheap and plentiful water in irrigated areas. As the human population tripled in the twentieth century, water use multiplied sixfold, mostly for agriculture. Agricultural productivity has risen sharply in recent decades due to higher yielding varieties and increased fertilizer use – but also due to major investments in water resources infrastructure and massive subsidies on energy for pumping groundwater that are less likely to be repeated in coming decades.

The question appears to be: ***How will we find sufficient water to provide food security, health, and livelihoods to a growing world population – in harmony with other water users and the environment?*** This is truly a global challenge, that perhaps should be re-formulated as follows:

How can we grow the food we need with the water available?

To grow enough food and provide sustainable livelihoods to poor people with the available water will require a considerable overhaul of the way agriculture is practiced. The dominant agricultural philosophy that views land as the scarce resource and aims to maximize yields per unit of land through better varieties while removing nutrients and water as constraints[1] needs to be replaced. Replaced by a philosophy that views land, water, nutrients and genetic resources as an integrated set of scarce resources that need to be managed by the stakeholders[2]. For water and land resources management there are three priorities:

[1] Achieved through higher yielding varieties, cheap fertiliser and essentially free water.
[2] This is, of course, nothing more or less than a plea for integrated natural resources management.

1. implement better water and land resources management practices in agriculture, forestry and fisheries;
2. increase understanding between agriculture and other water users, particularly environmental uses; and
3. reduce agriculture's water use and dependence.

We are proposing major initiatives involving the CGIAR in a central role that address these priorities, as briefly outlined hereafter.

There are many ways in which water can be managed better, ranging from better technology such as laser-land levelling or drip irrigation to better involvement of users in planning and management of resources. Collectively these are known as "integrated water resources management" and most of IWMI's work deals with specific aspects of this. Particularly in upper catchment areas and on hillsides, but not limited to these areas, better water management ought to be closely intertwined with better land management, e.g. through integrated watershed or catchment management approaches.

While it is clear that water and land resources management in currently cultivated systems can be improved, it is not clear how much irrigated areas should be expanded in the coming decades. Irrigated agriculture – "old style", understood as large-scale publicly funded irrigation systems – has gained an ambiguous reputation with parts of society. Willingness to invest in new systems has declined. Others, particularly in the irrigation and drainage community, hold it self-evident that considerable expansion of irrigated areas is necessary and unavoidable to achieve food-security and reduce hunger and poverty in rural areas.

Dialogue on Water, Food and Environment

Bridging the gaps in perception on the desirable directions in water management for agriculture will reduce conflicts among users and increase the resources available for broadly supported investments. To this end a broad consortium is being established that will catalyse a process of cross-sectoral dialogue on water for food and environmental security[3]. IWMI has taken the initiative for this exercise and will host its Secretariat. A sponsor group chaired by the Netherlands government has been established to support the exercise. Significant resources from outside the CGIAR are expected to be available for the programme and its components such as the Comprehensive Assessment. The Dialogue will be formally launched in August 2001 at the Stockholm Water Symposium.

The global challenge for water and agriculture

There is a challenge, however, that goes considerably beyond the implementation of improved water and land management practices in agriculture forestry and fisheries, however. That is the challenge of addressing water and land resources management practices in conjunction with (1) breeding plants that are more drought resistant and have a higher yield per unit of water and (2) the management of soil fertility.

It will require a considerable paradigm shift to think in terms of yield per unit of water as a major complement to yield per unit of land. Key areas can be grouped as follows:

[3] Initially consisting of the Food and Agriculture Organisation (FAO); Global Water Partnership (GWP); International Commisison on Irrigation and Drainage (ICID); IUCN, The World Conservation Union (IUCN); International Water Management Institute (IWMI); United Nations Environment Programme (UNEP); World Health Organisation (WHO); and World Water Council (WWC)

1. increasing the drought stress tolerance of key irrigated and rainfed food and cash crops through breeding and biotechnology, thereby also adapting agriculture to increased climatic variability due to anthropogenic climate change;
2. similarly increasing the water productivity of key food and cash crops through breeding and biotechnology;
3. improving soil water and soil fertility management to sustainably increase yields in, particularly, rainfed agriculture;
4. improving integrated water resources management at the basin level to increase water productivity and (re-)allocate water resources to a sustainable mix of high value uses, from crops to forestry, to fisheries, the environment and domestic and industrial use and reduce conflicts among users;
5. integrated natural resources management with full involvement of all stakeholders and explicit sustainability and poverty alleviation objectives.

The overall objective of the global challenge program on water and agriculture could be to sustainably increase global food production by 40% while reducing the renewable water resources used in agriculture by 10-20% in the next 25 years. This would imply a reduced use of water for agriculture over current projections by about 600-700 cubic kilometres – of the same order, as the additional water required for domestic and industrial purposes.

Managing Water for Food and Environmental Security

Frank Rijsberman
International Water Management Institute
Colombo, Sri Lanka

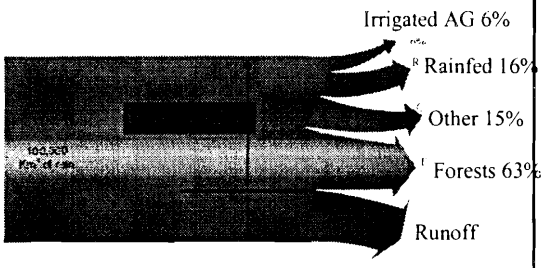
"We need a Blue Revolution in agriculture that focuses on increasing productivity per unit of water – "more crop per drop".

Mr Kofi Annan, Secretary General of the United Nations, Report to the Millennium Conference, October, 2000

Symptoms of the Water Crisis

- Polluted waters, damaged ecosystems, loss of biodiversity
- Drying Up - Yellow River, Syr Darya, Colorado River, the Nile, Tana River
- Malnourishment - lack of access to water for drinking and agriculture

Global Water Use



Global Water Consumption

Aggregated class	Percent Total Area	Percent Total Evaporation
Forest	46	63
Irrigated	3	6
Rainfed	14	16
Shrubs/Grassland/Bare/Desert	37	15
Total Area	128 Million km^2	
Total Evaporation	96,000 Km^3	

How Much More Irrigation Water?

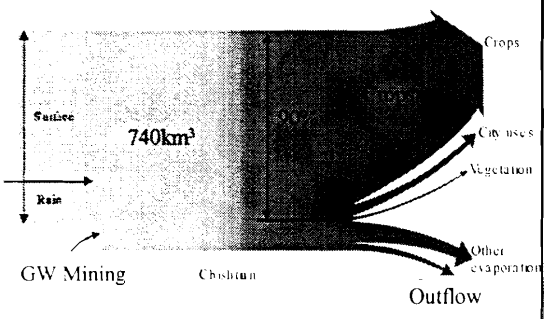
- To meet food security objectives by 2025:
  - IWMI +17%, FAO +12%, Shiklomanov 27%
- To meet environmental security objectives:
  - Alcamo -8%
- The difference between +17% and - 8% is 800 cubic kilometers, equivalent to total withdrawals for global urban supplies

42

What is the Solution?

- Will increases in irrigation efficiency solve the problem?

Accounting for Water Use at Chistian, Pakistan

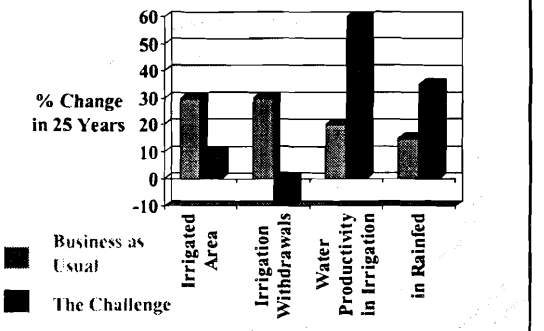


Problem

- Not efficiency
- Low production per every drop consumed
- Rice 1.4 tons/ha, wheat 2 tons/ha
- Wheat 0.6 kg/cubic meter

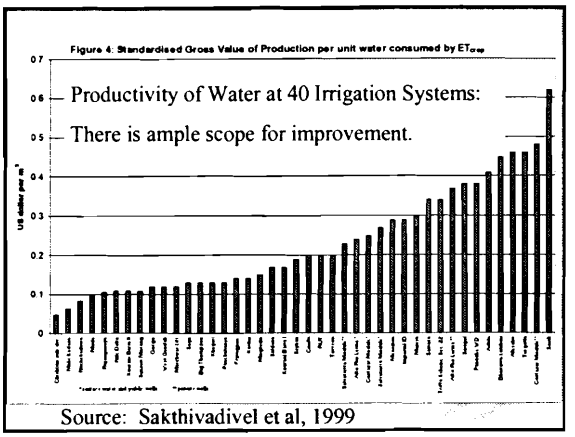
Water Productivity

- Needs a shift in thinking
  - from efficiency to productivity
  - thinking of kg/ha and kg/cubic meter
- Grow more food with less water
- Leave more water for cities and ecosystem services

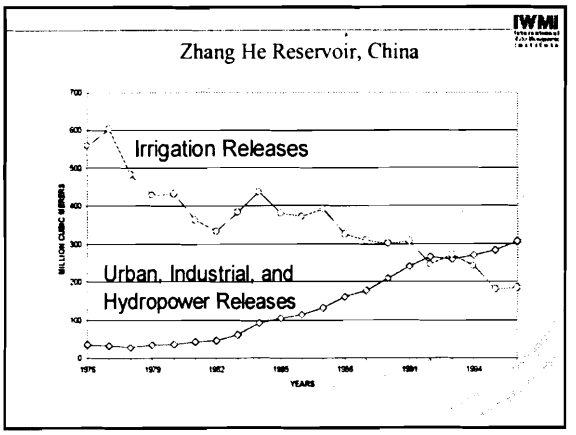


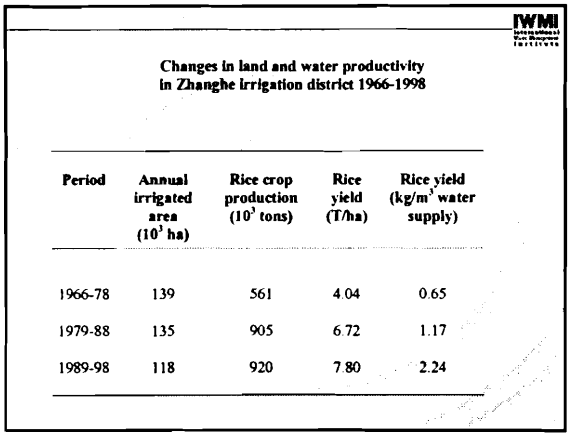
The Billion $$$ Question?

- Can we do it?
- There are many approaches:
  - improved varieties, better nutrient management, better soil-water management, supplemental irrigation on rainfed areas, water management, policies, institutions



Source: Sakthivadivel et al, 1999

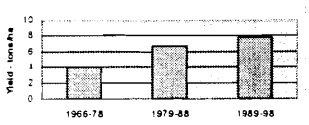




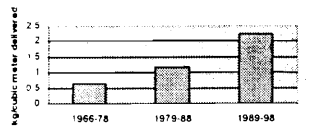
Period	Annual irrigated area (10^3 ha)	Rice crop production (10^3 tons)	Rice yield (T/ha)	Rice yield (kg/m^3 water supply)
1966-78	139	561	4.04	0.65
1979-88	135	905	6.72	1.17
1989-98	118	920	7.80	2.24

IWMI

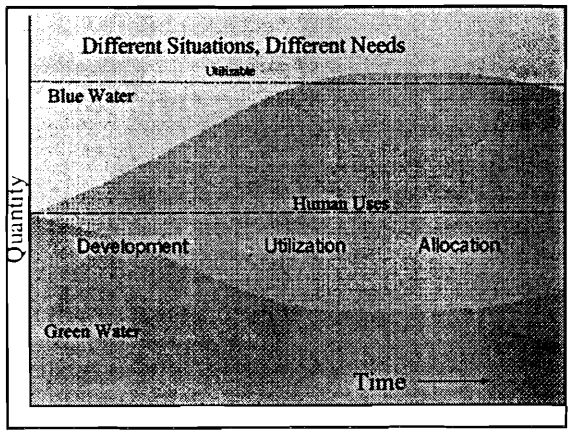
Rice Yields



Water Productivity



At Zhang He, China, rice yields doubled, while water productivity per unit supply nearly tripled.



IWMI

Basins

• Development	• Parts of sub-saharan Africa
• Utilization	• SE and South Asia
• Allocation	South Africa, North China Plains, NW India, the Punjab

ICID-CIID GWP IWMI INTERNATIONAL WATER MANAGEMENT INSTITUTE

IFAP

Dialogue on
Water, Food and Environment:
a strategic alliance of key stakeholders

UNEP WWF WWC

IUCN The World Conservation Union

FAO FIAT PANIS

WHO

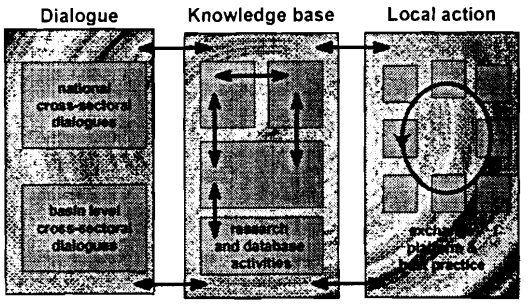
IWMI

Dialogue on Water, Food and Environment

FAO
Global Water Partnership- GWP
Int. Cie. on Irrigation and Drainage-ICID
Int. Fed. Of Agricultural Producers-IFAP
IUCN - the World Conservation Union
IWMI
UNEP
WWF - the Worldwide Fund for Nature
World Health Organisation- WHO
World Water Council

IWMI

Dialogue on Water, Food & Environment



Integrated Natural Resource Management

Global Challenge: Water for Poverty Alleviation

- Appropriate technologies
- eg Treadle Pumps
  - 1.3 million treadle pump users in Bangladesh
  - 600,000 ha of farmland
  - Annual net income raised by $100

The Challenge

- Water Management in agriculture can contribute to solving the water crisis.
- Over 25 years - Increase in Water Productivity
  - 60% increase on irrigated lands
  - 30% increase on rainfed lands
- Focus on livelihoods and poverty alleviation
- Recognizing different situations and needs

Conflict and Cooperation: The Challenge of International Waters

Dr. Aaron Wolf
Oregon State University[1]

USAID Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Planning in the New Century
July 2001

River basins and groundwater aquifers which cross international boundaries present increased challenges to effective water management, where hydrologic needs are often overwhelmed by political considerations. While the potential for paralyzing disputes are especially high in these basins, history is rich with examples of water acting as a catalyst to dialog and cooperation, even among especially contentious riparians.

Background to International Waters

There are 261 watersheds, and countless aquifers, which cross the political boundaries of two or more countries. International basins cover 45.3% of the land surface of the earth, affect about 40% of the world's population, and account for approximately 60% of global river flow.

These basins have certain characteristics that make their management especially difficult, most notable of which is the tendency for regional politics to regularly exacerbate the already difficult task of understanding and managing complex natural systems.

Disparities between riparian nations – whether in economic development, infrastructural capacity, or political orientation – add further complications to international water resources management. As a consequence, development projects, treaties, and institutions are regularly seen as, at best, inefficient; often ineffective; and, occasionally, as a new source of tensions themselves.

Despite the tensions inherent in the international setting, riparians have historically shown tremendous creativity in approaching regional development, often through preventive diplomacy, and the creation of "baskets of benefits" which allow for positive-sum, integrative allocations of joint gains.

Traditional Chronology: Development, Crisis, Conflict Resolution

A general pattern has emerged for international basins over time. Riparians of an international basin implement water development projects unilaterally first on water within their territory, in attempts to avoid the political intricacies of the shared resource. At some point, one of the riparians, generally the regional power, will implement a project which impacts at least one of its neighbors.

This project which impacts one's neighbors can, in the absence of relations or institutions conducive to conflict resolution, become a flashpoint, heightening tensions and regional instability, and requiring years or, more commonly, decades, to resolve – the Indus treaty took ten years of negotiations, the Ganges thirty, and the Jordan forty – while all the while water quality and quantity degrades to where the health of dependent populations and ecosystems are damaged or destroyed. This problem gets worse as the dispute gains in intensity; one rarely hears talk about the ecosystems

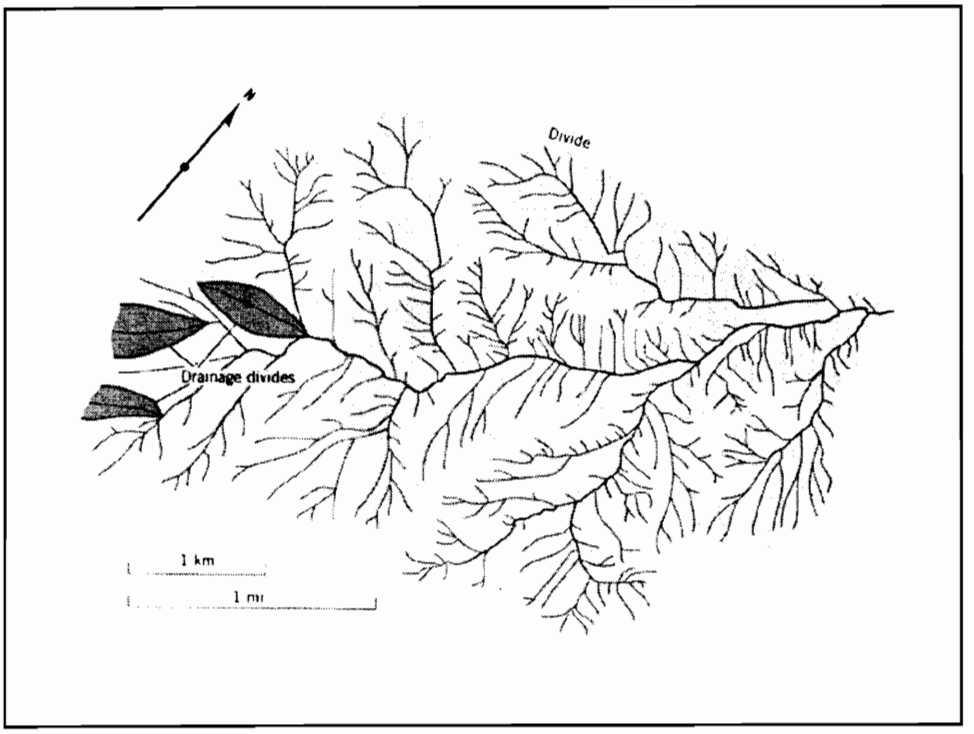
[1] Address for correspondence: Department of Geosciences; 104 Wilkinson Hall; Oregon State University; Corvallis, OR 97331-5506, USA; Tel: +1-541-737-2722; Fax: +1-541-737-1200; email: wolfa@geo.orst.edu

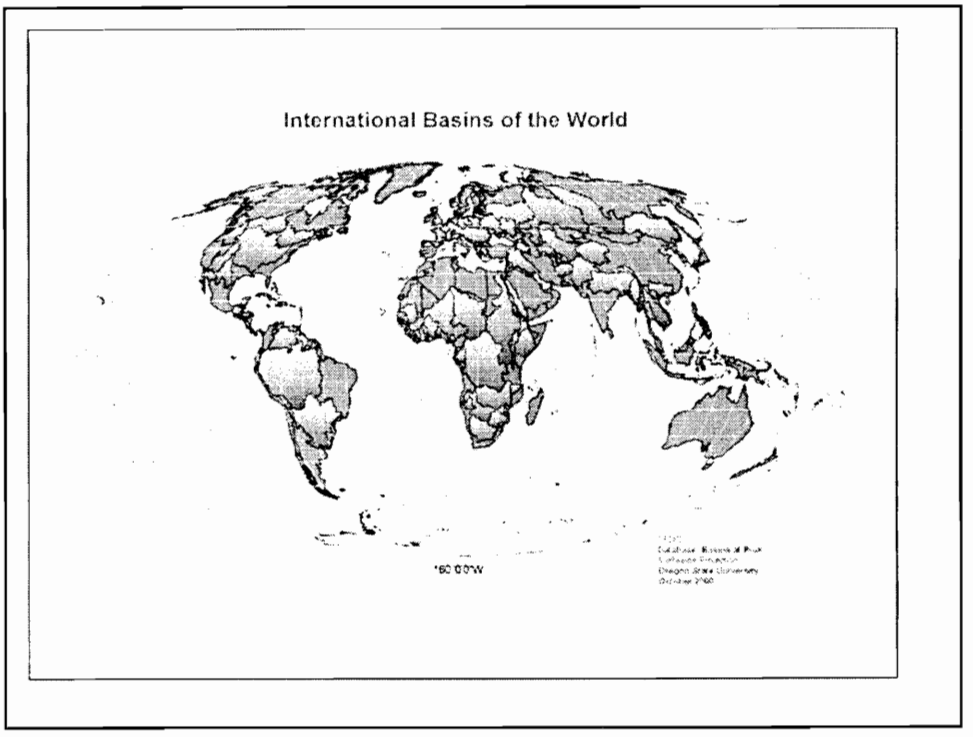
of the lower Nile, the lower Jordan, or the tributaries of the Aral Sea – they have effectively been written off to the vagaries of human intractability.

Getting Ahead of the Curve: Preventive Diplomacy and Institutional Capacity Building

Despite their complexity, the historical record shows that water disputes *do* get resolved, and that the resulting water institutions can be tremendously resilient, even among bitter enemies, and even as conflicts rage over other issues. Some of the most vociferous enemies around the world have negotiated water agreements or are in the process of doing so, and many treaties and management bodies have survived subsequent hostilities intact. The challenge for the international community is to get ahead of the "crisis curve," to help develop institutional capacity and a culture of cooperation in advance of costly, time-consuming crises, which in turn threaten lives, regional stability, and ecosystem health.

One productive approach to the development of transboundary waters has been to examine the benefits in a basin from a mult-resource perspective. This has regularly required the riparians to get past looking at the water as a commodity to be divided, and rather to develop an approach which equitably allocates not the water, but the benefits derived therefrom.

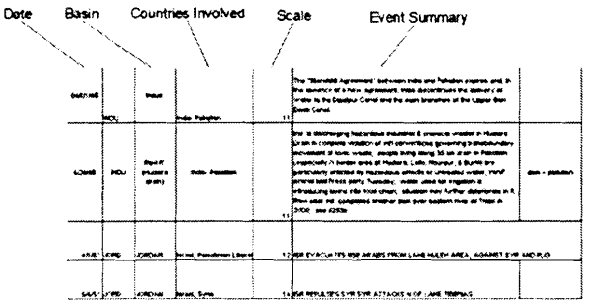




The Transboundary Freshwater Dispute Database

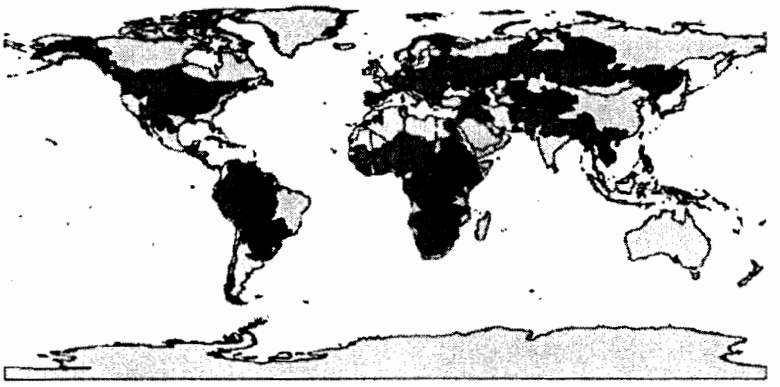
A Project of
Oregon State University
Department of Geosciences
and the Northwest Alliance for
Computational Science

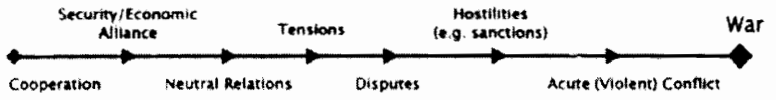
- Reference to 3,600 water-related treaties (805-1997)
- Full-text of 150 treaties and 40 US compacts, entered in computer database
- Detailed negotiating notes (primary or secondary) from fourteen case-studies of water conflict resolution
- Annotated bibliography of "State of the Art" of water dispute resolution literature
- News files on cases of acute water-related disputes
- Indigenous methods of water dispute resolution

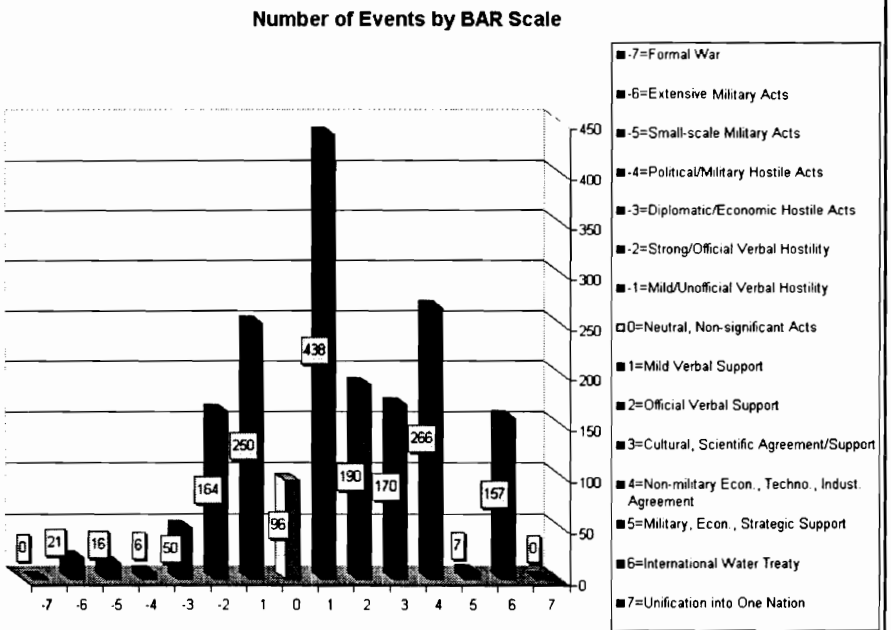


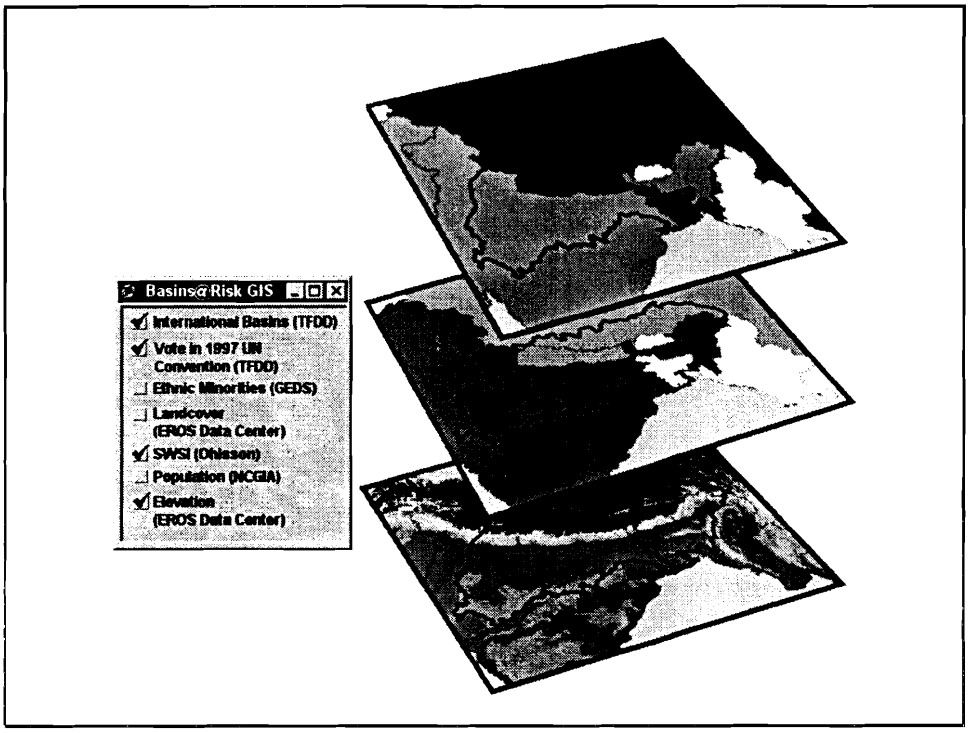
Events Database, Example

Scale of Conflict







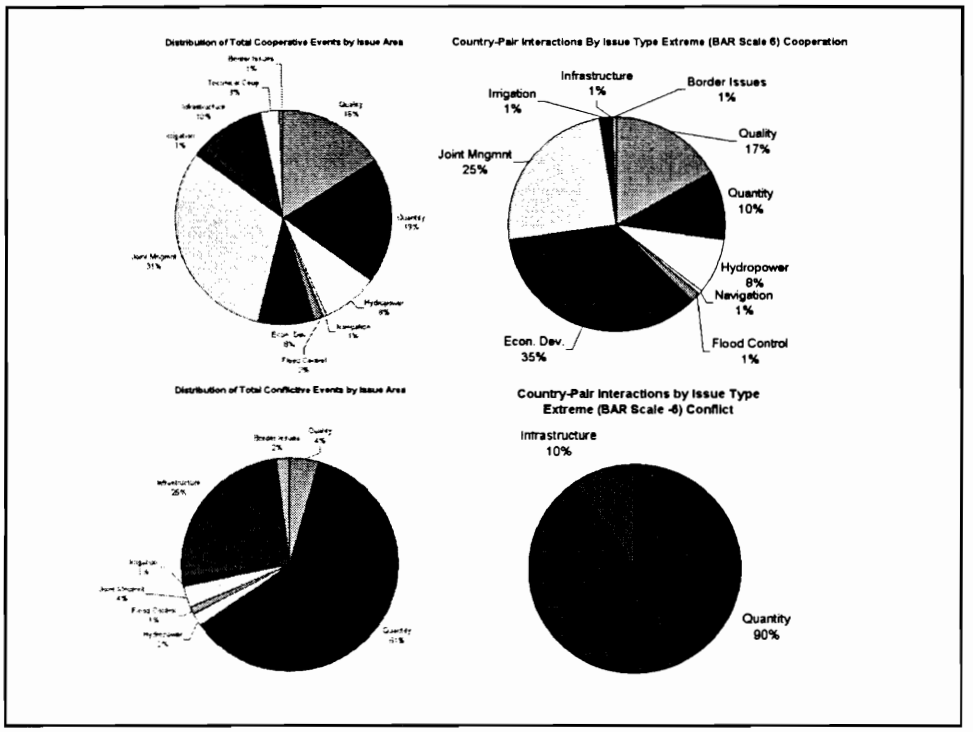


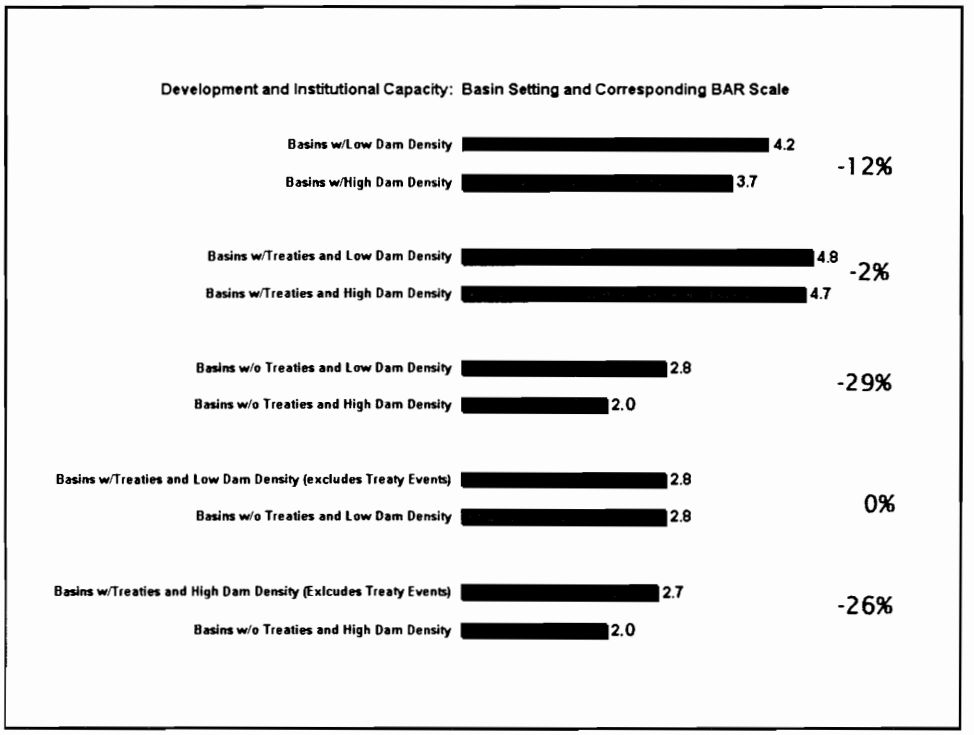
BASINS AT RISK: Working Hypothesis

"The likelihood of conflict rises as the rate of change within the basin exceeds the institutional capacity to absorb that change."

Parameters which seem *not* to be indicators:

- **Climate**
- **Water stress**
- **Population**
- **Level of development**
- **Dependence on hydropower**
- **Dams or development *per se***
- **"Creeping" changes:**
  - general degradation of quality
  - climate change induced hydrologic variability





BASINS AT RISK: Working Hypothesis

"The likelihood of conflict rises as the rate of change within the basin exceeds the institutional capacity to absorb that change."

What *are* indicators?

Sudden physical changes or lower institutional capacity are more conducive to disputes:

1) Uncoordinated development: a major project *in the absence* of a treaty or commission
2) "Internationalized basins"
3) General animosity

Table 3: Treaty Statistics Summary Sheet

Signatories
- Bilateral 124/145 (86%)
- Multilateral 21/145 (14%)

Principal Focus
- Water Supply 53/145 (37%)
- Hydropower 57/145 (39%)
- Flood Control 13/145 (9%)
- Industrial Uses 9/145 (6%)
- Navigation 6/145 (4%)
- Pollution 6/145 (4%)
- Fishing 1/145 (<1%)

Monitoring
- Provided 78/145 (54%)
- No/N. A. 67/145 (46%)

Conflict Resolution
- Council 43/145 (30%)
- Governmental Unit 9/145 (6%)
- UN/Third Party 14/145 (10%)
- None/N. A. 79/145 (54%)

Enforcement
- Council 26/145 (18%)
- Force 2/145 (1%)
- Economic 1/145 (<1%)
- None/N.A. 116/145 (80%)

Unequal Power Relationship
- Yes 52/145 (36%)
- No/Unclear 93/145 (64%)

Information Sharing
- Yes 93/145 (64%)
- No/N. A. 52/145 (36%)

Water Allocation
- Equal Portions 15/145 (10%)
- Complex/Clear 39/145 (27%)
- Unclear 14/145 (10%)
- None/N. A. 77/145 (53%)

Non-Water Linkages
- Money 44/145 (30%)
- Land 6/145 (4%)
- Political 2/145 (1%)
- Other Linkages 10/145 (7%)
- No Linkages 83/145 (57%)

Criteria for Water Allocations

Initial Positions:

- Rights-based: Geography vs. Chronology

Interim Positions:

- Needs-based plus recognition of historic use

Final Agreement:

- Equal distribution of benefits

Integration versus Transaction Costs:
Transboundary Management Structures
(after Feitelson, forthcoming)

Structure	# of Tasks	Potential for Disagreement	Sovereignty Infringment	Transaction Costs
Watershed Monitoring	Single	Low	None	Low
Technical Research Coordination	Single	Low	None	Low
Resource Conservation	Single	Low	None	Low
Training Center	Single	Low	None	Low
Appropriation Body	Single	High	Limited*	Medium*
Arbitration Body	Single	High	Limited*	Medium*
Appropriation Monitoring	Single	Moderate	None	Low-Medium
Investigative/Advisory Body	Few	High	Limited	Medium
Risk Management	Few	High**	Limited	Medium
Pollution Control	Many	Moderate*	Significant*	High*
Joint Regulatory Bios	Several	High	Major	Very High
Wastewater Utility	Several	Moderate	None	Medium
Water Utility	Several	Moderate	Nine	Medium
Economic Development	Several	Moderate-High*	Limited	Medium-High
Project Management	Several	High	Limited	Medium-High
Water Transfers or Markets	Several	Moderate	Limited	High***
Comprehensive Utility	Many	High	Limited	High***
Integrated Watershed Management	Many	Very High	Major	Very High
Centralized Joint Management	Many	Very High	Major	Very High

Institutional Resiliency Argument

Transboundary water institutions are resilient over time, even between hostile riparians, even as conflict is waged over other issues:

- **Picnic Table Talks**
- **Mekong Committee**
- **Indus River Commission**
- **Caucasus**
- **SADC Region**

RESILIENT TRANSBOUNDARY WATER INSTITUTIONS

- Adaptable Management Structure
  - -- public input
  - -- changing basin priorities
  - -- new information/monitoring abilities
- Clear and Flexible Allocation
  - -- rights to needs to interests
  - -- hydrologic extremes
  - -- new knowledge
  - -- changing societal values
- Equitable Distribution of (Baskets of) Benefits, Not Water
- Detailed Conflict Resolution Mechanism

Competition and Cooperation, Then and Now: The Challenge of Interstate Waters

Dr. Roland C. Steiner, Associate Director for Water Resources
Interstate Commission on the Potomac River Basin, Rockville, Maryland, USA

USAID Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Planning in the New Century
July 2001

Competition for water to serve the municipal and industrial needs of the Washington, D.C. metropolitan area was evident in theory from demand forecasts and resource availability studies conducted as early as 1963. The lowest flows on record in the Potomac River, occurring shortly afterward in 1966, brought theoretical shortages close to reality. There followed nearly two decades of analysis and planning for resource expansion among the three major water suppliers to the region.

Competition

The Washington, D.C. metropolitan area is supplied by three independent major utilities serving a total population of 3.6 million people. Public water supply began with the U.S. Army Corps of Engineers providing service directly from the Potomac River to the nation's capital in the mid-1800s. Separate suppliers developed reservoirs to supply the adjacent suburban areas in the states of Maryland and Virginia. For most of the 1960s and 1970s, these three suppliers competitively and independently conducted feasibility studies to increase their resources. In the early 1980s, a joint agreement among the states, the District of Columbia, and the water suppliers averted wasteful inefficient development of new resources.

Now, twenty years later, demands are again forecast to exceed supplies in a planning horizon of fifteen to twenty-five years, and competition is even more complex than before. It is currently recognized that up-stream consumptive uses of water in the Potomac River basin significantly reduce available flows for the Washington, D.C. metropolitan area; the provision of minimum in-stream flows for the preservation of aquatic habitat are increasingly important; and in-lake and downstream recreation and flood control are competing with water supply as resource functions.

Cooperation

In 1982, an historic agreement established joint funding and use of new resources to meet future regional water demands. Because the Washington, D.C. metropolitan area covers parts of two states and an independent city, the jurisdictions as well as the water suppliers were all party to the agreement. Significantly, the suppliers gave some management functions and the development of operating rules for their jointly and individually owned resources to an independent agency (the Interstate Commission on the Potomac River Basin). This arrangement combined the least cost capital expense and environmental disturbance with independent impartial management support. It has been demonstrably successful for two decades and has led to a regional framework for addressing the forecast of water supply shortage expected in fifteen to twenty-five years from now.

There is currently underway a regional water resource augmentation study which incorporates operational optimization of existing supplies, potential for reducing demands, quantification of competing demands, and the feasibility of alternative resource expansion projects to meet resultant demands. This study is expected to avert competitive conflict for water by the early inclusion and consideration of all identifiable related issues and their associated stakeholders.

Competition and Cooperation --
The Challenge of Interstate Waters

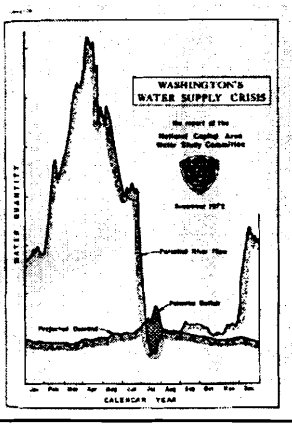
Roland C. Steiner, Ph.D., P.E.
Regional Water & Wastewater Manager

Washington Suburban Sanitary Commission

40 years ago water supply studies were examining the feasibility of new sources.

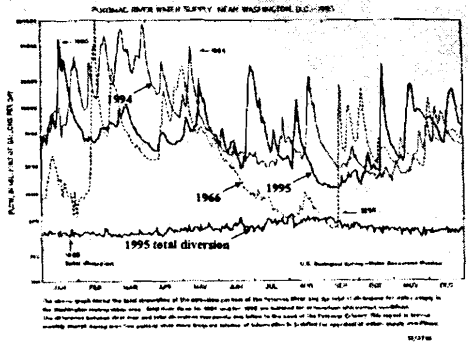
30 years ago, Washington's water supply was considered to be in crisis.

Potential Deficit - 1972



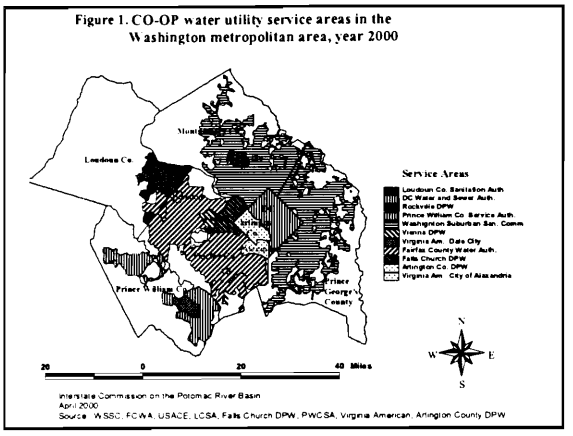
In the past decade, demands have exceeded the low flow of record.

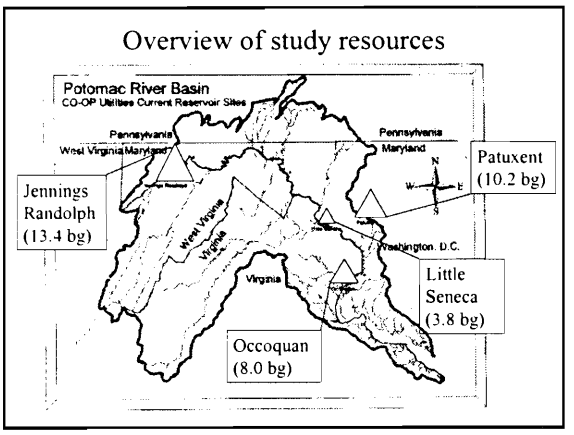
Flow and diversions - 1995



Water Suppliers to the Politically Complex Region

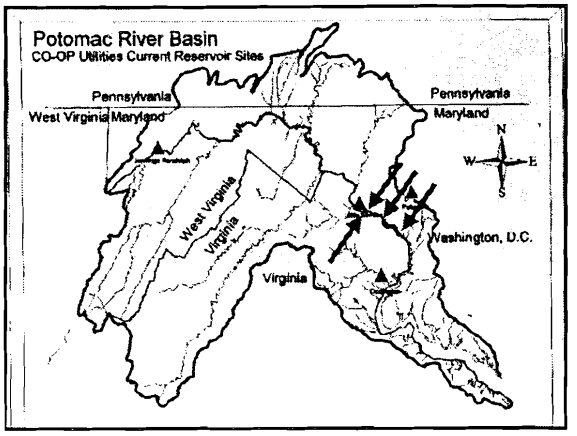
- Washington Aqueduct - central area
- Washington Suburban Sanitary Commission - Maryland suburbs
- Fairfax County Water Authority - Virginia suburbs





Competition / Conflict with Water Supply

- Upstream consumptive use
- Flood control
- Political disagreement
- Minimum in-stream flows
- In-lake and downstream recreation



Row vs. Wade, the Great Fishing Controversy

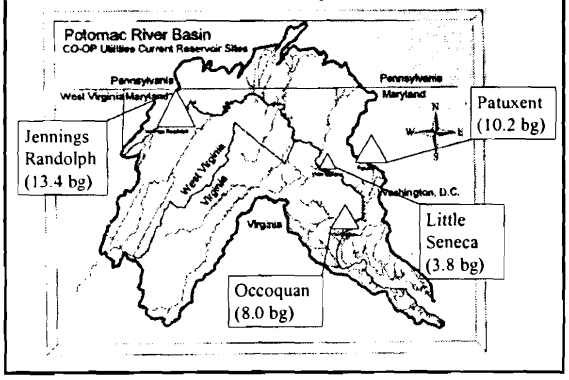
History of Coordination

- 1978 Agreement to consider minimum in-stream flow, and allocate remaining flow for water supply
- 1982 Agreement to share resource development funding and provide for coordinated management

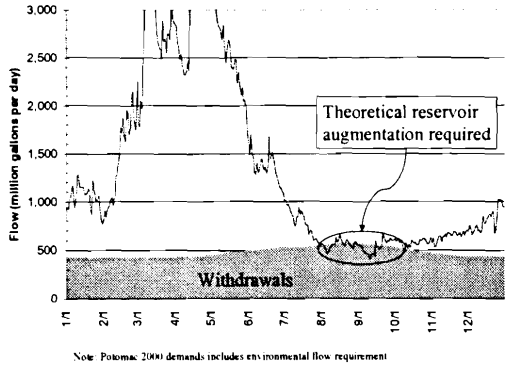
Supplies to be Allocated

- Individually owned direct supply reservoirs
- Potomac River natural flow and up-stream low flow augmentation water supply storage
- Expected to meet demands for 20 years

Overview of study resources



Historic worst case flow and 2000 demands



Note: Potomac 2000 demands includes environmental flow requirement

New (Comprehensive) Study

- Optimize existing sources
- Increase conservation
- Quantify (accommodate) competing demands
- Examine feasibility of new resources

Conclusions

- Prior development of resources and coordinated operating rules succeeded in meeting all demands
- New development will require consideration of construct-ability and operational-ability in a more competitive environment

Worldwide Overview of Agency-Wide Water Activities

Mr. Richard Volk
G/ENV Water Team, USAID

Dr. Meg Findley
G/ENV Water Resources Advisor

USAID Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Planning in the New Century
July 2001

USAID and the global community have come to understand that effective water resources management requires a participatory approach involving users, planners, managers, and policy-makers at all levels. By first assessing a country's overall water supply and demand, and through building capacity and a coordinated response at local, national, and international levels, effective water resources management is achievable. The Water Team, within USAID's Global Environment Center, works with USAID missions and Regional Bureaus worldwide towards that goal. The fundamental role of the Agency's Water Team is to promote the use of integrated water resources management worldwide by providing technical and managerial assistance, education and outreach opportunities, and international leadership through both USAID and other donor programs.

In order to improve the impact of USAID's water portfolio, the Water Team has undertaken an analysis to examine how and where the Agency invests in water-related activities, and to assess the potential for improved effectiveness and efficiency across its portfolio. This analysis estimated that USAID obligated a total of $406 million on water-related activities in FY 2000. Approximately 75% of these obligations were allocated to ANE Missions ($306 million), with lesser amounts obligated for LAC Missions ($51 million or 13%), EE Missions ($22 million or 6%), AFR Missions ($11 million or 3%), and Central operating units ($14 million or 3%). This last figure also includes nearly $2 million invested by the Water Team across all regions.

Major obligations were allocated to four categories across all Bureaus and operating units: Water Supply, Sanitation, and Wastewater Management (WSSWM) ($221 million); Natural Resources Management ($96 million); Economic Development/Food Security ($73 million); and Disaster Preparedness ($17 million). More obligations ($221 million or 54% of the total) were allocated to WSSWM activities than any other major category.

Seven SOs totaling $237 million (58% of all water-related obligations) were found to be "Water SOs," for which all activities and obligations are allocated to some aspect of water resources management. None of the seven water SOs addressed Disaster Preparedness.

In addition to Agency-wide analysis, this report separately examines the obligations directed to three operating units that account for nearly 66% ($268) million) of USAID's investment in water-related activities in FY 2000: Egypt ($129 million), Jordan ($83) million), and West Bank/Gaza ($56 million). Within the Agency, obligations are somewhat more evenly distributed across activity categories after removing Egypt, Jordan and West Bank/Gaza from the analysis. WSSWM receives 43% ($60 million) of remaining obligations, Natural Resources Management

receives 28% ($39 million), Economic Development/Food Security receives 16% ($22 million), and Disaster Preparedness accounts for 13% (nearly $17 million).

Within regions, different patterns are apparent. In some places, WSSWM obligations predominate. For example, 89% ($20 million) of the total EE water-related portfolio is dedicated to this area. In other regions, different activities emerge as priorities, as in the 44% ($5 million) of AFR obligations allocated to Natural Resources Management, or the 30% ($15 million) of investment in Disaster Preparedness in the LAC region devoted almost entirely to post-reconstruction activities of one extreme event in 1998, Hurricane Mitch.

Worldwide demand for water tripled during the past century and is presently doubling every 21 years (Green Cross International, 2000). Of the 31 countries (with a combined population of 458 million) that faced water scarcity or water stress in 1995, USAID is currently engaged in water-related activities in only 11. Looking towards the future, of the 48 countries (with a combined population of more than 2.8 billion) expected to face water scarcity or water stress in 2025, USAID is currently engaged in water-related activities in only 16 of these countries. This represents $280 million in USAID water-related assistance to countries with a combined population of 1.8 billion expected in 2025 (66% of the population projected to face water scarcity or stress). Worldwide, as this report describes, USAID invested approximately $406 million in water-related activities during FY 2000.

The USAID obligation figures compare with World Water Council estimates that $70-80 billion (excluding direct investment by industry) is currently invested each year to provide water services. The largest investors by far are governments at $50 billion per year, followed by the private sector at around $15 billion (dominated by small vendors servicing municipal utilities). International donors invest roughly $9 billion annually (Cosgrove and Rijsberman, 2000).

The analysis reveals that activities at all stages of the IWRM planning and implementation cycle are being undertaken by USAID around the world, through the promotion of sound information and analysis, participatory governance, and effective site-based practices. As USAID proceeds into the new Millennium, the Water Team will work with operating units in the field and in Washington to advance USAID's collective understanding about the most effective approaches to integrated water resources management at all scales. It is our hope that the present analysis of Agency activities, along with the detailed highlights and thematic discussions provided in the accompanying report "Towards a Water Secure Future: USAID's Obligations in Water Resources Management for FY 2000," will serve as important inputs to future strategic planning and program design related to water resources for all USAID operating units.

Tuesday July 17, 2001

6:30 AM **Optional Topical Breakfast Tables**

8:00 AM **Opening Plenary**

8:30 AM **Concurrent Technical Sessions:**

8:30 AM ~ ***Ridge to Reef: The Conceptual Watershed***

Objectives: By the end of this session, participants will:
1.) Understand basic hydrological processes and dependent interactions between fresh, estuarine, and marine components of a basin system.
2.) Understand fundamental cause/impact relationships regarding various human uses of a basin system.

Description: This session will begin with three sequential presentations, including one each on the fresh, estuarine, and marine components of a conceptual river basin. Key concepts presented and discussed shall include (at a minimum): land use/land cover, hydrology, water balances, surface/groundwater interactions, environmental flows, the estuarine environment, shore and nearshore processes, water quantity and quality impacts, and the key concept that a basin should be conceptualized and managed as an ecological continuum from ridge to reef.

Speakers: **Chris Scott**, G/ENV Water Team, USAID
Richard Volk, G/ENV Water Team, USAID
Barbara Best, Marine Resource Advisor, USAID

Moderator: **Richard Volk**

8:30 AM ~ ***Small Scale Water Supply and Sanitation: State of the Art Approaches***

Objectives: By the end of the session, participants will have increased knowledge regarding each of the three critical components of a comprehensive approach to providing small-scale water supply and sanitation services in both rural and peri-urban areas. Particular emphasis will be placed in the following actions necessary for sustainability: (1) Access to hardware and technologies, (2) Hygiene promotion for optimal health impact, and (3) Enabling environments to maximize public health impact and sustainability.

Description: Topic (1) will address appropriate technology choice for water supply, sanitation, and hygiene improvement. Topic (2) will address systematic ways to ensure that behavior change is achieved through selective support for community participation, social marketing, and other techniques. Topic (3) will address the importance of policy improvement, community organization, financing and cost recovery, public-private partnerships, and institutional strengthening to both impact and sustainability. Extensive use will be made of design, implementation, and evaluation of USAID-supported activities. In addition, attendees will gain insight regarding how these three approaches are consistent with other global activities including the Vision 21 statement of the Water Supply and Sanitation Collaborative Council and "demand-responsiveness" strategies, which are now widely accepted in the sector. Additional resources, which will be introduced

and described, include: the water supply and sanitation programming manual produced by DFID; UNICEF's Manual on Hygiene Promotion; the World Health Organization's participatory approach for the control of diarrhea disease, and; CARE's publications related to hygiene promotion in relief and development.

Speakers: **Chris McGahey**, Coordinator, Community Based Environmental Sanitation and Hygiene, ARD
Rick McGowan, Project Management Advisor, ARD

Moderator: **John Austin**

8:30 AM ~ ***Water and Energy***

Objectives: By the end of the session participants will: understand the many ways that water and energy resource management are 'linked," both in the consumption of energy to make use of water resources, and in the use of water in the energy generation process; be able to consider opportunities for incorporating water-energy actions within USAID portfolios, and; be exposed to several key practices that can increase the sustainability of both water and energy through creative co-management.

Description: This session will be divided into three parts. An expert will provide a summary of the conceptual linkages between water and energy in two different "directions", i.e., water in the production of energy (hydropower, thermal power, and even use of wastewater treatment by-products for energy generation) and energy to make use of water (pumping, transport, treatment, etc.). This overview will be followed by a facilitated brainstorm. Participants will be asked to jot down their own ideas for practices/technologies/mechanisms that can help break the vicious cycles of inefficiency between water and energy, in all sectors. They will be asked to place a special focus on interventions that could be incorporated into their USAID portfolios. Finally, the Water-Energy "Top Ten" will be given as a panel expert presents a synthetic, systematic analysis of different ways to optimize both the energy =>water and water => energy connections. A summary of 'top picks' of practical management interventions will be provided, giving case examples as illustrations.

Speakers: **Betsy Marcotte**, Vice President PA Consulting
Kevin James, Program Manager, Sustainable Cities Alliance to Save Energy
S. Padmanaban, Sr. Energy Advisor, USAID/India

Moderator: **Dick Edwards**

8:30AM ~ ***Water Sector Reform***

Objectives: Participants will be exposed to the underlying reasons for water sector reform in USAID countries, the major targets for reform (financial, institutional, and legal), the range of reform interventions being carried out by USAID and the successes and stumbling blocks. Current trends and initiatives in public-private partnerships, decentralization, and river basin management among others, will reshape the water sector's major stakeholders' actions and interrelationships.

Description: This session examines the following areas:

· Policy and legal frameworks for sustainable water resource management trends and models
· Institutional authority and relationships over water resources
· Implications of decentralization and devolution of authority to local scales (for water supply, irrigation)
· Enabling environments for private sector involvement
The overall session will examine where we hope to go, why we want to go there, and how we plan to do it in partnership with our cooperating countries, donors, and other key stakeholders, including the private sector, NGOs, and end users.

Speakers: **David McCauley**, Director, Asia Pacific Region, International Resources Group
Peter Rogers, Gordon McKay Professor of Environmental Engineering, Harvard University
Brad Carr, Project Manager, USAID/El Salvador

Moderator: **Jim Harmon**

8:30 AM ~ ***HIV/ AIDS and the Environment – Why you should care***

Objectives: By the end of the session, participants will:
1) Receive an update of the status of the HIV/AIDS epidemic worldwide and the environmental and societal implications of the epidemic.
2) Understand the potential utility of community-based approaches (participatory decision-making, common property management) and environmental impact mitigation to help cope with the challenges that HIV/AIDS places on all sectors of society.
3) Examine at a case study around a community based natural resource management project (CBNRM) in Southern Africa, and suggest modifications to the project using low-cost suggestions for ENR Mission professionals.

Description: This session will be a facilitated group thinking exercise that will consist of a short presentation and a case study. Participants will form small groups to discuss practical solutions for resource managers to cope with HIV/AIDS in the field.

Speakers: **Greg Booth**, Advisor for Tropical Forestry, USAID Africa Bureau, Office of Sustainable Development, ANRE Division
Mike Godfrey, Senior Technical Specialist, CBNRM, Development Alternatives, Inc.

Moderator: **Jeanny Wang**

10:00 AM **Break**

10:30 AM **Concurrent Technical Sessions:**

10:30 AM ~ ***Ridge to Reef: Management Instruments***

Objectives: Participants will: 1) Become familiar with the history of ambient water quality management in the U.S. under the Clean Water Act; 2) Be able to relate applicability of various ambient water quality management instruments to developing country contexts.

Description: This session will begin with a presentation on the U.S. Clean Water Act and the federal/state relationship that today exists to manage ambient water quality in this country. Participants will learn about water quality standards and practices, total loading (point and nonpoint sources), TMDLs, and the establishment of designated uses. A second presentation will focus on a USAID activity to improve surface water quality management in Bangladesh.

Speakers: **Bill Painter**, Office of Water, U.S. Environmental Protection Agency
Azharul Mazumder, Team Leader, Environment Team, USAID/Bangladesh

Moderator: **Chris Scott**

10:30 AM ~ ***Key Issues in Developing Financially Viable Water and Wastewater Systems***

Description: This session focuses on reviewing financially viable ways of building and operating medium and large-scale water and wastewater systems. Key issues explored include the following: Institutional arrangements and fiscal policies at the national level; Local assessments of service provision, fiscal capacity, and willingness to pay; Suggested ways a community can increase investor confidence; Improving local creditworthiness; Public and private options for financing and managing systems; and a USAID case study: the Financial Institutions Reform and Expansion (FIRE) Project. In short, a properly designed capital financing strategy will ease cash flow pressures on the local government, open a formerly public asset to private participation, and, at the same time, safeguard the environment.

Speakers: **Curtis Borden**, Financial Consultant, Community Consulting International

Moderator: **Ernie Rojas**

10:30PM ~ ***Water and Agriculture: Water Quality and Quantity Impacts***

Objectives: By the end of the session, participants will learn new methods of identifying and handling agriculture-based water pollutants; adopt new approaches for effective utilization of scarce water resources; and be exposed to new ways of predicting and assessing demands for water.

Description: There will be three presentations in this session. One will focus on approaches for assessing relative inputs of agriculture related nutrients, bacteria, and other constituents as well as methods for quantifying agricultural NPS pollution. Two presentations will deal with demand prediction, allocation, and conservation issues related to water resources.

Speaker: **Jeff Mullen**, University of Georgia
Harald D. Fredericksen, Senior Water Resources Specialist
Frank Rijsberman, Director, IWMI

Moderator: **Isai Urasa**

10:30AM ~ ***Climate Variability and Extremes: Implications for Water Resources Management***

Objectives: The participants will understand that weather variability and prepared to deal with them; new tools are available for predicting seasonal and inter-annual variability in climate, and other tools can help to anticipate droughts and/or floods.

Description: A panel of three experts will present on climate variability and extremes and current skill in prediction. NOAA's Office of Global Programs will present the current state-of-the-art in climate prediction, especially ENSO [El Niño and La Niña cycles], including the most recent precipitation and temperature outlooks for the coming 3-6 months. The international Research Institute for Climate Prediction (IRI) will explain the application strategies in Africa and South America. NOAA/OGP will discuss how climate variability and extremes may influence patterns and prevalence of water-borne infectious diseases.

Speakers: **Upmanu Lall**, Professor, Earth & Environmental Engineering, Columbia University
Juli Trtanj, Program Manager for Climate Variability and Human Health, NOAA Office of Global Programs
Candyce E. Clark, Director, Applications Research Program NOAA Office of Global Programs
Jonathan Pundsack, Program Manager for Latin America and the Caribbean, NOAA Office of Global Programs

Moderator: **Peter Gleick**

10:30AM ~ ***Water and Energy Resources Development***

Description: This session will examine the range and mix of options available today to meet electricity needs in rural and urban settings that can be associated with water development. Emphasis will be placed in the development of run of the river small (up to a few MW) and micro (in the kW range) hydropower. The relationship to water supplies for irrigation, flood management, electricity generation, environmental protection, particularly as it relates to larger hydro-plants with dams, will be also considered.

Speakers: **Jamie Workman**, Senior Advisor, World Commission on Dams
Dennis McCandless, Board Member, U.S. Hydropower Council for International Development, East Indies Consulting Services, Inc.

Moderator: TBD

12:00 PM **Lunch Buffet**

1:30 PM **Concurrent Technical Sessions:**

1:30PM ~ ***Ridge to Reef: Sharing the Basin***

Objectives: Participants will have a better appreciation for the vast number and variety of stakeholders in a basin, the multiplicity of their interests, the complexity of forming solutions, and some models/approaches for doing so.

Description: This session addresses the reality that water resources in a basin are always shared among many users both within and across political boundaries. Creative solutions at the basin scale – regionally, nationally and transboundary -- are needed to achieve both equitable and sustainable allocation. Several useful approaches will be presented to help address allocation and use issues from a basin-level perspective.

Speakers: **Eduardo Mestre**, National and Regional Water Management Specialist
John Thomas, Chief, Office of Environment & Natural Resources, USAID/Morocco
M'Hamed Hanafi, Advisor, Office of Environment and Natural Resources, USAID/Morocco

Moderator: **Tom Rhodes**

1:30PM ~ ***Sanitation and Health: The Urban Poor***

Objectives: By the end of this session, participants will have increased understanding of the health burden posed by inadequate sanitation for the urban poor, the technical and policy barriers to addressing this problem, and examples of successful field-tested solutions.

Description: Non-existent or inadequate sanitation remains a critical problem for the urban poor. This session will focus on technical, policy, and institutional issues in providing access to and insuring health-effective use of sanitation in a variety of urban settings. These include the slums of large cities as well as rapidly growing secondary cities. The cultural and gender sensitivity of proposed solutions will be considered. Illustrative issues to be covered include sewerage and condominial sewer systems.

Speakers: **Barbara Evans**, Urban Programs Manager, Water and Sanitation Program, World Bank
Eddy Perez, Technical Advisor and Activity Manager, Environmental Health Project, CDM

Moderator: **John Borrazzo**

1:30 PM ~ ***Ecological and Economic Impacts of Aquatic Biodiversity Conservation***

Objectives: By the end of the session, participants will gain an understanding of the major threats of freshwater and coral biodiversity and how investing in biodiversity conservation may be more cost effective than replacing lost ecosystem services.

Description: Results of two studies conducted by World Resources Institute (WRI) will be presented. One study assesses hydrologic services of forests, chiefly water quality and water flow, and the other study assesses threats to coral reefs. Discussion will revolve around how environment program managers can use the results of such studies that evaluate ecosystem threats and services for improved biodiversity conservation in USAID project areas.

Speakers: **Nels Johnson**, Deputy Director Biological Resources Program, World Resources Institute
Lauretta Burke, Senior Associate, Information Program, World Resources Institute

Moderator: **Mary Rowen**

1:30PM ~ ***Valuation of Water Resources***

Objectives: 1) Understand the principles of and range of methods available to do ecological valuation for water and coastal resources.
2) Hear examples of how to apply the results of ecological valuation to decision-making for sustainable management.

Description: This session will begin with an overview to address the question, "What is Ecological Valuation?" As an introduction to the concepts and methods of ecological valuation, the session will include discussion of willingness-to-pay/contingent valuation, welfare economics/social accounting, etc. After the overview, the session will focus on applying water resources valuation to decision-making and management. Examples will be given for both a watershed and coastal situation.

Speakers: **Sharon Murray**, Water Team, G/ENV USAID
Marlou Tomkinson-Church, The Nature Conservancy
Richard Huber, Organization of American States

Moderator TBD

1:30PM ~ ***Walking on Water? Mainstreaming Gender in to Mission Activities***

Description: Women are widely recognized as playing an important role in water, sanitation, and environmental management. Yet, despite growing awareness of women's roles, the availability of tools, and incentives for gender integration, many managers lack practical insight into how gender mainstreaming works in the field. A panel discussion of women, water, and the environment will provide accounts of how USAID field missions are addressing gender integration on the ground-- and in the water. Examples from experience on USAID's front line will cover a range of topics from urban and rural water issues, to watershed management and institutionalizing gender integration into environmental institutions and organizations. Learn about opportunities for and challenges of gender integration in Armenia, El Salvador, and Guinea, and within the global context of the Women in Integrated Coastal Management Leadership Development Workshop.

Speakers: **Brad Carr**, Project Manager, USAID/El Salvador
Nancy Diamond, Environmental Social Scientist, Diamond Consulting
Chris Pannkuk, Water Management Specialist, Investing in Women in Development Fellow, USAID/Armenia
Susan van Keulen-Cantella, CBNRM Specialist, USAID/Guinea

Moderator: **Macol Stewart**

3:00 PM **Break**

3:30 PM **Regional Small Group Session: #1**
Small, region-based groups will meet to discuss issues of a regional interest.

5:00 PM **Networking and Free Time**

6:00 PM **Buffet Dinner**

Regional Small Group Meetings
Description and Guidelines

Overview

During the workshop, you will have three opportunities to meet with others from your region as well as USAID/Washington staff to network and explore areas of mutual interest and concern.

The objectives of the regional team sessions are to:

- Discuss critical issues that are relevant to the region.
- Share ideas and best practices about what is currently going on in IWRM and the Environment in the region.
- Explore ways to integrate new ideas and approaches from the workshop into your programs.
- Identify resources needed to implement the ideas.

The 3 discussion sessions are scheduled for the following times:

- Tuesday, July 17th, 3:30 – 5:00 (Regional Bureau Issues)
- Thursday, July 19th, 1:00 – 2:30 (IWRM & Environmental Issues)
- Fri. July 20th, 11:00 – 12:00 (Final Preparation for Presentation)

Friday afternoon from 1:30-3:30, each regional group will have up to 15 minutes to report back to the plenary on the results of their discussions.

Your regional group is encouraged to reflect and report back on some or all of the following questions during your 15-minute presentation:

- What do you see as the most critical emerging or burning IWRM or environmental issues you are currently facing in your region?
- How will missions operationalize some of the ideas that have been presented during the workshop to deal with these issues? (Please cite some specific examples, if possible)
- What other donors / partners are involved in IWRM and environment in your region and what types of collaborative efforts are on-going or being planned that could leverage USAID's water and environment programs?
- How could USAID/Washington better support your environment and / or water programs?
- What do you see as the role of water and the environment in supporting the new USAID's Pillars?

The results of your discussions will be included in the summary of the workshop that will be available on CDRom and on the web following the workshop.

Areas of Discussion

Regional bureaus have identified several region-specific topics and initiatives related to water and the environment to discuss during the first regional team sessions. Proposed topics include the following:

Region	Contact	Topics
E&E	Carl Maxwell/ Carl Mitchell	- Environmental Compliance - Environmental Staffing at Missions/USAID Washington - New Directions, the Regional R4 - Mission Input on compliance, staffing, new directions, etc.
ANE	John Wilson	ENCORE
AFR	Carl Gallegos/Jon Anderson	
LAC	Morris Israel	State Dept Roles, Reg 216

Wednesday July 18, 2001

6:30 AM **Optional Topical Breakfast Tables**

8:00 AM **Workshop Group Photo and Opening Plenary**

8:30 AM **Concurrent Technical Sessions:**

8:30AM ~ ***Towards Better Environmental Governance: Property Rights, Procedural Rights and Institutional Development***

Objectives: By the end of the session, participants will: have a better understanding of the links between governance and NRM including local rights (procedural and property), transparency, accountability, advocacy and other issues; have a better idea of where to go to follow-up on issues; and have a better understanding of the governance constraints and opportunities of environmental programs.

Description: The material will be presented by a three person panel. Panel members will use case studies in their presentations. One will address property rights, one will address procedural rights, and one will address institutional issues. The moderator will summarize. Panelists will interact among themselves as well as with members of the audience.

Speakers: **Peter Veit**, World Resources Institute
Owen Lynch, Senior Attorney, Center for International Environmental Law
Alex Serrano, Program Manager, Africa, International Division, CLUSA/NCBA

Moderator: **Jon Anderson**

8:30AM ~ ***A Threats Based Conservation of Biodiversity***

Objectives: By the end of the session participants will learn to improve the management of biodiversity conservation programs through the application of threats based conservation, and better understand tools for threats based conservation applied by USAID's partners The Nature Conservancy and the African Wildlife Foundation.

Description: Threats based conservation is an approach employed by USAID and many of USAID's partners to strategic and effective conservation of biodiversity. The approach is applied at the design, implementation, and monitoring and evaluation stages of conservation programs.

Speakers: **Cynthia Gill**, Acting Biodiversity Team Leader
Bill Ulfelder, Peru Country Director, The Nature Conservancy
Katie Frohardt, Program Technical Director, African Wildlife Foundation

Moderator: **Mary Rowen**

8:30AM ~ ***The Environment and Cities: Love or Hate Relationship?***

Objectives: By the end of the session, participants will: have a stronger understanding of how cities can be employed creatively to enhance achievement of environment program results;learn more about urban

development and its linkages to environmental strategic objectives; and gain a better understanding about the Agency's urban strategy and how it impacts the work of Environment Officers.

Description: This session is designed to engage Environment Officers in a dialog about the environment-urban linkages that they are currently tackling. The session is inter-active with a strong emphasis on sharing experiences. It is divided into three parts: 1) environment-urban perceptions; 2) group exercise; and 3) resources and tools available to Environment Officers.

Speaker: **David Painter**, G/ENV/UP, Director of Urban Programs, USAID
Moderator: **Alison Paijit**

8:30AM ~ ***Potential Consequences of Climate Change on the Water Sector***

Objectives: Participants will have a better understanding of the link between climate change and water resources, and the new efforts underway within USAID to address the potential impacts of climate change in developing countries through vulnerability assessments. Assessment of a country's regional vulnerability will help planners develop targeted adaptation strategies.

Description: This session will be divided into two parts:
1.) An overview of the link between climate change and water resources.
2.) Discussion with Workshop participants.

Speaker: **Liz Malone**, Senior Research Scientist, Pacific Northwest National Laboratory
Moderator: **Carrie Stokes**

8:30AM ~ ***Sustaining Trees and People-GENV/ENR Forestry Team***

Description: Participants will gain a full understanding of the GENV/ENR Forestry Team recent re-thinking exercise, and its efforts in expanding and improving its role and services to USAID Missions.

Speakers: **CJ Rushin-Bell**, G/ENV/ENR Forestry Team Leader, USAID
Peter Gore, Executive Director, TFCA, USAID
Richard Rice, Chief Economist, Conservation International
Moderator: **CJ Rushin-Bell**

10:00 AM **Break**

10:30 AM **Site Visits (Five Options):**

Option 1: "LOCAL PROGRAMS FOR FLOOD PROTECTION, RIVER RESTORATION AND WASTEWATER TREATMENT" (Alleghany County Department of Public Works)

Tour Highlights:

- Visits to two wastewater treatment plants;
- A tour of George's Creek rehabilitation/flood protection works, presentation of sensitization actions, and demonstration of physical stream model.

Tour Itinerary (5-6 hours):

10:30-11:00am

Drive to first site (large treatment plant) – Solanese site where we meet Steve Young and Ron Sneider who lead us through the wastewater section of the trip.

11:00-11:45am

Visit of first plant; activated charcoal treating Groundwater contamination from old industrial site, two small towns and a large prison. Cost $9M in upgrades to handle the load as Brownfield development.

11:45-12:00pm

Drive to second site (small treatment plant) – Beers Lane System (a constructed wetland for wastewater treatment).

12:00-12:30pm

Examination of the wetland treatment process. Applicable as a cluster home system for small villages or industrial parks in the developing world.

12:30-1:00pm

Drive to George's Creek – Westernport Park (a flood plain park for George's Creek).

1:00-1:30pm

Lunch Break

1:15-1:30pm

Drive to Barton Elementary School, where Virginia Megan takes over the group and leads us for the rest of the day in "Project Impact" activities (including social assessment, bio-engineering, geomorphology and rehabilitation section).

1:30-3:00pm

Presentation of sensitization actions with communities and participatory planning as well as the demonstration and experimenting with the stream model.

3:00-4:30pm

Tour of George's Creek rehabilitation/flood protection works with comments about the planning initiative, the watershed steering committees, policy, zoning, etc.

4:30-5:00pm

Drive back to Rocky Gap resort

Option 2: "COAL MINE OPERATION AND RECLAMATION: LOW-COST SOLUTIONS FOR MITIGATION OF WATER QUALITY IMPACTS AND LOCAL PARTNERSHIPS FOR RESOURCE MANAGEMENT" (Maryland Dept. of the Environment/Canaan Valley Institute)

Tour Highlights:

- Presentations by the Maryland Department of the Environment and the Canaan Valley Institute on their missions, mining and water quality issues, approaches to problem-solving at local and regional scales, recommended solutions, results achieved, and lessons learned;
- A visit to a historic regional mining site – drainage tunnel, witness the impacts of legacy mining activities and their continued impacts on the local waterways;
- A visit to active mining site, presentation of former and current mining practices, including the acid generation process and on-site mitigation measures;
- A visit to abandoned mine with ongoing reclamation works, presentation of the treatment system, passive treatment process of acid reduction using limestone,

charcoal and a constructed wetland all passively treating acid mine drainage with minimal O&M costs; and

- A presentation by the Canaan Valley Institute, created to foster and support local decision-making by Mid-Atlantic highland communities implementing locally determined solutions to environmental resources issues.

Tour Itinerary:

10:30-11:00am

Presentations at Rocky Gap by Joe Mills of the Md. DOE Bureau of Mines and Peter Glaggett of the Canaan Valley Institute. Specific topics include institutional mission, mining context, issues, solutions, achieved results and lessons learned.

11:00-11:10am

Drive to first site.

11:10-11:30am

First site - old tunnel with remnant mining water. FeOH and Ph problems in stream channel and mitigation realities from coal mining.

11:30-11:45am

Drive to second site

11:45-12:30pm

Second site – active coal mine. Presentation by Joe Mills and the DOE mine inspector of old and current mining practices, government regulation, acid generation process, and on-site mitigation measures for surface coal mining in the state of Md.

12:30-1:00pm

Drive to State Park for lunch break.

1:00-1:40pm

Lunch Break.

1:40-1:50pm

Drive to third site - Acid Mine Drainage Mitigation Site (w/ constructed wetland).

1:50-2:50pm

Third site – Acid Mine Mitigation Site. Presentation of treatment system, experimental process of acid reduction using limestone beds, constructed wetlands, etc., and a tour of how the chemistry works.

2:50-3:30pm

Drive back to Rocky Gap resort.

3:30-5:30pm

Additional presentation by the Canaan Valley Institute concerning their objective of supporting/strengthening local decision-making by Mid-Atlantic highland communities implementing locally determined solutions to environmental resources issues.

Option 3: "MULTIPLE USES AND IMPACTS OF THE JENNINGS RANDOLF DAM" (U.S. Army Corps of Engineers)

Tour Highlight:

- A presentation of USACE's mission and of dam context purposes and management procedures;
- A tour of the dam, including spillway and auxiliary structures; and
- A visit to and presentation about a fish hatchery program downstream of the dam.

Tour Itinerary (5-6 hours):

10:30-11:45am

Drive to dam.

11:45-12:30pm

Lunch in the pavilions with an informal question and answer time period with the Corps Rangers.

12:30-2:30pm

Presentation of the JR Dam (Background on the Army Corps and the JR Dam; tour of dam and grounds, spillway, etc.; explanation of objectives; exploration of the various interest groups). Specific topics to be discussed are:

I Dam's changing functions within the watershed.

II Management issues associated with recreation use: fishing, boating, jet ski, whitewater kayak, fishing, etc. How to decide *who gets what, when, and why.*

III Management in a transboundary setting. The major players include the State of West Virginia, the State of Maryland, and Federal Regulations as they apply to the Corps of Engineers.

IV Enforcement issues associated with recreational use.

V Financing. How the dam was initially financed; who has rights to what uses? Who pays for what? Who benefits most from the dam's existence? Will there be revenue from the recreational use?

2:30-2:45pm

Transit to the fish hatchery

2:45-4:15pm

Presentation by Mike Dean (Md. Department of Environment) of recreational fishing activity and a tour of the fish hatchery downstream.

4:15-5:30pm

Drive back to Rocky Gap resort

Option 4: "DAM AND WATERSHED MANAGEMENT: RECREATION, WATER QUALITY, AND INDUSTRIAL WASTEWATER TREATMENT"
(Upper Potomac River Commission and Savage River State Forest)

Tour Highlights:

- A presentation on the Upper Potomac River Commission (organizational structure, objectives, governing powers, roles and responsibilities)
- A visit to the Savage River Dam;
- A presentation of natural resources management in the Savage River Watershed (including such topics as forestry, recreation, watershed management regulations and policies, etc.).

Tour Itinerary (6.5 hours):

10:30-11:15am

Drive to Savage River Dam

11:15-12:30pm

Presentation of the Upper Potomac River Commission and Waste water Treatment Plant by Jim Taylor. Topics to be addressed include:

I Presentation concerning the UPRC as an organization (organizational structure, objectives, governing powers, roles and responsibilities)

II Financing. (Sources of funding; Operating and Maintenance costs per month, per person; Amount dedicated to residential wastewater and industrial wastewater; Annual Budget; fee structures)

III Wastewater. (Types of treatment; options for different purposes and amounts of flow - large plants, package systems, cluster homes; How different wastewater inputs change the process – paper, industrial, domestic wastes; Productive uses of wastes produced)

12:30-1:00pm

Lunch at the dam.

1:00-1:45pm

45 minute tour of dam (with time for Q&A).

1:45-2:00pm

Drive to Savage River State Forest.

2:00-4:15pm

A "Watershed Tour" with Forester Larry Maxim - presentation of Natural Resource Management/Forestry in the Savage River Watershed. Topics to be discussed include:

I Conflict management within the watershed.

II Revenue generating activities: Timber harvesting, recreation (hunting, use fees, etc. Also, the road building and trail building that accompany such activities and the ecological impact they have on the watershed.

III Finances.

IV The benefits and difficulties of inter-agency coordination: state forests, state parks, Dept. of Environment, Dept. of Game.

V Effective Watershed Management Watershed Management: Forestry and vegetative cover as protection for water bodies.

4:15-5:00pm

Drive back to Rocky Gap resort

Option 5: "WATER DATA MANAGEMENT: DATA COLLECTION AND ANALYSIS FOR RESOURCE ASSESSMENT, MONITORING AND FORECASTING" (U.S. Geological Survey, National Weather Service)

Tour Highlights:

- A review by USGS and NWS of their data collection network, including types of data collected, types of stations, and procedures for collection and analysis;
- A visit to an automated measurement station to demonstrate discharge measurement, water gauging procedures, automatic water sampling, and basic water quality tests; and a
- A presentation of concepts about hydrologic data applications (flood protection, water resources availability) by USGS and NWS hydrologists.

Tour Itinerary (6½ hours):

10:30-11:30am

Presentation of USGS and NWS's missions, networks, types of data collected, types of stations, procedures for collection and analysis.

11:30-12pm

Leave Rocky Gap and drive to the first site at the Sideling River.

12:00-12:30pm

Lunch break by the river.

12:30-2:30pm

Split into two groups and rotate.

1) Presentation of discharge measurement, and of water gauging procedures.
2) Presentation of automatic water sampling, and of basic water quality tests.

2:30-3:00pm

Drive to site of Satellite DCP- N. Branch Potomac, at Cumberland, MD.

3:00-3:45pm

Overview by the National Weather Service on Flood Warning concepts about Satellite DCP water data use (flood protection, early warning systems, water resources availability, etc.)

4:00pm

Return to Rock Gap

5:00 PM **Networking and Free Time.**

6:00 PM **Buffet Dinner**

Thursday July 19, 2001

6:30 AM **Breakfast: Optional Topical Breakfast Tables**

8:00 AM **Bilaterals in a Multilateral World**
Plenary session to present information and recent developments related to various conventions, treaties, and protocols relevant to USAID programs. Franklin Moore will give a video presentation.

9:00 AM **All day Environment and Water Resources Exhibits**
Twenty-five exhibit spaces sponsored by USAID, other US Government Agencies, and/or speaker organizations will be set up for participants to browse and explore during breaks and free time.

9:00 AM **Concurrent Tools Sessions:**

9:00 AM ~ ***(A) Guide to USAID Legislation, Policies, and Procedures; and (B) Biodiversity Primer***

Part A: The objective of this session is to introduce a new reference guide to USAID environmental requirements that is in the final stages of development. It provides information on environmental legislation, policies, and procedures as well as useful summaries of treaties, legislative directives, and Presidential Executive Orders to ensure the sustainability of the Agency's development activities. The guide facilitates the exchange of information on these requirements and is intended to serve as a single reference point for staff to locate current information on environmental programming at USAID.

Part B: The objective of this session is to introduce a new primer for biodiversity conservation at USAID and to get feedback on the draft primer. The biodiversity primer is intended as a reference for USAID environment staff with a range of backgrounds in biodiversity conservation. An annotated outline will be presented and drafts of sections of the primer will be distributed.

Speakers: A) **John Smith-Sreen**, Environment Officer Asia Near East Bureau USAID
A) **Jill Kelley**, New Entry Professional (Environment) USAID
B) **Mary Rowen**, Wildlife and Biodiversity Advisor, USAID

Moderators: A) **Steve Olive**
B) **Cynthia Gill**

9:00 AM ~ ***Public/Private Partnerships in Water and Wastewater Utility Management***

Description: This session will provide a better understanding of the opportunities and limitations of private sector participation, appropriate vehicles that might be used to encourage greater private-public partnerships, and the future direction of this major policy change and implementation strategy for USAID.

Speaker: **Allen Eisendrath**, Deloitte & Touche Emerging Markets
Moderator: **Isai Urasa**

9:00 AM ~ ***Hydrologic Assessment: Procedures to Determine a Water Balance***

Description: This session will start with a brief overview of the central components of water balance: precipitation, evapotranspiration, surface runoff, groundwater recharge, inter-basin transfers, consumptive use (various sectors), return flows, changes in surface and groundwater storage, and outflow. Simple procedures will be detailed on how to calculate an annual water balance at the river basin level. Data availability, uncertainty in demand calculations and projections, inter-annual variability, and other limitations will be discussed.

Speaker: **Verne Schneider**, US Geological Service
Moderator: **Curt Barrett**

9:00 AM ~ ***Collaborative Problem Solving and Conflict Prevention***

Description: This session will present the principles, examples and case studies of application of Alternative Dispute and Conflict Resolution in water resources management.

Speakers: **Chris Moore**, Program Manager, CDR Associates
Moderator: **Mike Hall**

9:00 AM ~ ***Innovative Wastewater Treatment Technologies***

Description: Participants will be exposed to two innovative wastewater treatment systems in use in India and Morocco in USAID projects. Two case studies will be presented - one using an anaerobic lagoon and sand filter in Drarga, Morocco, and the other using the Advanced Integrated Wastewater Pond System (AIWPS) technology in Varanasi, India.

Speakers: **Bailey Green**, Oswald Green, LLC
Mario Kerby, Chief of Party, Morocco WRS ECODIT
Moderator: TBD

10:00 AM **Break**

10:30 AM **Concurrent Tools Sessions:**

10:30 AM ~ ***60 Minutes of Regulation 216 and its Application throughout the Agency***

Description: This session will present the requirements and examples of best practice for application of the USAID Environmental Regulations (Regulation 216). Topics to be discussed are: 1) $ and Sense of Reg 16; 2) Reg 16 and Pesticides 3) Reg 16 and GMOs, asbestos, and arsenic; and 4) Application of Reg 16 Requirements to India's Gujarat Earthquake Recovery Initiative

Speakers: **Mohammad Latif**, Regional Environmental Officer, E&E, USAID
Paul de Rossier, Environmental Officer, G/ENV, USAID
Carl Gallegos, Deputy Director USAID/AFR/ANRE; AFR/BEO
John Wilson, ANE Bureau Environment Officer, USAID
Jeff Brokaw, Environment Officer LAC USAID
Moderator: **Jim Hester**

10:30 AM ~ ***Treated Wastewater and Agricultural Reuse***

Description: This session will focus on the reuse of treated urban-domestic effluent and to a lesser extent agricultural drainage, primarily for irrigation, as a means to alleviate water scarcity. The practice is growing worldwide as wastewater volumes from cities grow; however, there is essentially no systematic planning to reduce or mitigate the health and environmental risks it poses. A continuum of options will be discussed including restrictions and bans, full treatment regardless of subsequent use (the California model), appropriate treatment linked to specific reuse, and abject indifference. Further contacts for case studies of practices relevant in developing countries will be identified.

Speakers: **Bob Bastian**, Senior Environmental Scientist, Environmental Protection Agency
Martin Karpiscak, Associate Research Scientist University of Arizona

Moderator: **Peter McCornick**

10:30 AM ~ ***River Forecasting and Disaster Mitigation***

Objectives: Participants will be better informed about the state of the art and in the importance of river forecasting for flood, storm and drought warning and management, as well as the utility of such systems for improved integrated water management.

Description: The World Bank and NOAA will explain their individual approaches to disaster mitigation through incorporation of risk identification and risk reduction strategies.

Speakers: **Curt Barrett**, Project Manager, NOAA
Maxx Dilley, Geographer, World Bank

Moderator: **Dan Deely**

10:30 AM ~ ***Applications of Environmental Education and Communication***

Description: This session will present examples and case studies showing how the principles of Environmental Education and Communication can be applied to water resources management, and also where further information can be obtained.

Speakers: **Brian Day**, GreenCom, Project Director, Academy for Educational Development
Roberta Hilbruner, G/ENV/ENR Environmental Education and Communication Team Leader, USAID

Moderator: **Roberta Hilbruner**

10:30 AM ~ ***Tools for Sustainable Aquaculture Development***

Description: Tools and methods applied to sustainable coastal aquaculture development in tropical developing countries are relevant to other resource sectors and integrated resource management issues. Tools and approaches related to policy and institutional aspects of capacity building, and private sector partnering will be described. They draw from recent field experience of USAID projects in East Africa and Central America. Action strategies to promote good practices and private sector voluntary agreements will be described.

Speakers: **Maria Haws**, Dir. of Pearl Research and Training Program, Pacific Aquaculture and Coastal Resources Center, University of Hawaii
Jim Tobey, Associate Resource Manager, Coastal Resources Center, University of Rhode Island
Moderator: **Richard Volk**

11:30 AM **Buffet Lunch**

1:00 PM **Regional Small Group Discussion Session #2**
The small groups from Tuesday will reconvene to continue discussions.

2:30 PM **Break**

3:00 PM **Concurrent Tools Sessions:**

3:00 PM ~ ***Biotechnology and Biodiversity: What are the Environmental Issues and USAID Tools?***

Description: Participants will have an overview of the environmental concerns surrounding the potential impact of agricultural biotechnology. They will become aware of USAID policies and programs aimed at addressing potential environmental concerns associated with agricultural biotechnology.

Speakers: **Josette Lewis**, Biotechnology Advisor, USAID Robert Frederick, Senior Scientist, U.S. Environmental Protection Agency
Robert Frederick, Scientist/ORD Biotechnology Liaison, National Center for Environmental Assessment, EPA
Moderator: **Josette Lewis**

3:00 PM ~ ***Water and Wastewater Treatment Technologies Appropriate for Reuse Model (WAWTTAR): A System Design Tool***

Description: The system features will be described and demonstrated on a computer. Questions will be taken during the session to amplify the description. Interested parties will have the opportunity to try out the system program during the day.

Speaker: **Chris McGahey**, Coordinator, Community-Based Environmental Sanitation and Hygiene, ARD
Moderator: **John Austin**

3:00 PM ~ ***Water Quality Monitoring "By Whom, For What?"***

Description: This session will provide an understanding of the varied purposes and wide range of approaches that can be utilized for water quality monitoring, will provide an improved grasp of the related capacities required by participating government and private staff and institutions, and a briefing from Earth Force on more informal local school and community activities that can serve to advance water quality monitoring and related local community-based actions.

Speakers: **Ron Hoffer**, Senior Advisor for Federal and International Programs, U.S. Environmental Protection Agency

Howard J. Baston, Director, Office of the Environment, USAID/Jamaica
Vince Meldrum, Vice President of Programs, Earth Force
Moderator: **Ron Hoffer**

3:00 PM ~ ***Transboundary River Basin Management***

Description: This session will present a sense of the political, technical, and institutional issues surrounding transboundary river basin activities. Two case studies will be presented - the Aras/Kura Basin in the Caucasus (Armenia, Azerbaijan, and Georgia) and the Limpopo (Botswana, South Africa, Zimbabwe and Mozambique).

Speakers: **Nino Nadiradze**, Environmental Project Assistant, USAID/Caucasus
Oliver Chapeyama, NRM Policy Advisor, USAID/RCSA

Moderator: TBD

3:00 PM ~ ***Ecosystem Approaches to Water Management: The Chesapeake Bay Program***

Description: This session will present an overview of the inter-linked aquatic ecosystem processes exemplified by the multi-River Basin and Bay ecosystem of the Chesapeake Bay. River and estuarine ecological productivity in relation to non-point source pollution associated with land use and land cover and economic sector practices will be highlighted.

Speaker: **Carin Bisland**, Associate Director for Ecosystem Management Environmental Protection Agency

Moderator: **Dan Deely**

4:00 PM **Networking, Free Time, and Cash Bar Reception**

6:00 PM **Dinner Speaker**
Margaret Catley-Carlson, Chair of the Global Water Partnership. Introduction by Richard Volk.

Biographical Sketch
Thursday Dinner Speaker

Dr. Margaret Catley-Carlson

Margaret Catley-Carlson has over international 35 years experience in a wide variety of governance, public policy, regulatory, management, economic, health, and development issues. She has been Chair, Board member, and Advisor to international and national public and private groups. Catley-Carlson has extensive experience working with organizations applying science and knowledge to the better management of national and international problems in freshwater governance, health, agriculture, information management, environmental protection, international development and development finance.

In the area of water governance, Catley-Carlson has served as a Chair of both the Global Water Partnership, based in Stockholm, Sweden, and the Group Lyonnaise des Eaux: Water Resource Management Advisory Committee—Paris, France.

Catley-Carlson was President of the Population Council (1993-1998), Deputy Minister of the Canadian Department of Health and Welfare (1989-1992), President the Canadian International Development Agency (1983-1989), and Deputy Executive Director of UNICEF (1981-1983)

Friday July 20, 2001

6:30 AM **Breakfast: Optional Topical Breakfast Tables**

8:00 AM **Agency Administrative Briefing**
Jim Hester, Carl Gallegos, and Barbara Ellington-Burke will discuss in plenary important administrative, personnel, budgeting, and other concerns affecting all USAID officers in the field and in Washington.

9:30 AM **Break**

10:00 AM **Concurrent Tools Sessions:**

10:00AM ~ ***Critical and Emerging Issues in Forest Management: Field Management Tools and Techniques***

Description: This session will examine responses to illegal logging including detection, monitoring and reporting, and existing tools and tools under development for reduced impact logging. Four types of tools will be discussed as ways to approach Forest and Natural Resource Management. As an illustrative example, the session will provide a synopsis of the Albania watershed assessment.

Speaker: **Alex Moad**, Assistant Director for Technical Cooperation US Forest Service, International Programs

Moderator: **Linda Lind**

10:00AM ~ ***Industrial Water Pollution Prevention in Latin America***

Description: This session will examine the appropriate approaches and options available for dealing with industrial water pollution prevention and control. Cleaner production and preventative options will be highlighted and contrasted with treatment-based command and control approaches.

Speakers: **Alan Gagnet**, Pollution Prevention Specialist
Betsy Marcotte, Vice President, PA Consulting

Moderator: **Gil Jackson**

10:00AM ~ ***Research, Library, and Internet Resources for Environmental Officers***

Description: This session will provide participants with a synopsis of the research, library, and Internet information resources available to them worldwide. The session will focus on the services provided by Development Information Services (DIS), the USAID Library, and the Development Experience Clearinghouse (DEC). A tutorial of CDIE Online will illustrate how to navigate Internet resources such as the R4 database, the library catalogue, and the USAID document database.

Speakers: **Stephanie DeMoss**, Research Analyst Academy for Educational Development
Gail Wadsworth, Outreach Librarian Academy for Educational Development

Moderator: **Molly Davis**

10:00AM ~ ***Stakeholder Participation: Moving Beyond "One Size Fits All" Approach***

Objectives: This session will help participants understand how and when to use different stakeholder participation approaches according to why (function) and at what level (scale) "participation" is undertaken.

Description: Experts will provide illustrative examples of many types of participation strategies and techniques, and present cases from Central America (Hurricane Mitch) and South Africa. Participants will also have an opportunity to raise questions and discuss lessons learned.

Speakers: **Mary Rojas**, Development Alternatives, Inc.
Otto Gonzales, USDA, Foreign Agricultural Service/International Cooperation and Development Program
Scott Lewis, USDA, Foreign Agricultural Service/International Cooperation and Development Program
Sharon Murray, G/ENV/ENR Water Team, USAID

Moderator: **Mary Rojas**

10:00AM ~ ***Reducing Agricultural Water Use***

Description: Because agriculture consumes a large share of water resources (both surface and groundwater), efforts to reduce overall water demand in many cases target irrigation. This session will look at options to improve the efficiency of irrigation through drip and trickle irrigation systems, laser land leveling, improved on-farm water management and irrigation scheduling, and other technological innovations. Rough costs for capital investment and operation and maintenance will be compared with more conventional irrigation techniques. Constraints and opportunities for the adoption of higher efficiency irrigation technologies will be discussed.

Speakers: **Ljsbrand de Jong**, Water Resources Specialist, Africa World Bank
Dr. Todd Trooien, Natural Resources Engineer, South Dakota State University

Moderator: TBD

11:00 AM **Regional Small Group Preparations for Presentations**
Final chances for Small Groups to meet, discuss issues, and prepare short read-out presentations for the afternoon plenary.

12:00 PM **Buffet Lunch**

1:30 PM **Regional Small Group Presentations and Discussion**
Opportunity for Small Groups to present discussion results to the plenary.

3:30 PM **Break**

4:00 PM **Closing Remarks**
Bill Sugrue and Alan Hurdus will close the training workshop.

5:00 PM **Networking and Free Time**

6:00 PM **Buffet Dinner**

Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Management
in the New Century
15-21 July 2001

Personal Journal

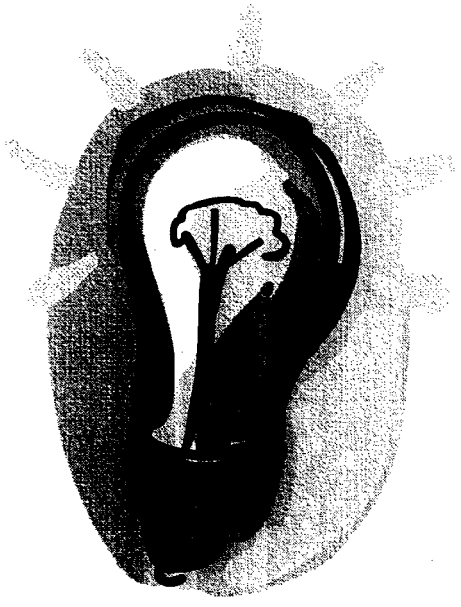
This **Personal Journal** is for your use during the environmental training workshop. The purpose of the journal is to allow you to capture your ideas, thoughts and realizations about what you are learning, re-learning, and becoming more aware of during the sessions. The journal is for your private use and reflection.

We encourage you to take time **at least once each** day to reflect on the sessions you attended and write down your ideas and insights in this journal.

Throughout the week, you will have several opportunities to meet with colleagues from your region to discuss regional issues and to present a short (15 minute) report in a plenary session on Friday. The regional reports will highlight such things as your group's reactions to the workshop, application plans, major recommendations and next steps. The presentations will be included in the CD Rom that will be distributed following the workshop.

Your journal entries will be useful during your regional meetings as you discuss and prepare for the Friday afternoon report-out.

We hope you will also use your journal when you return to work, to remind yourself of what you want to implement and follow-up on in the future.



Personal Journal

Date: July ,2001 Time: _____

Session: _____

Presenter(s): _____

_____

1. My overall reactions to this session are as follows:

2. The most important ideas, challenges, comments I want to remember from this session are:

3. I would like to use the information from this session in the following ways:

4. I want to share the results of this session with the following people and organizations:

5. Other thoughts

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Environmental Training Workshop
Millennium Plus One: Integrated Water Resources Management in the New Century
15-21 July 2001

EVALUATION FORM

Using a scale from one to five, please rate the degree to which the Environmental Training Workshop helped you meet the following objectives: 1 = not met; 5 = met successfully.

Workshop Objectives

1. Review the latest thinking about the environment, particularly how cross-cutting approaches, including integrated water resources management (IWRM), can be used to improve current programs and design new programs in USAID portfolios.

objective not met 1 2 3 4 5 objective successfully met

Comments:

_____

_____

_____

2. Explore key concepts and technical tools to support USAID environment programs.

objective not met 1 2 3 4 5 objective successfully met

Comments:

_____

_____

_____

3. Examine critical environmental issues facing USAID, including those related to water resource management, and develop approaches for addressing them programmatically.

objective not met 1 2 3 4 5 objective successfully met

Comments:

_____

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_____

Please take time to answer the following questions. Your responses will help us when we begin planning for other environmental training workshops.

1. Which workshop sessions did you find the most useful?

2. Which sessions could have been done better?

3. What comments do you have on the following aspects of the program?

   - Overall theme, design, and organization of the workshop
   - Relevance of the workshop sessions to the issues you are dealing with in your work
   - Technical session speakers and presenters
   - USAID-specific updates and sessions
   - Facilitators and Moderators
   - Program Coordination
   - Logistical Arrangements

4. If there were another environmental training workshop in the future, what central theme would you suggest?

5. What final comments do you have for the steering group and organizers of the Environmental Officers Training Workshop – Millennium Plus One: Integrated Water Resources Management in the New Century?

Please check one of the following:
_____Field Staff
_____USAID/Washington
_____Other (please specify)

Thank-you for taking time to complete the evaluation form.

Meal and Lodging Payment Procedures and Check-Out Time

Each participant will be charged a package rate of $85 per day, which covers the sleeping room and three buffet meals. This amount is the full per diem allowed for Cumberland.

Pre-Arranged Buffet Meals for Participants

All of this week's meals have been pre-arranged and will be located in the Tent adjacent to the Conference Center. Please make sure to take advantage of these meals as they are part of your daily package rate and cannot be refunded.

The meals which have been arranged are:

7/15/01- Dinner

7/16/01 – 7/20/01- Breakfast, Lunch and Dinner

7/21/01- Breakfast

Rocky Gap will not be able to adjust individual bills to reflect meals not taken in the tent or as a box lunch on Wednesday.

What if my Family Wishes to Join the Buffet?

Should you have family members who wish to join any of the package buffet meals, please pick up a "Meal Checklist" and to track the number of meals. At the end of your stay, we ask that you present the checklist to the staff member seated at the conference Registration/Information Desk who will calculate and collect the amount owed for the meals.

Payment for Sleeping Room

Please use a personal credit card at check out. DAI will not be able to pay individual participant's room bill.

Check Out Time

Please note that check out time at the Rocky Gap is 11:00 am.

Workshop Shuttle Information

Transportation Schedule

The workshop has arranged for shuttle service to take participants to Rocky Gap on Sunday, July 15 and return to Washington, DC on Saturday, July 21.

Shuttles will pick up participants at the following times and locations:

Sunday, July 15
12:00 noon – Ronald Reagan Building
3:00 pm – Dulles International Airport
7:00 pm – Dulles International Airport

Saturday, July 21
6:00 am – Dulles International Airport (to arrive at approximately 9:00 am)
12:00 noon – Dulles International Airport (to arrive at approximately 3:00 pm)
12:00 noon – Ronald Reagan Building (to arrive at approximately 3:00 pm)

These are the only scheduled times which the shuttle service will be running. If you are unable to make one of these times, the workshop cannot be responsible for providing you with transportation.

Shuttle Pick-up Locations: Going to Rocky Gap

Dulles International Airport: Haymarket Transportation Co. will provide shuttle transportation. This name will appear on the shuttle bus. They will be waiting on the second level of the Dulles Airport Terminal outside of the International Arrivals area. A Development Alternatives Inc. staff member will be in the customs area to direct you to the bus location.

Ronald Reagan Building: Haymarket Transportation Co. will provide shuttle transportation. Their name appears on the shuttle bus. They will be waiting in the bus lane on 14th Street in front of Ronald Reagan Building. A Development Alternatives, Inc. staff member will be at the pick up site.

Shuttle Pick-up Locations: Going to Washington, D.C.

All shuttles will depart from out front of the Rocky Gap Conference Center.

Participating Steering Committee Members of the USAID Environment Officers Training Workshop "Millennium Plus One: Integrated Water Resources Management in the New Century"

Preparations for this training workshop began in October of 2000. Every one to two weeks, the individuals below would meet to discuss the organization and session content for the training workshop. All members of the Steering Committee contributed large portions of their time to ensure that the sessions offered reflect the issues and concerns relevant to USAID environmental programming now and for the future.

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2. Richard Volk
3. Dan Deely
4. Sharon Murray
5. Chris Scott
6. Morris Israel
7. Harry Rea
8. John Borrazzo
9. Meg Findley
10. Steve Olive
11. Roberta Hilbruner
12. Lisa Brodey
13. Curt Barrett
14. Michele Zador
15. Isai Urasa
16. John Austin
17. Carl Gallegos
18. Jim Franckiewicz
19. Loren Schulze
20. Mary Rowen
21. Carl Maxwell
22. Barbara Best
23. Robin Martino
24. Linda Lind
25. Mohammad Latif
26. John Wilson
27. Teri Allendorf
28. Fred Guymont
29. Jill Kelley
30. Ernest Rojas
31. Macol Stewart
32. Stephanie de Moss
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LODGE & GOLF RESORT

Rocky Gap - Resort's Activities and Local Attractions

Rocky Gap Resort has put together an assortment of activities that will tickle everyone's fancy, from a leisurely hike in the woods to a wild whitewater adventure!! For those who choose to explore the surrounding area, rest assured that you are not forgotten, with outings to a number of historic and cultural sites, as well as excursions to various shopping areas. And, our premier Jack Nicklaus designed golf course has been named in the Top 100 Golf Courses in the Mid-Atlantic Region by Washington Golf Monthly.

Planned Activities:

Let Us Preplan Your Rocky Gap Adventure.
Please note that a minimum of 48 hours notice is required to schedule these activities.

- **Canoeing**: Participants can enjoy a lazy float down the Potomac. Trained outfitters will lead your trip and take care of all the details for your group. 1-4 hours.

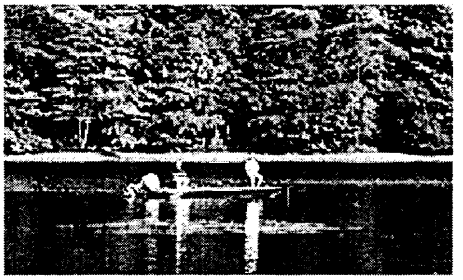
- **Caving**: Spend sometime below the surface exploring one of the area's caves. Experienced guides will caravan with you to the site, provide the equipment, instruction and safely guide through the event. 3-5 hours.

- **Cross Country Skiing**: Cross country skiing provides some of the best exercise available. Enjoy the beauty of the winter wonderland at Rocky Gap. Cross-country ski equipment is available for rental in the Rocky Gap Golf Shop. Conditions permitting.

- **Cultural Tours**: Visit some of the area's art galleries and Penn Alps; which highlights the Appalachian Crafts and music of the area. These tours also include stops at local museums and the services of a guide.

- **Fly-Fishing**: Find out why fly-fishing is all the rage! Fly-fishing is one of the fastest growing sports, try your hand at it and find out why. All instruction, equipment and fishing stories included.

- **Guided Bass Fishing**: Try your hand at bass fishing with a professional bass fishing guide. Instruction, equipment and technique are all included in this ½ day trip. Whether you are floating on the Potomac or out on Lake Habeeb your guide is sure to point out the "hot spots".



- **Guided Bike Rides**: For a more leisurely and relaxing ride try peddling on the C&O Canal. Trips can be arranged for individuals that can include shuttle, bike rental and guide.

- **Guided Mountain Bike:** Enjoy a challenging ride whether it's on your own or with instruction and guidance from an expert. Shuttle, bike rental and guide service can be included in this activity. Green Ridge State Forest offers a 12-mile mountain bike course and miles of fire roads to challenge all levels of riders.

- **Historical Tours**: Each tour is designed uniquely for your group. Stops can include the History House, historic churches, Washington's Headquarters, the Train Station, the Castle and many other locations here in Allegany County. A guide in period clothing is included in the cost of the tour. These tours are individually designed to meet the interests and financial requirements of the group.

- **Horse Handling Course**: This unique course is designed to take you through the basic care and handling of horses. It is offered in the area's finest Equestrian Center featuring Arabian horses. Learn how to: approach a horse, brush, saddle, lead, trot and ride. A fantastic opportunity to overcome any fear you may have had and develop a complete understanding of horses, care and riding. 4-5 hours

- **Kayaking**: Enjoy a relaxing kayaking tour of Lake Habeeb. Skilled instructors will teach the basics and then you can perfect your skills while taking in the scenic beauty of Rocky Gap State Park. 2-4 hours.

- **Pontoon Boat Tours** - Private Tours: Our pontoon boat holds up to 13 individuals for each tour. Sit back, relax and enjoy a 45 minute tour of Rocky Gap's Lake Habeeb.

- **Rappelling**: This is an extreme sport, which requires little to no skill or physical strength. Adventurers can experience the thrill of being on the rocks yet feel comfortable in a controlled environment. 2-4 hours.

- **Rock Climbing**: Rock climbing is an extreme sport that combines strength and balance to scale upward on the rock face. All levels of climbing are available and this activity is available both on site at the park and at alternative locations. 3-5 hours.

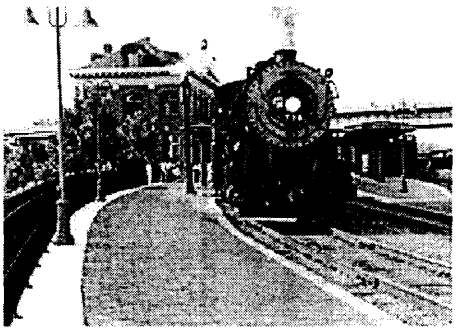
- **Scales & Tales**: If hearing an owl call in the dark sets your curiosity in motion or seeing a snake slither makes your own skin crawl then don't miss this very unique opportunity to see the newest addition to our programming agenda. Learn about the importance of reptiles and raptors in the balance of nature. This is one of Maryland's premier programs. Scales & Tales has recently opened a satellite site at Rocky Gap. This was made possible through a partnership between the Maryland Department of Natural Resources and Rocky Gap Lodge & Golf Resort. This one of a kind educational program allows guests the opportunity to view wildlife up close and hear the "tales" of how the animals became part of the program. For those of you who are looking for something unique at your next special event, Scales & Tales can be scheduled to fit your plans.

- **Scuba Diving**: Explore the basics of scuba diving while under the direct instruction of a certified scuba instructor. Approximately 4 hours.

- **Snorkeling**: See what lurks under the surface at Lake Habeeb while snorkeling through it's crystal clear water. 2-4 hours.

- **Sporting Clays**: If you want to sharpen your skills for wingshooting, rabbit hunting or just have fun, you will want to visit one of our sporting clay sites. Sporting clays are one of the nation's fastest growing sports. Open seasonally.

- **Western Maryland Scenic Railroad**: All aboard! The Western Maryland Scenic Railroad is ready to take you on a journey through time. When you step on board the vintage 1916 Baldwin Locomotive, you'll feel like you're traveling to another era. Specialty Trains, such as the Murder Mystery and Dinner Train, are also available. The train can be booked exclusively for a group or tickets can be purchased individually. Group rates are available.



- **Whitewater Rafting**: Enjoy an exhilarating thrill ride down the Upper Youghiogheny, world renowned for it's tight and technical passages featuring continuos white water and a world class drop of over 115 feet per mile.

Prices for activities are dependent on group size.
For additional information or to schedule an activity
Please call 301-784-8403 or Guest Services at 800-724-0828.

Outdoor activities are weather dependent and subject to change.
Programs are offered and in partnership with the
Maryland Department of Natural Resources Nature Tourism Program

Basic Global Water Facts

Basic Terms

minimum human requirement for water = 20 liters per capita per day[i]

water stress- disruptive water shortages can frequently occur
renewable water resources <1,700 m3/capita/year[ii]

chronic water scarcity- severe damage to food production and stunted economic development
renewable water resources <1,000 m3/capita/year[ii]

The Global Situation

- Less than 1% of the world's fresh water, or about 0.008 percent of all water on earth, is readily accessible for direct human use.[iii]
- The average annual global renewable water resources equals 7,045 m3 per person in the year 2000[iv] -a drop of 40 percent per person since 1970 due to growing world population.
- Fresh water resources are unevenly distributed
  - Amazon carries 16 percent of global run-off
  - The Lake Baikal accounts for 20% of the world's fresh water surface. (23,600 km3).[v]
  - The Great Lakes account for another 20%, and for 9/10th of US supply.[vi]
  - Congo-Zaire river basin carries one-third of the river flow in all Africa
- Twenty countries (most of them in Africa and the Arab States), suffer chronic water scarcity. [vii]
- 160 billion cubic meters of over pumping of non-renewable water annually[viii]

A Growing Problem

- Global water consumption grew six-fold[ix] between 1900 and 1995, and continues growing at the same pace.
- The number of chronic water scarce countries will grow to 45 in 2050[x]
- In 2025, one third of the global population is expected to live in chronic water shortage areas[xi]
- In 2025 almost 50 percent of the global population will live in river basins under water stress[xii]

Connecting People to Water

- To reach universal coverage by the year 2025, almost 3 billion people need to be linked with water supply and more than 4 billion with sanitation.[xiii]
- Globally, 16 billion USD have been spent annually in constructing new water and sanitation facilities over the past 10 years.[xiv]
  - 11 billion USD is spent each year in Europe on ice cream,
  - 17 billion USD is spent each year in Europe and the US on pet food,
  - and 105 billion USD is spent each year in Europe alone on alcoholic drinks.

- In order to reach half of the people without water services by 2015 investment in urban water supplies must increase by more than 30percent.[xv]
- Low-income urban dwellers not connected to water systems often must turn to alternatives such as water vendors who can charge more than 16 times more than the formal piped water tariff.[xvi]

Municipal Role

- By 2020 over 50 percent of the population in developing countries will live in urban centers.[xvii]
- There is clear trend of water allocation away from agriculture and towards urban uses.[xviii]
- Currently only about half of urban dwellers in developing countries have water[xix] connections in their homes and over one quarter have no access to safe drinking water.
- Unaccounted for water in many large developing countries cities has been reported as amounting to more than 50 percent of supplies.[xx]
- 1 to 1.5 billion USD each year is the cost Latin Americans have to bear because of these losses.[xxi]
- 1 to 1.5 billion USD is also the amount needed annually to provide water and sanitation services to all the region's currently unserved citizens.[xx]
- The quantity of water Mexico City alone loses is enough to supply the city of Rome.[xxii]
- Over 1/3rd of the urban water supplies in Africa, and LAC, and more than half those in Asia, operate intermittently.[xxiii]
- In the US, 50 percent to 75 percent of the cost of operating municipal water systems is due to energy consumption. [xxiv]
- In the US, 75 billion kWh, or 3 percent of the total consumption of electricity, are consumed annually by the water and wastewater sector[xxv]
    - This amount is equal to the electricity used by the pulp and paper and petroleum sectors combined.[xxvi]
    - This is predicted to grow 33 percent in the next 20 years.[xxvii]

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[i] Water Supply and Sanitation at the World Bank – Pricing & Tariffs
http://www.worldbank.org/html/fdp/water/topics/pricing.html

[ii] Pilot analysis of global ecosystems -- http://www.wri.org/wr2000/pdf/page_freshwater_quantity.pdf

[iii] Report by the World Commission on Water – http://watervision.cdinet.com/commreport.htm
Section 2: The Water Crisis: Where we are today and how we got there
http://watervision.cdinet.com/pdfs/commission/cchpt2.pdf
Human Appropriation of the World's Fresh Water Supply
http://www.sprl.umich.edu/GCL/Notes-1999-Winter/freshwater.html

[iv] WRI, Table FW.1 Fresh Water Resources and Withdrawals –
http://www.wri.org/wr-00-01/pdf/fw1n_2000.pdf

[v] http://www.livinglakes.org/baikal/

[vi] http://www.great-lakes.net/lakes/

[vii] Water Stress Index, 1990 – Sustaining Water: An Update, Population Action International, Washington DC

[viii] How Water Scarcity will shape the New Century
http://www.earthpolicy.org/zl_htm/z2_htm/t0814_00.htm

[ix] WRI, Water quantity, Conditions and trends, October 27,2000 and WRI, Water: Critical shortages ahead? http://www.wri.org/trends/water.html

[x] Water Stress Index, 2050–Sustaining Water: An Update, Population Action International, Washington DC

[xi] WRI, Freshwater systems, Water quantity, http://www.wri.org/trends/water.html.

[xii] WRI, Water quantity, Conditions and trends, October 27,2000 and WRI, Water: Critical shortages ahead? http://www.wri.org/trends/water.html

[xiii] Global Water Supply and sanitation Assessment 2000 report
http://www.who.int/water_sanitation_health/Globassessment/Global1.htm#1.1

[xiv] Global Water Supply and sanitation Assessment 2000 report – 3.2
http://www.who.int/water_sanitation_health/Globassessment/Global3.2htm

[xv] [xv] Global Water Supply and sanitation Assessment 2000 report – 5.2
http://www.who.int/water_sanitation_health/Globassessment/Global5.2htm

[xvi] Michael Klein and Timothy Irwin, "Regulating Water Companies", (The Private Sector in Water, The World Bank Group, 1999), 25 pp.

[xvii] Kariuki, Mukami, WSS Services for the Urban Poor, website, www.wsscc.org/vision21/docs/doc16.html

[xviii] Mei Xie ET AL, Using Water Efficiently, (World Bank Technical Paper Number 205), 1993, 3 pp.

[xix] Global Water Supply and sanitation Assessment 2000 report
http://www.who.int/water_sanitation_health/Globassessment/Global3.4.htm

[xx] Water Demand Management and Conservation – http://www.wsscc.org/wq_conservation.html –
http://www.who.int/water_sanitation_health/wss/sustoptim.html

[xxi] http://www.unicef.org/pon97/water4.htm

[xxii] Peter Gleick, "Making Every Drop Count" (Scientific America, February, 2001).

[xxiii] Global Water Supply and sanitation Assessment 2000 report
http://www.who.int/water_sanitation_health/Globassessment/Global3.4.htm

[xxiv] Energy Efficiency and Renewable Energy Network, DOE, Cities Cut Water System Energy Costs
http://www.eren.doe.gov/cities_counties/watersy.html

[xxv] Julia Oliver and Cynthia Putnam,, "How to Avoid Taking a Bath on Energy Costs" (Opflow, May 1997).
[xxvi] Based on analysis done by Laura Lind of the Alliance to Save Energy using MECS 1991.

[xxvii] H. Arora and Mark LeCHevallier, "Energy Management Opportunities" (AWWA Journal, February 1998).

Session: **Ecological and Economic Impacts of Aquatic Biodiversity Conservation**
Title: **Ecological and Economic Impacts of Aquatic Biodiversity Conservation**

Date: **Tuesday, July 17 1:30 pm**
Speaker: **Nels C. Johnson**

Growing water scarcity and alarming declines in aquatic biodiversity indicate that water policies in most of the world are failing to protect life's most vital resource. Water is certain to be a major topic of discussion at next year's Rio +10 Summit and seems likely to join climate change as a perennial topic at global gatherings of environmental policy-makers. Two questions that should be prominent at these events will be addressed in this presentation. First, where is water scarce and how will this change over time? Second, what changes in water management can address the needs of people of nature?

Nels C. Johnson
Deputy Director
Biological Resources Program
World Resource Institute

Nels Johnson is Deputy Director of the Biological Resources Program at the World Resources Institute (WRI) in Washington, DC. His research has focused on forest management, monitoring global trends in forest condition, setting priorities for biodiversity conservation, and the relationship between land use and water management. He is currently working on strategies for water management that rely on the protection of natural wetland habitats and sustainable farming and forestry practices to meet water management goals. Johnson has authored or co-edited over a dozen books on forest management and biodiversity conservation. He serves on the senior management team at WRI and the Executive Committee for the Biodiversity Support Program, a USAID-funded project managed by WWF-US, The Nature Conservancy, and WRI. Before joining WRI in 1989, he worked for the International Institute for Environment and Development and the U.S. Forest Service Pacific Northwest Research Station. A Minnesota native, Johnson received his undergraduate degree in Biology at Reed College and a Master of Forest Science from Yale's School of Forestry and Environmental Studies.

The Environment and Cities --- A Love or Hate Relationship?

USAID Environment Officer's Conference "The Water Workshop" July 2001

Goals for this Technical Session

- Explore ways cities can be employed to enhance environmental program results.
- Learn more about urban development and its linkages to environmental strategic objectives.
- Gain a better understanding about the Agency's urban strategy and how it impacts the work of Environment Officers.

USAID Perceptions

- Will complete with survey results

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Urban as an Opportunity

Cities, when well-managed...

→ Reduce natural resource degradation through better urban environmental services

→ Provide access to sanitation facilities to a greater number of poor

→ Have the potential to be the driver for decreasing greenhouse gas emissions

Why Urban?

- The poor are increasingly located in cities.
- Population growth is concentrated in urban centers.
- Economies of scale.
- Nexus of resources, both human and monetary.

Making Cities Work Strategy

Helping enable cities to:

- Offer healthy places to live, within a sustainable environment;
- Provide basic infrastructure and housing;
- Feature robust economies; and
- Promote better city governance.

Making Cities Work

For more details please reference:

www.makingcitieswork.org

Regional Urban Development Offices

- Latin America and Caribbean in Guatemala City, Guatemala
- Middle East in Rabat, Morocco
- South Asia in New Delhi, India
- Southeast Asia in Jakarta, Indonesia
- Sub-Sahara Africa in Pretoria, South Africa

Resource Cities

Provide an opportunity for city officials in developing and transitional countries to learn about pragmatic, field-tested approaches to urban management and environmental challenges directly from their US peers.

MCW Partnership Fund

Goal: To encourage innovation in incorporating an urban dimension in USAID programs through a matching grant of up to $50,000.

In FY 2000, 12 proposals were submitted.
In FY 2001, over 25 proposals were submitted – an increase of 108%.

Indefinite Quantity Contracts

- **Sustainable Urban Management (SUM) IQC**
- **Engineering IQCs**
  - Environmental Engineering
  - Power
  - Transportation

Cities Matter Training Course

www.makingcitieswork.org

Analyzing the Practices that Work in the Age of Decentralization

Latest course: February 11 - 16, 2001

146

Seminar Series

www.makingcitieswork.org

- Children in the City
- Women, Micro-Finance & Slum Upgrading
- Urban Agriculture

Development Credit Authority

- RUDOs have over 30 years experience in using credit as a development tool.

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Managing Freshwater Ecosystems for People and Nature

Nels Johnson
World Resources Institute

USAID Environment Officers Workshop
July 17, 2001
Cumberland, MD

World Resources Institute

Key Issues

- Freshwater ecosystems deliver goods and services of enormous global value
- Freshwater ecosystems are more heavily degraded than any other major ecosystem type
- **Freshwater ecosystems are not being managed well for either people or nature**
- **Better applied science and innovative market tools are key to an ecosystem approach to water management**

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Global Importance of Freshwater Ecosystem Goods and Services

- ***Fisheries***: Inland fisheries provide 12% of global fish catch
- ***Agriculture:*** Irrigated agriculture supplies about 40% of world's crops
- ***Electricity***: Hydropower supplies 20% of world's electricity
- ***Biodiversity:*** At least 12% of world's species live in freshwater ecosystems

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Water-Related Ecosystem Services from Forests and Wetlands

- ***Water quality*** - forest soils and wetlands filter chemicals and bacteria
- ***Flow regulation*** - forests and wetlands reduce peak flows and increase low flows
- ***Water supply*** - forests tend to reduce flows; wetlands recharge groundwater
- ***Aquatic productivity*** - forests and wetlands intimately tied to productivity

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River Fragmentation and Flow Regulation

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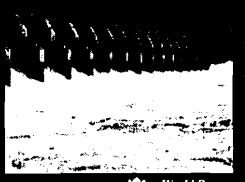
River Fragmentation and Flow Regulation

- **35,000 large dams (>15 m) built since 1950**
- **60% of the largest 227 rivers in the world are strongly or moderately fragmented by dams, diversions and canals**
- **Overall, strongly or moderately fragmented systems account for 90% of the water volume flowing through these rivers**



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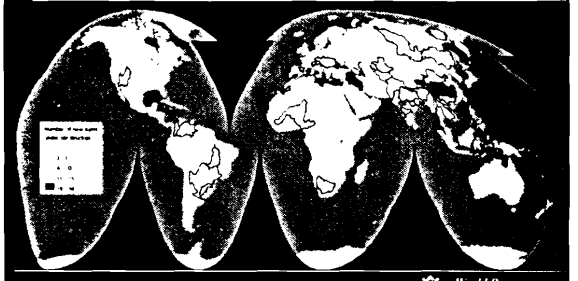
Large Dams under Construction



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Agricultural Water Consumption

- 70% of all water withdrawals are for agriculture
- More than half of water entering irrigation systems never makes it to the crops
- Price for irrigation water typically covers only a small fraction of capital and management costs

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Domestic, Industrial and Agricultural Contamination

- Nearly 90% of wastewater in developing countries is discharged w/o treatment
- pesticides have joined sewage and industrial sources as leading cause of contamination in developing countries
- nitrate contamination of surface and groundwater is growing rapidly
- 3.3 billion people lack access to clean water - in many places water is unfit even for industrial uses

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Overexploited Freshwater Fisheries

- In 1997 inland fisheries landings totaled 7.7 million tonnes
- Most inland fisheries are being exploited at or above sustainable levels
- The major threat is loss of fish habitat and environmental degradation

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Invasive Species

The introduction of non-native species is the second-leading cause, after habitat degradation, of species extinction in freshwater systems

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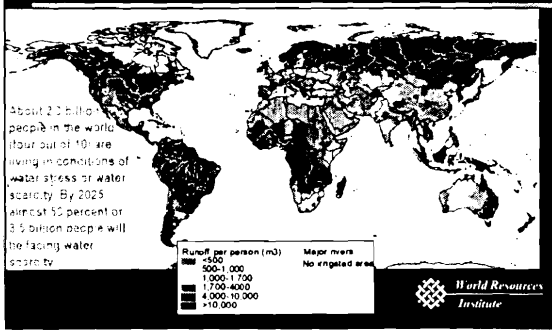
Water Availability by River Basin



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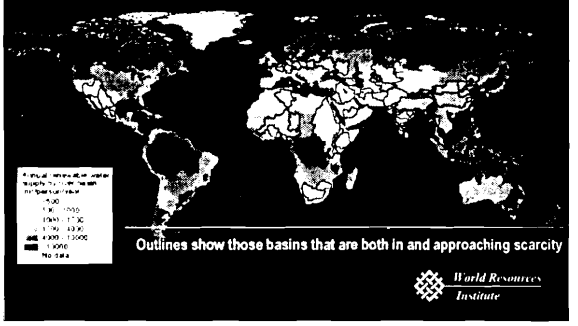
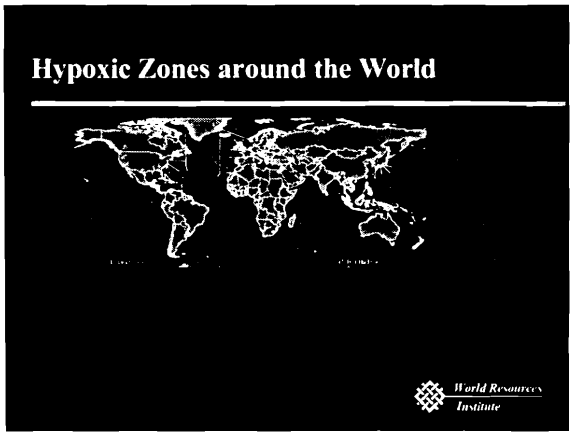
Water Scarcity – 2025



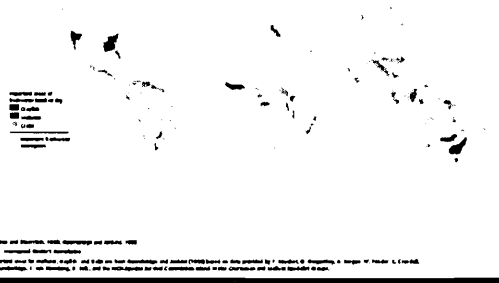
Hypoxic Zones around the World



Freshwater Biodiversity

- More than 20% of freshwater fish species are threatened, endangered or have become extinct in recent decades
- Modeled estimates of future species extinction rates suggest that the rates for freshwater species are 5 times higher than for terrestrial species

Important Areas and Ecoregions for Freshwater Biodiversity



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Fish Species Richness and Endemism by River Basin

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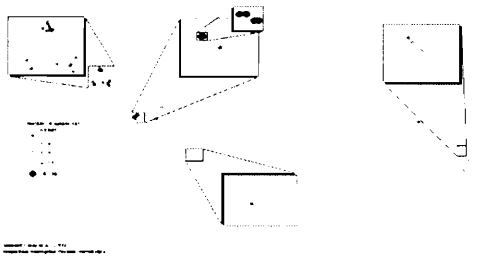
Amphibian Census Sites and Decline Index



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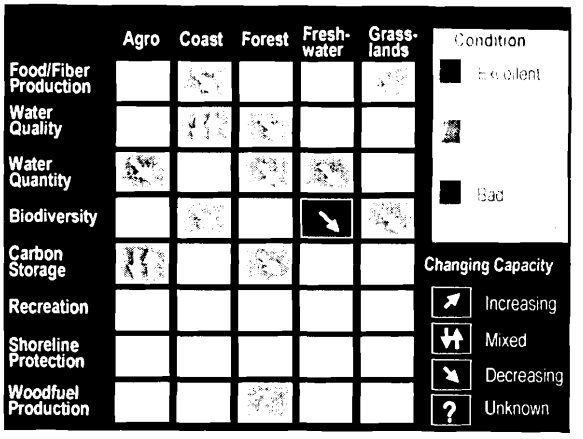

Realistic Pricing

- Set prices to reflect cost of supplying and distributing water
- Include the cost of watershed management in water prices
- Charge polluters the cost for mitigating their emissions

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Applied Research and Monitoring

Need better information on:

- minimum in-stream flows for biodiversity
- maximum threshold loads for common pollutants
- relation of land use to hydrologic functions

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An Ecosystem Approach to Water Management

An ecosystem approach to water management:

- conserves critical natural forest and wetland habitats;
- creates buffer zones along rivers and streams;
- shifts farming and road building away from steep slopes;
- avoids use of agricultural chemicals in sensitive areas near streams, wetlands, and recharge areas.

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Biophysical Rules of Thumb for an Ecosystem Approach....

- Protect or restore wetlands and riparian vegetation first;
- Maintain natural forests before investing in reforestation;
- Focus on road-building and soil compaction before reforestation;
- Do not rely on fast growing tree species to slow erosion or extend dry season flows;
- Anticipate differences between species, young vs. old forests, natural vs. plantation forests.

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Economic Rules of Thumb for an Ecosystem Approach....

- Focus on services that are scarce, declining and have expensive or no substitutes;
- Focus on services directly linked to beneficiaries;
- Set compensation levels based on the value or the economic importance of the service;
- Choose incentives according to institutional conditions;
- Package hydrological services w/other ecosystem services if possible.

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Social Rules of Thumb for an Ecosystem Approach....

- Seek out and use local knowledge;
- Clarify rights and responsibilities under law and custom;
- Identify stakeholder groups and involve key members in early planning;
- Consider equity implications.

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Operational Rules of Thumb for an Ecosystem Approach....

- Find relevant local and international experience;
- Treat major assumptions as hypotheses - monitor and test once implementation begins;
- Do not underestimate transaction costs - seek government or donor help;
- Assemble interdisciplinary planning and management team;
- Share experiences and findings early and often, especially with decisionmakers and stakeholders.

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Publications

http://www.wri.org/wri

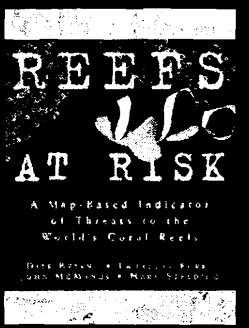
World Resources Institute

Reefs at Risk in Southeast Asia

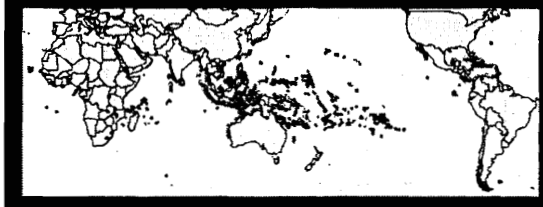
Lauretta Burke and Elizabeth Selig
World Resources Institute
April, 2001

WHY?

Global Analysis
released in 1998 by
World Resources Institute,
in collaboration with
WCMC, ICLARM and UNEP



The *Reefs at Risk* Indicator



Low Medium High

Regional Reefs at Risk - Southeast Asia

- More detailed analysis for Southeast Asia
- Higher resolution data
- Better differentiation of coral reefs - by natural vulnerability
- Coastal management and protection included
- More collaborative analysis - better validation of results

Goals of Reefs at Risk - Southeast Asia

- Raise awareness about threats to coral reefs in region and establish linkages between human activity and coral condition
- Develop a standardized indicator of threat to coral reefs from human activities
- Promote sharing and improvement of information through data integration and distribution

WRI and many partners....

- University of Philippines, Marine Sciences Institute
- University of Malaysia, Sabah, Borneo Marine Research Unit
- National University of Singapore
- Institute of Oceanography, Vietnam
- Silliman University
- Universiti Putra Malaysia
- University of Malaysia, Sarawak
- Meio University, Japan
- National Taiwan University
- Phuket Marine Biological Center, Thailand
- Chulalongkorn University, Thailand
- Center for Oceanographic Research and Development, Indonesia
- UNEP-WCMC
- ICLARM
- GCRMN
- ReefCheck
- UNEP - East Asian Regional Seas
- US AID – Coastal Resource Management Project
- University of Rhode Island, Coastal Resources Center
- Tetra Tech, Inc
- SEA Basins Project
- Yayasan Ati Cita Lestari
- International Marinelife Alliance
- The Nature Conservancy, Indonesia Program

Financial Support for Project

- US Agency for International Development (USAID)
- The David and Lucile Packard Foundation
- The United Nations Foundation - ICRAN
- The Swedish International Development Cooperation Agency (SIDA)

Integrated Data Sets for Region- on CD

- Coral reef and mangrove locations
- Coral reef status parameters
- Physical landscape data
- Infrastructure
- Socioeconomic variables
- Estimated threat to coral reefs

Data Development Approach

Build upon regional data sets to:

1) Develop better "real data" on the status of coral reefs (live coral cover, bleaching, impacts, etc.)

2) Develop better "input data" sets for threat modeling (use of destructive techniques, shipping lanes, MPA -management effectiveness)

Many data sets support threat modeling

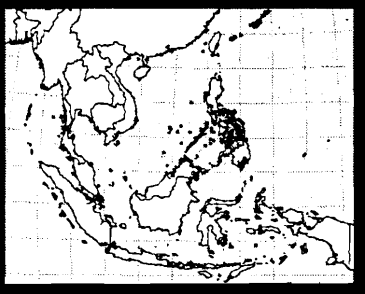
- Land cover type, elevation, slope, precipitation, and soil type (for the analysis of sedimentation)
- Population density and coral reef area (for the analysis of overfishing pressure)
- Cities, settlements, population growth, mines, and tourist centers (for the analysis of coastal development)
- Ports, oil wells and rigs, and shipping lanes (for the analysis of marine-based pollution).

Regional Extent of Analysis

Coral Reef and Mangrove Locations

1:1,000,000 base data from WCMC, revised by partners and WRI

Live Coral Cover

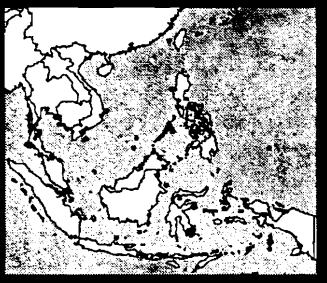


Data from ReefBase, ReefCheck and project partners

Percent live coral cover

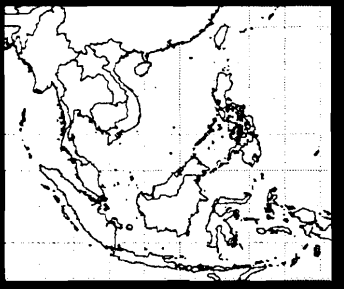
- 0% - 25%
- 25% - 50%
- 50% - 75%
- 75% - 100%
- No data

Sea Surface Temperature Anomalies for 1998



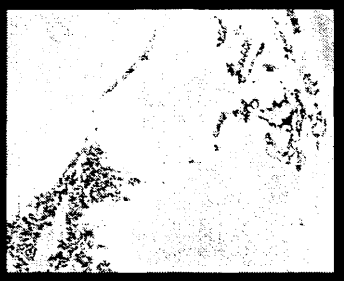
Data from NOAA-NESDIS, WCMC, GCRMN, ReefCheck, ReefBase, and project partners

Observed Impacts to Coral Reefs



Impacts from pollution, sedimentation, tourism, overexploitation, and destructive fishing from ReefBase

Elevation and Bathymetry



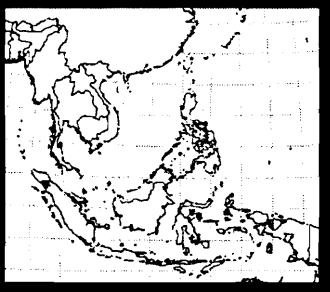
1 km resolution elevation data from EROS Data Center

4 km resolution bathymetry data from TOPEX

Watershed (basin) boundaries

5000 basins derived from 1 km resolution elevation data

Marine and Coastal Protected Areas



Data, originally from WCMC, revised by project partners

"Management Effectiveness" designation for 300 MPAs.

Most only have point location

Data formats on CD

- ESRI ArcView Shapefile format
- ESRI ArcInfo GRID format
- Excel Spreadsheet format

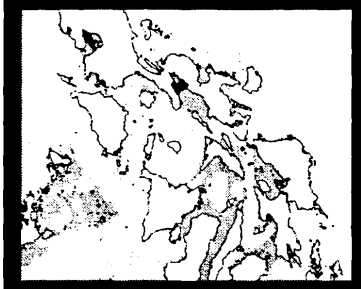
(Most data can be viewed with public domain software.)

Modeling Threats to Coral Reefs in Southeast Asia

Five categories of threat examined:

- Coastal development
- Marine-based pollution
- Inland pollution and sedimentation
- Overfishing
- Destructive fishing

Natural Vulnerability



Vulnerability
Low
High

Vulnerability is a function of degree of embayment, fetch, depth and tidal range

Coastal Development Features

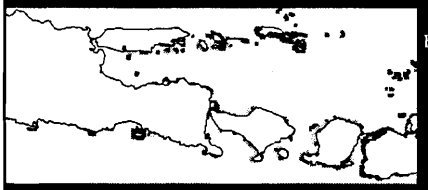
cities
settlements
airports,
mines,
tourist centers
population
growth

Estimated Threat from Coastal Development

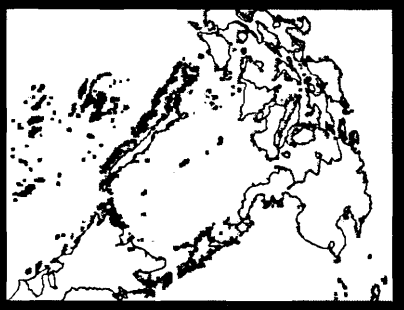
Estimated Threat
Low
Medium
High
V.High

Threat evaluated based upon distance to cities, settlements, airports, mines, and tourist centers, and population growth along coast.

Reefs Classified by Threat from Coastal Development



Estimated Threat from Coastal Development



Marine-based Pollution

Threat evaluated based upon distance to ports, oil tanks and wells, and shipping lanes.

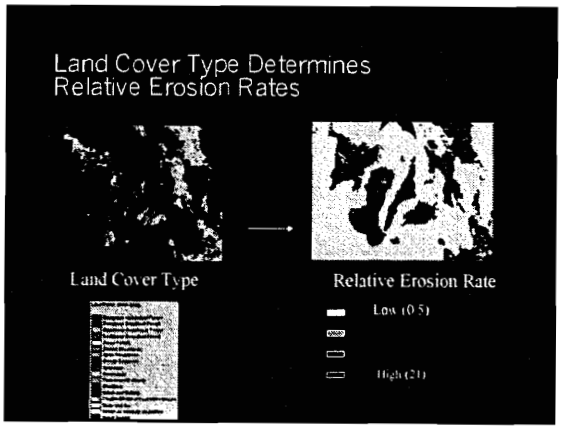
Estimated Threat from Marine-based Pollution

Inland Pollution and Sedimentation

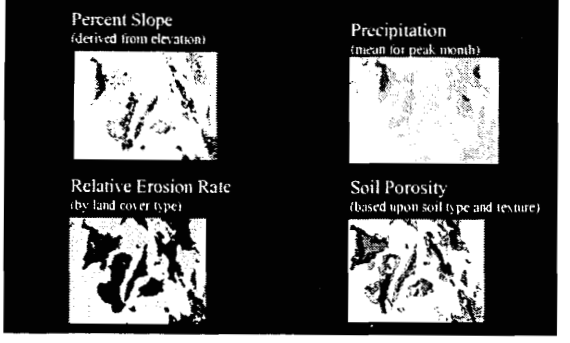
Inland Pollution and Sedimentation

- Watershed-based Analysis
- Erosion estimates are based upon slope, land cover, rainfall, and soil type
- Relative erosion potential (REP) summarized by watershed
- Sediment dispersion estimate based on river flow and erosion during peak rainfall month

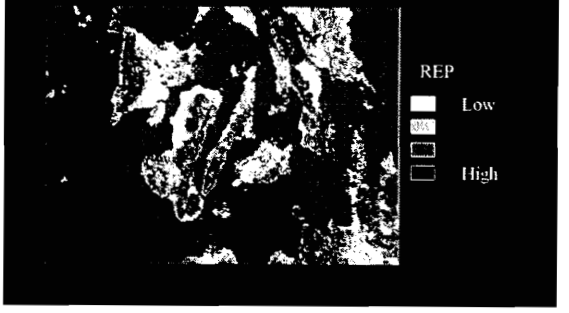
Land Cover Type Determines Relative Erosion Rates



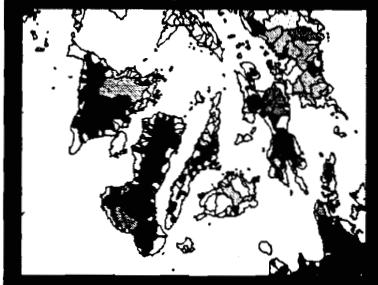
Inputs to "Relative Erosion Potential" (REP)



Relative Erosion Potential (by grid cell)



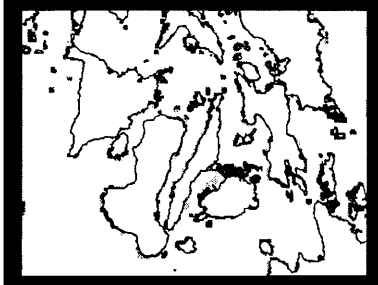
Watershed delineations - summary unit



REP and river flow estimates for basin reflected at river mouth

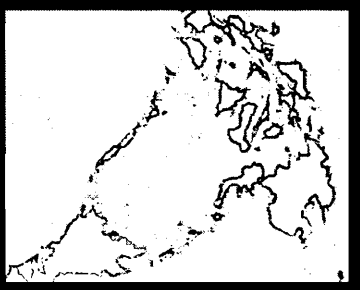
Sediment plume estimates based upon river flow, sediment, and vulnerability

Reefs classified by threat from sediment



Estimated Threat
- Low
- Medium
- High
- V.High

Local Overfishing Pressure

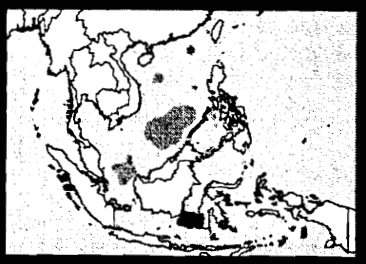


Coastal Population Density
- Low
- Med
- High
- V High

Estimated Threat from Local Overfishing

Estimated Threat
- Low
- Medium
- High

Destructive Fishing

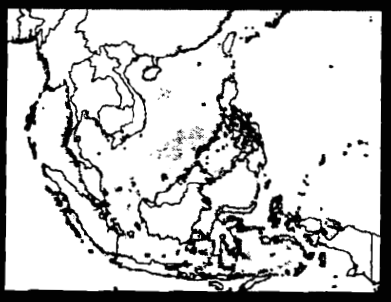


Estimated Threat

- Low
- Medium
- High

Mapping of expert opinion on occurance of
1) blast fishing
2) fishing with poisons

Estimated Threat from Destructive Fishing



Estimated Threat

- Low
- Medium
- High

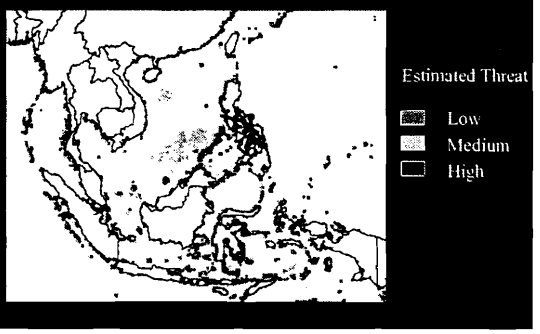
Integrating threats

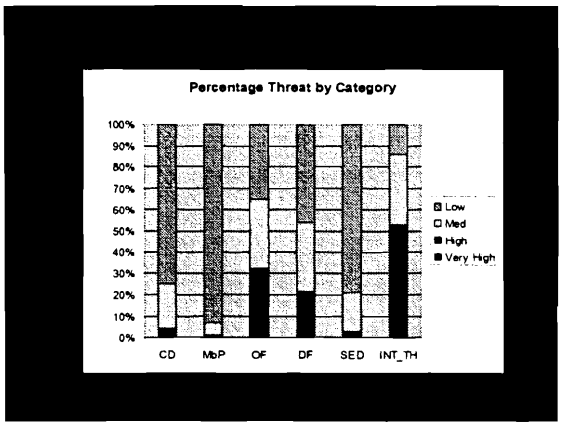
Threat estimates for the five threat categories were combined:

1) highest individual threat

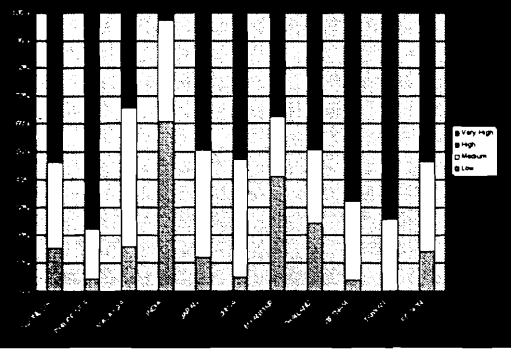
2) areas with 3 or more "high threats" set to very high.

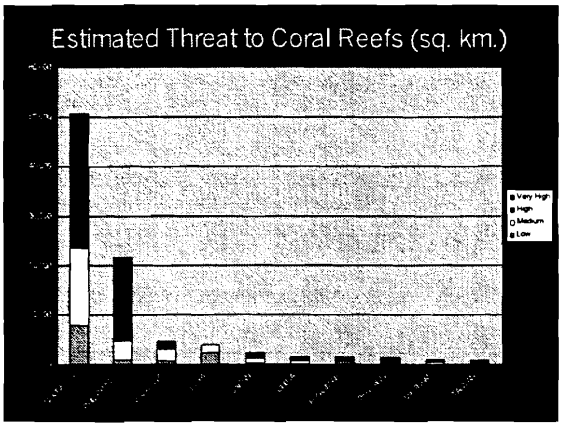
Cumulative Threat from Human Activities





Pct. Reefs by Estimated Cumulative Threat





Multiple Scale Analysis

- Coastal Zone of Sabah, Malaysia
- Community-based management in Philippines

Additional Analyses

- Biodiversity Patterns
- Economic Valuation

RR SEA Project Outputs

- Printed Report (English and Bahasa Indonesian)
- Posters
- Data CD
- GIS-based model for evaluating threat
- Web site (report, data and model)

Application Areas

- Sub-regional comparison
- Priority Setting
- Environmental Impact Analysis

Comments Appreciated

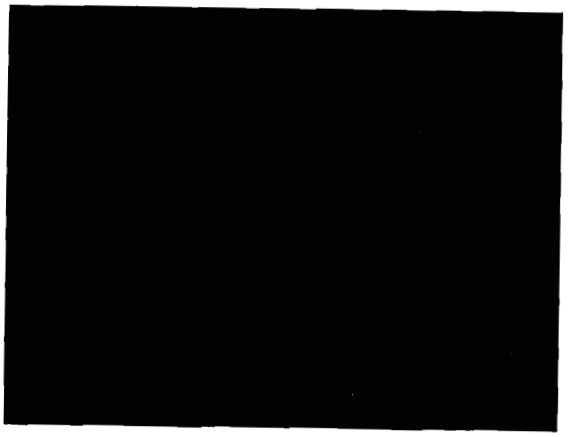
Reefs at Risk in Southeast Asia

Fall 2001

www.wri.org

lauretta@wri.org

lhrs@wri.org



Relative Erosion Potential (REP)

REP = Slope $^{1.5}$ * Relative_Erosion_Rate * Precipitation * Soil Porosity

Slope - is in percent slope
Relative Erosion Rate - is based upon land cover type
Precipitation - mean precipitation for the peak rainfall month
Soil porosity - based upon soil texture

Estimated Threat to Coral Reefs

By category

ENERGY - WATER NEXUS IN AGRICULTURE

S. Padmanaban
Sr. Energy & Environment Advisor
USAID/India

Millennium Plus One:

USAID Environmental Officers Workshop on Water Resources Management in the New Century

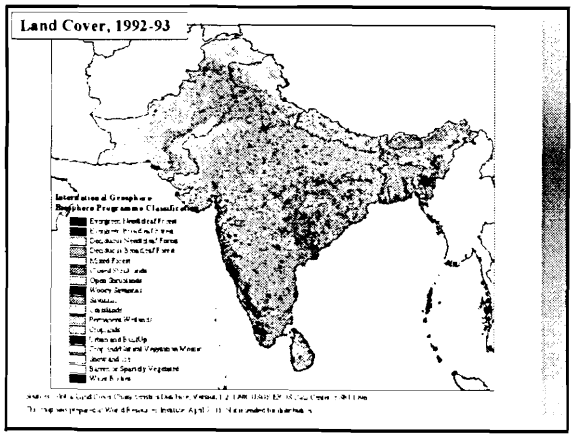
July 15-21, 2001

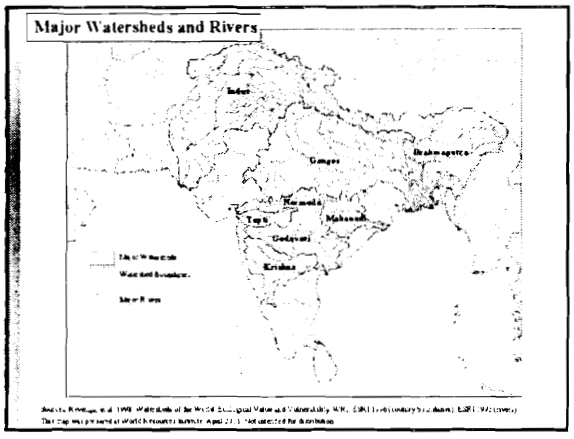
Cumberland, Maryland

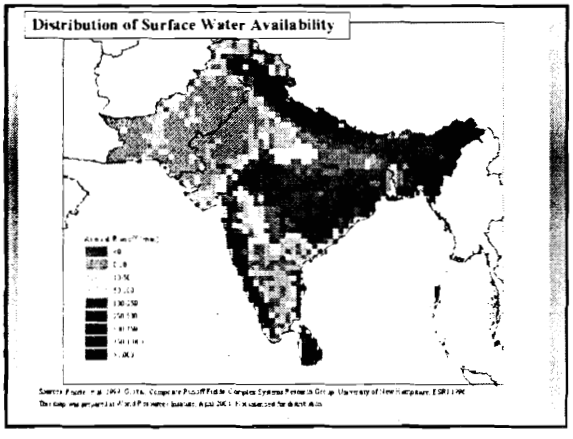
OUTLINE

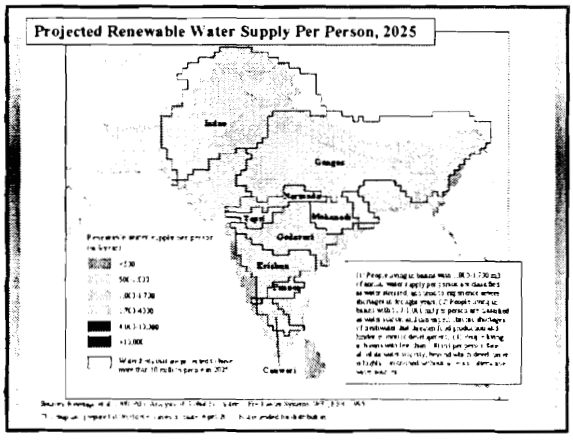
ENERGY/WATER NEXUS IN INDIAN AGRICULTURE

- CONTEXT: VISUAL MAPS
- MACRO-PICTURE: ENERGY AND WATER USE
- INTEGRATED AGRICULTURAL DSM
- USAID/I's DEVELOPMENTAL STRATEGY
- EXPECTED RESULTS

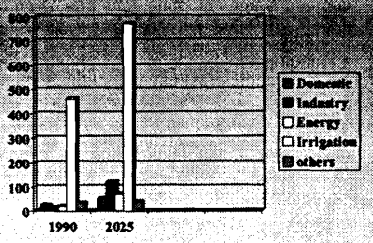




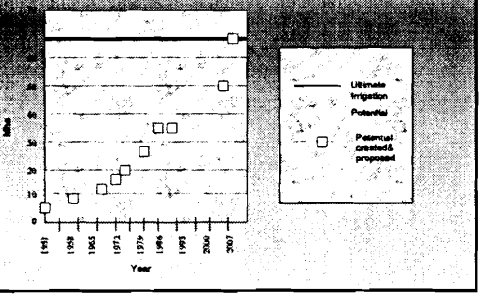




Demand of Water in India



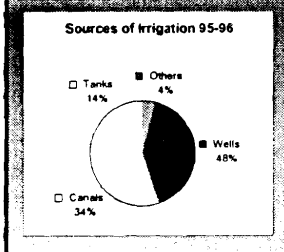
Evolution of Groundwater Irrigation Potential



Groundwater - Overexploited and Dark Blocks, 1984-93

State	1984-85	1992-93
Andhra Pradesh	0	30
Gujarat	6	26
Haryana	31	51
Karnataka	3	18
Madhya Pradesh	0	3
Punjab	64	70
Rajasthan	21	56
Tamil Nadu	61	97

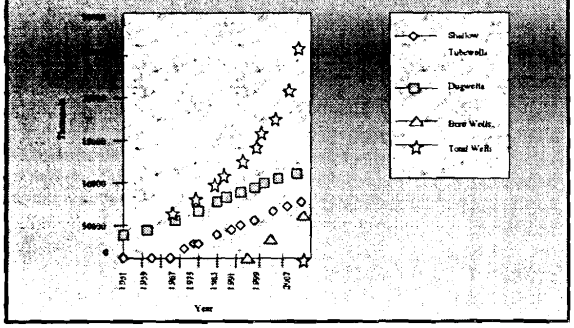
Groundwater Irrigation and Power Sector Linkages in India



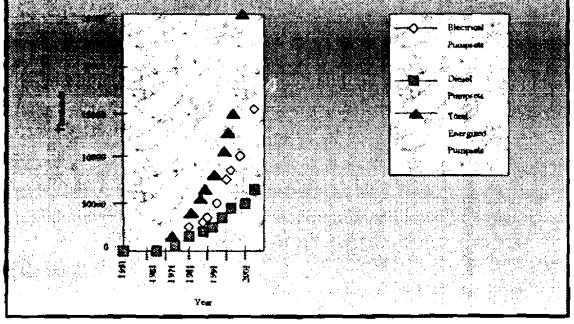
- Wells accounts for largest share of irrigated area (40 million ha)
- Groundwater extraction thru pumps, 85% are electric

Accts for 30 % of electricity use

The Growth in the Number of Wells, 1951-2007

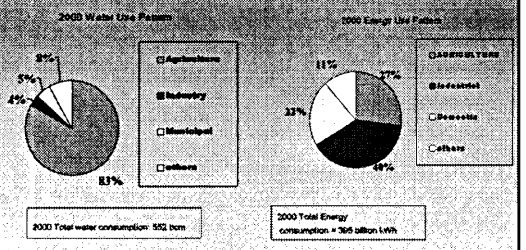


The Growth in the Number of Pumpsets, 1951-2005



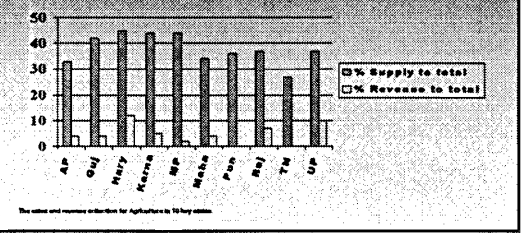
Agriculture's Impact Is Significant

•Agriculture is the largest user of water and accounts for about one-third of total power use



Agricultural Revenue is Smallest Component of Total

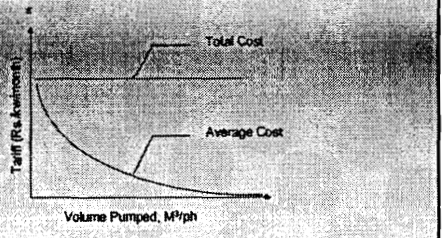
Power sales attributed to the agricultural sector account for between 20-40% of all sales, but the total revenue collected is a small fraction of total revenues.



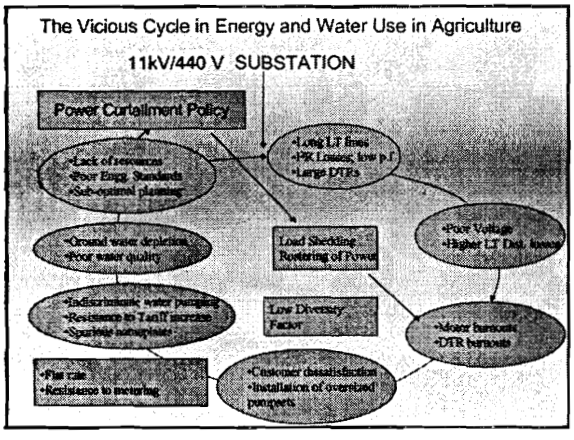
THE CHALLENGE: NON- URBAN (RURAL/AGRICULTURAL) DISTRIBUTION SYSTEM

- No regulations on tube-well drilling or amount limits for groundwater extraction
- Low tariffs for electricity; poor metering, billing and collection system
- Zero marginal cost of water pumping leading to groundwater depletion
- Poor quality and reliability of power supply for the user
- Low efficiency of end-use devices, eg. Electrical pumping system

Pumping Cost under a Flat-Rate System



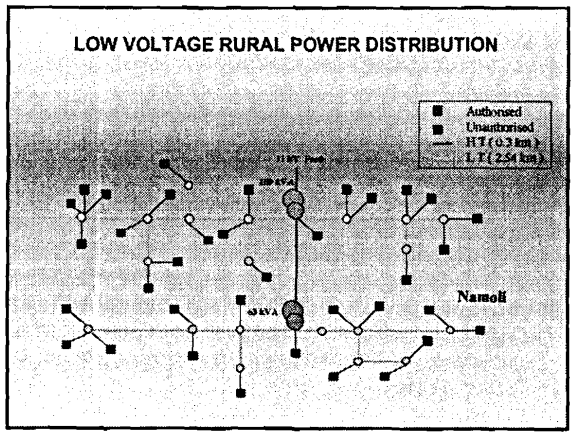
The Vicious Cycle in Energy and Water Use in Agriculture



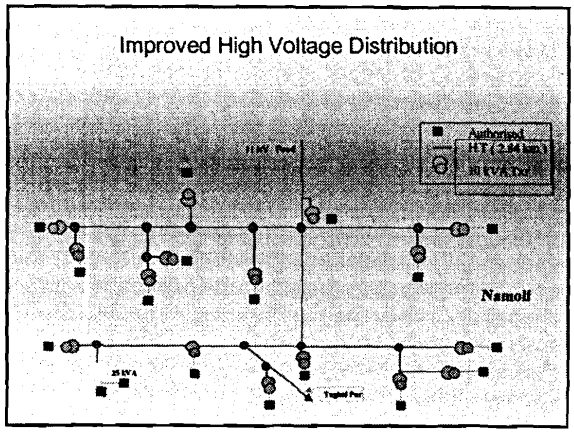
COMPONENTS OF AN INTEGRATED AGRICULTURAL DSM

- Conversion from low voltage (LV) feeders to high voltage (HV) feeders
- Reduction in system demand and line losses, as well as improved services to non-agricultural customers through use of automated load control
- Improvements in end-use efficiency by replacement of pumpsets and associated pipes and valves with efficient products
- Introduction of water conservation measures (eg. Drip irrigation, conversion to dry crops, etc.

LOW VOLTAGE RURAL POWER DISTRIBUTION



Improved High Voltage Distribution



Payback Period

✓ **Initial Outlay**

Capital Expenditure Rs.788,000

✓ **Net Cash Flow**

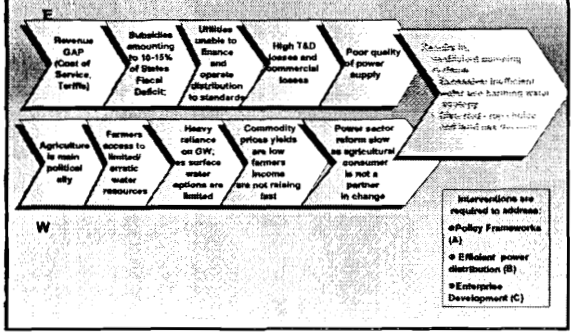
Reduction in Loss	Rs. 337,400
Additional Revenue	Rs. 16,800
Saving in Cost of Funds	Rs. 12,000
Total	Rs 366,200 / annum

Payback Period 2 years

WATER/ENERGY NEXUS

- What is AID's developmental interest?
  - Poverty alleviation and social sector development
    - Sustainability of groundwater resources
    - Support power sector distribution reform

Energy Water Design Concept in Agriculture



USAID/INDIA'S ENERGY/WATER STRATEGY

- Central and state policy dialogue on power and water sector reform - to develop an energy/water framework.
- Commercial practices in rural power distribution - to expand the domain of power planning beyond the customer side of the electrical meter to encompass the water well, the exploitation and recharge of aquifers and the management of the watershed as a whole.
- The agricultural/rural consumer - to engage a neglected, but crucial constituency in partnership to advance energy and water use efficiency, thereby improving reform prospects.

Expected Results

- Less energy consumed for pumping
- Reduction in groundwater abstraction
- Improvement in utility revenues; reduction in state fiscal deficits
- More flexibility and reliability of energy and water services delivery
- More integrated utilization of energy and water resources

THANK YOU

Session: **Water and Energy**
Title: **The Water/Energy Nexus: The Benefits of Using Integrated Approaches to Address Water and Energy Supply and Demand**

Date: **Tuesday July 17 8:30 am**
Speaker: **Betsy Marcotte**

As concerns over the adequacy of both energy and water supplies increase, more attention is being focused on the *nexus* of water and energy supply and demand. The *nexus* represents a series of conditions that result from the interdependence of water and energy resources, and the role that each plays in the generation and use of the other.

In regions of the world where there are well-documented shortages of energy and water, there are significant opportunities for achieving savings in both resources through combined approaches that address the demand and supply of both water and energy.

This presentation will highlight those regions where the water/energy nexus is particularly relevant and describe in more detail the nature of the relationship between water and energy supply and demand in these regions. Generally, these are areas where water resources are in increasingly short supply and more and more energy is required to transport water longer distances or pump it from deeper aquifers. The amount of energy required to deliver these water resources is further increased through the use of old, inadequate infrastructure and inefficient water and energy management practices. In addition, the policy framework governing these transactions is inadequate to provide the right incentives to promote more efficient water and energy use. Significant benefits can be derived through integrated approaches that modify the policy framework and promote better management techniques for both resources.

Betsy Marcotte
Managing Consultant
Hagler Bailly

A vice president with Hagler Bailly, Ms. Marcotte, has over 25 years of experience in water policy, regulatory, and environmental analysis, training, public outreach and involvement, strategic planning, and project management. She currently manages Hagler Bailly's Integrated Water and Coastal Resources Management IQC for USAID, and from 1994 to 1998, she managed USAID's Environmental Pollution Prevention Project (EP3), which provided technical and institutional assistance to 17 countries in the areas of environmental management and industrial pollution prevention. Prior to joining Hagler Bailly, Ms. Marcotte managed several multi-year, multi-disciplinary contracts for USEPA in the areas of ground water protection, hazardous waste remediation, and facility permitting. She also managed a business unit engaged in the development and implementation of training and public outreach programs on a diverse set of environmental issues - from Superfund cleanups and hazardous waste siting to acid rain reduction and lead in drinking water.

Key Questions

Determine the key drivers:

How strong is the vicious cycle and what can be done to break it?

To what extent do WATER consumption practices adversely affect ENERGY consumption?

To what extent do ENERGY consumption practices adversely affect WATER consumption?

PA

Understand the Water/Energy Connection

Geography, hydrology, meteorology

Demographic features: urban/rural, rate of growth, economics

Sectors: domestic consumption, industrial use, agriculture

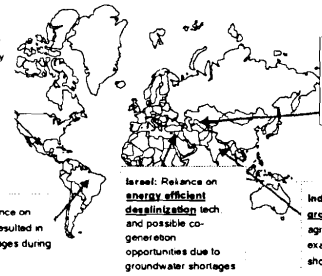
Institutional framework: prices, regulations governing use and protection

Quality of the resources

PA

Understanding Regional Challenges

Mexico: Topography requires much energy intensive pumping for the distribution of **municipal water** supplies



Central Asia: Upstream hydro power energy needs reduce supply for downstream **agricultural uses**

Brazil: Heavy reliance on **hydropower** has resulted in huge energy shortages during drought conditions

Israel: Reliance on **energy efficient desalinization** tech and possible co-generation opportunities due to groundwater shortages

India: A high reliance on **groundwater** and heavy agricultural use is exacerbated by energy shortages

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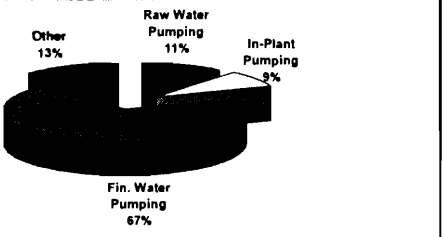
Energy Use in Water Treatment Plants



A water utility's energy costs typically range from 30-60% of its total budget

PA

Possible Implementation Interventions

- Strengthen institutions at local and national Levels
- Develop improved information management systems
- Promote local aquifer user groups
- Improve demand side management
- Strengthen agricultural extension services
- Promote the use of renewable energy
- Encourage energy efficiency in municipal water systems
- Support leak detection and repair
- Enact tariff and regulatory reform

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Possible Implementation Interventions

Possible Interventions	Political Risks	Institutional Risks	Org. Risks	Costs
Cross-sector policy reform	◐	◐	◐	◐
Water reform at the state level	●	●	◐	○
Transparent Info Systems	○	○	◐	◐
Local Aquifer user groups	◐	◐	●	◐
Cross-sectoral water energy swaps	○	◐	◐	◐

● Strong ◐ Moderate ○ Minimal

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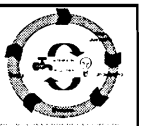

Design

Factor in the constraints with the opportunities

- Where and how can you Get the "biggest bang for your buck"?
- Where is the greatest need?
- What is the level of resources and timeframe?
- Where is there past experience / past success?
- Which jurisdiction level is most appropriate?
- Where is there a supportive institutional framework?

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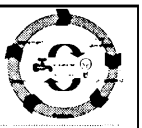

Implement

- Work at multiple levels but focus efforts at the local level
- Involve stakeholders in development and implementation
- Measure results
- Link on-the-ground results to policy change
- Look for opportunities to replicate

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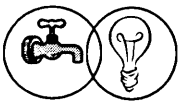

Conclusions

Solutions that address the integrated nature of water and energy are likely to be more effective.

- They address the whole problem rather than just certain aspects
- Opportunities for increased efficiency are much greater
- More protective of scarce resources in the long term

PA

Contact Information

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PA

PA Consulting Group

The Water Energy Nexus

Millennium Plus One: Integrated Water Resources Management in the New Century

Betsy Marcotte, PA Consulting Group

Agenda

- What is the water energy nexus?
- The vicious cycle
- Using integrated approaches to break the cycle
- Case studies
- Examining intervention options
- Conclusions

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The Water Energy Interface

Water is required for several phases of energy production and conversion

Energy is required to process and deliver water resources

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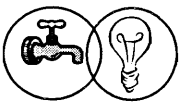


Exploring the Nexus

Water is key to energy production

- Large in-stream requirements for hydroelectric generation
- Cooling water needs for thermoelectric power generation
- Energy co-generation from wastewater treatment methane gases
- Streams and rivers as receiving water for wastes

Energy is essential to water delivery

- Groundwater pumping for agriculture
- Delivery of water for domestic use in rural and urban areas
- Delivery of water for industrial use
- Water and wastewater treatment

PA

The Vicious Cycle

Poor water management increases energy demand and energy supply problems encourage poor water management. These linkages become critical in the following circumstances:

Scarcity

- Water shortages can reduce energy production
- Limited power supplies can restrict water supplies for irrigation or other uses

Institutional Failures

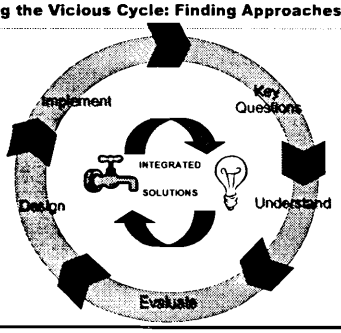
- Subsidized prices for water or power offer no incentive for efficient management or use
- No framework to protect or develop encourages exploitation

Inadequate Technology

- Poorly designed pumps waste water and energy
- Lack of funding for improvement and maintenance results in losses

PA

Breaking the Vicious Cycle: Finding Approaches that Work



PA

Session: **Water and Energy**
Title: **Municipal Water Efficiency: Maximizing the Benefits of Water and Energy Resources**

Date: **Tuesday July 17 8:30am**
Speaker: **Kevin James**

In their role as water providers for almost 50 percent of the world's population, municipal water utilities play a vital role in managing this often-scarce resource. As global urbanization continues, municipal water utilities have the complex task o cost effectively providing water to keep cities functioning. Limited energy resources, sparse freshwater supplies, and mounting environmental concerns often serve to make water delivery even more challenging.

Most water utilities in the world neither maximize the benefits of energy and water resources, nor minimize their negative environmental impacts. By creating and empowering comprehensive water efficiency management structures, municipal water utilities can be in a stronger position to cost effectively provide water services, ensure adequate energy supplies, and protect the environment.

Case Studies based on work done by the Alliance to Save Energy in Brazil, India and elsewhere highlight the water and energy efficiency opportunities for municipalities on both the supply-side (pumping, leak-reduction, O&M, etc.) and the demand-side (industries, residential, and commercial).

Kevin James
Director, Sustainable Cities Program
Alliance to Save Energy

Kevin James is the program manager for a portfolio that includes the Sustainable Cities Initiative and the Municipal Water Pumping Efficiency effort. These projects focus on capacity development at the municipal level and seek to create critical links between the public, private, and NGO sectors. The efforts underway engage each of these sectors by touting the multiple benefits of energy efficiency. By helping these sectors find common cause through energy efficiency, the Alliance mobilizes community wide activity to improve the environment, reduce electricity use and costs, and improve the provision of critical serves within the community.

Before coming to the Alliance, Kevin James worked for the US Environmental Protection Agency's Climate Wise Program. At the EPA, he worked to develop ties between the industrial sector and local and state governments focusing on the issue of climate change. By developing these links, municipalities have been able to promote community wide efforts to reduce greenhouse gas emissions at the same time they are reducing costs through energy efficiency. Kevin James successfully implemented this working model on both the domestic and international fronts.

ALLIANCE TO

SAVE ENERGY

20 Years of Leadership

Kevin James, Sustainable Cities Program Manager

Who is the Alliance to Save Energy ?

- NGO coalition of prominent business, government, environmental and consumer leaders who promote the efficient and clean use of energy worldwide to benefit the environment, economy, and national security
- Expertise in Building, Industrial, International, Financing, Utility, Policy, Market Development, and Education sectors
- 52 staff members with programs in U.S., Russia, Ukraine, Hungary, Romania, Bulgaria, Poland, Ghana, Mexico, Central America, Malaysia, Thailand, China, India and Brazil
- Over 70 Alliance Associates

Alliance Associates

3M
AFG Industries
Alliance for the Polyurethane Industry
American Gas Association
American Gas Cooling Center, Inc
Andersen Corporation
Armstrong International, Inc
AT&T Foundation
Battelle Pacific Northwest National Laboratory
BC Hydro
Brookhaven National Laboratory
California Energy Commission
Calmac Manufacturing Corporation
Cardinal IG
CertainTeed Corporation
City of Austin/Austin Energy
CMC Energy Services, Inc.
Dewey Ballantine
Dow Chemical
Edison Electric Institute
E-Mon Corporation
Energyguide.com
Enron
EPS Capital Corporation
Exelon Corporation
Fannie Mae Foundation
Gas Technology Institute
Geothermal Heat Pump Consortium, Inc
Great Lakes Window, Inc
Honeywell
IBM
Johnson Controls
Knauf Fiber Glass
Lawrence Berkeley National Laboratory
Lithonia Lighting
Johns Manville
Los Angeles Department of Water and Power
Maytag
Midwest Energy Efficiency Alliance
National Grid USA
National Insulation Association
National Renewable Energy Laboratory
New York State Energy Research and Development Authority
Nexant, Inc
North American Insulation Manufacturers Association
Oak Ridge National Laboratory
Ontario Power Generation
OSRAM SYLVANIA
Owens-Corning
PA Consulting
Pacific Gas and Electric Company
Plug Power
Polyisocyanurate Insulation Manufacturers Association
Public Service Company of New Mexico
Sacramento Municipal Utility District
Sempra Energy
Solar Energy Industries Association
Spirax Sarco
Swagelok
Tennessee Valley Authority
Texas A&M University Energy Systems Laboratory
Texas State Energy Conservation Office
The Trane Company
Washington Gas
Whirlpool Corporation
Xenergy, Inc.

What is Water Efficiency?

Water efficiency means cost effectively providing the consumer with the desired services associated with water while using the least amount of water and energy possible.

Why Water Efficiency?

- **Water Equals Energy**
- Environmental Benefits
  - Reduced strain on ecosystems
  - Reduced air pollution from energy

Air pollution produced per 1000 gallons treated in Austin, Texas:

Air pollution for Power use for Water and Wastewater Treatment Based on Austin Mix of Power Generation					
Pollutant	SO_2	NOx	Particulates	CO	CO_2
Grams/kWh*	1.58	1.22	0.13	0.16	540.0
Grams/1000 Gal.	6.2	4.8	0.5	0.6	2,277.3

*includes 7% line loss

Why Water Efficiency?

- Social Benefits
  - Lower water cost & improved service
- Economic Benefits
  - Often costs less to save a gallon of water than pump an additional gallon (i.e. Toronto efficiency = 1/3 cost of additional capacity)
- Future Water Supply Issues
  - Water Supplies being depleted faster than they can be replenished
    - The City of Ahmedabad in India is quickly running out of water supplies and needs to reduce waste in order to avoid major investment costs in new capacity. It has recorded a 7 foot/year average drop in the watertable.

What Role Do Municipalities Play?

- By 2020 over 50 percent of the population in developing countries will live in urban centers
- Currently only about half of urban dwellers in developing countries have water connections in their homes and over one quarter have no access to safe drinking water
- Low-income urban dwellers not connected to water systems often must turn to alternatives such as water vendors who can charge more than 16 times more than the formal piped water tariff
- Unaccounted-for water (leaks, theft, other water losses) in cities in many large developing countries amounts to more than 50 percent of supplies

What Can a Municipality Do?

- Create Management Infrastructure
- Expand Water Metering and Monitoring Systems
- Develop a Baseline and Metrics
- Carry Out Facility Assessments
- Establish Goals and Benchmark Success
- Develop an Action Plan for addressing waste
- Seek outside assistance
- Mobilize Community Action
- **Management and Leadership are Key**

Creating a Water Efficiency Team

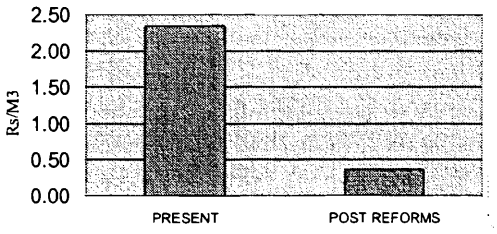
The Goals of a Water Efficiency Team are to:

- Increase the potential savings from water efficiency measures
- Organize efforts to improve water efficiency in the municipality
- Create a pool of technical know-how to identify and implement projects
- Pool pertinent data to best analyze water efficiency
- Create internal focus on water efficiency

Supply-Side and Demand-Side Opportunities

- **Supply-Side (& Industrial)**
  - **leaks**
  - **inefficient pumps and motors**
  - low c-value (high friction) for pipes
  - improper system layout
  - system over-design
  - incorrect equipment selection
  - old, outdated equipment
  - poor maintenance
  - wastage of usable water
- **Demand-Side**
  - Ultra-Low Flow Toilets
  - Toilet Dams or other water displacement devices
  - Low-Flow Showerheads
  - Efficient Faucet Aerators
  - Efficient Clothes Washers
  - Xeriscaping
  - Drip Irrigation

Cost of Pumping Pure Water (Kolhapur, India)



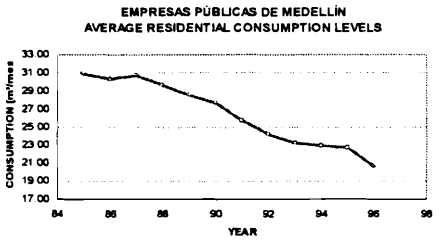
Demand-Side Policies

- Proper Pricing and Revenue Generation -The prices charged to customers should reflect as closely as politically possible the cost of providing the water
- Building Codes/Equipment Standards
- Tax Incentives

Rand Water Company, South Africa Comprehensive Demand-Side Program

- Promotion of water-saving devices such as dual-flush toilets and aerated showerheads.
- Establishment of Community Forums
- Establishment of Discussion Forums on topics such as education, environment, gardening, living, and water cycle management
- School conservation programs
- Development of Teacher Lesson Plans
- Design of Wastewater Kits
- Establishment of an Educational Water conservation website aimed at helping consumers save water in homes and gardens
- Domestic leak repair programs
- Reporting of leaks to local councils

Medellin, Colombia –Demand-Side Program



Beijing, China-Industrial Water Reuse

- Beijing initiated an effort to promote industrial water reuse
- From 1978 to 1984, the percentage of reused industrial water rose from 46 percent to 72 percent
- Metal refining, metal products, and chemicals achieved higher than 80 percent reuse
- Even though industrial output increased 80 percent during this time frame, water consumption actually declined slightly

The Sustainable Cities Program In Pune and Indore, India

Currently Pune & Indore are working with the Alliance to:

- Develop energy management teams
- Create a metering and monitoring system
- Assess the system-wide potential for energy and water savings
- Mobilize community-wide resources to participate in the development and implementation process of water-energy management strategy

Results

- Energy management cell and energy use tracking and monitoring system have been created in Pune and Indore
- Energy efficiency activities identified through this project in Pune at Cantonment Water Works total Rs.7 million (more than $150,000) with an average payback of 16 months and 4319 tonnes of CO2 avoided per year
- In Indore savings of over Rs.1.6 million have been identified for no investment cost & Rs. 3.1 million from improvement in monitoring and tracking of energy usage
- Indore created a Rs. 2 million budget line item for efficiency

For More Information

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Session: **Water and Agriculture: Water Quality and Quantity Impacts**

Date: **Tuesday July 17 10:30 am**
Speaker: **Frank Rijsberman, Director General, International Water Management Institute (CGIAR supported)**

Frank Rijsberman has 20 years experience as a natural resources planner in projects for fresh water resources, coastal zones, soil erosion, environmental management and climate change / sea level rise. He has gained his experience in projects in developed countries, economies in transition (Hungary, Poland) as well as developing countries (Afghanistan, Yemen, Egypt, Burkina Faso, Nigeria, India, the Maldives, Indonesia, Mexico, Turks and Caicos Islands, Netherlands Antilles, and Jamaica). Prof. Rijsberman has consulted for UNDP, UN-DTCD, World Bank, USAID, European Union, Inter-American Development Bank, ESCAP, the Netherlands Government, French Government and OECD. In 1987 Frank Rijsberman was one of three founders of Resource Analysis (RA), a private research and consulting firm in the Netherlands. He has been Managing Director of RA from 1992-2000. Resource Analysis has a professional staff of about 75 with offices in Delft (the Netherlands) and Antwerp (Belgium) and provides services in the fields of water resources management, coastal zone management, and environmental management. In recent years Frank Rijsberman has worked mostly in integrated water and coastal resources management, particularly the design of computer based decision support and communication systems (DSSs), used to facilitate stakeholder participation. He was appointed part-time professor at IHE in Delft in 1999. In water resources Frank Rijsberman has been involved in international developments on water policy since he co-authored one of the keynote papers at the Dublin Conference in 1992. He was a consultant to the Netherlands Government and the Global Water Partnership on international water resources management issues. In 1998 he was appointed Deputy Director of the World Water Vision Unit, the Secretariat of the World Water Commission, charged with the development of a World Water Vision by March 2000. He is a co-author, with Cosgrove, of the World Water Vision report and editor of the technical companion volume on scenarios.

Frank Rijsberman was appointed Director General of the International Water Management Institute, a CGIAR-supported research institute headquartered in Colombo, Sri Lanka, effective August 2000.

Session: **Water and Agriculture: Water Quality and Quantity Issues**
Title: **TMDL Development and Georgia Agriculture**

Date: **Tuesday July 17 10:30am**
Speaker: **Jeff Mullen**

Recently agricultural activities have become the target of perceptions, or some might say misperceptions. Agriculture is often portrayed as the country's most significant contributor of non-point source [NPS] pollution. Georgia's agricultural community is attempting to use recent debates over proposed swine facilities and confined animal feeding operations as an opportunity to increase partnerships between, and within, natural resource management individuals, groups, and agencies across the State. One aspect of this cooperative effort has been the development of a methodology for assessing agricultural contributions to water quality impairments, which is introduced. While agricultural operations can represent a potential environmental threat, the results of applying this methodology, to date, suggest that individuals, groups, and agencies assessing the source of water quality impairments in watersheds where agriculture exists should consider four foundational characteristics before quantifying agricultural non-point source pollution.

Jeff Mullen
Assistant Professor, Department of Agricultural and Applied Economics
College of Agricultural and Environmental Sciences, University of Georgia

Mr. Mullen has conducted research pertaining to federal wetlands policy, the environmental and human health benefits of reducing pesticide use, returns to public investment in agricultural technologies, bio-economic modeling, and optimal enforcement of environmental regulations. He is also involved in testing fundamentals of economic theory with experimental methods. He has worked in Ghana, Mali, Israel, and the United States.

Mr. Mullen earned a PhD. and M.S. in Agricultural and Applied Economics from Virginia Tech, and a B.S. in Economics from Northwestern University. In July of 2000, he joined the faculty of the University of Georgia where he teaches courses in natural resource/environmental economics, in addition to his research responsibilities.

Morocco: Drarga Wastewater Treatment and Reuse Project

July 19, 2001

- Morocco is projected to become a water deficit country by 2020
- Some areas of Morocco are already experiencing severe water shortages
- The Souss-Massa region in southern Morocco is under significant water stress

- Drarga is a rapidly expanding town in the Souss-Massa (population 8,000)
- The town of Drarga has built potable water and sewage collection systems
- Raw wastewater was released untreated in nature, creating cesspools

Objectives

- Treat the domestic sewage of Drarga
- Reuse the treated effluents for irrigation
- Implement a technology adapted to the Moroccan context
- Recover the operation and maintenance costs of the plant
- Demonstrate a model of institutional partnership

Project Steps

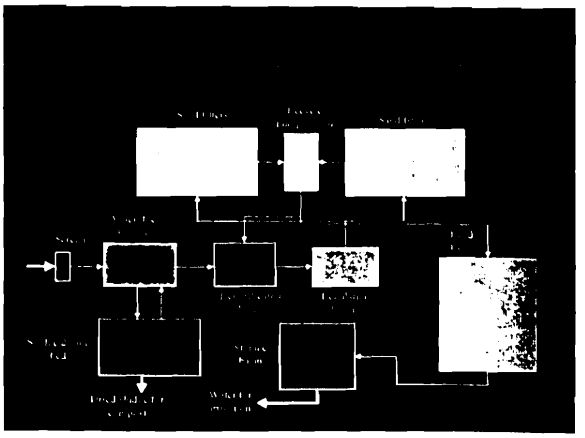
- 1997 : Feasibility study
- 1997 : Environmental impact assessment
- 1998 : Signature of a collective agreement
- 1998 : Observational study tour in the U.S.
- 1998 : Plant design
- 1999 - 2000 : Construction
- October 2000 : Inauguration

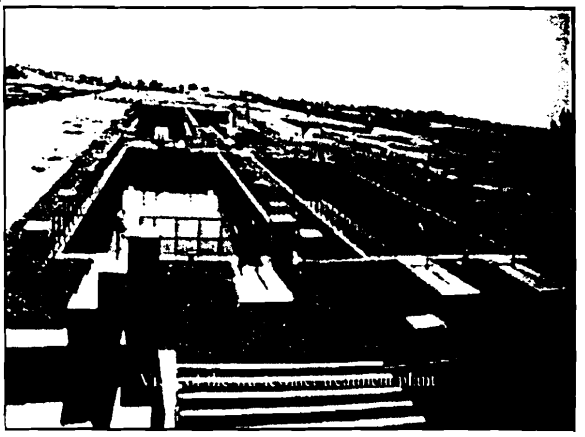
Institutional Partnership

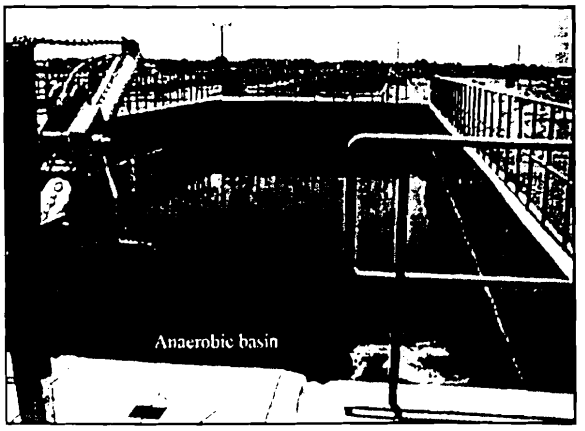
- Collective agreement signed between project partners:
  - Moroccan Ministry of Environment
  - WRS project (USAID financing)
  - Wilaya of Agadir
  - Commune of Drarga
  - ERAC-Sud
- Technical monitoring committee

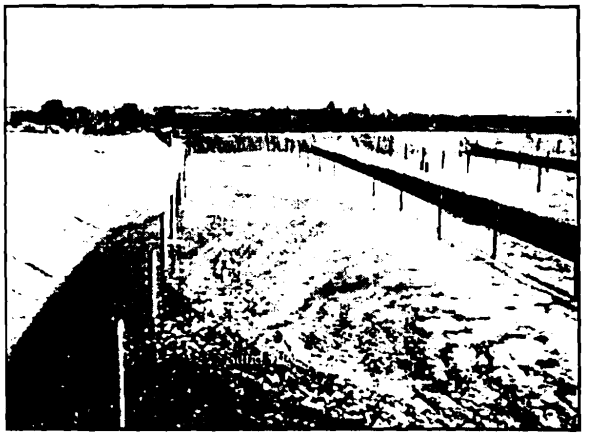
Plant design

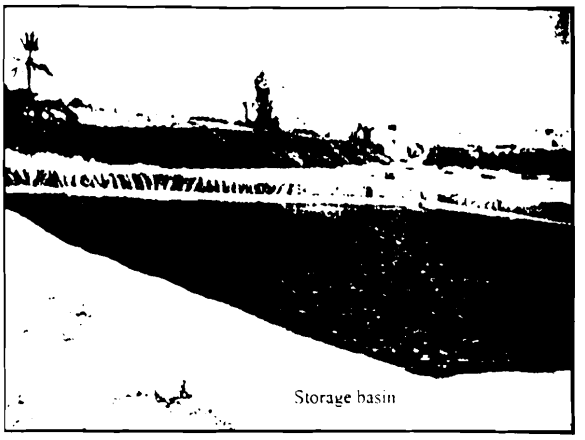
- Treatment capacity : 1000 m^3 / day
- Recirculating sand filtration system
  - Primary treament: anaerobic basins
  - Secondary treatment: sand filters
  - Tertiary treatment: reed beds
- Residual sludge drying beds
- Treated effluents storage basin



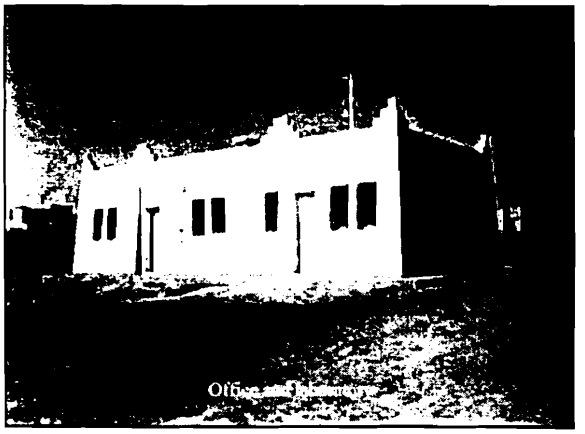


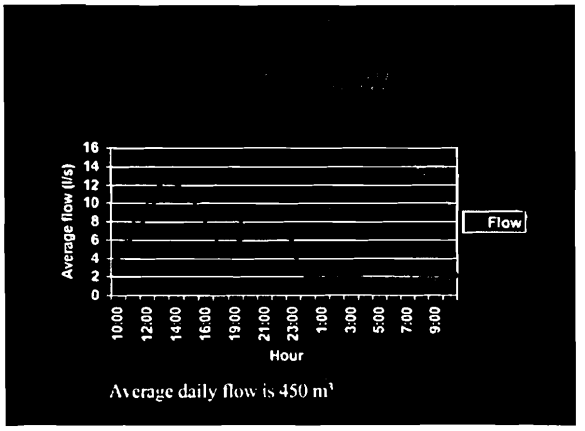






Storage basin

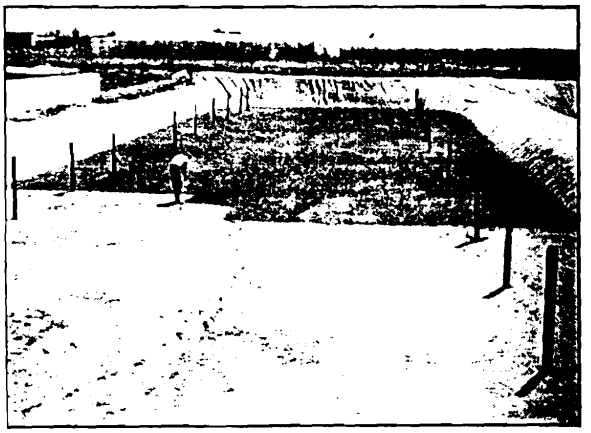




Average daily flow is 450 m³

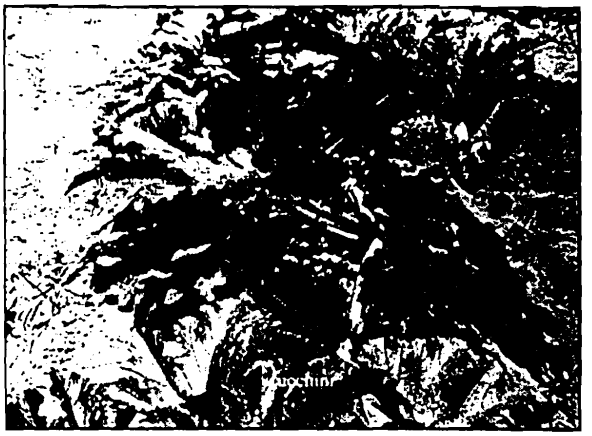
Indicator	BOD_5 (mg/l)	COD (mg/l)	TSS (mg/l)	NTK (mg/l)	Fecal Coliform (mpn/l)
Entrance	625	1825	651	319	6.3×10^6
Standard	< 30	N.A.	< 30	N.A.	< 1000
Exit	10	75	3.9	10.2	< 500

- The project cost is $2 million
  - Studies : $300,000
  - Design : $200,000
  - Construction : $800,000
  - Equipment : $500,000
  - Transportation : $200,000
- Operating costs : $3,000 per month



- Methane gas is recovered from the anaerobic basins and converted to energy
- Treated wastewater is sold to farmers for irrigation
- Reeds are harvested and sold
- Residual sludges will be dried and used with organic solid wastes from Drarga to make compost

- Treated effluents are sold to farmers through a water users association
- Treated effluents contain fertilizer elements (potassium, phosphorous)
- The price of the treated wastewater is competitive with alternative water sources



- The town of Drarga has full sewage treatment
- There is more water available for irrigation
- Crop yields have increased and farmers are saving on fertilizer applications
- Property values in Drarga have increased
- The project has generated a lot of interest from other localities in adopting similar technologies

- The Drarga wastewater treatment and reuse project is demonstrating the use of non-conventional water sources in a water scarce environment
- This project and the lessons learned from it can serve as a useful model for replication of similar technologies and approaches in many areas

Integrated Planning and Management for Sustainable Coastal Mariculture

James Tobey
Coastal Resources Center
University of Rhode Island
http://crc.uri.edu/

Mariculture Project Partnerships USAID/CRMP

- Ecuador Coastal Management Project
- Indonesia, Lampung Province
- Tanzania Coastal Management Partnership
- Mexico, Gulf of California
- Central America

Mariculture Management
Key Characteristics

- Straddles boundary between land and sea
- Resource (land, water) jurisdiction and ownership are complex or ambiguous
- User conflicts
- Intersectoral
- Resource dependent
- Cumulative and additive impacts

These Characteristics Imply:

- Need for planning and management of the sector by government in collaboration with producers
- Need for integrated and strategic interventions (rather than reactive and uncoordinated) to allocate and use resources more equitably and efficiently

Integrated Mariculture Management

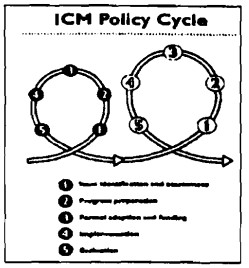
- A wide range of **stakeholders**, with differing values, dealing with a wide range of development issues
- **Multidisciplinary** analysis and synthesis of complex technical, social, economic and ecological information
- Cross-links between institutions and coordination between sectoral **policies**

Integrated Mariculture Management

- Correspondence between local, regional and national level policies--**vertical integration**
- Overcoming **institutional and political barriers** to integration
- Greater integration ➡ increased **complexity**
- **Decision-making** is likely to be slower and more difficult as the degree of integration increases

Steps in the ICM Policy Cycle

- Issue identification and assessment
- Planning and preparation
- Formalization and adoption
- Implementation
- Evaluation



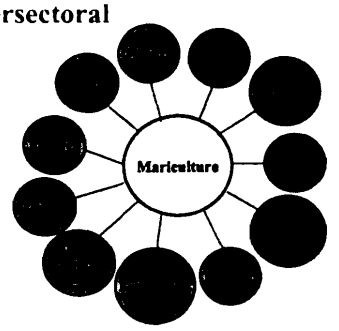
1 Issue Identification and Assessment

- Identify the means/mechanism and level of planning
- Build trust, involvement and commitment of key stakeholders
- Define goals and objectives
- Learn about the development context and development options--Issue Profile

Mariculture

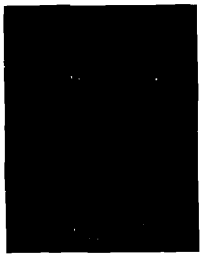
- ***Start to chisel away at sectoral walls on day one ... make friends not foes.***

Intersectoral



Issue Profile: development context and options

- Stakeholder analysis
- Institutional analysis—structure, roles, resources, planning and coordinating mechanisms
- Review of policy and legal frameworks –including land tenure and resource use policy and regulations



- Description and mapping of resource base
- Technical review of mariculture sector –compositon, structure, technology
- Market assessment
- Human resources, capabilities, needs and values

Tools

- Rapid rural appraisal
- Interactive working group approaches
- Stakeholder and institutional analysis
- SWOT analysis/Force-field analysis
- Policy environment mapping
- Participatory resource assessment
- Coastal atlas

Tanzania Mariculture Issue Profile Findings

- Policy Gaps- no one policy covers all topics and combined policies still incomplete
- Institutional roles and responsibilities
  - unclear
  - conflicting
  - overlaps

Issue Profile Findings
Environmental Management Capacity

- General EIA guidelines developed, but not legally adopted
- EIA not specific for mariculture
- Patchy environmental standards
- Little surveillance or enforcement
- Lack of land use planning

Issue Profile Findings
Mariculture Development

- Research and extension institutions act in isolation
- Extension capacity weak
- No long-term plan for development
- Development priorities not identified
- No criteria for species or site use and management

Issue Profile Findings
Institutional Capacity

- Permitting pathway is not clear
- Policy incomplete or conflicting
- Institutional roles unclear, overlaps
- Lack of mechanisms for coordination and communication
- Disconnect between levels of government

Success Factors in Planning Processes

- Responsiveness to beneficiary needs--high degree of *fit* between program design, needs, and capacities
- Strategic--select issues carefully and set boundaries on the scope of change
- Clearer information and better information exchange
- Participation and improved decision making process

Project Tailoring

Complexity ↑

Type 1 High Complexity Low Capacity	Type 3 High Complexity High Capacity
Type 2 Low Complexity Low Capacity	Type 4 Low Complexity High Capacity

Capacity →

Pematang Pasir

Actions to increase knowledge, participation, and capacity

- Community profile
- Study tour and environmental education
- ICM training
- Mangrove committee
- Community self-reliance group
- Partner with local NGO to build capacity
- Demonstration pond

2 Planning and Preparation

- Identify development priorities (consultation, communication, participation, visioning)

Institutional strengthening and capacity building

- Clearly delineate institutional roles, responsibilities, and legal mandates
- Intersectoral mechanisms--consultation, communication and coordination between agencies and between agencies and other stakeholders
- Procedures for the exchange of relevant information between different interests

Permitting and development guidelines

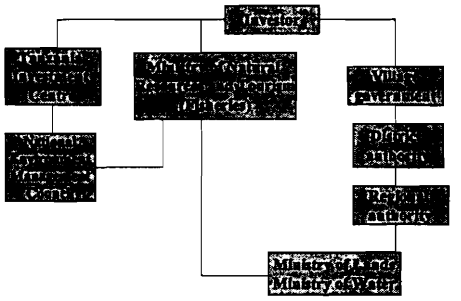
- Clarify permitting pathway— project appraisal, permit approval and EIA procedures
- Criteria for environmental impact assessment
- Resolve policy gaps
- Site selection guidelines

Permitting and development guidelines

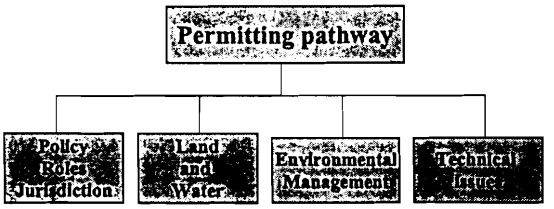
- Guidelines on land and water tenure and use
- Guidelines on appropriate species, culture technology and disease control
- Monitoring, reporting, assessment and response protocols

Tanzania: Permitting pathway and development guidelines as focus area

Permitting Pathway 1998



Clarifying and harmonizing permitting pathway



Planning and management actions

- Training, research and extension
- Land use planning and zoning
- BMPs
- Markets and labelling
- Regulatory instruments
- Economic instruments and incentives
- Infrastructure development

Experiences with Best Management Practices in Central America

Maria C. Haws
Pacific Aquaculture and Coastal Resources Center
University of Hawai'i at Hilo

Ten Years of Experience

From preliminary research to implementation

Objectives of this presentation

- Share present and past experiences with Best Management Practices
- Explicitly describe management tools used
- Lessons learned
- Recommendations for future efforts

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Contributions of Shrimp Farming in Central America

- Employment
  - 12,000 direct, 22,000 indirect (Honduras)
  - 700 direct participants in cooperatives (Nicaragua)
- Export earnings
  - $136 million, 25 million pounds, Honduras 1999 = #2 export
  - $21 million, 6.6 million pounds, Nicaragua 1999 (↓ 25% pre-Hurricane)
- Yield: 700-3,500 lb/ha $1,400-$7,000 gross (vs. $210-1,050 for corn)

Best Management Practices (BMPs)

- Practices or behaviors that:
  - Improve ecosystems management
  - Optimize production systems
  - Promote sustainable production
  - Improve quality of life

Characteristics of BMPs

- Represent the best scientific and empirical knowledge available
- Must be continually examined, tested and revised (research and evaluation)
- Provide guidance, yet flexibility for managers
- Encompass: technical, social, economic themes

Voluntary adoption

- Pro's
  - Industry has technical capacity
  - Industry self-regulation more likely to be rapid
  - BMPs provide incentives for adoption
  - Industry can rapidly assess and modify BMPs
  - Stability
- Con's
  - Implementation may require capitalization
  - Cooperation of other sectors
  - Discordance with regulations
  - Requires industry wide agreement
  - Non-compliance

Regulatory aspects

- Pro's
  - BMPs may be more appropriate than complex permitting pathways
  - More current and flexible than regulations
  - Offer more flexibility for management than traditional regulations
  - Enforcement may be required in case of non-compliance
- Con's
  - BMPs provide guidance, not absolutes
  - Government may have lower technical capacity
  - Corruption
  - Governments often unstable
  - Lack of enforcement capacity

BMPs are most effective when government, industry, universities and NGO's work together for:

research
testing
extension
adoption
evaluation
enforcement

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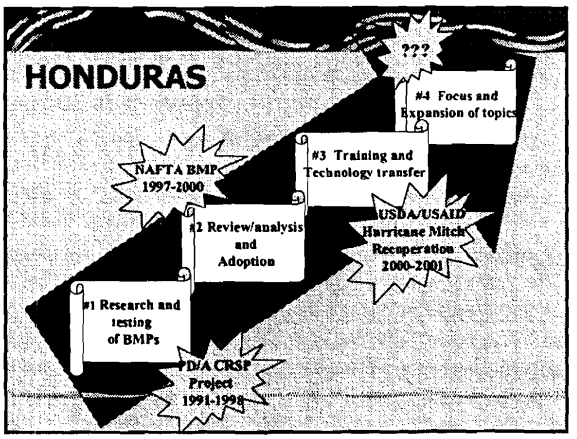
Benefits of BMPs

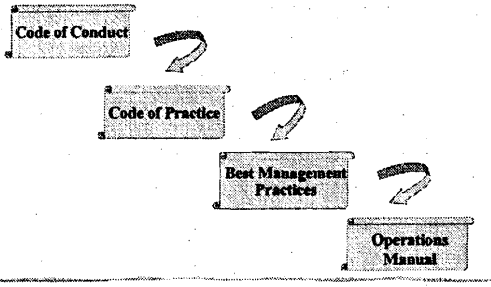
- Protect the environment
- Increase production efficiency vs. increasing volumen of production
- Lower production risks
- Increase technical capacity
- Increase institutional capacity
- Improve data base for making management decisions

The case of BMPs in Central America

Application of ICZM tools to production and management issues



Steps for improving practices



#1 Research and Testing of BPMs

- Identify critical points in production system
- Research to evaluate management options
- Determine relationship between production and environment
- Monitor environmental parameters
- Economic analysis

Pond Dynamics/Aquaculture Collaborative Research Support Program 1992-1999

- Universidad de Auburn (USAID)
  - Dr. Claude Boyd
  - Dr. Bartholomew Green
  - Dr. David Teichert-Coddington
- ANDAH, Secretaría de Agricultura y Ganadería (SAG)

Achievements

- Water Quality and Pathology laboratories
- Ecosystem and farm monitoring programs
- Research on management alternatives (feeding, fertilization, water exchange, seasonal variations)
- Data base for decision-making
- Began adoption process for BMPs
- Partial sustainability of initiatives

#2

Review and Analysis of experiences/ Adoption

- Review of research results and past experiences:
  - **Industry**
  - **Scientists and technicians**
  - **Environmentalists**
  - **Regulators and other stakeholders**
- Confirm feasibility of recommendations under local conditions
- Formal adoption by stakeholders

Good Practices for the Honduras Shrimp Industry 1997-2000 Hemispheric Free Trade Initiative

- Coastal Resources Center, University of Rhode Island
- Claude Boyd and Bartholomew Green, Auburn University
- ANDAH

Achievements

- Report on potential impacts of industry in LAC
- Set of BMPs in limited technical areas adopted and published
- Survey of industry practices and compliance with BMPs
- Environmental improvement committee
- Technical assistance for small producers to promote implementation of BMPs
- Continuation with funds from USAID/USDA

#3 Training and technology transfer

- **Practical and intensive training for:**
  - **Producers**
  - **Extension Agents**
  - **Academics**
  - **Resource Managers**
- **Strengthen capacity for extension and support services**
- **Facilitate transfer of technology**
- **Write and produce operations manuals and extension materials**
- **Produce and monitor changes in practices**
- **Plans and strategies for future extension efforts, water quality monitoring, biosecurity**

USAID/USDA Aquaculture Projects

Capacity building for shrimp farming industry in Central America

- **Goal: Improve animal health and product safety**
- **3 projects:**
  - ***AQ-1*** **Training of trainers in BMPs**
  - ***AQ-2*** **Pathology and diagnostic techniques for laboratories**
  - ***AQ-3*** **Design of water quality programs and analytical laboratory techniques**

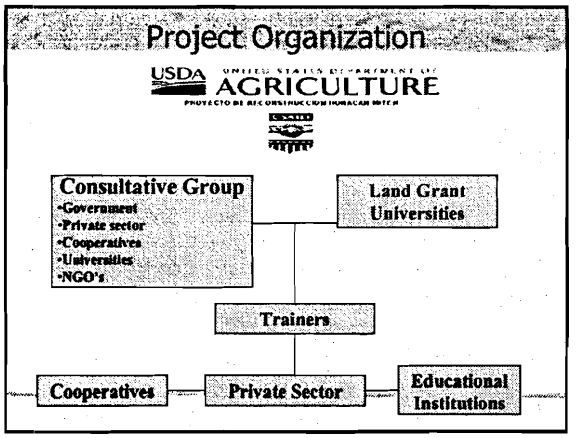
AQ-1 Project

Curriculum and Training Development for Small and Medium Shrimp Producers with Emphasis on Best Management Practices to Guide Post-Hurricane Mitch Recuperation

- Training of Trainer Courses in BMPs
- Replicate courses for producers
- Direct technical assistance for producers
- Manual of BMPs
- Extension materials
- Extension plans and strategies

Project Organization

USDA AGRICULTURE



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Technical Advisors and themes

Especialista	Institución
Claude Boyd	Auburn University
Donald Lightner	University of Arizona
Carlos Pantoja	
Carole Engle	University of Arkansas at Pine Bluff
Granvil Treece	Texas A&M
Steve Otwell	University of Florida
Emilio Ochoa	Ecocostas
Marco Alvarez	
Maria Haws	University of Hawaii at Hilo
James Tobey	Coastal Resources Center, University of Rhode Island

BMP Training Topics

- **Water and Soil Management**
- **Biosecurity and Pathology**
- **Aquaculture Economics**
- **Financial Administration and Business Management**
- **Site selection**
- **Pond construction**
- **Pond management**
- **Food safety and quality**
- **Extension methods**
- **Environmental protection**

AQ-1 Project Results

- 50 Trained trainers
- 2 active consultative groups
- Inter-institutional technical cooperation agreement
- Courses replicated
- Extension materials
- BMP manual
- Interactions between trainers and producers facilitated
- Extension plans and strategies
- Preliminary changes in practice documented

Changes in practices

- Monitoring and assessment currently being conducted
- Replication of training proceeding
- Changes in attitude detected
- Increased support to producers
- Some changes in practice reported:
  - ***Increased awareness of relationship between shrimp farming and environmental protection***
  - ***Lower water exchange***
  - ***Lower feeding rates and better food conversion ratios***
  - ***Increase water quality monitoring in ponds***
  - ***Some biosecurity measures implemented***
  - ***Ponds and infrastructure being renovated***

Changes in practices

- More time for outreach required
- Extension agents need more institutional support, incentives and resources
- Issues go beyond technical topics, i.e. public health, regional planning, enforcement
- Environmental problems are global-require regional and inter-sectoral cooperation.

#4 Focusing and expansion of topics

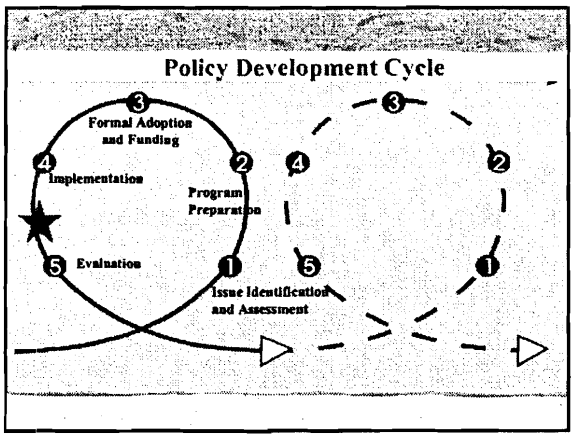
(next steps)

- Work towards fuller implement BMPs
- Strengthen extension component
- Institutional capacity to support implementation (e.g. laboratory services, education, finance)
- Work with other sectors
  - ***Alleviate their impacts on shrimp sector***
  - ***Shrimp BMP work as a model approach***

#4 Focusing and expansion of topics
(next steps)

- Continue developing integrated plans at farm and industry level
  - Biosecurity systems
  - Inter-institutional extension efforts
  - Regional resource use and management
- Focus on other themes:
  - Business management, marketing, socioeconomic topics
- Link to ICZM efforts

TOOLS and LESSONS



CREATE PARTNERSHIPS

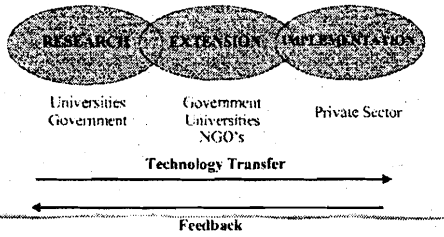
Link international and national experience and knowledge

Bi-national linkages

Create linkages within nations:

between sectors
professional networks
between levels of government
between institutions

Work towards a permanent program of collaborative research and extension program



Applied Research is critical

- Directed and appropriate
- Target specific management questions or issues
- Science-based recommendations
- Continual monitoring and assessment of BMPs
- Refinement and re-testing

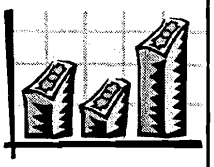
Results of BMP Implementation

Long term monitoring to assess results and determine future directions

Environmental
Social
Economic

Cost/benefit analysis and effects on management

- What do BMPs cost to implement?
- Are there financial incentives?
- Are there differences between large and small farms?
- Which combinations of management practices work best?



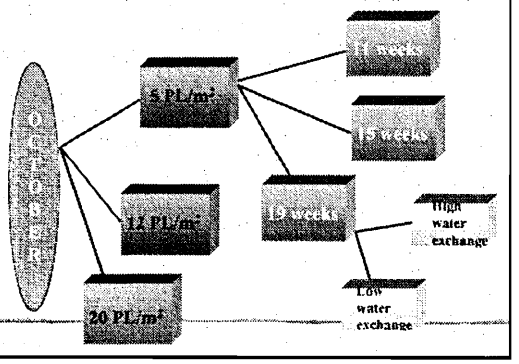
Results of BMP implementation

- Long-term monitoring to assess impacts
  - Environmental
  - Social
  - Economic
- Feed back mechanisms

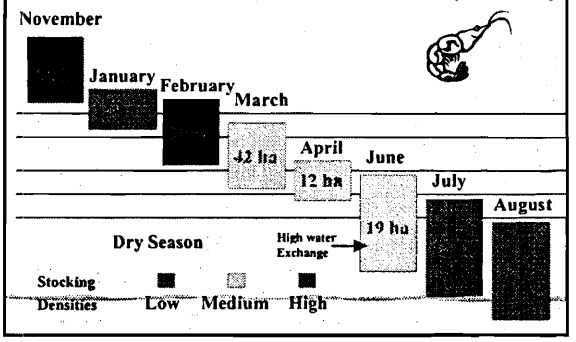
Optimization model-Engle y Valderrama

- Objective: **Develop an annual plan of management activities to maximize income for three sizes of shrimp farm.**
- Strategy: **the model evaluates 18 management scenarios for each month including:**
  - **Three stocking densities**
  - **Three durations of production c,**
  - **Two water exchange regimes**

Dry Season (October - March)



Optimal plan for management activities for small farms (73 ha)



Collaborative Working Groups

- Provide interdisciplinary capacity to guide work
- Improve communication within and between institutions
- Provide high level support for on the ground activities and personnel
- Technical capacity for tasks
- Leadership for other initiatives

TIME and RESOURCES

Industry success and sustainability depends on:

Support services (e.g. laboratory services)
Biosecurity systems
Environmental monitoring
Applied research
Permanent extension capacity
Supportive policy and legal framework
Financing
Regional planning

Training is directed and trainees enabled

- Aim for multiplicative effect
- Select according to merit and commitment
- Institutional support required
- Interdisciplinary
- Inter-sectoral
- Knowledge AND skills acquired
- Interactions with target group facilitated

Acknowledgements

- USAID and USDA
- Central American University, Nicaragua (UCA)
- Association of Honduran Aquaculture Producers (ANDAH)
- Land Grant Universities: Auburn, Texas A&M, Universities of Arizona, Rhode Island, Florida

Additional talking points

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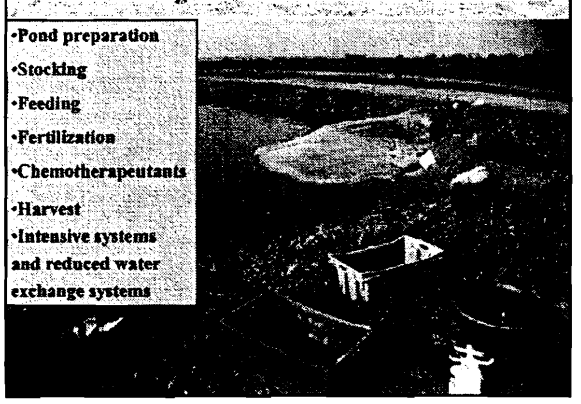
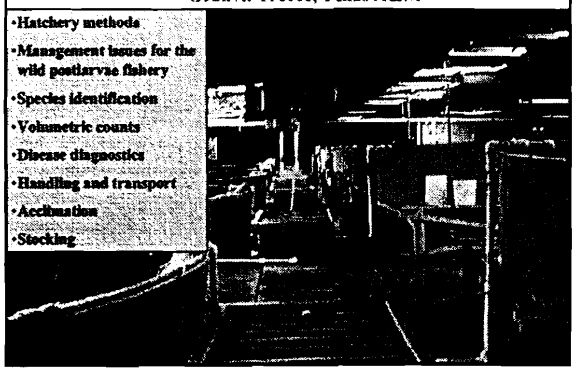
Pond Management-Dr. Granvil Treece, Texas A&M

- Pond preparation
- Stocking
- Feeding
- Fertilization
- Chemotherapeutants
- Harvest
- Intensive systems and reduced water exchange systems



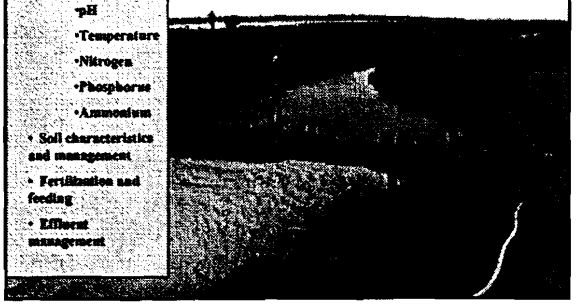
Hatchery methods and postlarvae handling-Dr. Granvil Treece, Texas A&M

- Hatchery methods
- Management issues for the wild postlarvae fishery
- Species identification
- Volumetric counts
- Disease diagnostics
- Handling and transport
- Acclimation
- Stocking



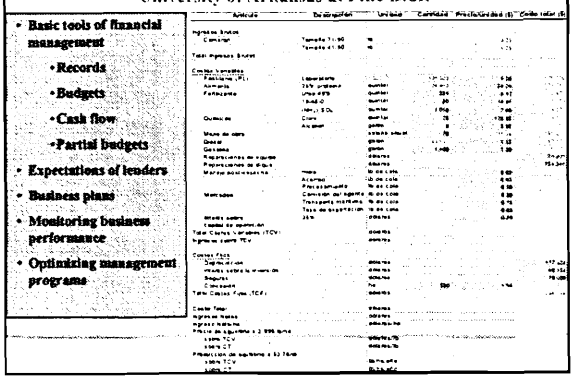
Manejo de Calidad de Aguas y Suelos-Dr. Claude Boyd, Auburn University

- Basic water quality parameters
  - Salinity
  - pH
  - Temperature
  - Nitrogen
  - Phosphorus
  - Ammonium
- Soil characteristics and management
- Fertilization and feeding
- Effluent management

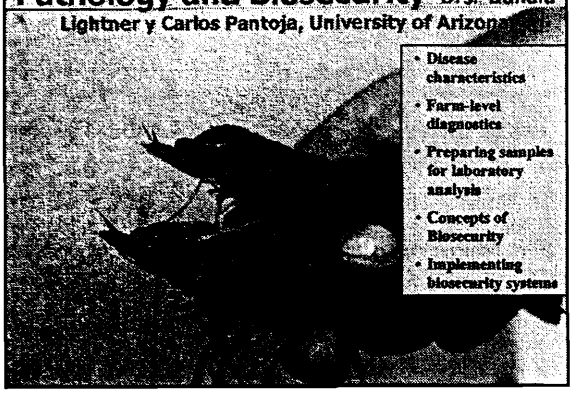


Financial and Business Management-Dra. Carole Engle, University of Arkansas at Pine Bluff

- Basic tools of financial management
  - Records
  - Budgets
  - Cash flow
  - Partial budgets
- Expectations of lenders
- Business plans
- Monitoring business performance
- Optimizing management programs



Pathology and Biosecurity-Drs. Donald Lightner y Carlos Pantoja, University of Arizona



- Disease characteristics
- Farm-level diagnostics
- Preparing samples for laboratory analysis
- Concepts of Biosecurity
- Implementing biosecurity systems

Calidad e inocuidad del producto-

Dr. Steve Otwell y Laura y Victor Garrido- University of Florida

- Market requirements
- Pre-harvest techniques
- Post-harvest techniques
- Regulatory requirements
- Microbiology
- Chemicals and other treatments
- Processing
- Distribution
- HACCP

Extension Methods-Emilio Ochoa y Dr. Marco Álvarez, Ecocostas, Ecuador

- Basic concepts and principals of extension
- Models of extension programs
- Characteristics of adult education
- Planning extension programs and campaigns
- Extension and outreach techniques
- Demonstrations and practices

AIWPS® Technology:
Sustainable Wastewater Management

USAID
Environmental Officers
Training Workshop
Millennium Plus One:
Integrated Water Resources Management in the New Century
July 15-21, 2001
Cumberland, Maryland USA

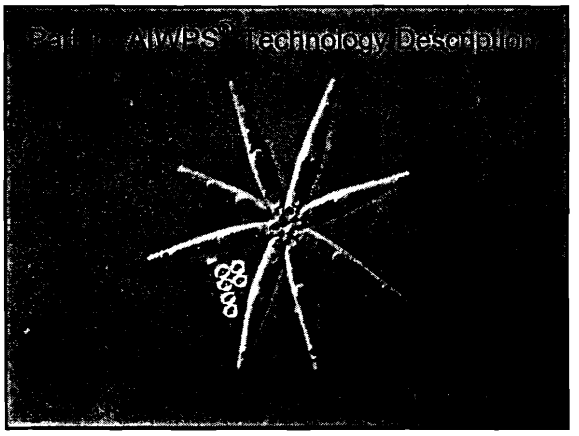
Franklin Bailey Green, Ph.D.
OSWALD GREEN, LLC
Engineers, Scientists, Planners
Kensington, California, USA

OUTLINE

Part 1. AIWPS® Technology

Part 2. Performance Efficiencies

Part 3. Energy and Cost Savings



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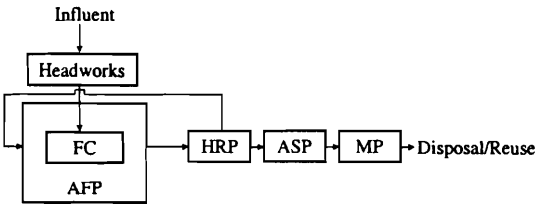
AIWPS® TECHNOLOGY COMPONENTS

- Headworks (screening, grit removal, flow measurement, influent pumping, flow distribution)
- Fermentation Cells (FCs)
- Advanced Facultative Ponds (AFPs)
- High Rate Ponds (HRPs)
- Algal Settling Ponds (ASPs)
- Maturation Ponds (MPs)
- Algae Drying Beds (ADBs)
- Dissolved Air Flotation (DAF) optional for advanced tertiary treatment

AIWPS® PROCESS SCHEMATIC For Secondary Treatment

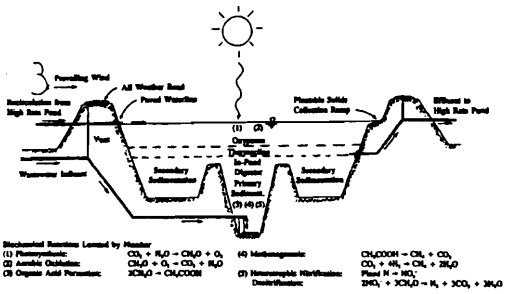


AIWPS® Advantages

Complete Methane Fermentation
Photosynthetic Oxygenation
Superior Effluent Quality
Low O&M Costs
Energy Efficiency
Land Use Efficiency
Environmental Enhancements
Sustainability

Complete Methane Fermentation

- Primary solids settle removing at least 60% of the influent BOD in the first stage of treatment
- Parasite ova are removed
- Heavy metals are reduced and retained in FCs
- No sludge residuals to handle and dispose
- Potential for maximum methane recovery to offset the minimal energy requirements for primary and secondary treatment

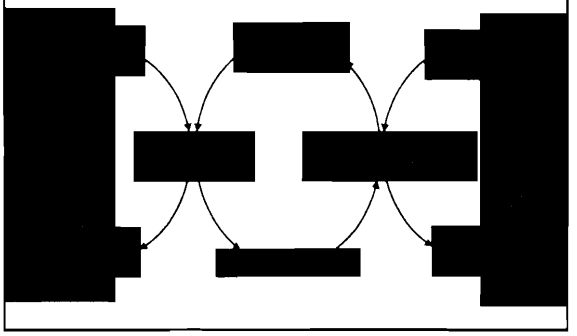


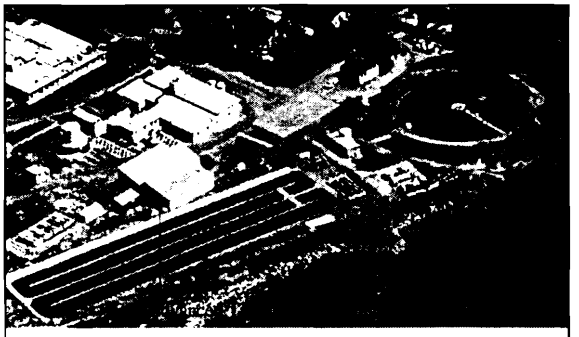
Cross section of an Advanced Facultative Pond

Photosynthetic Oxygenation

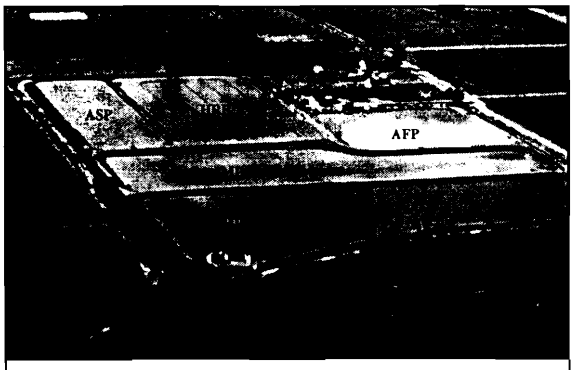
- Supersaturation of dissolved oxygen (20-30 mg/L daylight DO concentration in HRPs)
- Odor control in AFP by recirculation
- Less than 25% of the energy used in mechanical aeration systems
- Less equipment and hence less maintenance and spare parts

Symbiosis in the AIWPS® Process





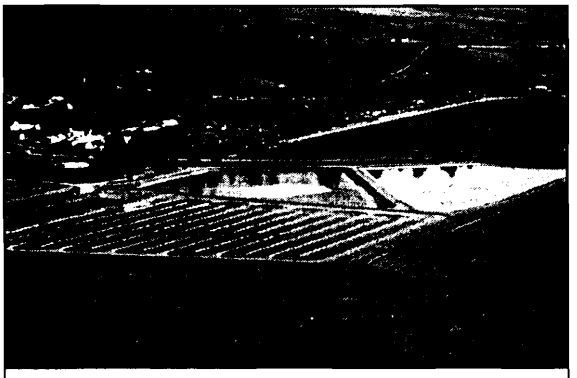
AIWPS® Demonstration Facility
Richmond, California



St. Helena AIWPS® Facility

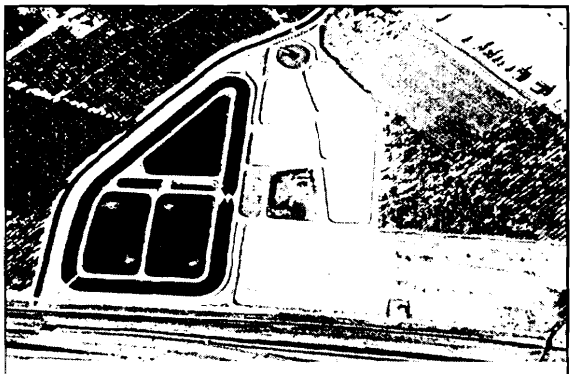
Bolinas AIWPS® Facility

Napa AIWPS® Facility



AIWPS® Facility at Hollister, California

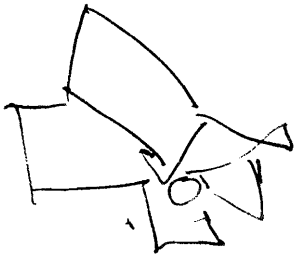
Ridgemark AIWPS® Facility



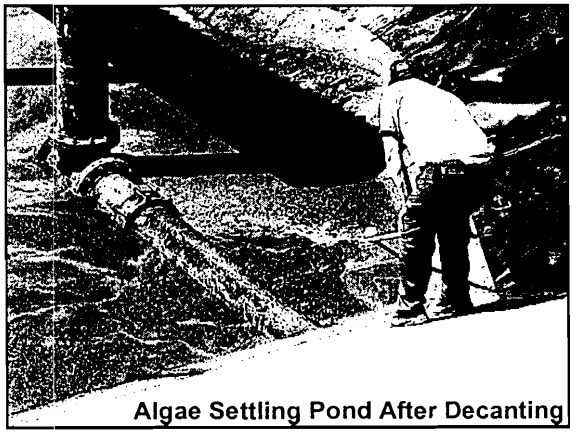
Delhi AIWPS® Facility

Aspirating Aerator on AFP

Paddle Wheels at Delhi, California



High Rate Pond Paddle Wheel



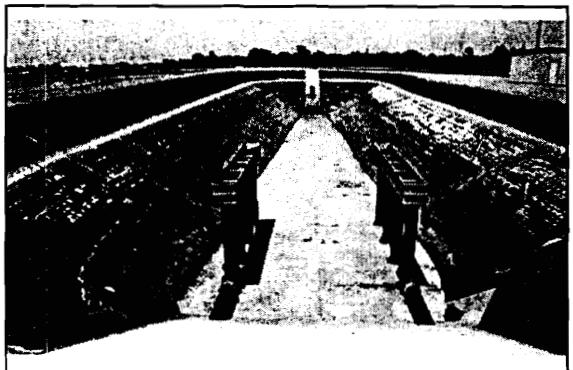
Algae Settling Pond After Decanting

Algae Settling Pond

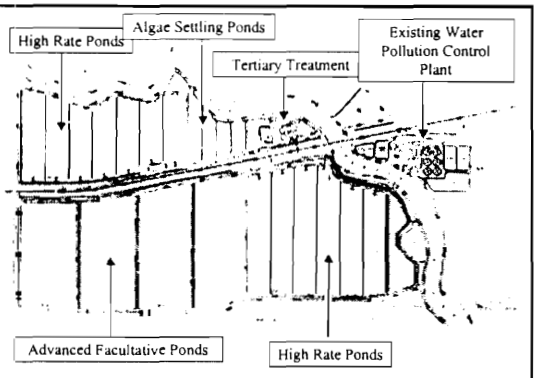
Tertiary Treatment

will have

Bio-HOCS



Algae Settling Pond



AIWPS® Retrofit Design for Stockton, California

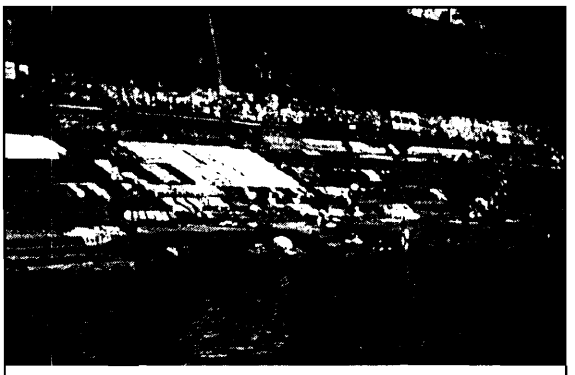
68s acres / 8000 ponds

passive
shallow
protozoa by

Motorcycle
customs

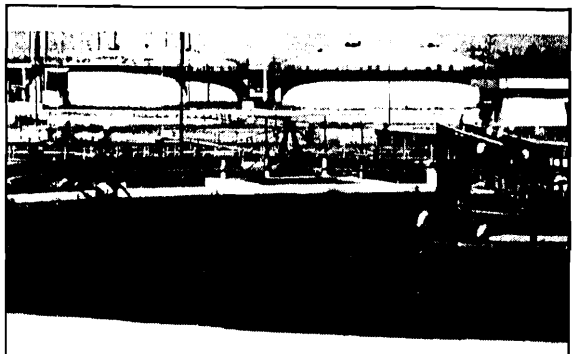
Dashashwmegh Ghat, The Ganges at Varanasi

Rajendra Prasad Ghat at Varanasi



Varanasi, India

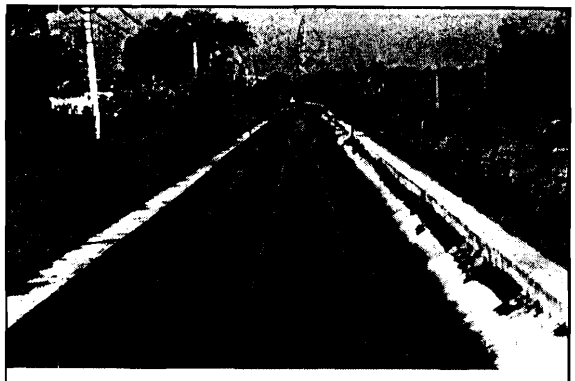
Water Supply Pump Station on the Ganges at Varanasi



Dinapur Activated Sludge Plant

50 MPd

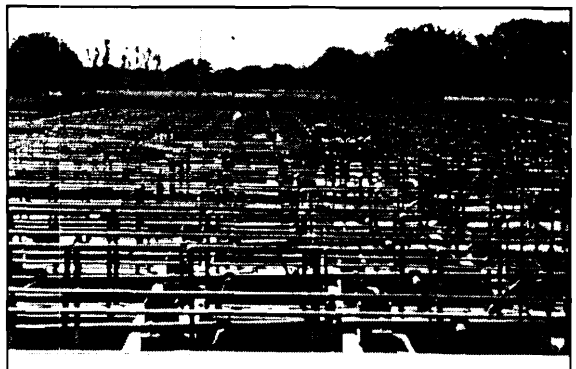
for treatment



Dinapur Effluent Channel

effluent channel

parallel to influent



Mirzapur UASB Treatment Plant

Potash designed

Upflow anaerobic UB

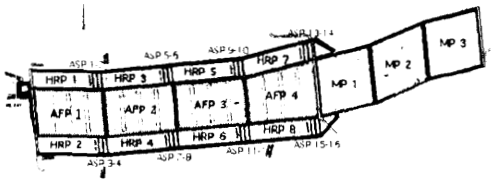
primary treatment

old channel also

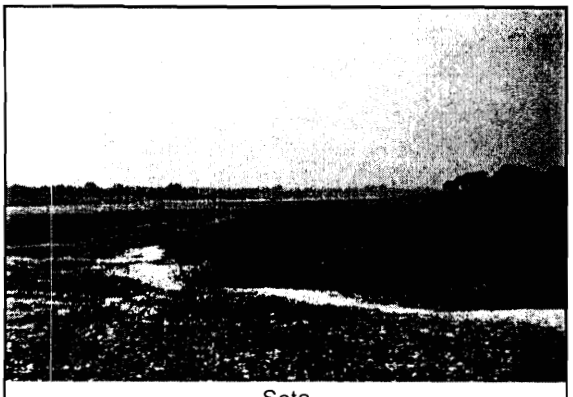
later applicable

as proposed

250



250 MLD AIWPS® Facility
Proposed for Varanasi under GAP-2 at Sota



Sota

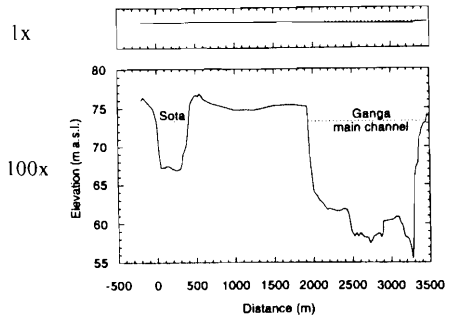
Sota

Sota

Expected Effects of Closing the Sota Channel on Flood Stage and Bank Erosion of the Ganges River near Varanasi, Uttar Pradesh

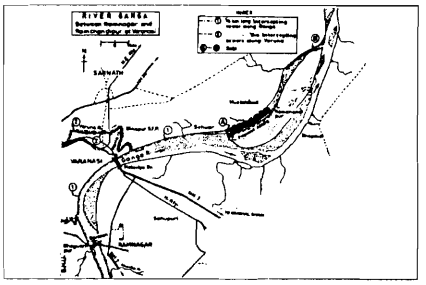
Professor James W. Kirchner
Department of Geology and Geophysics
University of California, Berkeley

Cross Section of Sota



Channel Stability

Location of AIWPS Facility at Sota downstream of Varanasi



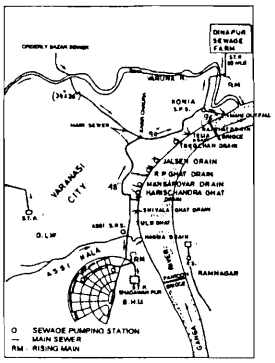


Fig. 3.1 : Varanasi Sewerage & Drains

Effluent Quality

1. AIWPS® Facilities produce a final effluent whose quality is safe for irrigation reuse at a relatively low capital, O&M, and energy cost.
2. AIWPS® Facilities remove organic nitrogen compounds from sewage without producing nitrate and therefore eliminate nitrate discharges and the additional energy required for mechanical denitrification.
3. Much of the carbon dioxide released during waste oxidation is fixed by microalgae thus avoiding much of the carbon dioxide emissions associated with more energy intensive mechanical wastewater treatment.

Effluent Quality

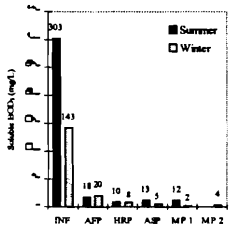
4. The AIWPS® Technology minimizes biosolids production and allows complete primary sludge digestion in the Fermentation Pits thus eliminating the cost of separate sludge digestion, sludge thickening and handling, and the land required for sludge disposal.

5. AIWPS® Facilities are sufficiently nuisance-free and fail safe to permit integration into parks and recreational areas where water, nutrients, and energy reclamation are appropriate.

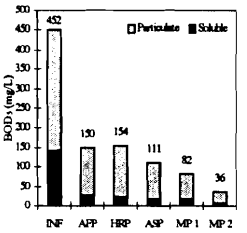
Effluent Quality
Metal & Carbon Removal

PROCESSES \FACTORS	ACTIVATED SLUDGE	AERATED LAGOONS	AIWPS7 TECHNOLOGY
Heavy Metals Removal (%)	<50	<20-50	90-95
Halogenated Hydrocarbon Removal (%)	<50	50	90-95
Organic Carbon Removal (%)	50-60	50-70	80-90

Mean BOD Removal by AIWPS® Process

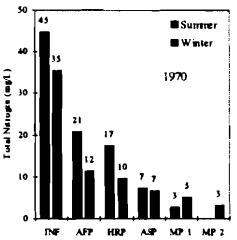


St. Helena AIWPS® Facility
(Meron, 1971)

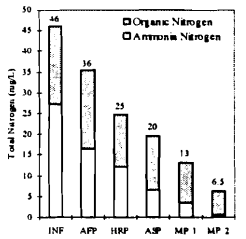


St. Helena AIWPS® Facility
(U.S. EPA, 1996)

Mean Total Nitrogen Removal

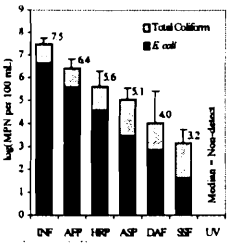


St. Helena 1970
(Meron Dissertation)

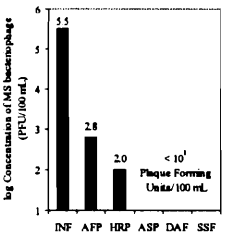


St. Helena 1996
(U.S. EPA)

Pathogen Removal



Total coliform
Richmond 1998-1999



Indicator Virus
Richmond June 1999

Effluent Quality

Nutrient Removal

PROCESSES /FACTORS		ACTIVATED SLUDGE	AERATED LAGOONS	AIWPS7 TECHNOLOGY
Total Nitrogen Removal (%)	w/o BNR	<50%	30	80-90
	w/ BNR	80-85%	N/A	N/A
Total Phosphorus Removal (%)	w/o BNR	<20%	40%	65%
	w/ BNR + lime add.	80-90%	80-90%	90-95 (1)

(1) With lime or alum only

Ecological Efficiency

- The AIWPS® Technology efficiently applies the natural processes of methane fermentation of settleable solids and photosynthetic oxygenation of residual organics and requires half the land of conventional waste stabilization or oxidation ponds.
- It uses solar energy for photosynthetic oxygenation and requires between 1/3 to 1/10 of the electrical energy used in mechanical wastewater treatment. Photosynthetic oxygenation minimizes the direct and indirect release of carbon dioxide to the atmosphere from bacterial oxidation and from power generation required for mechanical aeration.

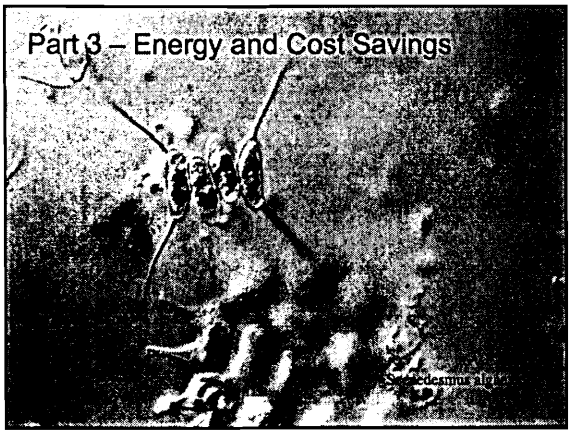
Environmental Quality

- Highest Effluent Quality of all WWT Processes at Least Cost
- No Odors
- No Sludge
- Safe Water Reuse for Agriculture and Aquaculture
- Safe Nutrient Recycle through Algal Biomass used as a Animal or Fish Feed or Fertilizer
- Enhanced Work Place Safety & Aesthetics
- Compatible with Parks & Urban Greenbelts

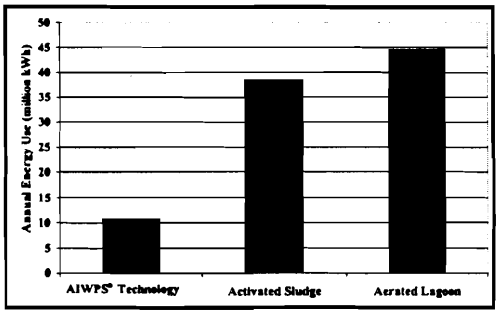
Environmental Quality

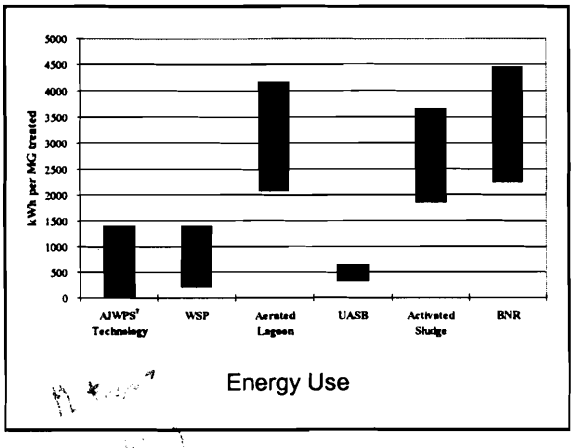
Less Energy Use & Greenhouse Gas Emissions

PROCESSES/ FACTORS		ACTIVATED SLUDGE	AERATED LAGOONS	AIWPS7 TECHNOLOGY
Energy Use (kWh/kg BOD)	Without N Removal	1.4	1.6	0.4
	With N Removal	2	N/A	0.4
Methane Emissions		Partial Potential Recovery	Released to Atmosphere	Maximum Potential Recovery

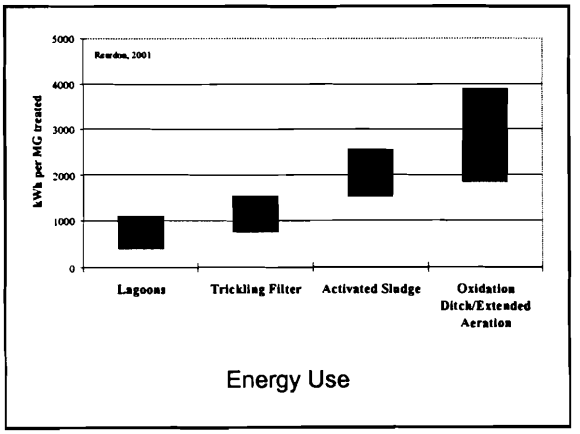


Comparative Energy Use





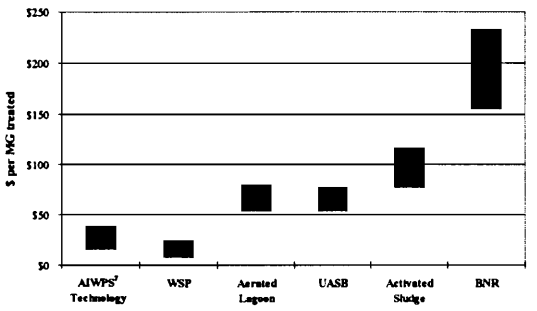
Energy Use



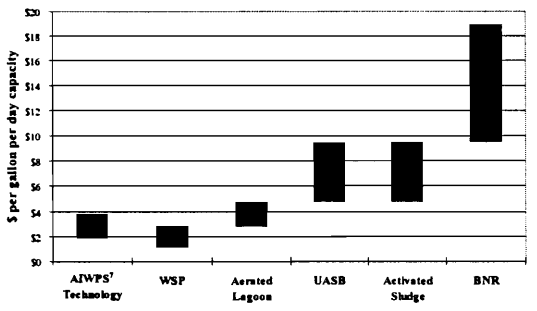
Energy Use

Low O&M Costs

- O&M Costs Reduced by 60% to 80%
  - Fewer mechanical components
  - Complete methane fermentation of solids; no sludge removal or disposal is required
  - Energy efficient oxygen production
  - Reduced overall energy use
  - No chemical disinfection is required
  - Reduced manpower



O&M Costs



Capital Costs

Conclusion: Process Comparisons

PROCESSES/ FACTORS	ACTIVATED SLUDGE	AERATED LAGOONS	AIWPS® □□□□□□□□□
Sludge Handling Frequency	Daily	2-4 years	35-50 years
Principal Energy Source	Electricity	Electricity	Solar
Reclamation Potential	Water	Water	Water, Nutrients, Energy
Ancillary Benefits	Waste Treatment	Waste Treatment	Recreational Open Space, Algae, Wildlife Habitat
Objectionable Odor	Occasional	Possible	None
Noise	Yes, Severe	Possible	None

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- ***OSWALD GREEN, LLC*** is an environmental technology and engineering services company based in California.
- The Principals of ***OSWALD GREEN, LLC*** have developed the AIWPS® Technology over the past half century of engineering research and practice.
- The AIWPS® Technology has been successfully applied to municipal and industrial effluent treatment in a broad range of climates around the world.
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- **OSWALD GREEN, LLC** seeks to implement its AIWPS® Technology by providing for municipalities and industries planning, engineering design, construction management, and operation & maintenance services when necessary to insure successful implementation.

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22 CFR 216

AGENCY ENVIRONMENTAL PROCEDURES

These procedures have been revised based on experience with previous ones agreed to in settlement of a law suit brought against the Agency in 1975. The Procedures are Federal Regulations and therefore, it is imperative that they be followed in the development of Agency programs.

In preparing these Regulations, some interpretations and definitions have been drawn from Executive Order No. 12114 of January 1979, on the application of the National Environmental Policy Act (NEPA) to extraterritorial situations. Some elements of the revised regulations on NEPA issued by the President's Council on Environmental Quality have also been adopted. Examples are: The definition of significant impact, the concept of scoping of issues to be examined in a formal analysis, and the elimination of certain AID activities from the requirement for environmental review.

In addition, these procedures: 1) provide advance notice that certain types of projects will automatically require detailed environmental analysis thus eliminating one step in the former process and permitting early planning for this activity; 2) permit the use of specially prepared project design considerations or guidance to be substituted for environmental analysis in selected situations; 3) advocate the use of indigenous specialists to examine pre-defined issues during the project design stage; 4) clarify the role of the Bureau's Environmental Officer in the review and approval process, and 5) permit in certain circumstances, projects to go forward prior to completion of environmental analysis.

Note that only minimal clarification changes have been made in those sections dealing with the evaluation and selection of pesticides to be supported by AID in projects or of a non-project assistance activity.

INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

U.S. Agency for International Development

22 CFR PART 216

ENVIRONMENTAL PROCEDURES

Authority: 42 U.S.C. 4332; 22 U.S.C. 2381.

Source: 41 FR 26913, June 30, 1976.

§216.1 Introduction

(a) Purpose. In accordance with sections 118(b) and 621 of the Foreign Assistance Act of 1961, as amended, (the FAA) the following general procedures shall be used by A.I.D. to ensure that environmental factors and values are integrated into the A.I.D. decision-making process. These procedures also assign responsibility within the Agency for assessing the environmental effects of A.I.D.'s actions. These procedures are consistent with Executive Order 12114, issued January 4, 1979, entitled Environmental Effects Abroad of Major Federal Actions, and the purposes of the National Environmental Policy Act of 1970, as amended (42 U.S.C. 4371 et seq.)(NEPA). They are intended to implement the requirements of NEPA as they effect the A.I.D. program.

(b)Environmental Policy. In the conduct of its mandate to help upgrade the quality of life of the poor in developing countries, A.I.D. conducts a broad range of activities. These activities address such basic problems as hunger, malnutrition, overpopulation, disease, disaster, deterioration of the environment and the natural resource base, illiteracy as well as the lack of adequate housing and transportation. Pursuant to the FAA, A.I.D. provides development assistance in the form of technical advisory services, research, training, construction and commodity support. In addition. A.I.D. conducts programs under the Agricultural Trade Development and Assistance Act of 1954 (Pub. L. 480) that are designed to combat hunger, malnutrition and to facilitate economic development. Assistance programs are carried out under the foreign policy guidance of the Secretary of State and in cooperation with the governments of sovereign states. Within this framework, it is A.I.D. policy to:

(1) Ensure that the environmental consequences of A.I.D.financed activities are identified and considered by A.I.D. and the host country prior to a final decision to proceed and that appropriate environmental safeguards are adopted;

(2) Assist developing countries to strengthen their capabilities to appreciate and effectively evaluate the potential environmental effects of proposed development strategies and projects, and to select, implement and manage effective environmental programs;

(3) Identify impacts resulting from A.I.D.'s actions upon the environment, including those aspects of the biosphere which are the common and cultural heritage of all mankind; and

(4) Define environmental limiting factors that constrain development and identify and carry out activities that assist in restoring the renewable resource base on which sustained development depends.

(c) Definitions

(1) CEQ Regulations. Regulations promulgated by the President's Council on Environmental Quality (CEQ) (Federal Register, Volume 43, Number 230, November 29, 1978) under the authority of NEPA and Executive Order 11514, entitled Protection and Enhancement of Environmental Quality (March 5, 1970) as amended by Executive Order 11991 (May 24, 1977).

(2) Initial Environmental Examination. An Initial Environmental Examination is the first review of the reasonably foreseeable effects of a proposed action on the environment. Its function is to provide a brief statement of the factual basis for a Threshold Decision as to whether an Environmental Assessment or an Environmental Impact Statement will be required.

(3) Threshold Decision. A formal Agency decision which determines, based on an Initial Environmental Examination, whether a proposed Agency action is a major action significantly affecting the environment.

(4) Environmental Assessment. A detailed study of the reasonably foreseeable significant effects, both beneficial and adverse, of a proposed action on the environment of a foreign country or countries.

(5) Environmental Impact Statement. A detailed study of the reasonably foreseeable

environmental impacts, both positive and negative, of a proposed A.I.D. action and its reasonable alternatives on the United States, the global environment or areas outside the jurisdiction of any nation as described in §216.7 of these procedures. It is a specific document having a definite format and content, as provided in NEPA and the CEQ Regulations. The required form and content of an Environmental Impact Statement is further described in §216.7 infra.

(6) Project Identification Document (PID). An internal A.I.D. document which initially identifies and describes a proposed project.

(7) Program Assistance Initial Proposal (PAIP). An internal A.I.D. document used to initiate and identify proposed nonproject assistance, including commodity import programs. It is analogous to the PID.

(8) Project Paper (PP). An internal A.I.D. document which provides a definitive description and appraisal of the project and particularly the plan or implementation.

(9) Program Assistance Approval Document (PAAD). An internal A.I.D. document approving nonproject assistance. It is analogous to the PP.

(10) Environment. The term environment, as used in these procedures with respect to effects occurring outside the United States, means the natural and physical environment. With respect to effects occurring within the United States see §216.7(b).

(11) Significant Effect. With respect to effects on the environment outside the United States, a proposed action has a significant effect on the environment if it does significant harm to the environment.

(12) Minor Donor. For purposes of these procedures, A.I.D. is a minor donor to a multidonor project when A.I.D. does not control the planning or design of the multidonor project and either

(i) A.I.D.'s total contribution to the project is both less than $1,000,000 and less than 25 percent of the estimated project cost, or

(ii) A.I.D.'s total contribution is more than $1,000,000 but less than 25 percent of the estimated project cost and the environmental procedures of the donor in control of the planning of design of the project are followed, but only if the A.I.D. Environmental Coordinator determines that such procedures are adequate.

§216.2 Applicability of procedures.

(a) Scope. Except as provided in §216.2(b), these procedures apply to all new projects, programs or activities authorized or approved by A.I.D. and to substantive amendments or extensions of ongoing projects, programs, or activities.

(b) Exemptions. (1) Projects, programs or activities involving the following are exempt from these procedures:

(i) International disaster assistance;

(ii) Other emergency circumstances; and

(iii) Circumstances involving exceptional foreign policy sensitivities.

(2) A formal written determination, including a statement of the justification therefore, is required for each project, program or activity for which an exemption is made under paragraphs (b)(l) (ii) and (iii) of this section, but is not required for projects, programs or activities under paragraph (b)(l)(i) of this

section. The determination shall be made either by the Assistant Administrator having responsibility for the program, project or activity, or by the Administrator, where authority to approve financing has been reserved by the Administrator. The determination shall be made after consultation with CEQ regarding the environmental consequences of the proposed program, project or activity.

(c) Categorical Exclusions. (1) The following criteria have been applied in determining the classes of actions included in §216.2(c)(2) for which and Initial Environmental Examination, Environmental Assessment and Environmental Impact Statement generally are not required:

(i) The action does not have an effect on the natural or physical environment;

(ii) A.I.D. does not have knowledge of or control over, and the objective of A.I.D. in furnishing assistance does not require, either prior to approval of financing or prior to implementation of specific activities, knowledge of or control over, the details of the specific activities that have an effect on the physical and natural environment for which financing is provided by A.I.D.;

(iii) Research activities which may have an affect on the physical and natural environment but will not have a significant effect as a result of limited scope, carefully controlled nature and effective monitoring.

(2) The following classes of actions are not subject to the procedures set forth in §216.3, except to the extent provided herein;

(i) Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.);

(ii) Controlled experimentation exclusively for the purpose of research and field evaluation which are confined to small areas and carefully monitored;

(iii)Analyses, studies, academic or research workshops and meetings;

(iv) Projects in which A.I.D. is a minor donor to a multidonor project and there is no potential significant effects upon the environment of the United States, areas outside any nation's jurisdiction or endangered or threatened species or their critical habitat;

(v) Document and information transfers;

(vi) Contributions to international, regional or national organizations by the United States which are not for the purpose of carrying out a specifically identifiable project or projects;

(vii) Institution building grants to research and educational institutions in the United States such as those provided for under section 122(d) and Title XII of Chapter 2 of Part I of the FAA (22 USCA §§2151 p. (b) 2220a. (1979));

(viii) Programs involving nutrition, health care or population and family planning services except to the extent designed to include activities directly affecting the environment (such as construction of facilities, water supply systems, waste water treatment, etc.)

(ix) Assistance provided under a Commodity Import Program when, prior to approval, A.I.D. does not have knowledge of the specific commodities to be financed and when the objective in furnishing such assistance requires neither knowledge, at the time the assistance is authorized, nor control, during implementation, of the commodities or their use in the host country.

(x) Support for intermediate credit institutions when the objective is to assist in the capitalization of the institution or part thereof and when such support does not involve reservation of the right to review and approve individual loans made by the institution;

(xi) Programs of maternal or child feeding conducted under Title II of Pub. L. 480;

(xii) Food for development programs conducted by food recipient countries under Title III of Pub. L. 480, when achieving A.I.D.'s objectives in such programs does not require knowledge of or control over the details of the specific activities conducted by the foreign country under such program;

(xiii) Matching, general support and institutional support grants provided to private voluntary organizations (PVOs) to assist in financing programs where A.I.D.'s objective in providing such financing does not require knowledge of or control over the details of the specific activities conducted by the PVO;

(xiv) Studies, projects or programs intended to develop the capability of recipient countries to engage in development planning, except to the extent designed to result in activities directly affecting the environment (such as construction of facilities, etc.); and

(xv) Activities which involve the application of design criteria or standards developed and approved by A.I.D.

(3) The originator of a project. program or activity shall determine the extent to which it is within the classes of actions described in paragraph (c)(2) of this section. This determination shall be made in writing and be submitted with the PID, PAIP or comparable document. This determination, which must include a brief statement supporting application of the exclusion shall be reviewed by the Bureau Environmental Officer in the same manner as a Threshold Decision under §216.3(a)(2) of these procedures. Notwithstanding paragraph (c)(2) of this section, the procedures set forth in §216.3 shall apply to any project, program or activity included in the classes of actions listed in paragraph (c)(2) of this section, or any aspect or component thereof, if at any time in the design, review or approval of the activity it is determined that the project, program or activity, or aspect or component thereof, is subject to the control of A.I.D. and may have a significant effect on the environment.

(d) Classes of Actions Normally Having a Significant Effect on the Environment.

(1) The following classes of actions have been determined generally to have a significant effect on the environment and an Environmental Assessment or Environmental Impact Statement, as appropriate, will be required:

(i) Programs of river basin development;

(ii) Irrigation or water management projects, including dams and impoundments;

(iii) Agricultural land leveling;

(iv) Drainage projects;

(v) Large scale agricultural mechanization;

(vi) New lands development;

(vii) Resettlement projects;

(viii) Penetration road building or road improvement projects;

(ix) Powerplants;

(x) Industrial plants;

(xi) Potable water and sewerage projects other than those that are smallscale.

(2) An Initial Environmental Examination normally will not be necessary for activities within the classes described in §216.2(d), except when the originator of the project believes that the project will not have a significant effect on the environment. In such cases, the activity may be subjected to the procedures set forth in §216.3.

(e) Pesticides. The exemptions of §216.2(b)(l) and the categorical exclusions of §216.2(c)(2) are not applicable to assistance for the procurement or use of pesticides.

§216.3 Procedures.

(a) General procedures

(1) Preparation of the Initial Environmental Examination. Except as otherwise provided, an Initial Environmental Examination is not required for activities identified in §216.2(b)(1), (c)(2), and (d). For all other A.I.D. activities described in §216.2(a) an Initial Environmental Examination will be prepared by the originator of an action. Except as indicated in this section, it should be prepared with the PID or PAIP. For projects including the procurement or use of pesticides, the procedures set forth in §216.3(b) will be followed, in addition to the procedures in this paragraph. Activities which cannot be identified in sufficient detail to permit the completion of an Initial Environmental Examination with the PID or PAIP, shall be described by including with the PID or PAIP:

(i) An explanation indicating why the Initial Environmental Examination cannot be completed;

(ii) an estimate of the amount of time required to complete the Initial Environmental Examination; and

(iii) a recommendation that a Threshold Decision be deferred until the Initial Environmental Examination is completed. The responsible Assistant Administrator will act on the request for deferral concurrently with action on the PID or PAIP and will designate a time for completion of the Initial Environmental Examination. In all instances, except as provided in

§216.3(a)(7), this completion date will be in sufficient time to allow for the completion of an Environmental Assessment or Environmental Impact Statement, if required, before a final decision is made to provide A.I.D. funding for the action.

(2) Threshold Decision. (i) The Initial Environmental Examination will include a Threshold Decision made by the officer in the originating office who signs the PID or PAIP. If the Initial Environmental Examination is completed prior to or at the same time as the PID or PAIP, the Threshold Decision will be reviewed by the Bureau Environmental Officer concurrently with approval of the PID or PAIP. The Bureau Environmental Officer will either concur in the Threshold Decision or request reconsideration by the officer who made the Threshold Decision, stating the reasons for the request. Differences of opinion between these officers shall be submitted for resolution to the Assistant Administrator at the same time that the PID is submitted for approval.

(ii) An Initial Environmental Examination, completed subsequent to approval of the PID or PAIP, will be forwarded immediately together with the Threshold Determination to the Bureau Environmental Officer for action as described in this section.

(iii) A Positive Threshold Decision shall result from a finding that the proposed action will have a significant effect on the environment. An Environmental Impact Statement shall be prepared if required pursuant to §216.7. If an impact statement is not required, an Environmental Assessment will be prepared in accordance with §216.6. The cognizant Bureau or Office will record a Negative Determination if the proposed action will not have a significant effect on the environment.

(3) Negative Declaration. The Assistant Administrator, or the Administrator in actions for which the approval of the Administrator is required for the authorization of financing, may make a Negative Declaration, in writing, that the Agency will not develop an Environmental Assessment or an Environmental Impact Statement regarding an action found to have a significant effect on the environment when (i) a substantial number of Environmental Assessments or Environmental Impact Statements relating to similar activities have been prepared in the past, if relevant to the proposed action, (ii) the Agency has previously prepared a programmatic Statement or Assessment covering the activity in question which has been considered in the development of such activity, or (iii) the Agency has developed design criteria for such an action which, if applied in the design of the action, will avoid a significant effect on the environment.

(4) Scope of Environmental Assessment or Impact Statement

(i) Procedure and Content. After a Positive Threshold Decision has been made, or a determination is made under the pesticide procedures set forth in §216.3(b) that an Environmental Assessment or Environmental Impact Statement is required, the originator of the action shall commence the process of identifying the significant issues relating to the proposed action and of determining the scope of the issues to be addressed in the Environmental Assessment or Environmental Impact Statement. The originator of an action within the classes of actions described in §216.2(d) shall commence this scoping process as soon as practicable. Persons having expertise relevant to the environmental aspects of the proposed action shall also participate in this scoping process. (Participants may include but are not limited to representatives of host governments, public and private institutions, the A.I.D. Mission staff and contractors.) This process shall result in a written statement which shall include the following matters:

(a) A determination of the scope and significance of issues to be analyzed in the Environmental Assessment or Impact Statement, including direct and indirect effects of the project on the environment.

(b) Identification and elimination from detailed study of the issues that are not significant or have been covered by earlier environmental review, or approved design considerations, narrowing the discussion of these issues to a brief presentation of why they will not have a significant effect on the environment.

(c) A description of

(1) the timing of the preparation of environmental analyses, including phasing if appropriate,

(2) variations required in the format of the Environmental Assessment, and

(3) the tentative planning and decision-making schedule; and

(d) A description of how the analysis will be conducted and the disciplines that will participate in the analysis.

(ii) These written statements shall be reviewed and approved by the Bureau Environmental Officer.

(iii) Circulation of Scoping Statement. To assist in the preparation of an Environmental Assessment, the Bureau Environmental Officer may circulate copies of the written statement, together with a request for written comments, within thirty days, to selected federal agencies if that Officer believes comments by such federal agencies will be useful in the preparation of an Environmental Assessment. Comments received from reviewing federal agencies will be considered in the preparation of the Environmental Assessment and in the formulation of the design and implementation of the project, and will, together with the scoping statement, be included in the project file.

(iv) Change in Threshold Decision. If it becomes evident that the action will not have a significant effect on the environment (i.e., will not cause significant harm to the environment), the Positive Threshold Decision may be withdrawn with the concurrence of the Bureau Environmental Officer. In the case of an action included in §216.2(d)(2), the request for withdrawal shall be made to the Bureau Environmental Officer.

(5) Preparation of Environmental Assessments and Environmental Impact Statement. If the PID or PAIP is approved, and the Threshold Decision is positive, or the action is included in §216.2(d), the originator of the action will be responsible for the preparation of an Environmental Assessment or Environmental Impact Statement as required. Draft Environmental Impact Statements will be circulated for review and comment as part of the review of Project Papers and as outlined further in §216.7 of those procedures. Except as provided in §216.3(a)(7), final approval of the PP or PAAD and the method of implementation will include consideration of the Environmental Assessment or final Environmental Impact Statement.

(6) Processing and Review Within A.I.D.

(i) Initial Environmental Examinations, Environmental Assessments, and final Environmental Impact Statements will be processed pursuant to standard A.I.D. procedures for project approval documents. Except as provided in §216.3(a)(7), Environmental Assessments and final Environmental Impact Statements will be reviewed as an integral part of the Project Paper or equivalent document. In addition to these procedures, Environmental Assessments will be reviewed and cleared by the Bureau Environmental Officer. They may also be reviewed by the Agency's Environmental Coordinator who will monitor the Environmental Assessment process.

(ii) When project approval authority is delegated to field posts, Environmental Assessments shall be reviewed and cleared by the Bureau Environmental Officer prior to the approval of such actions.

(iii) Draft and final Environmental Impact Statements will be reviewed and cleared by the Environmental Coordinator and the Office of the General Counsel.

(7) Environmental Review After Authorization of Financing.

(i) Environmental review may be performed after authorization of a project, program or activity only with respect to subprojects or significant aspects of the project, program or activity that are unidentified at the time of authorization. Environmental review shall be completed prior to authorization for all subprojects and aspects of a project, program or activity that are identified.

(ii) Environmental review should occur at the earliest time in design or implementation at which a meaningful review can be undertaken, but in no event later than when previously unidentified subprojects or aspects of projects, programs or activities are identified and planned. To the extent possible, adequate information to undertake deferred environmental review should be obtained before funds are obligated for unidentified subprojects or aspects of projects, programs or activities. (Funds may be obligated for the other aspects for which environmental review has been completed.) To avoid an irreversible commitment of resources prior to the conclusion of environmental review, the obligation of funds can be made incrementally as subprojects or aspects of projects, programs or activities are identified; or if necessary while planning continues, including environmental review, the agreement or other document obligating funds may contain appropriate covenants or conditions precedent to disbursement for unidentified subprojects or aspects of projects, programs or activities.

(iii) When environmental review must be deferred beyond the time some of the funds are to be disbursed (e.g., long lead times for the delivery of goods or services), the project agreement or other document obligating funds shall contain a covenant or covenants requiring environmental review, including an Environmental Assessment or Environmental Impact Statement, when appropriate, to be completed and taken into account prior to implementation of those subprojects or aspects of the

project, program or activity for which environmental review is deferred. Such covenants shall ensure that implementation plans will be modified in accordance with environmental review if the parties decide that modifications are necessary.

(iv) When environmental review will not be completed for an entire project, program or activity prior to authorization, the Initial Environmental Examination and Threshold Decision required under §216.3(a)(l) and (2) shall identify those aspects of the project, program or activity for which environmental review will be completed prior to the time financing is authorized. It shall also include those subprojects or aspects for which environmental review will be deferred, stating the reasons for deferral and the time when environmental review will be completed. Further, it shall state how an irreversible commitment of funds will be avoided until environmental review is completed. The A.I.D. officer responsible for making environmental decisions for such projects, programs or activities shall also be identified (the same officer who has decision-making authority for the other aspects of implementation). This deferral shall be reviewed and approved by the officer making the Threshold Decision and the officer who authorizes the project, program or activity. Such approval may be made only after consultation with the Office of General Counsel for the purpose of establishing the manner in which conditions precedent to disbursement or covenants in project and other agreements will avoid an irreversible commitment of resources before environmental review is completed.

(8) Monitoring. To the extent feasible and relevant, projects and programs for which Environmental Impact Statements or Environmental Assessments have been prepared should be designed to include measurement of any changes in environmental quality, positive or negative, during their implementation. This will require recording of baseline data at the start. To the extent that available data permit, originating offices of A.I.D. will formulate systems in collaboration with recipient nations, to monitor such impacts during the life of A.I.D.'s involvement. Monitoring implementation of projects, programs and activities shall take into account environmental impacts to the same extent as other aspects of such projects, programs and activities. If during implementation of any project, program or activity, whether or not an Environmental Assessment or Environmental Impact Statement was originally required, it appears to the Mission Director, or officer responsible for the project, program or activity, that it is having or will have a significant effect on the environment that was not previously studied in an Environmental Assessment or Environmental Impact Statement, the procedures contained in this part shall be followed including, as appropriate, a Threshold Decision, Scoping and an Environmental Assessment or Environmental Impact Statement.

(9) Revisions. If, after a Threshold Decision is made resulting in a Negative Determination, a project is revised or new information becomes available which indicates that a proposed action might be "major" and its effects "significant", the Negative Determination will be reviewed and revised by the cognizant Bureau and an Environmental Assessment or Environmental Impact Statement will be prepared, if appropriate. Environmental Assessments and Environmental Impact Statements will be amended and processed appropriately if there are major changes in the project or program, or if significant new information becomes available which relates to the impact of the project, program or activity on the environment that was not considered at the time the Environmental Assessment or Environmental Impact Statement was approved. When ongoing programs are revised to incorporate a change in scope or nature, a determination will be made as to whether such change may have an environmental impact not previously assessed. If so, the procedures outlined in this part will be followed.

(10) Other Approval Documents. These procedures refer to certain A.I.D. documents such as PIDs, PAIPs, PPs and PAADs as the A.I.D. internal instruments for approval of projects, programs or activities. From time to time, certain special procedures, such as those in §216.4, may not require the use of the aforementioned documents. In these situations, these environmental procedures shall apply to those special approval procedures, unless otherwise exempt, at approval times and levels comparable to projects, programs and activities in which the aforementioned documents are used.

(b) Pesticide Procedures

(1) Project Assistance. Except as provided in §216.3 (b)(2), all proposed projects involving assistance for the procurement or use, or both, of pesticides shall be subject to the procedures prescribed in §216.3(b)(l)(i) through (v). These procedures shall also apply, to the extent permitted by agreements entered into by A.I.D. before the effective date of these pesticide procedures, to such projects that have been authorized but for which pesticides have not been procured as of the effective date of these pesticide procedures.

(i) When a project includes assistance for procurement or use, or both, of pesticides registered for the same or similar uses by USEPA without restriction, the Initial Environmental Examination for the project shall include a separate section evaluating the economic, social and environmental risks and benefits of the planned pesticide use to determine whether the use may result in significant environmental impact. Factors to be considered in such an evaluation shall include, but not be limited to the following:

(a) The USEPA registration status of the requested pesticide;

(b) The basis for selection of the requested pesticide;

(c) The extent to which the proposed pesticide use is part of an integrated pest management program;

(d) The proposed method or methods of application, including availability of appropriate application and safety equipment;

(e) Any acute and longterm toxicological hazards, either human or environmental, associated with the proposed use and measures available to minimize such hazards;

(f) The effectiveness of the requested pesticide for the proposed use;

(g) Compatibility of the proposed pesticide with target and nontarget ecosystems;

(h) The conditions under which the pesticide is to be used, including climate, flora, fauna, geography, hydrology, and soils;

(i) The availability and effectiveness of other pesticides or nonchemical control methods;

(j) The requesting country's ability to regulate or control the distribution, storage, use and disposal of the requested pesticide;

(k) The provisions made for training of users and applicators; and

(l) The provisions made for monitoring the use and effectiveness of the pesticide.

In those cases where the evaluation of the proposed pesticide use in the Initial Environmental Examination indicates that the use will significantly effect the human environment, the Threshold Decision will include a recommendation for the preparation of an Environmental Assessment or Environmental Impact Statement, as appropriate. In the event a decision is made to approve the planned pesticide use, the Project Paper shall include to the extent practicable, provisions designed to mitigate potential adverse effects of the pesticide. When the pesticide evaluation section of the Initial Environmental Examination does not indicate a potentially unreasonable risk arising from the pesticide use, an Environmental Assessment or Environmental Impact Statement shall nevertheless be prepared if the environmental effects of the project otherwise require further assessment.

(ii) When a project includes assistance for the procurement or use, or both, of any pesticide registered for the same or similar uses in the United States but the proposed use is restricted by the USEPA on the basis of user hazard, the procedures set forth in §216.3(b)(1)(i) above will be

followed. In addition, the Initial Environmental Examination will include an evaluation of the user hazards associated with the proposed USEPA restricted uses to ensure that the implementation plan which is contained in the Project Paper incorporates provisions for making the recipient government aware of these risks and providing, if necessary, such technical assistance as may be required to mitigate these risks. If the proposed pesticide use is also restricted on a basis other than user hazard, the procedures in §216.3(b)(l)(iii) shall be followed in lieu of the procedures in this section.

(iii) If the project includes assistance for the procurement or use, or both of:

(a) Any pesticide other than one registered for the same or similar uses by USEPA without restriction or for restricted use on the basis of user hazard; or

(b) Any pesticide for which a notice of rebuttable presumption against reregistration, notice of intent to cancel, or notice of intent to suspend has been issued by USEPA,

The Threshold Decision will provide for the preparation of an Environmental Assessment or Environmental Impact Statement, as appropriate (§216.6(a)). The EA or EIS shall include, but not be limited to, an analysis of the factors identified in

§216.3(b)(l)(i) above.

(iv) Notwithstanding the provisions of §216.3(b)(l)(i) through (iii) above, if the project includes assistance for the procurement or use, or both, of a pesticide against which USEPA has initiated a regulatory action for cause, or for which it has issued a notice of rebuttable presumption against reregistration, the nature of the action or notice, including the relevant technical and scientific factors will be discussed with the requesting government and considered in the IEE and, if prepared, in the EA or EIS. If USEPA initiates any of the regulatory actions above against a pesticide subsequent to its evaluation in an IEE, EA or EIS, the nature of the action will be discussed with the recipient government and considered in an amended IEE or amended EA or EIS, as appropriate.

(v) If the project includes assistance for the procurement or use, or both of pesticides but the specific pesticides to be procured or used cannot be identified at the time the IEE is prepared, the procedures outlined in §216.3(b)(i) through (iv) will be followed when the specific pesticides are identified and before procurement or use is authorized. Where identification of the pesticides to be procured or used does not occur until after Project Paper approval, neither the procurement nor the use of the pesticides shall be undertaken unless approved, in writing, by the Assistant Administrator (or in the case of projects authorized at the Mission level, the Mission Director) who approved the Project Paper.

(2) Exceptions to Pesticide Procedures. The procedures set forth in §216.3 (b)(l) shall not apply to the following projects including assistance for the procurement or use, or both, of pesticides.

(i) Projects under emergency conditions.

Emergency conditions shall be deemed to exist when it is determined by the Administrator, A.I.D.. in writing that:

(a) A pest outbreak has occurred or is imminent; and

(b) Significant health problems (either human or animal) or significant economic problems will occur without the prompt use of the proposed pesticide; and

(c) Insufficient time is available before the pesticide must be used to evaluate the proposed use in accordance with the provisions of this regulation.

(ii) Projects where A.I.D. is a minor donor, as defined in

§216.1(c)(12) above, to a multidonor project.

(iii) Projects including assistance for procurement or use, or both, of pesticides for research or limited field evaluation purposes by or under the supervision of project personnel. In such instances, however, A.I.D. will ensure that the manufacturers of the pesticides provide toxicological and environmental data necessary to safeguard the health of research personnel and the quality of the local environment in which the pesticides will be used. Furthermore, treated crops will not be used for human or animal consumption unless appropriate tolerances have been established by EPA or recommended by FAO/WHO, and the rates and frequency of application, together with the prescribed preharvest intervals, do not result in residues exceeding such tolerances. This prohibition does not apply to the feeding of such crops to animals for research purposes.

(3) Non-Project Assistance. In a very few limited number of circumstances A.I.D. may provide nonproject assistance for the procurement and use of pesticides. Assistance in such cases shall be provided if the A.I.D. Administrator determines in writing that

(i) emergency conditions, as defined in §216.3(b)(2)(i) above exist; or

(ii) that compelling circumstances exist such that failure to provide the proposed assistance would seriously impede the attainment of U.S. foreign policy objectives or the objectives of the foreign assistance program. In the latter case, a decision to provide the assistance will be based to the maximum extent practicable, upon a consideration of the factors set forth in §216.3(b)(l)(i) and, to the extent available, the history of efficacy and safety covering the past use of the pesticide the in recipient country.

§216.4 Private applicants.

Programs, projects or activities for which financing from A.I.D. is sought by private applicants, such as PVOs and educational and research institutions, are subject to these procedures. Except as provided in §216.2(b), (c) or (d), preliminary proposals for financing submitted by private applicants shall be accompanied by an Initial Environmental Examination or adequate information to permit preparation of an Initial Environmental Examination. The Threshold Decision shall be made by the Mission Director for the country to which the proposal relates, if the preliminary proposal is submitted to the A.I.D. Mission, or shall be made by the officer in A.I.D. who approves the preliminary proposal. In either case, the concurrence of the Bureau Environmental Officer is required in the same manner as in §216.3(a)(2), except for PVO projects approved in A.I.D. Missions with total life of project costs less than $500,000. Thereafter, the same procedures set forth in §216.3 including as appropriate scoping and Environmental Assessments or Environmental Impact Statements, shall be applicable to programs, projects or activities submitted by private applicants. The final proposal submitted for financing shall be treated, for purposes of these procedures, as a Project Paper. The Bureau Environmental Officer shall advise private applicants of studies or other information foreseeably required for action by A.I.D.

§216.5 Endangered species.

It is A.I.D. policy to conduct its assistance programs in a manner that is sensitive to the protection of endangered or threatened species and their critical habitats. The Initial Environmental Examination for each project, program or activity having an effect on the environment shall specifically determine whether the project, program or activity will have an effect on an endangered or threatened species, or critical habitat. If the proposed project, program or activity will have the effect of jeopardizing an endangered or threatened species or of adversely modifying its critical habitat, the Threshold Decision shall be a Positive Determination and an Environmental Assessment or Environmental Impact Statement completed as appropriate, which shall discuss alternatives or modifications to avoid or mitigate such impact on the species or its habitat.

§216.6 Environmental assessments.

(a) General Purpose. The purpose of the Environmental Assessment is to provide Agency and host country decision-makers with a full discussion of significant environmental effects of a proposed action. It includes alternatives which would avoid or minimize adverse effects or enhance the quality of the environment so that the expected benefits of development objectives can be weighed against any adverse impacts upon the human environment or any irreversible or irretrievable commitment of resources.

(b) Collaboration with Affected Nation on Preparation. Collaboration in obtaining data, conducting analyses and considering alternatives will help build an awareness of development associated environmental problems in less developed countries as well as assist in building an indigenous institutional capability to deal nationally with such problems. Missions, Bureaus and Offices will collaborate with affected countries to the maximum extent possible, in the development of any Environmental Assessments and consideration of environmental consequences as set forth therein.

(c) Content and Form. The Environmental Assessment shall be based upon the scoping statement and shall address the following elements, as appropriate:

(1) Summary. The summary shall stress the major conclusions, areas of controversy, if any, and the issues to be resolved.

(2) Purpose. The Environmental Assessment shall briefly specify the underlying purpose and need to which the Agency is responding in proposing the alternatives including the proposed action.

(3) Alternatives Including the Proposed Action. This section should present the environmental impacts of the proposal and its alternatives in comparative form, thereby sharpening the issues and providing a clear basis for choice among options by the decision-maker. This section should explore and evaluate reasonable alternatives and briefly discuss the reasons for eliminating those alternatives which were not included in the detailed study; devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits; include the alternative of no action; identify the Agency's preferred alternative or alternatives, if one or more exists; include appropriate mitigation measures not already included in the proposed action or alternatives.

(4) Affected Environment. The Environmental Assessment shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data and analyses in the Environmental Assessment shall be commensurate with the significance of the impact with less important material summarized, consolidated or simply referenced.

(5) Environmental Consequences. This section forms the analytic basis for the comparisons under paragraph (c)(3) of this section. It will include the environmental impacts of the alternatives including the proposed action; any adverse effects that cannot be avoided should the proposed action be implemented; the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity; and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. It should not duplicate discussions in paragraph (c)(3) of this section. This section of the Environmental Assessment should include discussions of direct effects and their significance; indirect effects and their significance; possible conflicts between the proposed action and land use plans, policies and controls for the areas concerned; energy requirements and conservation potential of various alternatives and mitigation measures; natural or depletable resource requirements and conservation potential of various requirements and mitigation measures; urban quality; historic and cultural resources and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures; and means to mitigate adverse environmental impacts.

(6) List of Preparers. The Environmental Assessment shall list the names and qualifications (expertise, experience, professional discipline) of the persons primarily responsible for preparing the Environmental Assessment or significant background papers.

(7) Appendix. An appendix may be prepared.

(d) Program Assessment. Program Assessments may be appropriate in order to assess the environmental effects of a number of individual actions and their cumulative environmental impact in a given country or geographic area, or the environmental impacts that are generic or common to a class of agency actions, or other activities which are not country-specific. In these cases, a single, programmatic assessment will be prepared in A.I.D./Washington and circulated to appropriate overseas Missions, host governments, and to interested parties within the United States. To the extent practicable, the form and content of the programmatic Environmental Assessment will be the same as for project Assessments. Subsequent Environmental Assessments on major individual actions will only be necessary where such follow-on or subsequent activities may have significant environmental impacts on specific countries where such impacts have not been adequately evaluated in the programmatic Environmental Assessment. Other programmatic evaluations of class of actions may be conducted in an effort to establish additional categorical exclusions or design standards or criteria for such classes that will eliminate or minimize adverse effects of such actions, enhance the environmental effect of such actions or reduce the amount of paperwork or time involved in these procedures. Programmatic evaluations conducted for the purpose of establishing additional categorical exclusions under §216.2(c) or design considerations that will eliminate significant effects for classes of actions shall be made available for public comment before the categorical exclusions or design standards or criteria are adopted by A.I.D. Notice of the availability of such documents shall be published in the Federal Register. Additional categorical exclusions shall be adopted by A.I.D. upon the approval of the Administrator, and design consideration in accordance with usual agency procedures.

(e) Consultation and Review.

(1) When Environmental Assessments are prepared on activities carried out within or focused on specific developing countries, consultation will be held between A.I.D. staff and the host government both in the early stages of preparation and on the results and significance of the completed Assessment before the project is authorized.

(2) Missions will encourage the host government to make the Environmental Assessment available to the general public of the recipient country. If Environmental Assessments are prepared on activities which are not country specific, the Assessment will be circulated by the Environmental Coordinator to A.I.D.'s Overseas Missions and interested governments for information, guidance and comment and will be made available in the U.S. to interested parties.

(f) Effect in Other Countries. In a situation where an analysis indicates that potential effects may extend beyond the national boundaries of a recipient country and adjacent foreign nations may be affected, A.I.D. will urge the recipient country to consult with such countries in advance of project approval and to negotiate mutually acceptable accommodations.

(g) Classified Material. Environmental Assessments will not normally include classified or administratively controlled material. However, there may be situations where environmental aspects cannot be adequately discussed without the inclusion of such material. The handling and disclosure of classified or administratively controlled material shall be governed by

22 CFR Part 9. Those portions of an Environmental Assessment which are not classified or administratively controlled will be made available to persons outside the Agency as provided for in 22 CFR Part 212.

§216.7 Environmental impact statements.

(a) Applicability. An Environmental Impact Statement shall be prepared when agency actions significantly affect:

(1) The global environment or areas outside the jurisdiction of any nation (e.g., the oceans);

(2) The environment of the United States; or

(3) Other aspects of the environment at the discretion of the Administrator.

(b) Effects on the United States: Content and Form. An Environmental Impact Statement relating to paragraph (a)(2) of this section shall comply with the CEQ Regulations. With respect to effects on the United States, the terms environment and significant effect wherever used in these procedures have the same meaning as in the CEQ Regulations rather than as defined in §216.l(c)(12) and (13) of these procedures.

(c) Other Effects: Content and Form. An Environmental Impact Statement relating to paragraphs (a)(l) and (a)(3) of this section will generally follow the CEQ Regulations, but will take into account the special considerations and concerns of A.I.D. Circulation of such Environmental Impact Statements in draft form will precede approval of a Project Paper or equivalent and comments from such circulation will be considered before final project authorization as outlined in §216.3 of these procedures. The draft Environmental Impact Statement will also be circulated by the Missions to affected foreign governments for information and comment. Draft Environmental Impact Statements generally will be made available for comment to Federal agencies with jurisdiction by law or special expertise with respect to any environmental impact involved, and to public and private organizations and individuals for not less than fortyfive (45) days. Notice of availability of the draft Environmental Impact Statements will be published in the FEDERAL REGISTER. Cognizant Bureaus and Offices will submit these drafts for circulation through the Environmental Coordinator who will have the responsibility for coordinating all such communications with persons outside A.I.D. Any comments received by the Environmental Coordinator will be forwarded to the originating Bureau or Office for consideration in final policy decisions and the preparation of a final Environmental Impact Statement. All such comments will be attached to the final Statement, and those relevant comments not adequately discussed in the draft Environmental Impact Statement will be appropriately dealt with in the final Environmental Impact Statement. Copies of the final Environmental Impact Statement, with comments attached, will be sent by the Environmental Coordinator to CEQ and to all other Federal, state, and local agencies and private organizations that made substantive comments on the draft, including affected foreign governments. Where emergency circumstances or considerations of foreign policy make it necessary to take an action without observing the provisions of §1506.10 of the CEQ Regulations, or when there are overriding considerations of expense to the United States or foreign governments, the originating Office will advise the Environmental Coordinator who will consult with Department of State and CEQ concerning appropriate modification of review procedures.

§216.8 Public hearings.

(a) In most instances AID will be able to gain the benefit of public participation in the impact statement process through circulation of draft statements and notice of public availability in CEQ publications. However, in some cases the Administrator may wish to hold public hearings on draft Environmental Impact Statements. In deciding whether or not a public hearing is appropriate, Bureaus in conjunction with the Environmental Coordinator should consider:

(1) The magnitude of the proposal in terms of economic costs, the geographic area involved, and the uniqueness or size of commitment of the resources involved;

(2) The degree of interest in the proposal as evidenced by requests from the public and from Federal, state and local authorities, and private organizations and individuals, that a hearing be held;

(3) The complexity of the issue and likelihood that information will be presented at the hearing which will be of assistance to the Agency; and

(4) The extent to which public involvement already has been achieved through other means, such as earlier public hearings, meetings with citizen representatives, and/or written comments on the proposed action.

(b) If public hearings are held, draft Environmental Impact Statements to be discussed should be made available to the public at least fifteen (15) days prior to the time of the public hearings, and a notice will be placed in the FEDERAL REGISTER giving the subject, time and place of the proposed hearings.

§216.9 Bilateral and multilateral studies and concise reviews of environmental issues.

Notwithstanding anything to the contrary in these procedures, the Administrator may approve the use of either of the following documents as a substitute for an Environmental Assessment (but not a substitute for an Environmental Impact Statement) required under these procedures:

(a) Bilateral or multilateral environmental studies, relevant or related to the proposed action, prepared by the United States and one or more foreign countries or by an international body or organization in which the United States is a member or participant; or

(b) Concise reviews of the environmental issues involved including summary environmental analyses or other appropriate documents.

§216.10 Records and reports.

Each Agency Bureau will maintain a current list of activities for which Environmental Assessments and Environmental Impact Statements are being prepared and for which Negative Determinations and Declarations have been made. Copies of final Initial Environmental Examinations, scoping statements, Assessments and Impact Statements will be available to interested Federal agencies upon request. The cognizant Bureau will maintain a permanent file (which may be part of its normal project files) of Environmental Impact Statements, Environmental Assessments, final Initial Environmental Examinations, scoping statements, Determinations and Declarations which will be available to the public under the Freedom of Information Act. Interested persons can obtain information or status reports regarding Environmental Assessments and Environmental Impact Statements through the A.I.D. Environmental Coordinator.

(22 U.S.C. 2381; 42 U.S.C. 4332)

Dated October 9, 1980

Joseph C. Wheeler

Selected Reg 216 Issues and Responses in the Africa Bureau

Global Environment Officers' Workshop
Cumberland, MD
July 16-20, 2001

Two subjects to highlight...

- Environmental assessment capacity building by USAID/AFR;
  (Opportunities exist for cross-bureau collaboration.)
- Pest and pesticide management in USAID/AFR programs.
  (Opportunities exist for cross-bureau policy development to help USAID programs have a positive influence on pesticide use patterns.)

Evolving Approaches to Environmental Review

- Since 1995, with Agency legal and environment staff approval, AFR has promoted **devolution of responsibility to Missions** for approval of small-scale activities and, especially, small grants and sub-grants.
- Approach rests on a **strategy of environmental capacity building**, and providing environmental guidelines, technical assistance and environmental assessment training to upgrade Missions' and implementing partners' capacity to carry out effective environmental review and program implementation.
- Result is **ENCAP** = ENvironmental Assessment CAPacity building program

ENCAP Products and Services

- Environmental assessment training for small-scale development projects. Since 1995, training of partners in Africa has involved ...
  - ↑ 25 courses
  - ↑ 16 countries
  - ↑ 750+ trained in 300 organizations
- ***Environmental Guidelines for Small Scale Activities in Africa (EGSSA)*** (Revision by March, 2002)
- ***Environmental Documentation Manual (EDM)***, with BHR/FFP and Title II partners
- **Regional EA course materials**
  - → *Organizers' Guide*
  - → *Participants' Sourcebook*
  - → *Facilitators' Guide*
- **Professional development** - learning by doing.

AFR Procedures & Approaches

- **Environmental Screening and Reporting Forms** approved by Missions in most cases
- Work with BHR/FFP to **support Title II PVOs,** developing documentation manual, training materials
- **Analysis of emerging environmental issues** for guidelines development, e.g, trade and environment, healthcare waste management, micro- and small enterprises, cleaner production technologies, etc.
- **Pest and pesticide management support** in agriculture and public health

Pest & Pesticide Management Situation in AFR

- **Policy reform and structural adjustment** in Africa in 1990's has led to a shift from the public to the private sector for inputs provision, including pesticides.
- Increased risks approach, but "**window of opportunity**" exists to introduce Integrated Pest Management
- Pesticide management a concern in nearly all AFR Missions' programs at one level or another, esp. in export-oriented agriculture and recently in malaria control
- AFR developed Integrated Pest Management (IPM) technical support networks and mechanisms

Support to Pest & Pesticide Management Decisionmaking

- Numerous IEEs with various levels of analyses justifying certain limited uses
  - Uganda economic growth SO's Pesticide Analysis and Mitigation Plan, Agricultural Sector Procedures Guide
- Economic and Environmental evaluations to influence Missions' strategies
- Programmatic Environmental Assessments
  - PVO Support Program in Mozambique
  - Locusts in Africa and Asia - 1989
  - Transboundary (Outbreak & Migratory) Pests
  - Insecticide Treated Materials for Malaria Control
- Safe Use Action Plans
- Global Crop Protection Compendium (CD-ROM & Web)
- IPM CRSP support for research
- Pesticide Action Network (PAN) Africa – NGO support
- Global IPM Facility support (FAO, WB, etc.)

The "PERSUAP" Tool

"Pesticide Evaluation Report and Safer Use Action Plan" (PERSUAP).

- Two parts:
  - PER – 12 info and analysis elements from Reg 216 Pesticide Procedures
  - SUAP – an action plan based on conclusions from the PER.
- Comprehensive, but less than an EA. Appropriate to the scale of use generally encountered in African programs.

Safer use of Pesticides

Key Insights from Insecticide Treated Materials PEA and PERSUAP

- The benefits of ITNs are substantial and outweigh risks (est'd 6 lives saved/1,000 children protected.)
- Best practices:
  - WHO-recommended products only.
  - Avoid exposure, where possible; formulation is the key.
  - Best for environment and for efficacy just arrived on market – **long-lasting nets** that postpone need for retreatment (to 20 washes, from 3 previously). They are cost-effective and seem the option of choice.
- Potentially significant issue: the possibility for substitution of different pesticides once retreatment is practiced. Unknown how likely, as people rarely retreat their nets.
- Monitoring for adverse effects needs to be built into ITN programs.

Critical Pesticide Management Issues

- Agency and partners in AFR have very limited capacity for pest and pesticide management. Agency needs stronger support for the adoption of IPM: beyond research and one-off training.
- Botanical pesticides - explicit USAID policy may be needed.
- Safer use of pesticides
  - Avoid use when possible (last resort)
  - Use least toxic products
  - Reduce exposure (e.g., training, proper formulations, good labeling and packaging, protective gear) .
- Protection of food aid commodities once delivered in country

Opportunities for Action re: Pesticides in USAID Programs

- Update USAID Pesticide Procedures
- Develop new IPM outreach support instrument in Agency agriculture sector strategy
- Introduce community-based ("Farmer Field School") informal mutual learning approaches for crop health management
- Apply AFR Insecticide Treated Materials PEA to rest of Agency
- Encourage more emphasis on staff capacity in pest and pesticide management among implementing partners if crop production is a significant element

USAID

UNITED STATES AGENCY

FOR

INTERNATIONAL DEVELOPMENT

$ AND SENSE OF REG 16
(i.e., 22 CFR 216- Agency Environmental Procedures)

PRESENTED BY

MOHAMMAD A. LATIF

EUROPE & EURASIA (E&E) /REGIONAL ENVIRONMENTAL OFFICER (REO)

Tools Concurrent Sessions- Track 1, Thursday, July 19, 2001 (10:30 am-10:50 am)

Presentation Title: $ AND SENSE OF REG 16

(i.e., 22 CFR 216- Agency Environmental Procedures)

1.0 OBJECTIVE

The objective of the course is to introduce the Agency CTOs, Environmental Officers, Water Engineers, other USAID Field Mission/ WDC Office officials, Strategic Objective (SO) Team Members, , and Implementing Partners (Contractors, Grantees, NGOs, PVOs, etc.) in compliance procedures for 22 CFR 216-USAID Environmental Procedures.

2.0 PRESENTATION

2.1 Background and Introduction:

Background

- Why USAID should comply (Give brief history of Reg. 216)?
- **Purpose - 22 CFR 216.1 (a)**

2.2 Review of USAID Environmental Procedures

Definitions [22 CFR 216.1 (c)]

Initial Environmental Examination
Environment
Significant Effect
Threshold Decision
Exemptions [22 CFR 216.2 (b)(1)]
Categorical Exclusions (CE) **[22 CFR 216.2 (c)(2)]**
Relationship of CE to 22CFR 216.3 Procedures
Environmental Assessment (EA) **[22 CFR 216.6]**
and classes of actions w/ significant effect: **[22 CFR 216.2 (d)]**
Environmental Impact Statement (EIS) **[22 CRR 216.7]**
Minor Donor [22 CFR 216.1 (c) (12)]

Applicability Of Procedures [22 CFR 216.2]

Scope [22 CFR 216.2 (a)]
Exemptions [22 CFR 216.2 (b)(1)]
Categorical Exclusions **[22 CFR 216.2 (c)(1)]**
Negative Determination **[22 CFR 216.3 (a)(2)]**, (p. 128-129/ T.P. No. 18), Environmental Screening form (p. 131/ T.P. No. 18), and EDM 2-3
Positive Determination **[22 CFR 216.3 (a)(2)]**
Negative Declaration **[22 CFR 216.3 (a)(3)]**
Classes of Actions Normally Having a Significant Effect on the Environment **[22 CFR 216.2 (d)]**
Programmatic Environmental Assessment (PEA)**[22 CFR 216.6 (d)]**, T.P. No. 18 (p. 105-106), EDM (C-1)
Deferral **[22 CFR 216.3 (a)(1)(iii)]**, T.P. No. 18 (p. 106, p.189-190), EDM (2-4)
Monitoring Plan [22 CFR 216.3 (a)(8)], Mitigation Plan (EDM 4-20)

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Procedures [22 CFR216.3]

Preparation of Categorical Exclusion [Tab 1,EDM (A-1)]
Preparation of the Initial Environmental Examination (IEE)
For activities that cannot be explained in sufficient detail
Explanation
Estimate of time
Recommendation of deferral
Threshold Decision
Positive Threshold Decision
Negative Threshold Decision

2.4 Format

Environmental Compliance Facesheet/Narrative-Request for a Categorical Exclusion
IEE Facesheet and IEE Narrative

2.5 Handouts

- **Presentation Slides & Roster;** Trained Officials through E &E Bureau
- **22 CFR 216**
- **ADS 201 special brief & ADS 204**
- **Judge John. J. Sirica's Letter & Civil Action** 75-0500, Environmental Defense Fund Vs USAID
- **Executive Order 12114**-Enviornmental Effects Abroad of Major Federal Actions
- **FAA Section 117 (Environment and Natural Resources)**
- **FAA Section 118 (Tropical Forests)**
- **FAA Section 119 (Endangered Species-Biodiversity)**
- **IEE-Templates for** CE and ND/PD
- **IEE:** Categorical Exclusion-Russia, Project 110-0005 under SO 1.3 and SO 1.4
- **IEE:** FOREST Project –Russia (CE, ND with Conditions and Umbrella IEE)
- **IEE:** Infrastructure-Kosovo

2.6 Selected References

22 CRR 216 : Agency Environmental Procedures can be found in several documents including:

- USAID Environmental Compliance Training Handbook (Short Version)
- Technical Paper No 18 (Environmental Guidelines for Small-Scale Activities in Africa), Appendix E-2, p. 184-This document may be downloaded from http://www.usaid.gov/sdpsge/pubs/18ngo.pdf
- **Environmental Documentation Manual (EDM), Appendix D-1. This document may be downloaded from http://www.foodaid.org/usaiddoc.htm**
- **USAID External Web page under environment (www.usaid.gov)**
- **E&E Bureau web page (www.ee-enviornment.net/216)**

USAID Automated Directives System (ADS) Chapter 201: USAID Program Assistance-Planning

- **USAID Environmental Compliance Training Handbook (Short Version)**
- **USAID Intranet Homepage (www.inside.usaid.gov)**
- USAID External Web page under environment (www.usaid.gov)

USAID Automated Directives System (ADS) Chapter 204: USAID Program Assistance-Environmental Procedures

- **USAID Environmental Compliance Training Handbook**
- **USAID Intranet Homepage (www.inside.usaid.gov)**
- **USAID External Web page under environment (www.usaid.gov)**
- Technical Paper No 18 (Environmental Guidelines for Small-Scale Activities in Africa),Appendix E-1, p. 179-This document may be downloaded from http://www.usaid.gov/sdpsge/pubs/18ngo.pdf

USAID

EUROPE & EURASIA (E&E)

$ AND SENSE OF REG 16

(i.e., 22 CFR 216- Agency Environmental Procedures)

BY
MOHAMMAD A. LATIF
REGIONAL ENVIR. OFFICER (REO)

Background- Past: Why USAID should comply?

- ✓NEPA (1970) set environmental standards for domestic activities
- ✓ 1975 USAID to shut down or develop environmental procedures (law suit)
- ✓FAA section 117 amended/ E/O of Jan 1979 and 22 CFR 216 (October 1980)
- ✓Reg. 216-legal requirement and basic tool for designing sustainable activities

Background- Present: ADS 201: Why USAID should comply?

- ✓ADS 201 (2000, revised 2001): Section 201.3.6.3 specifies Environmental Review as a requirement for pre-obligation of funds
- ✓OP and RCOs are putting Environmental Compliance of Activities as one of the contractual requirements in contracts and grants

Background- Other Drivers for ER and EA work

- ✓In E&E, EU Accession is triggering ER and EA work by host countries in CEE
- ✓In E&E , another driver of ER and EA work is rebuilding of infrastructure in the Balkans with funding from Donors and IFIs

FAA Sections

- ✓**FAA Section 117** (Environment and Natural Resources)
- ✓**FAA Section 118** (Tropical Forests)
- ✓**FAA Section 119** (Endangered Species-Biodiversity)

How to Find *ADS 201 &204*

- ✓USAID Environmental Compliance Handbook
- ✓USAID External Web page (www.usaid.gov)
- ✓USAID Intranet (www.inside.usaid.gov)
- ✓Also find ADS Chapter 204 in

E&E Bureau web page (www.ee-environment.net/216) and Technical Paper No 18

(Environmental Guidelines for Small-Scale Activities in Africa), Appendix E-2, p. 184. See http://www.usaid.gov/sdpsge/pubs/18ugo.pdf

How to Find *22 CFR 216*

- ✓USAID Environmental Compliance Handbook
- ✓Technical Paper No 18 (Environmental Guidelines for Small-Scale Activities in Africa). Appendix E-2, p. 184. See http://www.usaid.gov/sdpsge/pubs/18ugo.pdf
- ✓Environmental Documentation Manual (EDM), Appendix D-1, see http://www.foodaid.org/usaiddoc.htm
- ✓USAID External Web page (www.usaid.gov)
- ✓E&E Bureau web page (www.ee-enviornment.net/216)

USAID Environmental Procedures

22 CFR 216

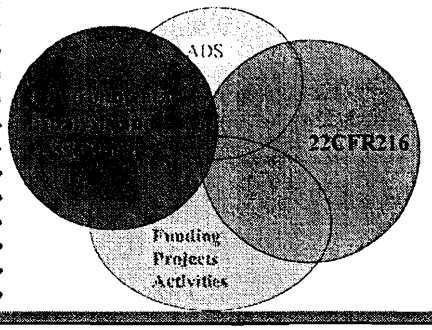
- ✓216. 1 Introduction,
- ✓216. 2 Applicability of procedures
- ✓216. 3 Procedures
- ✓216. 4 Private applicants
- ✓216. 5 Endangered species

USAID Environmental Procedures

22 CFR 216

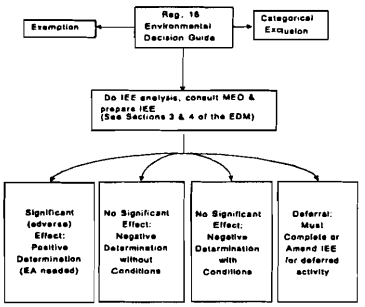
- ✓216. 6 Environmental assessments
- ✓216. 7 Environmental impact statements
- ✓216. 8 Public hearings
- ✓216. 9 Bilateral and multi-lateral studies and concise reviews of environmental issues
- ✓216.10 Records and reports

Intersection



Applicability of Procedures-Scope [22 CFR 216.2 (a)]-

Decision Tree for Reg 16



Introduction-*Purpose*

✓ **Purpose - 22 CFR 216.1 (a)**-ensure environmental factors integrated into AID decision making process and assigning responsibility for following AID procedures

Introduction-*Environmental Policy*

- ✓ **Environmental Policy- 22 CFR 216.1 (b):** Ensure that the environmental consequences of A.I.D.financed activities are identified and considered by A.I.D. and the host country prior to a final decision to proceed and that appropriate environmental safeguards are adopted

Introduction-Definitions

[22 CFR 216.1 (c)]

- ✓CEQ
- ✓Initial Environmental Examination(IEE)
- ✓Threshold Decision
- ✓Environmental Assessment
- ✓Environmental Impact Statement
- ✓Environment
- ✓Significant Effect
- ✓Minor Donor

Applicability of Procedures

[22 CFR 216.2] & More

- ✓Exemptions **[22 CFR 216.2 (b)(1)]**
- ✓Categorical exclusions **[22 CFR 216.2 (c)(1]**
- ✓Negative Determination **[22 CFR 216.3 (a)(2)]**
- ✓Actions having a significant effect on the environment **[22 CFR 216.2 (d)]** & Positive Determination **[22 CFR 216.3 (a)(2)]**
- ✓Environmental Assessment **[22 CFR 216.6]**
- ✓Programmatic EA (PEA) **[22 CFR 216.6 (d)]** & EIS **[22 CRR 216.7]**
- ✓Negative Declaration **[22 CFR 216.3 (a)(3)]**

Procedures [22 CFR 216.3]

- ✓IEE Preparation **[22 CFR 216.3 (a)(1)(i)&(ii)]**
- ✓Deferral **[22 CFR 216.3 (a)(1)(iii)]**
- ✓Pesticides Procedures **[22 CFR 216.3 (b)]**
- ✓Review after authorization of financing **[22 CFR 216.3 (a) (7)]**
- ✓Monitoring plan **[22 CFR 216.3 (a)(8)]**
- ✓Revisions **[22 CFR 216.3 (a)(9)]**

Compliance Document Format

- ✓Categorical exclusion face sheet (environmental compliance face sheet)
- ✓Request for a categorical exclusion -2 sections
- ✓IEE face sheet
- ✓IEE narrative-5 sections

Sample IEE Documents

- ✓Categorical Exclusion (CE)-Russia, Project 110-0005 under SO 1.3 and SO 1.4
- ✓FOREST Project-Russia (CE, ND with conditions and Umbrella IEE)
- ✓Infrastructure-Kosovo

IEE/ER Training in E&E

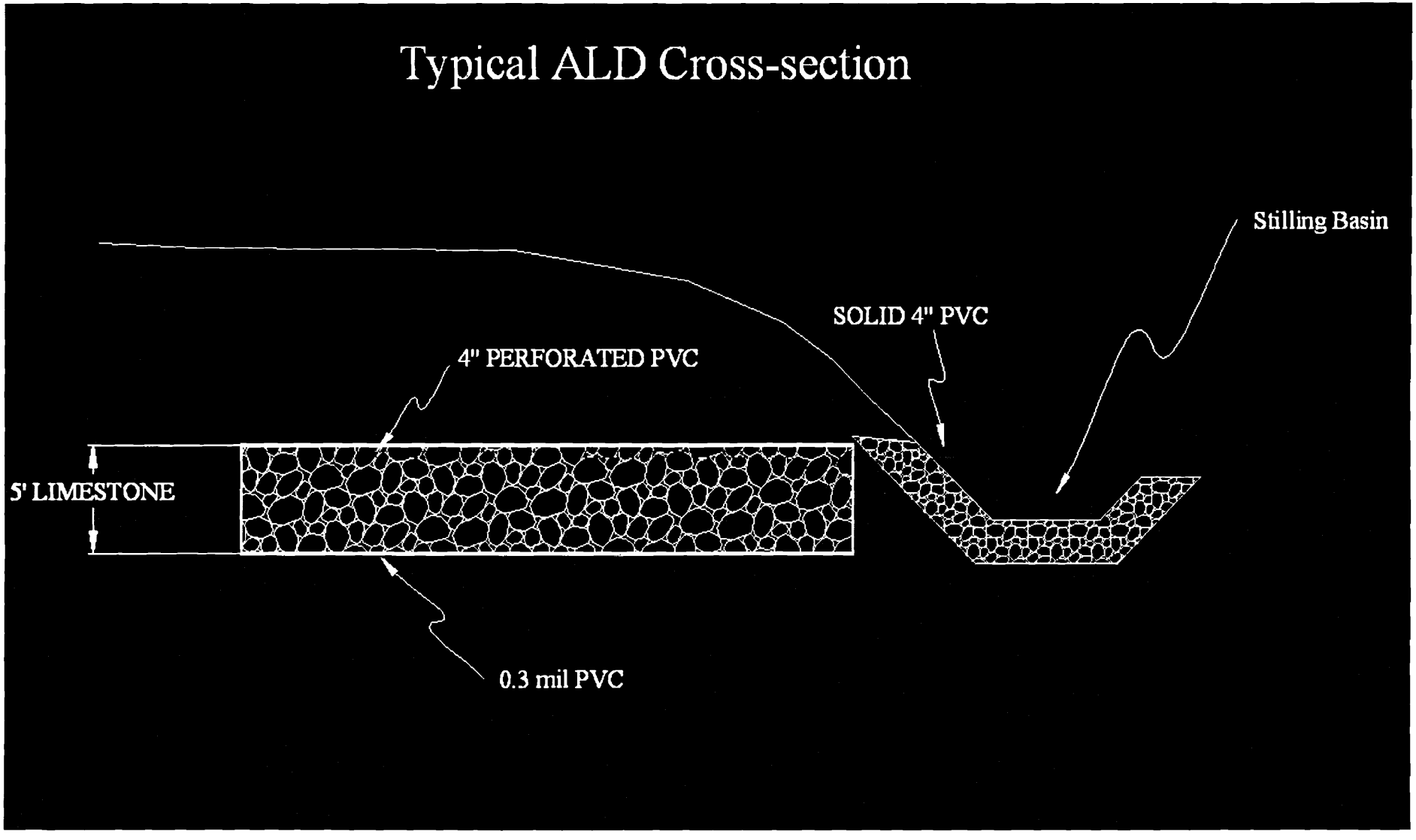
- ✓241 Officials trained (USAID, Contractors, NGOs, Ministries, etc.)
- ✓19 t/events (F& O), mostly field Missions
- ✓Host country Capability and Capacity in ER work enhanced
- ✓Initially 3-4 hour IEE/ ER training-kept it simple and in-house
- ✓Now, priority is on M&M

Handouts

- **Presentation Slides and Roster of trainees**
- **22 CFR 216, ADS 201, ADS 204**
- **Judge John. J. Sirica's Letter**
- **Executive Order 12114**
- **FAA Sections 117 (ENR), 118 (TF) ,119 (BD)**
- **IEE-Templates for** CE and ND/PD
- **IEE:** Categorical Exclusion-Russia,
- **IEE:** FOREST Project –Russia (CE, ND with Conditions and Umbrella IEE)
- **IEE:** Infrastructure-Kosovo

MDE

Project Type



MDE

Project Type

USAID/ENI CFR 216 Compliance Documents

CFR 216 Environmental Compliance Procedures

USAID Environmental Compliance Procedures

Annexes

A. Annex A: Categorical Exclusion and Initial Environmental Examination Forms
B. Annex B: Programmatic Environmental Assessments
C. Annex C: Examples of Categorical Exclusions and Initial Environmental Examinations (IEEs)
D. Annex D: Official USAID Guidance
E. Annex E: Sample Tables, Matrices and Environmental Checklists
F. Annex F: Preparation of an Umbrella IEE
G. Annex G: Environmental Review and Public Law 480

Template for R4/R2 Annex

Searchable Form of Completed 216 Documents

Click here to search the database.

Database administrators click here to update the database.

Questions? Contact Carl Maxwell, E&E/EEST/ENR.

Now searching for the record in the Activity IEE database:

Your search was for:

Project Number:
Project Title:
IEE Date:
Determination:
Country or Activity Name: Ukraine
Remarks:

And the closest matches were:

Project Number	Project Title	IEE Date	Determination	Country or Region	Activity Name	Remarks
110-0002	Energy Efficiency and Market Reform	June-97	Catagorical Exclusion	Ukraine	Ukraine Land Resource Management Institute Infrastructure	
110-0002	Energy Efficiency and Market Reform	May-97	Negative/ Data collection recommended	Ukraine	Infrastructure and Energy Efficiency Project	
110-0002	Energy Efficiency and Market Reform	April-95	Catagorical Exclusion	Ukraine	ISAR Grants	
110-0002	Energy Efficiency and Market Reform	April-95	Catagorical Exclusion	Ukraine	International Public Participation in Environmental Law Workshop	
110-0002	Energy Efficiency and Market Reform	April-95	Catagorical Exclusion	Ukraine	Practical Eco-Knowledge to Farmers Now	
110-0004	NIS Special Initiatives	July-96	Negative	Ukraine	Humanitarian Health Assistance Activity; Program for Appropriate Technology in Heath (PATH) COOP Agreement; Building rehabilitation to support local production of medical barrier materials	
110-0006	Food Systems Restructuring	no date	Catagorical Exclusion for Training/ Positive	Ukraine	Chicken Production Processing and Distribution Subgrant	
110-0006	Food Systems Restructuring	no date	Catagorical Exclusion for Training/ Positive	Ukraine	"Global Agricultural Mangement and Enterprise, Sumy Farm	

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ENVIRONMENTAL COMPLIANCE FACESHEET

Title of the Project: No. 110-0005 under SO 1.3, SO 1.4.

Country/Region: Russian Federation

Funding Period: FY1999 -2002 **Resource Levels/Amounts:** $ 10,065,570

Statement Prepared by: Marina Mikhailova Date: February 13, 2001
Revised: February 13, 2001

IEE Amendment (Y/N): No **Date of Original IEE:** February 13, 2001

Environmental Media and/or Human Health Potentially Impacted (check all that apply):
*air*__ *water*__ *land*___ *biodiversity* (specify)_____ *human health*___ *other*____ *none*_ x_

Environmental Action(s) Recommended (check all that apply):

_x___ 1. *Categorical Exclusion*(s)

___ 2. Initial Environmental Examination:

____ *Negative Determination:* no significant adverse effects expected, but multiple sites and sub-activities are involved that are not yet fully defined or designed. "Umbrella IEE" prepared.
____ conditions agreed to regarding an appropriate process of environmental capacity building and screening, mitigation and monitoring.

Summary of Findings:

The proposed action to be undertaken under SO 1.3. and SO 1.4., project No. 110-0005 activities is entirely within the classes of action cited in Title 22 of the Code of Federal Regulations (CFR) Section 216.2, (Applicability of Procedures) paragraph (c)(2), [22CFR216.2(c)(2)] and therefore, are categorically excluded. Pursuant to 22CFR216.2(c)(3), the originator of the proposed actions has determined that all activities under the RIBS project are fully within the following classes of action:

Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction) [22 CFR 216.2(c)(2)(i)].

Analyses, studies, academic or research workshops and meetings [22 CFR 216.2(c)(2)(iii)].

Document and information transfers [22 CFR 216.2 (c)(2) (v)].

Studies, projects or programs integrated to develop capability of recipient countries to engage in development planning, except to the designed to result in activities directly affecting the environment (such as construction of facilities, etc.) [22 CFR 216.2 (c)(2) (xiv)].

Revisions:

Pursuant to 22 CFR 216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Project might be "major" and the Project's effect "significant", this determination will be reviewed and revised by the originator of the project and submitted to the E&E Bureau Environmental Officer and, if appropriate, an environmental assessment will be prepared.

USAID APPROVAL OF ENVIRONMENTAL ACTION(S) RECOMMENDED:

Clearance:

Mission Director, USAID/Russia : _____ Date: 2/21/01

Regional Environmental Officer, REO/WA: _____ Date: 2/20/01
(M. A. L ATIF)

Concurrence:

Bureau Environmental Officer: Carl J. Maxwell Date: 2/21/01

Approved: ✓

Disapproved: _____

Optional Clearance:

Business Development and Investment Office Director: _____ Date: 2/20/01

Annex A.2

REQUEST FOR A

CATEGORICAL EXCLUSION

1. Background and Activity Description

This Request for Categorical Exclusion (RCE) is for the business development activities under SO 1.3. and SO 1.4.

1.1. SO 1.3., project 110-0005 consists of the following activities:

1.1.1. Entrepreneurial Business Services/East

This activity includes education, technical assistance, such as consulting and training to promote acceleration of development and growth of private enterprise in the RFE and Siberia by: enhancing the sustainability of small and medium-sized enterprises (SMEs); strengthening a group of selected Russian business support institutions (BSIs) across the regions to deliver high-quality demand-driven, fee-based business support services to SMEs; and developing indigenous capacity among Russian BSIs to administer similar volunteer technical services in the future.
Over the two years of this activity, ACDI/VOCA will assist 725 clients in the East of Russia with the help of 290 volunteers and will strengthen 10 local Russian partners.

1.1.2. Entrepreneurial Business Services/West

This activity includes education, technical assistance, such as consulting and training to promote the development and growth of private enterprise in Western Russia by: enhancing the sustainability of small and medium-sized enterprises (SMEs); strengthening a group of selected Russian business support institutions (BSIs) to deliver high-quality demand-driven, fee-based business support services to SMEs; and developing indigenous capacity among Russian BSIs to administer similar volunteer technical services in the future.
Over the two years of this activity, Citizens Democracy Corps (CDC) will assist 700 clients in the West of Russia with the help of 350 volunteers and will strengthen 11 local Russian partners.

1.1.3. Implementation of Innovative Technologies Program (INTECH/Tomsk) in Tomsk Oblast

The main aim of Innovative Technologies program in Tomsk is to provide technical assistance to technology-based enterprises in Tomsk, so that they commercialize their ideas and products, market the models of scientific technologies, train managers in selected firms on how to develop their products for both the Russian and the international market.
Increase support and capacity for the Business Support Institutions (BSI) in Tomsk use a model of technology commercialization of small and medium-sized technology-based enterprises developed in the Samara Oblast with the view of its further replication in other regions.

1.1.4. Regional Initiative Promotion of International Accounting Standards (Tomsk)

This program includes technical assistance, training programs, education, studies that support the promotion of international accounting standards (IAS) in the Tomsk Region to help enterprise management and financial officers learn new management techniques based upon open market

financial practices. The following activities focus upon the various aspects of IAS introduction and application are being organized under this program: seminars for high-level management; workshops for trainers; workshops for accountants/auditors; strengthening the capacity of local accounting associations; and assisting select local enterprises to prepare financial statements based on IAS.

1.1.5. **American Business Center (ABC) in Yuzhno-Sakhalinsk**

Through technical assistance, document and information transfers, studies the ABC activities provide support to companies either currently doing business or interested in entering the Sakhalin region, and thereby promote the development of trade and cooperation in all economic sectors by: providing up-to-date information and counseling on project development, market conditions; providing in-depth, accurate market research; implementing the highly successful search for partner initiatives; act as a center for commercial, legal and technical information, including environmental and export control information for firms and organizations of both countries; provide information and assistance to US Government in Russia and the US, covering commercial, political and other regional developments.

1.1.6. **Business Climate Survey**

Through analyses, academic and research workshops and meetings this activity is to collect and analyze the relevant statistical data pertaining to the small and medium-sized enterprise (SME) sector within selected regions of the Russian Federation. Specific outcomes are expected to be: collection of data through formal and informal interviews with 125 enterprises in 8 regions; preparation of a study containing a comprehensive analysis and assessment of the economic and institutional environment for small and medium businesses in 8 selected regions of Russia; presentation of survey results to USAID; and publication and dissemination of results among policy makers, investors, donor community members, and others seeking to support small and medium business.

1.2. SO 1.4., project 110-0005 consists of the following activities:

1.2.1. **Adoption of International Accounting Standards (IAS)**

This program includes analyses, studies, training programs to support the adoption of international accounting standards (IAS) to help Russian enterprises attract foreign or domestic investment and manage their existing resources more effectively. It is implemented in partnership with the International Center for Accounting Reform (ICAR), the Foundation for International Accounting Reform in Russia (FIAR), and the American Chamber of Commerce (AMCHAM) in Russia. This program emphasizes: preparation and publication of an authenticated Russian translation of IAS; international donor coordination in the realm of accounting standards definition, implementation and training; preparation of a series of implementing instructions for application of IAS in Russia; and seminars to facilitate the transition to full implementation of IAS.

As stated above, the activities under SO 1.3. and SO 1.4. focus on strengthening of business support institutions, capacity building, partnership facilitation, and training. As a result there is little expectation that the activities will have any sort of environmental impact.

2. **Justification for Categorical Exclusion Request**

The proposed actions to be undertaken under the SO 1.3. and SO 1.4 activities are entirely within the classes of action cited in Title 22 of the Code of Federal Regulations (CFR) Section 216.2, (Applicability of Procedures) paragraph (c)(2), [22CFR216.2(c)(2)] and therefor are categorically excluded. Pursuant to 22CFR216.2(c)(2), the originator of the proposed actions has determined that these activities are fully within the following classes of action:

Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction) [22 CFR 216.2(c)(2)(i)].

Analysis, studies, academic or research workshops and meetings [22 CFR 216.2(c)(2)(iii)].

Document and information transfers [22 CFR 216.2 (c)(2) (v)].

Studies, projects or programs integrated to develop capability of recipient countries to engage in development planning, except to the designed to result in activities directly affecting the environment (such as construction of facilities, etc.) [22 CFR 216.2 (c)(2) (xiv)].

Revisions:

Pursuant to 22 CFR 216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Project might be "major" and the Project's effect "significant", this determination will be reviewed and revised by the originator of the project and submitted to the E&E Bureau Environmental Officer and, if appropriate, an environmental assessment will be prepared.

Selected Reg 216 Issues and Responses in the Africa Bureau

Global Environment Officers' Workshop
Cumberland, MD
July 16-20, 2001

Two subjects to highlight...

- Environmental assessment capacity building by USAID/AFR;
  (Opportunities exist for cross-bureau collaboration.)
- Pest and pesticide management in USAID/AFR programs.
  (Opportunities exist for cross-bureau policy development to help USAID programs have a positive influence on pesticide use patterns.)

Evolving Approaches to Environmental Review

- Since 1995, with Agency legal and environment staff approval, AFR has promoted **devolution of responsibility to Missions** for approval of small-scale activities and, especially, small grants and sub-grants.
- Approach rests on a **strategy of environmental capacity building**, and providing environmental guidelines, technical assistance and environmental assessment training to upgrade Missions' and implementing partners' capacity to carry out effective environmental review and program implementation.
- Result is **ENCAP** = ENvironmental Assessment CAPacity building program

ENCAP Products and Services

- Environmental assessment training for small-scale development projects. Since 1995, training of partners in Africa has involved ...
  - ↑ 25 courses
  - ↑ 16 countries
  - ↑ 750+ trained in 300 organizations
- ***Environmental Guidelines for Small Scale Activities in Africa (EGSSA)*** (Revision by March, 2002)
- ***Environmental Documentation Manual (EDM)***, with BHR/FFP and Title II partners
- **Regional EA course materials**
  - → *Organizers' Guide*
  - → *Participants' Sourcebook*
  - → *Facilitators' Guide*
- **Professional development** – learning by doing.

AFR Procedures & Approaches

- **Environmental Screening and Reporting Forms** approved by Missions in most cases
- Work with BHR/FFP to **support Title II PVOs**, developing documentation manual, training materials
- **Analysis of emerging environmental issues** for guidelines development, e.g, trade and environment, healthcare waste management, micro- and small enterprises, cleaner production technologies, etc.
- **Pest and pesticide management support** in agriculture and public health

Pest & Pesticide Management Situation in AFR

- **Policy reform and structural adjustment** in Africa in 1990's has led to a shift from the public to the private sector for inputs provision, including pesticides.
- Increased risks approach, but **"window of opportunity"** exists to introduce Integrated Pest Management
- Pesticide management a concern in nearly all AFR Missions' programs at one level or another, esp. in export-oriented agriculture and recently in malaria control
- AFR developed Integrated Pest Management (IPM) technical support networks and mechanisms

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Support to Pest & Pesticide Management Decisionmaking

- Numerous IEEs with various levels of analyses justifying certain limited uses
  - Uganda economic growth SO's Pesticide Analysis and Mitigation Plan, Agricultural Sector Procedures Guide
- Economic and Environmental evaluations to influence Missions' strategies
- Programmatic Environmental Assessments
  - PVO Support Program in Mozambique
  - Locusts in Africa and Asia - 1989
  - Transboundary (Outbreak & Migratory) Pests
  - Insecticide Treated Materials for Malaria Control
- Safe Use Action Plans
- Global Crop Protection Compendium (CD-ROM & Web)
- IPM CRSP support for research
- Pesticide Action Network (PAN) Africa – NGO support
- Global IPM Facility support (FAO, WB, etc.)

The "PERSUAP" Tool

"Pesticide Evaluation Report and Safer Use Action Plan" (PERSUAP).

- Two parts:
  - PER – 12 info and analysis elements from Reg 216 Pesticide Procedures
  - SUAP – an action plan based on conclusions from the PER.
- Comprehensive, but less than an EA. Appropriate to the scale of use generally encountered in African programs.

Key Insights from Insecticide Treated Materials PEA and PERSUAP

- The benefits of ITNs are substantial and outweigh risks (est'd 6 lives saved/1,000 children protected.)
- Best practices:
  - WHO-recommended products only.
  - Avoid exposure, where possible; formulation is the key.
  - Best for environment and for efficacy just arrived on market – **long-lasting nets** that postpone need for retreatment (to 20 washes, from 3 previously). They are cost-effective and seem the option of choice.
- Potentially significant issue: the possibility for substitution of different pesticides once retreatment is practiced. Unknown how likely, as people rarely retreat their nets.
- Monitoring for adverse effects needs to be built into ITN programs.

Critical Pesticide Management Issues

- Agency and partners in AFR have very limited capacity for pest and pesticide management. Agency needs stronger support for the adoption of IPM: beyond research and one-off training.
- Botanical pesticides - explicit USAID policy may be needed.
- Safer use of pesticides
  - Avoid use when possible (last resort)
  - Use least toxic products
  - Reduce exposure (e.g., training, proper formulations, good labeling and packaging, protective gear) .
- Protection of food aid commodities once delivered in country

Opportunities for Action re: Pesticides in USAID Programs

- Update USAID Pesticide Procedures
- Develop new IPM outreach support instrument in Agency agriculture sector strategy
- Introduce community-based ("Farmer Field School") informal mutual learning approaches for crop health management
- Apply AFR Insecticide Treated Materials PEA to rest of Agency
- Encourage more emphasis on staff capacity in pest and pesticide management among implementing partners if crop production is a significant element

LAP1F

UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF COLUMBIA

ENVIRONMENTAL DEFENSE FUND, INC., et al.,

Plaintiffs,

v.

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, et al.,

Defendants.

Civil Action No. 75-0500

FILED

DEC 5 1975

JAMES F. DAVEY, Clerk

ORDER

This court has carefully considered the stipulation executed by the parties to this case. The court has concluded that the stipulation establishes a fair and equitable method of procedure in this action that it resolves in a fair and equitable manner some of the issues raised, and that approval of the stipulation would serve the public interest.

NOW THEREFORE, it is ordered that the attached stipulation is approved.

John J. Sirica

John J. Sirica
United States District Judge
for the District of Columbia

DATED: 12/5/75

United States District Court
for the District of Columbia
A TRUE COPY

JAMES F. DAVEY, CLERK

By James F. Caputano
Deputy Clerk

FOR THE DISTRICT OF COLUMBIA

ENVIRONMENTAL DEFENSE FUND, INC. et al.,

Plaintiffs,

v.

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, et al.,

Defendants.

Civil Action No. 75-0500

FILED
DEC 5 1975
JAMES F. DAVEY
CLERK

STIPULATION

The parties to this action, by and through their respective undersigned counsel, hereby stipulate and agree, subject to the approval of the Court, as follows:

1. The United States Agency for International Development ("AID") will prepare, circulate, make available to the public, and consider in its decisionmaking process, in accordance with the schedule and procedures set forth below and pursuant to Section 102(2)(C) of the National Environment Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852, 42 U.S.C. §§4321 et seq. ("NEPA"); Executive Order 11514, 3 C.F.R. 271 (Supp. 1974); and the guidelines of the President's Council on Environmental Quality, 40 C.F.R., Part 1500 (the "CEQ guidelines") a detailed environmental impact statement (the "EIS") on its pest management program including its pesticide activities The pest management program, as used herein, means all activities conducted, supported, financed, and/or otherwise assisted by AID intended to control or eliminate pests. Pesticide activities as used herein, means all activities conducted, supported, financed, and/or otherwise assisted by AID for the procurement or use of pesticides. Pesticides, as used herein, mean substances or mixtures of substances, (a) intended for prevention, destroying, repelling, or mitigating any unwanted insects, rodent nematodes, fungi, weeds and other forms of plant or animal li or viruses, bacteria or other micro-organisms (except viruses,

NEPA 1969

bacteria or other micro-organisms on or living in man or other living animals), or (b) intended for use as plant regulator, defoliant or desiccant.

2. AID may utilize a contractor and outside consultants or experts as well as other federal agencies, international organizations and representatives of foreign governments to assist in the preparation of the EIS, consistent with Section 1500.7(c) of the CEQ guidelines, and provided that, to the extent consistent with applicable laws and regulations, plaintiffs will be given the opportunity to identify and submit views to AID about any prospective contractors, consultants, or experts. Preparation of the EIS will be done in consultation with the Environmental Protection Agency (the "EPA").

3. Within 15 days of the approval of this stipulation by the Court, AID will publish in the Federal Register a notice of the intent to prepare the EIS. The notice will describe the pest management program, including the pesticide activities, in general terms, state the general scope of the EIS together with the anticipated schedule for preparation, and solicit comments and information from interested parties.

4. The EIS will be issued, circulated for comment to other federal agencies, and made available for comment to the public, the World Health Organization, the Food and Agricultural Organization, and foreign governments that are receiving or are eligible to receive AID assistance for the procurement and use of pesticides and desire to receive a copy, in draft form by ~~August 31~~, 1976. This date may be changed by agreement of the parties or by the Court upon good cause shown. Public and other comments on the draft EIS will be accepted within 60 days of the issuance of the draft. The EIS will be issued in final form within 45 days of the close of the comment period.

5. The EIS will contain, inter alia, the following, to the maximum extent practicable:

a. Historical description of the pest management program, including the pesticide activities.

b. Description of the scope and nature of current and reasonable anticipated pest management program, including pesticide activities, regulations, guidelines, policies and practices relating thereto; an individual description of any pesticides included in such activities for which the registration for use in the United States has been finally suspended or cancelled by the EPA and for 2, 4, 5-T, Chlordane, Heptachlor, and such descriptions by functional or chemical groups of all other pesticides included in such activities; and a statement with respect to each pesticide included in the pesticide activities of the amounts used, by geographic area and purpose.

c. Assessment of environmental impacts, including adverse environmental impacts which cannot be avoided, of the current and reasonably anticipated pest management program, including the pesticide activities, wherever such impacts or activities occur, subdivided by areas of activity, i.e., food production and preservation, public health programs, non-food crops, etc., including:

(i) effects on humans using the pesticides or living near the locale where the pesticides are used, or elsewhere;

(ii) effects on flora and fauna, including fish and wildlife;

(iii) effects on pesticide residues in food, with a focus on international and national residue tolerances;

(iv) effects caused because of the mobility of pesticides as they may be carried to other areas by water, air, or otherwise; and

(v) effects caused by the cumulative impact of the pesticides, to the extent data or analyses are available on such cumulative impacts.

d. Analysis of reasonable alternatives and their environmental effects, including, but not limited to:

(1) Terminating or temporarily suspending all or part of the pest management program, including pesticide activities;

(2) Providing assistance for forms of pest management other than the use of pesticides; and

(3) Requiring user compliance with standards, either those promulgated by the EPA for use of pesticides in the United States (including cancellations, suspensions, restricted uses, and label restrictions) or some other standards.

e. Conclusions as to which pesticides AID will not and which pesticides AID will provide assistance for, and, in detail, the limiting factors applicable to those pesticides for which AID will provide assistance including, but not limited to, conditions relating to use, climate, flora, fauna, or geography of areas where each pesticide may be used, handling and packaging and those efforts which will be undertaken, where possible, to obtain the agreement of host countries and/or international and regional organizations, for the establishment of such data-gathering mechanisms as might be necessary and appropriate to monitor or prevent potential adverse environmental impact associated with pesticide activities collectively and individually.

6. As soon as possible after the final EIS is filed, AID will publish regulations implementing the conclusions referred to in paragraph 5. The regulations will provide that, when assistance for the procurement and use of pesticides is sought, AID will determine, in writing, whether the specific pesticide, use, climatic, geographic or other relevant condition or factor has been analyzed in the EIS and is provided

for in the regulations. If they have not been analyzed and provided for in the regulations, AID will not provide assistance without initially assessing the impact of the pesticide, and if such assessment reveals potential significant environmental impact AID will not provide assistance without the preparation, circulatio for comment, release to the public, and consideration in its decisionmaking process, of a further environmental impact statement or an amendment to the EIS. Notwithstanding the above, AID may provide assistance before such assessment or environmental impact statement is completed (a) if the AID Administrator personally determine that an emergency, as defined in paragraph 7, exists and that the time available from discovery or prediction of the pest outbreak is insufficient for the preparation of the assessment or statement and (b) for controlled experimentation of limited scope, and not involving application for crop production purposes. In instances where capital or technical assistance is sought and where specific uses of such assistance are not identified, AID will condition the provision of such assistance on compliance with AID's regulations. Written copies of all determinations and assessments referred to above will be made available, on request, to any interested member of the public.

7. (a) Until the regulations referred to in paragraph 6, above, are effective, AID will not provide assistance for the procurement and use of --

(1) dichlorodiphenyl trichloroenthane (DDT) (except for public health use)

(2) Aldrin and Dieldrin (except for restricted termite use, the dipping of roots and tops of non-food plants)

(3) 2, 4, 5-T

(4) Chlordane

(5) Heptachlor

and will not provide assistance for a pesticide which is not registered, for a use which is not registered, for a pesticide or a use which has been finally suspended, or for a use or pest-

60 days from such notice, except that such assistance may be provided if the Administrator personally determines, in writing, that the benefits of using the pesticide outweigh the potential adverse effects and that no preferable alternative is available. The above prohibitions do not apply to assistance for pesticides if the responsible AID employee determines, in writing, that the pesticide will be used for health purposes and that significant health problems will occur without the use of the pesticide. Further, AID may provide assistance for the use of any pesticide referred to above if the AID Administrator personally determines, in writing, in each specific instance, that an emergency exists. An emergency will be determined to exist when a pest outbreak has or is about to occur and no pesticide registered for the particular use, or alternative method of control is available to eradicate or control the pest, and when significant economic problems will occur without the use of the pesticides. Further, notwithstanding the above, AID may provide assistance for the procurement and use of a pesticide if the pesticide is not registered in the United States or if the pesticide has been cancelled at the end of a five-year registration period or at the request of a registrant and if the pesticide will be used on agricultural crops and associated vectors not grown or found in the United States, and if the AID Administrator personally determines, in writing, that the benefits of using the pesticide outweigh the potential adverse effects and that no preferable alternative is available.

(b) Any determination by the AID Administrator mentioned in subparagraph (a), above, will be made in consultation with the EPA, will include a statement of the basis for the determination, and will be published in the Federal Register within 10 days of the time the determination is made. AID will, unless time constraints do not permit, provide public notice that the Administrator intends to render such a determination.

(c) Within 30 days of the approval of this Stipulation by the Court, AID will issue and publish in the Federal Register a regulation or other directive implementing this paragraph.

8. AID recognizes its responsibilities to conduct its operations in a manner that mitigates or avoids any potential short- or long-term deleterious environmental effects of local, regional or global proportions. AID will ensure that the environmental consequences of proposed AID-financed activities are identified and properly analyzed. AID will assist, to the extent possible, in strengthening the indigenous capabilities of developing countries to appreciate and evaluate the potential environmental effects of proposed development strategies and projects and to select, implement and manage effective environmental protection measures.

9. AID will propose, solicit and consider public comment on, and adopt environmental regulations, to assist AID in implementing the requirements of NEPA, such NEPA regulations to be adopted in consultation with the CEQ.

10. The following schedule will apply to the regulations referred to in paragraph 9 above:

a. Draft regulations published for comment in the Federal Register by February 29, 1976.

b. Public comment accepted for a period of approximately 60 days.

c. Final regulations published in the Federal Register 30 days after the close of the comment period.

The above dates can be altered by agreement of the parties or by the Court upon good cause shown.

11. The environmental regulations, referred to in paragraph 9 above, will cover all aspects of AID's activities (capital assistance, technical assistance, commodity assistance

a. AID will assess every proposed new activity at the earliest possible stage, including those that may arise in connection with ongoing projects, to identify whether the activity is a major action significantly affecting the environment.

b. AID will prepare a detailed environmental impact statement in accordance with Section 102(2)(C) of NEPA, the CEQ guidelines, and AID regulations on any aspect of AID's activities (capital assistance, technical assistance, commodity assistance, etc.) covered by NEPA in each instance where such a statement is required. Where the proposed action will not require an impact statement, AID will, nevertheless, assess the potential environmental effects and the results of that assessment will be an integral part of its decision-making process.

c. AID will prepare supplements to previously prepared assessments or impact statements to cover significant new information which may become available or to cover significant modifications of programs or activities which were previously studied in an assessment or environmental impact statement.

d. When an AID activity is undertaken with the understanding that further identifiable, related activites are intended to be undertaken of substantially the same nature, promoted and financed by AID or another U.S. government agency, or where AID assistance is conditioned upon the recipient country's undertaking further related activities of substantially the same nature, AID will identify the further activities in an AID project paper and will consider the cumulative impact of its activity and of the further activities when preparing assessments and in deciding whether to prepare an environmental impact statement and, if an environmental impact

12. Upon the approval by the Court of this Stipulation, the attached Order shall be entered herein.

Respectfully submitted,

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Dated: December 1, 1975
Washington, D. C.

Outline of the IEE Narrative: Template

INITIAL ENVIRONMENTAL EXAMINATION

Program/Project/SO/ Activity Data:
Program/ Project/ SO/ Activity Number:
Country/Region:
Title of Program/Project/ SO/ Activity/Project:

1. **BACKGROUND AND ACTIVITY DESCRIPTION**

   - **1.1 Background**
   - **1.2 Description of Activities**
   - **1.3 Purpose and Scope of IEE**

2. **COUNTRY AND ENVIRONMENTAL INFORMATION (BASELINE INFORMATION)**

   - **2.1 Locations Affected**
   - **2.2 National Environmental Policies and Procedures (of host country both for environmental assessment and pertaining to the sector)**

3. **EVALUATION OF ACTIVITY/PROGRAM ISSUES WITH RESPECT TO ENVIRONMENTAL IMPACT POTENTIAL**

4. **RECOMMENDED MITIGATION ACTIONS (INCLUDING MONITORING AND EVALUATION)**

   - **4.1 Recommended IEE Determination**
   - **4.2 Mitigation, Monitoring, and Evaluation**

   FOR UMBRELLA IEE, THE FOLLOWING MIGHT BE USED:
   - **4.1 Recommended Planning Approach**
   - **4.2 Environmental Screening and Review Process**
   - **4.3 Promotion of Environmental Review and Capacity Building Procedures**
   - **4.4 Environmental Responsibilities**
   - **4.5 Mitigation, Monitoring, and Evaluation**

5. **SUMMARY OF FINDINGS**

   - **5.1 Environmental Determinations**
   - **5.2 Conditions**

Annotated IEE Narrative

INITIAL ENVIRONMENTAL EXAMINATION

Program/Project/SO/ Activity Data:
Program/ Project/ SO/ Activity Number:
Country/Region:
Title of Program/Project/ SO/ Activity/Project:

The following narrative should be organized around the major activity sub-headings, if the activity categories are rather distinct, e.g., road construction, agricultural development, and irrigation works. As in sample IEEs (see enclosed), treat each major activity under each section. Alternatively, one could organize by activity and then each major heading would cover the Sections 1 to 4. The summary in Section 5 is to cover all categories addressed, with an overview of the summaries at the end.

If you are preparing an "Umbrella" IEE, please refer to Annex F of the EDM/FAM for the detailed description of what the outline might include.

1.0 BACKGROUND AND ACTIVITY DESCRIPTION

Describe why the activity is desired and appropriate, and outline the key activities proposed for funding. A current activity description should be provided and the purpose and scope of the IEE indicated (amendment, why needed, what it covers).

2.0 COUNTRY AND ENVIRONMENTAL INFORMATION

This section is critical and should briefly assess the current physical environment that might be affected by the activity. Depending upon the activities proposed, this could include an examination of land use, geology, topography, soil, climate, groundwater resources, surface water resources, terrestrial communities, aquatic communities, environmentally sensitive areas (e.g., wetlands or protected species), agricultural cropping patterns and practices, infrastructure and transport services, air quality, demography (including population trends/projections), cultural resources, and the social and economic characteristics of the target communities.

The information obtained through this process should serve as an environmental baseline for future environmental monitoring and evaluation. Be selective in the country and environmental information you provide, as it should be specific to the activity being proposed and more information is not necessarily better.

Finally, indicate the status and applicability of host country, Mission, and Cooperating Sponsors (PVOs & NGOs) policies, programs and procedures in addressing natural resources, the environment, and other related issues.

3.0 EVALUATION OF ACTIVITY/PROGRAM ISSUES WITH RESPECT TO ENVIRONMENTAL IMPACT POTENTIAL

This section of the IEE is intended to define all potential environmental impacts of the activity or project, whether they are considered direct, indirect, beneficial, undesired, short-term, long-term, or cumulative.

4.0 RECOMMENDED MITIGATION ACTIONS (INCLUDING MONITORING AND EVALUATION)

For each proposed activity or major component recommend whether a specific intervention included in the activity should receive a categorical exclusion, negative determination (with or without conditions), positive determination, etc., as well as cite which sections of Reg. 216 support the requested determinations.

Recommend what is to be done to avoid, minimize, eliminate or compensate for environmental impacts. For activities where there are expected environmental consequences, appropriate environmental monitoring and impact indicators should be incorporated in the activity's monitoring and evaluation plan.

5.0 SUMMARY OF FINDINGS

This should summarize the proposed environmental determinations and recommendations.

SEC. 117 Environment and Natural Resources

SEC. 118. Tropical Forests

SEC. 119 Endangered Species (Biodiversity)

USAID Missions are legally obligated (Section 117) to conduct an assessment of tropical forestry and biological diversity in accordance with Section 118 and 119 of the Foreign Assistance Act (FAA).

(5)[69] the extent to which each country has extended protection to refugees, including the provision of first asylum and resettlement;[71]

(6)[69,71] the steps the Administrator has taken to alter United States programs under this part in any country because of human rights considerations; and

(7)[70,71] wherever applicable, violations of religious freedom, including particularly severe violations of religious freedom (as defined in section 3 of the International Religious Freedom Act of 1998).

(e)[63,72] The President is authorized and encouraged to use not less than $3,000,000 of the funds made available under this chapter, chapter 10 of this part,[73] and chapter 4 of part II for each fiscal year for studies to identify, and for openly carrying out, programs and activities which will encourage or promote increased adherence to civil and political rights, including the right to free religious belief and practice,[74] as set forth in the Universal Declara-

[71] Sec. 102(d)(1) of the International Religious Freedom Act of 1998 (Public Law 105–292; 112 Stat. 2794) struck out "and" at the end of para. (4); replaced a period at the end of this para. (5) with "; and"; and added a new para. (6). Paras. (4) and (5), however, had already been redesignated as paras. (5) and (6) by sec. 2216 of Public Law 105–277. Sec. 2216 of Public Law 105–277 also redesignated a then-nonexistent para. (6) as para. (7). The amendment has been made to the subsequently enacted para. (6), shown here as para. (7).

[72] The first phrase, "The President is authorized and encouraged to use not less than", was added by sec. 109(1) of the International Development and Food Assistance Act of 1978 (Public Law 95–424; 92 Stat. 947).

The authorization level of $3,000,000 and the reference to funds available under chapter 4 of part II were added by sec. 1002(a)(1) of the Department of State Authorization Act, Fiscal Years 1984 and 1985 (Public Law 98–164; 97 Stat. 1052). Previously, amendments by sec. 306 of the International Security and Development Cooperation Act of 1981 (Public Law 97–113; 95 Stat. 1533), sec. 504 of Public Law 96–533 (94 Stat. 378), and sec. 109(2) of Public Law 95–424 (92 Stat. 947) authorized the use of $1,500,000 for this purpose in fiscal years 1982–1983, fiscal year 1981, and fiscal year 1979, respectively. The original text of subsec. (e), added by sec. 111 of Public Law 95–88 (91 Stat. 537), authorized the use of $750,000 for this purpose during fiscal year 1978.

The authorization level of $1,500,000 for the fiscal year 1986 and for each fiscal year thereafter was added by sec. 202 of Public Law 99–440 (100 Stat. 1095).

Paragraph designation "(1)" and a new par. (2) were added to subsec. (e) by sec. 1002(a)(3) of the Department of State Authorization Act, Fiscal Years 1984 and 1985 (Public Law 98–164; 97 Stat. 1052). Par. (2) subsequently was repealed by sec. 4(a)(3)(B) of the South African Democratic Transition Support Act of 1993 (Public Law 103–149; 107 Stat. 1505), and the designation for par. (1) was struck out.

Par. (2) of subsec. (e) had stated a priority, with supporting guidelines and conditions, for giving grants to "nongovernmental organizations in South Africa promoting political, economic, social, juridical, and humanitarian efforts to foster a just society and to help victims of apartheid.".

Section 4(a)(3)(B) of the South African Democratic Transition Support Act of 1993 (Public Law 103–149; 107 Stat. 1505) also repealed subsec. (f) and (g) of sec. 116, which had been added by sec. 202(b) of Public Law 99–440 (100 Stat. 1095).

Subsec. (f) directed not less than $500,000 under section (e)(2)(A) to be used "for direct legal and other assistance to political detainees and prisoners and their families, including the Investigation of the killing of protesters and prisoners, and for support for actions of black-led community organizations to resist, through nonviolent means, the enforcement of apartheid policies...".

Subsec. (g) directed $175,000 each fiscal year to "be used for direct assistance to families of victims of violence such as 'necklacing' and other such inhumane acts", and another $175,000 to "be made available to black groups in South Africa which are actively working toward a multi-racial solution to the sharing of political power in that country through nonviolent, constructive means.".

[73] Sec. 562 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1991 (Public Law 101–513; 104 Stat. 2026), added a new chapter 10 to part I of this Act, providing for long-term development in sub-Saharan Africa, and made a conforming amendment by inserting ", chapter 10 of this part," here, and text at the end of the first sentence beginning at "or under chapter 10".

[74] Sec. 501(b) of the International Religious Freedom Act of 1998 (Public Law 105–292; 112 Stat. 2811) in[illegible]ed ", including the right to free religious belief and practice" after "adherence to civil and p[illegible]l rights". Subsec. (a) of that sec. provided the following:

tion of Human Rights, in countries eligible for assistance under this chapter or under chapter 10 of this part, except that funds made available under chapter 10 of this part may only be used under this subsection with respect to countries in sub-Saharan Africa. None of these funds may be used, directly or indirectly, to influence the outcome of any election in any country.

Sec. 117.[75] *Assistance for Disadvantaged South Africans.*— * * * [Repealed—1993]

Sec. 117.[76] Environment and Natural Resources.—(a) The Congress finds that if current trends in the degradation of natural resources in developing countries continue, they will severely undermine the best efforts to meet basic human needs, to achieve sustained economic growth, and to prevent international tension and conflict. The Congress also finds that the world faces enormous, urgent, and complex problems, with respect to natural resources, which require new forms of cooperation between the United States and developing countries to prevent such problems from becoming unmanageable. It is, therefore, in the economic and security interests of the United States to provide leadership both in thoroughly reassessing policies relating to natural resources and the environ-

"SEC. 501. ASSISTANCE FOR PROMOTING RELIGIOUS FREEDOM.

"(a) FINDINGS.—Congress makes the following findings:

"(1) In many nations where severe violations of religious freedom occur, there is not sufficient statutory legal protection for religious minorities or there is not sufficient cultural and social understanding of international norms of religious freedom.

"(2) Accordingly, in the provision of foreign assistance, the United States should make a priority of promoting and developing legal protections and cultural respect for religious freedom.".

[75] Formerly at 22 U.S.C. 2151o. Sec. 117 was repealed by sec. 4(a)(3)(B) of the South African Democratic Transition Support Act of 1993 (Public Law 103–149; 107 Stat. 1505). It had been added originally by sec. 201(b) of Public Law 99–440 (100 Stat. 1094). Sec. 117 provided assistance for disadvantaged South Africans through South African nongovernmental organizations, such as the Educational Opportunities Council, the South African Institute of Race Relations, READ, professional teachers' unions, the Outreach Program of the University of the Western Cape, the Funda Center in Soweto, SACHED, UPP Trust, TOPS, the Wilgespruit Fellowship Center (WFC), and civic and other organizations working at the community level which did not receive funds from the Government of South Africa.

A previous sec. 117, relating to infant nutrition, was repealed in 1978.

[76] 22 U.S.C. 2151p. Sec. 117 was redesignated from being sec. 118 by sec. 301(1) of Public Law 99–529, resulting in the creation of two sections 117. Sec. 301(2) of Public Law 99–529 (100 Stat. 3014) further deleted subsec. (d) of that section, which dealt with tropical forests, and then sec. 301(3) of Public Law 99–529 added a new section 118 entitled "Tropical Forests". This section, as added by sec. 113 of Public Law 95–88 (91 Stat. 537) and amended by sec. 110 of Public Law 95–424 (92 Stat. 948) and sec. 122 of Public Law 96–53 (93 Stat. 948), was further amended and restated by sec. 307 of the International Security and Development Cooperation Act of 1981 (Public Law 97–113; 95 Stat. 1533). This section previously read as follows:

"Sec. 118. Environment and Natural Resources.—(a) The President is authorized to furnish assistance under this part for developing and strengthening the capacity of less developed countries to protect and manage their environment and natural resources. Special efforts shall be made to maintain and where possible restore the land, vegetation, water, wildlife and other resources upon which depend economic growth and human well-being especially that of the poor.

"(b) In carrying out programs under this chapter, the President shall take into consideration the environmental consequence of development actions.".

See also sec. 517(e) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1999 (division A, sec. 101(d) of Public Law 105–277; 112 Stat. 2681), relating to assistance to the new independent states of the former Soviet Union.

See also sec. 534 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1990 (Public Law 101–167; 103 Stat. 1228), as amended, relating to "Global Warming Initiative".

See also sec. 533 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1991 (Public Law 101–513; 104 Stat. 2013), as amended, relating to "Environment and Global Warming".

See also sec. 532 of the Foreign Operations, Export Financing, and Related Pro[illegible] Appropriations Act, 1993 (Public Law 102–391; 106 Stat. 1666), relating to "Environment".

ment, and in cooperating extensively with developing countries in order to achieve environmentally sound development.

(b) In order to address the serious problems described in subsection (a), the President is authorized to furnish assistance under this part for developing and strengthening the capacity of developing countries to protect and manage their environment and natural resources. Special efforts shall be made to maintain and where possible to restore the land, vegetation, water, wildlife, and other resources upon which depend economic growth and human well-being, especially of the poor.

(c)(1) The President, in implementing programs and projects under this chapter and chapter 10 of this part,[77] shall take fully into account the impact of such programs and projects upon the environment and natural resources of developing countries. Subject to such procedures as the President considers appropriate, the President shall require all agencies and officials responsible for programs or projects under this chapter—

(A) to prepare and take fully into account an environmental impact statement for any program or project under this chapter significantly affecting the environment of the global commons outside the jurisdiction of any country, the environment of the United States, or other aspects of the environment which the President may specify; and

(B) to prepare and take fully into account an environmental assessment of any proposed program or project under this chapter significantly affecting the environment of any foreign country.

Such agencies and officials should, where appropriate, use local technical resources in preparing environmental impact statements and environmental assessments pursuant to this subsection.

(2) The President may establish exceptions from the requirements of this subsection for emergency conditions and for cases in which compliance with those requirements would be seriously detrimental to the foreign policy interests of the United States.

Sec. 118.[78] Tropical Forests.

(a) IMPORTANCE OF FORESTS AND TREE COVER.—In enacting section 103(b)(3) of this Act the Congress recognized the importance of forests and tree cover to the developing countries. The Congress is particularly concerned about the continuing and accelerating alteration, destruction, and loss of tropical forests in developing countries, which pose a serious threat to development and the environment. Tropical forest destruction and loss—

(1) result in shortages of wood, especially wood for fuel; loss of biologically productive wetlands; siltation of lakes, reservoirs, and irrigation systems; floods; destruction of indigenous peoples; extinction of plant and animal species; reduced capacity for food production; and loss of genetic resources; and

[77] Sec. 562 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1991 (Public Law 101-513; 104 Stat. 2026), added a new chapter 10 to part I of this Act, providing for long-term development in sub-Saharan Africa, and made a conforming amendment by inserting "and chapter 10 of this part" here.

[78] 22 U.S.C. 2151p-1. Sec. 118 was added by sec. 301(3) of Public Law 99-529 (100 Stat. 3014). See also footnote 76.

(2) can result in desertification and destabilization of the earth's climate.

Properly managed tropical forests provide a sustained flow of resources essential to the economic growth of developing countries, as well as genetic resources of value to developed and developing countries alike.

(b) PRIORITIES.—The concerns expressed in subsection (a) and the recommendations of the United States Interagency Task Force on Tropical Forests shall be given high priority by the President—

(1) in formulating and carrying out programs and policies with respect to developing countries, including those relating to bilateral and multilateral assistance and those relating to private sector activities; and

(2) in seeking opportunities to coordinate public and private development and investment activities which affect forests in developing countries.

(c) ASSISTANCE TO DEVELOPING COUNTRIES.—In providing assistance to developing countries, the President shall do the following:

(1) Place a high priority on conservation and sustainable management of tropical forests.

(2) To the fullest extent feasible, engage in dialogues and exchanges of information with recipient countries—

(A) which stress the importance of conserving and sustainably managing forest resources for the long-term economic benefit of those countries, as well as the irreversible losses associated with forest destruction, and

(B) which identify and focus on policies of those countries which directly or indirectly contribute to deforestation.

(3) To the fullest extent feasible, support projects and activities—

(A) which offer employment and income alternatives to those who otherwise would cause destruction and loss of forests, and

(B) which help developing countries identify and implement alternatives to colonizing forested areas.

(4) To the fullest extent feasible, support training programs, educational efforts, and the establishment or strengthening of institutions which increase the capacity of developing countries to formulate forest policies, engage in relevant land-use planning, and otherwise improve the management of their forests.

(5) To the fullest extent feasible, help end destructive slash-and-burn agriculture by supporting stable and productive farming practices in areas already cleared or degraded and on lands which inevitably will be settled, with special emphasis on demonstrating the feasibility of agroforestry and other techniques which use technologies and methods suited to the local environment and traditional agricultural techniques and feature close consultation with and involvement of local people.

(6) To the fullest extent feasible, help conserve forests which have not yet been degraded, by helping to increase production on lands already cleared or degraded through support of reforestation, fuelwood, and other sustainable forestry projects and

practices, making sure that local people are involved at all stages of project design and implementation.

(7) To the fullest extent feasible, support projects and other activities to conserve forested watersheds and rehabilitate those which have been deforested, making sure that local people are involved at all stages of project design and implementation.

(8) To the fullest extent feasible, support training, research, and other actions which lead to sustainable and more environmentally sound practices for timber harvesting, removal, and processing, including reforestation, soil conservation, and other activities to rehabilitate degraded forest lands.

(9) To the fullest extent feasible, support research to expand knowledge of tropical forests and identify alternatives which will prevent forest destruction, loss, or degradation, including research in agroforestry, sustainable management of natural forests, small-scale farms and gardens, small-scale animal husbandry, wider application of adopted traditional practices, and suitable crops and crop combinations.

(10) To the fullest extent feasible, conserve biological diversity in forest areas by—

(A) supporting and cooperating with United States Government agencies, other donors (both bilateral and multilateral), and other appropriate governmental, intergovernmental, and nongovernmental organizations in efforts to identify, establish, and maintain a representative network of protected tropical forest ecosystems on a worldwide basis;

(B) whenever appropriate, making the establishment of protected areas a condition of support for activities involving forest clearance of degradation; and

(C) helping developing countries identify tropical forest ecosystems and species in need of protection and establish and maintain appropriate protected areas.

(11) To the fullest extent feasible, engage in efforts to increase the awareness of United States Government agencies and other donors, both bilateral and multilateral, of the immediate and long-term value of tropical forests.

(12) To the fullest extent feasible, utilize the resources and abilities of all relevant United States Government agencies.

(13) Require that any program or project under this chapter significantly affecting tropical forests (including projects involving the planting of exotic plant species)—

(A) be based upon careful analysis of the alternatives available to achieve the best sustainable use of the land, and

(B) take full account of the environmental impacts of the proposed activities on biological diversity,

as provided for in the environmental procedures of the Agency for International Development.

(14) Deny assistance under this chapter for—

(A) the procurement or use of logging equipment, unless an environmental assessment indicates that all timber harvesting operations involved will be conducted in an environmentally sound manner which minimizes forest destruction and that the proposed activity will produce positive economic benefits and sustainable forest management systems; and

(B) actions which significantly degrade national parks or similar protected areas which contain tropical forests or introduce exotic plants or animals into such areas.

(15) Deny assistance under this chapter for the following activities unless an environmental assessment indicates that the proposed activity will contribute significantly and directly to improving the livelihood of the rural poor and will be conducted in an environmentally sound manner which supports sustainable development:

(A) Activities which would result in the conversion of forest lands to the rearing of livestock.

(B) The construction, upgrading, or maintenance of roads (including temporary haul roads for logging or other extractive industries) which pass through relatively undegraded forest lands.

(C) The colonization of forest lands.

(D) The construction of dams or other water control structures which flood relatively undegraded forest lands.

(d) PVOs AND OTHER NONGOVERNMENTAL ORGANIZATIONS.—Whenever feasible, the President shall accomplish the objectives of this section through projects managed by private and voluntary organizations or international, regional, or national nongovernmental organizations which are active in the region or country where the project is located.

(e) COUNTRY ANALYSIS REQUIREMENTS.—Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of—

(1) the actions necessary in that country to achieve conservation and sustainable management of tropical forests, and

(2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

(f) ANNUAL REPORT.—Each annual report required by section 634(a) of this Act shall include a report on the implementation of this section.

Sec. 119.[79] Renewable and Unconventional Energy Technologies. * * * [Repealed—1980]

Sec. 119.[80] Endangered Species.—(a) The Congress finds the survival of many animal and plant species is endangered by overhunting, by the presence of toxic chemicals in water, air and soil, and by the destruction of habitats. The Congress further finds that the extinction of animal and plant species is an irreparable loss with potentially serious environmental and economic consequences

[79] Sec. 119, as added by Public Law 95-88 (91 Stat. 528), amended by sec. 111 of the International Development and Food Assistance Act of 1978 (92 Stat. 948), and by sec. 107 of the International Development Cooperation Act of 1979 (93 Stat. 362), was repealed by sec. 304(g) of the International Security and Development Cooperation Act of 1980 (Public Law 96-533; 94 Stat. 3147). See sec. 106 of this Act for text concerning energy technologies.

[80] 22 U.S.C. 2151q. Sec. 119, pars. (a) and (b) were added by sec. 702 of the International Environment Protection Act of 1983 (title VII of the Department of State Authorization Act, Fiscal Years 1984 and 1985, Public Law 98-164; 97 Stat. 1045).

for developing and developed countries alike. Accordingly, the preservation of animal and plant species through the regulation of the hunting and trade in endangered species, through limitations on the pollution of natural ecosystems, and through the protection of wildlife habitats should be an important objective of the United States development assistance.

(b)[80] In order to preserve biological diversity, the President is authorized to furnish assistance under this part, notwithstanding section 660,[81] to assist countries in protecting and maintaining wildlife habitats and in developing sound wildlife management and plant conservation programs. Special efforts should be made to establish and maintain wildlife sanctuaries, reserves, and parks; to enact and enforce anti-poaching measures; and to identify, study, and catalog animal and plant species, especially in tropical environments.

(c)[82] FUNDING LEVEL.—For fiscal year 1987, not less than $2,500,000 of the funds available to carry out this part (excluding funds made available to carry out section 104(c)(2), relating to the Child Survival Fund) shall be allocated for assistance pursuant to subsection (b) for activities which were not funded prior to fiscal year 1987. In addition, the Agency for International Development shall, to the fullest extent possible, continue and increase assistance pursuant to subsection (b) for activities for which assistance was provided in fiscal years prior to fiscal year 1987.

(d)[82] COUNTRY ANALYSIS REQUIREMENTS.—Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of—

(1) the actions necessary in that country to conserve biological diversity, and

(2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

(e)[82] LOCAL INVOLVEMENT.—To the fullest extent possible, projects supported under this section shall include close consultation with and involvement of local people at all stages of design and implementation.

(f)[82] PVOs AND OTHER NONGOVERNMENTAL ORGANIZATIONS.—Whenever feasible, the objectives of this section shall be accomplished through projects managed by appropriate private and voluntary organizations, or international, regional, or national nongovernmental organizations, which are active in the region or country where the project is located.

(g)[82] ACTIONS BY AID.—The Administrator of the Agency for International Development shall—

(1) cooperate with appropriate international organizations, both governmental and nongovernmental;

(2) look to the World Conservation Strategy as an overall guide for actions to conserve biological diversity;

(3) engage in dialogues and exchanges of information with recipient countries which stress the importance of conserving

[81] Section 533(d)(4)(A) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1990 (Public Law 101–167; 103 Stat. 1227), added "notwithstanding section 660" at this point.

[82] Pars. (c) through (h) were added by sec. 302 of Public Law 99–529 (100 Stat. 3017).

biological diversity for the long-term economic benefit of those countries and which identify and focus on policies of those countries which directly or indirectly contribute to loss of biological diversity;

(4) support training and education efforts which improve the capacity of recipient countries to prevent loss of biological diversity;

(5) whenever possible, enter into long-term agreements in which the recipient country agrees to protect ecosystems or other wildlife habitats recommended for protection by relevant governmental or nongovernmental organizations or as a result of activities undertaken pursuant to paragraph (6), and the United States agrees to provide, subject to obtaining the necessary appropriations, additional assistance necessary for the establishment and maintenance of such protected areas;

(6) support, as necessary and in cooperation with the appropriate governmental and nongovernmental organizations, efforts to identify and survey ecosystems in recipient countries worthy of protection;

(7) cooperate with and support the relevant efforts of other agencies of the United States Government, including the United States Fish and Wildlife Service, the National Park Service, the Forest Service, and the Peace Corps;

(8) review the Agency's environmental regulations and revise them as necessary to ensure that ongoing and proposed actions by the Agency do not inadvertently endanger wildlife species or their critical habitats, harm protected areas, or have other adverse impacts on biological diversity (and shall report to the Congress within a year after the date of enactment of this paragraph on the actions taken pursuant to this paragraph);

(9) ensure that environmental profiles sponsored by the Agency include information needed for conservation of biological diversity; and

(10) deny any direct or indirect assistance under this chapter for actions which significantly degrade national parks or similar protected areas or introduce exotic plants or animals into such areas.

(h)[82] ANNUAL REPORTS.—Each annual report required by section 634(a) of this Act shall include, in a separate volume, a report on the implementation of this section.

Sec. 120.[83] Sahel Development Program—Planning.—(a) The Congress reaffirms its support of[84] the initiative of the United States Government in undertaking consultations and planning with the countries concerned, and with other nations providing assistance, with the United Nations, and with other concerned international and regional organizations, toward the development and

[83] 22 U.S.C. 2151r. Sec. 120, originally added as sec. 639B of this Act by sec. 20 of the FA Act of 1973 and later redesignated as sec. 494B by sec. 101(5) of Public Law 94–161 (89 Stat. 849), was again redesignated as sec. 120 by sec. 115(1) of the International Development and Food Assistance Act of 1977 (Public Law 95–88; 91 Stat. 539).

The title caption "Sahel Development Program—Planning" was inserted in lieu of "African Development Program" by sec. 115(2) of the International Development and Food Assistance Act of 1977 (Public Law 95–88; 91 Stat. 539).

[84] The words in the first sentence of subsec. (a), "reaffirms its support of", were substituted in lieu of "supports" by sec. 101(7)(C) of Public Law 94–161 (89 Stat. 849).

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INITIAL ENVIRONMENTAL EXAMINATION

Program/Activity Number: 167-0003

Country/Region: Kosovo

Activity Title: Community Infrastructure and Services Program

Funding: FY 2000 - FY 2002

Resource Level(s)/Amount(s): $45 million

IEE Prepared By: Michael Gould E&E/DG/LGUD Date: January 2000

IEE Amendment (Y/N): NO

ENVIRONMENTAL ACTION RECOMMENDED:

Categorical Exclusion: __X__ Negative Determination: __X__

Positive Determination: ____ Deferral: ____

SUMMARY OF FINDINGS:

The Community Infrastructure and Services Program consists of three activities:

Activity 1: The provision of funding for USAID management, monitoring and evaluation of the program;
Activity 2: A contract with a general contractor to provide management, engineering design, construction supervision services, and assist with institutional strengthening of local utility companies; and
Activity 3: Rehabilitation of community infrastructure: These activities will consist of small projects, generally valued at less than $100,000, aimed at rehabilitation and upgrading of public buildings, small scale water supply systems, small scale sewer systems, electric distribution systems, municipal roads, health centers and schools. The small scale, dispersed rehabilitation projects to be completed is not expected to have a significant effect on the environment.

Activities (1) and (2)

The proposed action is entirely within one of the categories listed in paragraph (c)(1), "Categorical Exclusions," of Section 216.2, "Applicability of Procedures," of Title 22 CFR Part 216, "AID Environmental Procedures." Pursuant to 22 CFR 216.2(c)(3), the originator of the proposed action has determined that the proposed action is fully within the following classes of actions:

Education, technical assistance, or training programs.
[22 CFR 216.2(c)(2)(i)].

Pursuant to 22 CFR 216.2(c)(2), the proposed action is categorically excluded from further environmental review. As per 22 CFR 216.2(c)(1), neither an initial environmental examination nor an environmental assessment is required for an action which is determined to fall within one or more of the categories listed at 22 CFR 216.2(c)(2).

Activity (3) - Community Infrastructure

Pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the proposed project recommends a negative determination of significant environmental effect for the community infrastructure rehabilitation element, of the Community Infrastructure and Services Program, and requests EE Bureau approval of a negative threshold decision for these activities contingent on the application of the mitigating measures presented in Section 4.

REVISIONS

Pursuant to 22CFR216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Project might be "major" and the Project's effect "significant," this negative determination will be reviewed and revised by the E&E Bureau Environmental Officer and, if appropriate, an environmental assessment will be prepared.

APPROVAL OF ENVIRONMENTAL ACTION RECOMMENDED:

CLEARANCE:

Mission Director: Date:

CONCURRENCE:

Bureau Environmental Officer: Date:
Approved: _____.
Disapproved: _____.

USAID/W filename: Kosovo.IEE.doc

INITIAL ENVIRONMENTAL EXAMINATION

PROGRAM/PROJECT DATA:

Program Number:	167-0003
Country/Region:	Kosovo
Title of Program/Activity/Project:	Community Infrastructure and Services Program

1.0 BACKGROUND AND PROJECT DESCRIPTION

The objective of the Community Infrastructure and Services Program (CISP) is to stabilize Kosovar communities damaged by war, thus helping to create the basis for a normal life conducive to permanent peace, and encourage economic growth in the municipalities and villages assisted. The Program achieves this objective by supporting the reconstruction and operation of local infrastructure in areas where these interventions can effectively promote the normalization of community life and the restart of economic livelihood.

The people of Kosovo have been severely impacted by the recent war and the events leading up to it. In 1991 most Albanian Kosovars were displaced from civil service positions. Since then Serbian authorities provided little investment in public utilities and infrastructure deteriorated in terms of capacity and quality of service. During the recent conflict further damage was done. The International Management Group (IMG) with funding from the World Bank and the European Commission has broadly documented the condition of the infrastructure of Kosovo.

The Community Infrastructure and Services Program will assist in the repair of damaged and neglected infrastructure and provide limited technical assistance for institutional strengthening. Numerous donors and NGOs are involved in this overall effort, however, the USAID program will concentrate at the community level working with the Community Improvement Councils (CIC) which have been established with the assistance of USAID's Office of Transition Initiatives (OTI). More than 160 of these councils have been established in 24 of the 29 municipalities in Kosovo. Coordination with the CICs will ensure that the local infrastructure projects funded by CISP will be directed at the needs of the local people.

The activities will be normally less than $100,000 although some larger projects will be implemented. The sectors addressed will include local electricity distribution, water supply, sanitation including sewers and solid waste management, schools, health clinics, other public buildings and local roads. A total of 300 small construction

projects will be implemented. Almost all of these will be repair of existing facilities rather than new construction.

The institutional strengthening program will provide training and computer-based financial management systems to selected municipal water and regional electricity distribution companies. The program will supply limited quantities of computers, software and related materials.

An Initial Environmental Examination (IEE) needs to be performed on this program to permit the obligation of funds.

2.0 COUNTRY AND ENVIRONMENTAL INFORMATION (BASELINE INFORMATION)

Kosovo is a former province of the Republic of Serbia. It is bordered by Serbia on the north and east, by Macedonia on the south and Montenegro and Albania to the west. It is landlocked and approximately 10,000 square kilometers in area. The population prior to the recent conflict was approximately 2,200,000 but has now been reduced to about 1,700,000 due to the non-return of some of the refugees. The terrain is varied with mountain ranges along the borders with Albania and Montenegro, with fertile plains extending through most of the country. The land use is predominately devoted to field crops including corn, soybean and vegetables. Most of the people reside in rural farming communities in close proximity to a regional center of approximately 50,000 – 100,000 people.

The capital city is Pristina with a population of approximately 300,000. Some mining of zinc, lead and gold is done in the north-east near the town of Mitrovice. The climate is essentially continental due to the isolation from the Adriatic and Mediterranean sea climate zones caused by the mountain ranges to the west and partially to the south. The summers are hot and dry with relatively cold winters with heavy snowfall.

3.0 EVALUATION OF PROJECT/PROGRAM ISSUES WITH RESPECT TO ENVIRONMENTAL IMPACT POTENTIAL

The Community Infrastructure and Services Program consists of three types of activities: (1) the provision of funding for USAID management, monitoring and evaluation of the program; (2) a contract with a general contractor to provide management, engineering design, construction supervision services, and assist with institutional strengthening of local utility companies ; and (3) rehabilitation of community infrastructure.

Rehabilitation of community infrastructure will consist of small projects, generally valued at less than $100,000, aimed at rehabilitation and upgrading of public buildings, small scale water supply systems, small scale sewer systems, electric distribution systems, municipal roads, health centers and schools. The projects will be undertaken by local construction firms under the supervision of a U.S. general contractor who will

also be responsible for designing and awarding contracts for the work, and construction supervision. The small scales, dispersed rehabilitation projects to be completed are not expected to have a significant effect on the environment.

While these small-scale rehabilitation projects are not expected to have significant negative effects on the environment, mitigating actions are built into the project design to negate the following potential effects on the environment:

(1) Water system rehabilitation presents the potential for contamination of water lines that are being repaired or replaced. Excavation of pipe trenches may lead to erosion and problems of disposing of excavated material which may contain elements harmful to the environment.
(2) Sewer system repair, rehabilitation or cleaning may lead to problems in disposing of excavated material and sludge.
(3) In the rehabilitation of public buildings, schools and health clinics care must be taken to protect the users by insuring that materials are safe and environmentally friendly. Site runoff can cause erosion problems.
(4) Electric distribution system rehabilitation may present problems in disposal of older model transformers containing PCV or other harmful chemicals.
(5) Construction sites present hazards to the safety of both construction workers and others in the area.
(6) Road construction and rehabilitation can lead to improper disposal of excavated materials, batch plants which cause environmental damage and erosion problems.

Mitigating actions presented in the following section are proposed to ensure that environmental concerns are taken into account during both the design and construction phases of the projects.

4.0 RECOMMENDED MITIGATION ACTIONS (INCLUDING MONITORING AND EVALUATION)

Pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the proposed project has reviewed the potential environmental impacts of the action summarized in the foregoing IEE. It has been determined that the basic community infrastructure rehabilitation program component, Activity (3), of the proposed project, if implemented as described, will not have a significant negative impact on the environment. The reconstruction of public buildings, small-scale water supply systems, small-scale sewer systems, electric distribution systems, municipal roads, health centers and schools would only have beneficial effects on the living conditions and environment of Kosovo. To ensure compliance with A.I.D. environmental procedures, all construction activities will be monitored and documented. The environmental status of the project will be reviewed periodically during implementation by means of routine site visits by USAID/Kosovo staff. Any required correction in implementation will be made on the basis of these findings and in accordance with the following guidelines.

GUIDELINES: The general contractor will prepare environmental guidelines and checklists, similar to the attached Environmental Assessment Checklist, which will be used to identify the aspects of the projects that may have significant environmental impact. Since the majority of the projects under CISP involve repair and rehabilitation of existing facilities, it is not expected that negative environmental impacts will be frequent or significant. However, when the analysis indicates that negative environmental impacts may occur then the project will be designed to avoid or mitigate these impacts. In particular, when appropriate the contractor should address:

(1) Debris Disposal - by requiring construction contractor's to dispose of debris at appropriate sites approved by Kosovar authorities in concurrence with USAID official;
(2) Chlorinating of Drinking Water - by requiring that water lines which are repaired or replaced are chlorinated to the degree necessary to provide safe service once the lines are put back into operation;
(3) Water Quality Monitoring - by establishing water quality testing procedures with local utilities in conjunction with water and sewer rehabilitation projects;
(4) Safety - by assuring that construction contracts include clauses addressing the safety of both contractor personnel and the public:
(5) Road Construction - by assuring that contracts address runoff, erosion and the safe disposal of materials; and
(6) Public Building Rehabilitation - by assuring that environmentally safe material are used in the rehabilitation of public buildings.

The guidelines will also describe procedures used in the supervision of construction to ensure best practices on the construction sites to mitigate short-term construction related impacts such as runoff management. Overall, the CISP will have a positive impact on the people served by the rebuilt, improved and renovated infrastructure.

Copies of the environmental checklists, baseline environmental surveys, construction site monitoring reports will be kept on file by the contractor and will be provided to USAID for review and monitoring purposes.

MONITORING: Under the U.S. general contractor's scope-of-work, the contractor is required to develop environmental guidelines to help identify potential negative environmental effects, identify mitigating actions , and develop procedures for supervising construction to assure that the recommended mitigating measures are being addressed as planned.

In addition, USAID/Kosovo staff, a USPSC Engineer and three FSN Engineers, will monitor both the general contractor's work and the work of construction subcontractors to assure that environmental concerns are addressed from design through the completion of construction. This will be assured through USAID approval of designs, review of the general contractors environmental reports and assessments, and through site visits to assure that mitigating actions are actually implemented. Deviations will be reported to the Mission Environmental Officer to initiate corrective action.

A summary report will be sent to EE/BEO office in AID/W per 216.10 requirements.

5.0 SUMMARY OF FINDINGS

Environmental Determination:

Activities (1) and (2)

(1) The provision of funding for USAID management, monitoring and evaluation of the program;

(2) A contract with a general contractor to provide management, engineering design, construction supervision services, and assist with institutional strengthening of local utility companies;

The proposed actions are entirely within one of the categories listed in paragraph (c)(1), "Categorical Exclusions," of Section 216.2, "Applicability of Procedures," of Title 22 CFR Part 216, "AID Environmental Procedures." Pursuant to 22 CFR 216.2(c)(3), the originator of the proposed action has determined that the proposed action is fully within the following classes of actions:

Education, technical assistance, or training programs.
[22 CFR 216.2(c)(2)(i)].

Pursuant to 22 CFR 216.2(c)(2), the proposed action is categorically excluded from further environmental review. As per 22 CFR 216.2(c)(1), neither an initial environmental examination nor an environmental assessment is required for an action which is determined to fall within one or more of the categories listed at 22 CFR 216.2(c)(2).

Activity (3) - Community Infrastructure

Pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the proposed project recommends a negative determination of significant environmental effect for the community infrastructure rehabilitation activity of the Community Infrastructure and Services Program. Request the EE Bureau Environmental Officer approval of a negative threshold decision for these activities contingent on the application of the mitigating measures presented in Section 4.

REVISIONS

Pursuant to 22CFR216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Project might be "major" and the Project's effect "significant," this negative determination will be reviewed and revised by the E&E Bureau Environmental Officer and if appropriate, an environmental assessment will be prepared.

ENVIRONMENTAL ASSESSMENT CHECKLIST

The purposes of this *Environmental Assessment Checklist (EA Checklist)* are to determine whether the proposed action (scope of work) encompasses the potential for environmental pollution or damage and, if so, to determine the scope and extent of additional environmental evaluation, mitigation, and monitoring necessary to fulfill federal U.S. environmental requirements. The *EA Checklist* is intended to be used in conjunction with a brief Project Description prepared by the Project Engineer.

ENVIRONMENTAL CONSEQUENCES: Check appropriate column as Yes (Y), Maybe (M), No (N) or Beneficial (B). Briefly explain Y, M and B checks in next Section, "Explanations". A "Y" response does not necessarily indicate a significant effect, but rather an issue that requires focused consideration,

		Y, M, N or B
1.	**Earth Resources**	
	a. grading, trenching, or excavation > 1.0 hectare	___
	b. geologic hazards (faults, landslides, liquefaction, unengineered fill, etc.)	___
	c. contaminated soils or ground water on the site	___
	d. offsite overburden/waste disposal or borrow pits required > 1.0 ton	___
	e. loss of high-quality farmlands > 10 hectares	___
2.	**Air Quality**	
	a. substantial increase in onsite air pollutant emissions (construction/operation)	___
	b. violation of applicable air pollutant emissions or ambient concentration standards	___
	c. substantial increase in vehicle traffic during construction or operation	___
	d. Demolition or blasting for construction	___
	e. substantial increase in odor during construction or operation	___
	f. substantial alteration of microclimate	___
3.	**Water Resources and Quality**	
	a. river, stream or lake onsite or within 30 meters of construction	___
	b. withdrawals from or discharges to surface or ground water	___
	c. excavation or placing of fill, removing gravel from, a river, stream or lake	___
	d. onsite storage of liquid fuels or hazardous materials in bulk quantities	___
4.	**Cultural Resources**	
	a. prehistoric, historic, or paleontological resources within 30 meters of construction	___
	b. site/facility with unique cultural or ethnic values	___
5.	**Biological Resources**	
	a. vegetation removal or construction in wetlands or riparian areas > 1.0 hectare	___
	b. use of pesticides/rodenticides, insecticides, or herbicides > 1.0 hectare	___
	c. Construction in or adjacent to a designated wildlife refuge	___
6.	**Planning and Land Use**	
	a. potential conflict with adjacent land uses	___
	b. non-compliance with existing codes, plans, permits or design factors	___
	c. construction in national park or designated recreational area	___
	d. create substantially annoying source of light or glare	___
	e. relocation of >10 individuals for +6 months	___
	f. interrupt necessary utility or municipal service > 10 individuals for +6 months	___
	g. substantial loss of inefficient use of mineral or non-renewable resources	___
	h. increase existing noise levels >5 decibels for +3 months	___
7.	**Traffic, Transportation and Circulation**	

a. increase vehicle trips >20% or cause substantial congestion ___
b. design features cause or contribute to safety hazards ___
c. inadequate access or emergency access for anticipated volume of people or traffic ___

8. **Hazards**

a. substantially increase risk of fire, explosion, or hazardous chemical release ___
b. bulk quantities of hazardous materials or fuels stored on site +3 months ___
c. create or substantially contribute to human health hazard ___

EXPLANATION: explain Y, M and B responses

RECOMMENDED MITIGATION MEASURES

RECOMMENDED ACTION (Check Appropriate Action):

(a) The project has no potential for substantial adverse environmental effects. No further environmental review is required.
(b) The project has little potential for substantial adverse environmental effects, however the recommended mitigation measures (listed above) will be incorporated in the SOW. No further environmental review is required.
(c) The project has substantial but mitigatable adverse environmental effects and required measures to mitigate environmental effects (listed above) will be included in the SOW.
(d) The project has potentially substantial adverse environmental effects, but requires more analysis to form a conclusion. An Environmental Assessment will be prepared.
(e) The project has potentially substantial adverse environmental effects, and revisions to the project design or location or the development of new alternatives is required.
(f) The project has substantial and unmitigable adverse environmental effects. Mitigation is insufficient to eliminate these effects and alternatives are not feasible. The project is not recommended for funding.

APPROVAL

Project Director _____ Date _____

/KosovoENVCKLIST

Major Functional Series 200: USAID PROGRAM ASSISTANCE
ADS 204 Environmental Procedures

* This chapter provides policy and essential procedures about how to apply 22 CFR 216 to the new USAID assistance process in order to ensure that assessments of the environmental consequences of all programs, activities, and substantive amendments thereto, are in full accordance with the requirements of Title 22 of the Code of Federal Regulations, Part 216. (See Mandatory Reference 22 CFR 216)

Major Functional Series 200: USAID Program Assistance
ADS 204 ENVIRONMENTAL PROCEDURES

1. Section 117 of the Foreign Assistance Act of 1961, as amended.
2. National Environmental Policy Act, 42 USC 4371, et seq.
3. Executive Order 12114 dated January 4, 1979, regarding environmental review of Federal agency actions outside the United States.
4. Title 22 of the Code of Federal Regulations, Part 216 dated October 9, 1980, codifies USAID's environmental procedures (cited as 22 CFR 216).

204.2 Objective

Environmental sustainability is integral to USAID's overall goal. To meet this goal environmental considerations shall be incorporated into results planning, achieving, and monitoring. This Chapter defines what USAID and its operating units will do to integrate environmental issues into its programs to meet USG environmental

requirements.

204.3 Responsibility

* 1. Operational Bureaus
Operational Bureaus are responsible for overseeing and supporting their Operating Units to ensure that environmental review in accordance with 22 CFR 216 is fully integrated into the decision-making process, including planning and approval of all programs and activities needed to implement the Bureau and its Operating Units' Strategic Plan. (See Mandatory Reference 22 CFR 216)

2. Operating Units
Operating Units are responsible for allocating adequate staff and financial resources to their Teams to effectively implement the Agency's environmental procedures. Operating Units also hold their Strategic Objective Teams accountable for meeting these requirements and continuously monitoring their results.

3. Strategic Objective, Strategic Support Objective, or Special Objective Teams (SO Teams)
SO Teams are responsible for ensuring full compliance with 22 CFR 216, the Agency's environmental procedures. This includes designing, monitoring, and modifying all programs, results packages, and activities to ensure that the environmental consequences of all actions taken by USAID are considered and that appropriate environmental safeguards are adopted. The SO Team is also responsible for keeping their relevant Bureau Environmental Officer informed on upcoming 22 CFR 216 actions through informal contacts and the R4; and for ensuring that all of its 22 CFR 216 environmental reviews are accomplished in a timely fashion so as not to unnecessarily delay implementation of any activities.

4. Mission Environmental Officer and Regional Environmental Officer (MEO and REO)
MEOs and REOs are responsible for advising SO Teams on how best to comply with 22 CFR 216 requirements, how SO Teams can effectively monitor implementation of approved mitigative measures, and how SO Teams can obtain additional environmental expertise to assist them. MEOs and REOs also liaise with their relevant Bureau Environmental Officers on 22 CFR 216 issues affecting SO Teams in their Operating Units.

5. Bureau Environmental Officer (BEO)
BEOs are responsible for overseeing the effective implementation of 22 CFR 216 throughout all Operating Units in their Bureau through timely decision making and adherence to consistent and strong environmental principles that lead to environmentally sound development.

6. Agency Environmental Coordinator (AEC)
The AEC is responsible for overseeing the effective implementation of 22 CFR 216 throughout the Agency. This includes monitoring its implementation, resolving disputes, advising in selection of BEOs, and liaising with the President's Council on Environmental Quality and the public.

204.4 Definitions (See Glossary)

ACTIVITY
CEQ REGULATIONS
ENVIRONMENT
ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT
ESSENTIAL PROCEDURE
INITIAL ENVIRONMENTAL EXAMINATION
MINOR DONOR
OPERATING UNIT
PROGRAM ASSISTANCE APPROVAL DOCUMENT (PAAD)
PROGRAM ASSISTANCE INITIAL PROPOSAL (PAIP)
PROJECT IDENTIFICATION DOCUMENT (PID)
PROJECT PAPER (PP)
RESULTS PACKAGE
RESULTS REVIEW AND RESOURCES REQUEST (R4)
SIGNIFICANT EFFECT
SPECIAL OBJECTIVE
STRATEGIC OBJECTIVE
STRATEGIC OBJECTIVE TEAM
STRATEGIC PLAN
STRATEGIC SUPPORT OBJECTIVE
THRESHOLD DECISION

Acronyms used in this chapter are:

22 CFR 216 - Title 22 of the Code of Federal Regulations, Part 216. These are USAID's environmental procedures and are sometimes referred to colloquially as Reg 16.

AEC - Agency Environmental Coordinator
BEO - Bureau Environmental Officer
EA - Environmental Assessment
EIS - Environmental Impact Statement
IEE - Initial Environmental Examination
MEO - Mission Environmental Officer
REO - Regional Environmental Officer
SO - Strategic Objective/Strategic Support Objective/Special Objective
SO Team - The team managing an SO. See the ADS glossary for further detail.

204.5 POLICY

The following are the official Agency policies and corresponding essential procedures:

204.5.1 MANDATORY COMPLIANCE WITH 22 CFR 216

* The environmental procedures are codified in a Federal regulation. USAID must and shall fully comply with 22 CFR 216, except to the extent some of its terms are not used in the new operations assistance processes (i.e. PID, PP, etc.). In those cases the terms used in this chapter of the ADS (which are intended to be as parallel as possible to the original terms) are used instead. However, 22 CFR 216 is controlling in the event of a conflict between this chapter and 22 CFR 216. If there are questions, consult your BEO, the AEC, or Agency legal counsel. (See Mandatory Reference 22 CFR 216)

E204.5.1 Mandatory Compliance with 22 CFR 216 - N/A

204.5.2 OPERATIONAL BUREAUS

Incorporated into their normal Results Review and Resources Request (R4) process each operational Bureau shall review and approve, with the guidance of their Bureau

Environmental Officer, the R4 environmental section described below in 204.5.3

Bureaus shall provide each Operating Unit the resources necessary to complete environmental reviews for programs and activities in the Strategic Plan or any modification of it.

E204.5.2 Operational Bureaus - N/A

204.5.3 OPERATING UNIT

Each USAID Operating Unit shall prepare and submit an environmental section as an integral part of their R4. This section will consist of two parts:

- the first part will include a discussion of any issues that the Operating Unit may wish to raise with respect to implementation of mitigation measures, monitoring provisions or other implementation requirements agreed to pursuant to 22 CFR 216 during activity design; and,

* - the second part will be an illustrative schedule of upcoming activities that may require 22 CFR 216 review. While this schedule will necessarily be notional due to the desired flexibility in allowing teams to revise and develop new activities, it will allow the BEO to better plan for work loads in order to have shorter turn around times on reviews and approvals of 22 CFR 216 documents. The schedule will also serve the operating unit as a planning document for budgeting its time and money resources to ensure that all 22 CFR 216 requirements are met in a timely way and will not become an impediment to speedy action. (See Mandatory Reference 22 CFR 216)

Operating Units shall take necessary steps to ensure that each SO Team integrates timely and effective environmental review in the decision-making process for programs and activities and that sufficient money and staff are allocated to the SO Teams to accomplish the work.

Operating Units shall also take necessary steps to ensure that no irreversible commitments of resources for programs or activities are made by any of its Teams before environmental review is completed and its findings considered for the program or activity.

Operating Units shall undertake the required environmental planning analyses for its strategic plan as outlined in chapter 201.5.10g.

E204.5.3 Operating Unit - N/A

204.5.4 STRATEGIC OBJECTIVE, STRATEGIC SUPPORT OBJECTIVE AND SPECIAL OBJECTIVE TEAMS (SO TEAMS)

* Each SO Team shall actively plan how it will comply with 22 CFR 216 requirements for each activity it undertakes, actively monitor ongoing activities for compliance with approved IEE, EA, or EIS recommendations or mitigative measures; and modify or end activities that are not in compliance. When an SO Team chooses to create Results Package (RP) Teams, it may delegate the implementation of these responsibilities to them. In these cases the SO Team is responsible for ensuring that the RP Teams have adequate time, staff, authority, and money to implement these responsibilities.(See Mandatory Reference 22 CFR 216)

E204.5.4 Strategic Objective, Strategic Support Objective and Special Objective Teams (SO TEAMS) Operating Unit and SO Team Procedures

Each Operating Unit and SO Team shall develop effective essential procedures to:

* - ensure that adequate time and resources are available to complete all environmental work required under 22 CFR 216 before funds are obligated (this environmental work includes IEEs, Categorical Exclusions, requests for deferrals or exemptions of environmental reviews and if appropriate, Scoping Statements and their related EAs or EISs) (See Mandatory Reference 22 CFR 216). More specifically these environmental reviews include;

- completing an IEE or justification for a Categorical Exclusion or Exemption, in accordance 22 CFR 216, for each program or activity at the earliest time in the planning and design process when sufficient information is known about the program or activity to permit a meaningful environmental threshold determination; it is essential that this review be done as early as possible in the design process in order to allow adequate time for more detailed subsequent environmental review and concurrence, as well as integrating environmental mitigations into the design process, should this be required;

- completing Scoping Statements and EAs or EISs (if required) at the earliest time in the design process when sufficient information is known or being developed to undertake these analyses;

- forwarding each environmental document to the BEO for review and concurrence, allowing a reasonable amount of time for this process;

- providing reasonable notification to the affected public and, as feasible, encouraging public participation, review and comment on Scoping Statements and their related EAs or EISs. Public is defined for EAs to include directly affected people in the host country, host country governments. It is USAID's policy that interested U.S. parties should also be involved when they show an interest. For EISs including the U.S. public is a regulatory requirement.

- considering the content and findings of environmental documents in the design and approval of each program and activity before an irreversible commitment of resources is made for the program or activity;

- incorporating environmental features and mitigative measures identified in IEEs, EAs, and EISs, as appropriate, in the final design and implementation of programs or activities.

- Actively monitor and evaluate whether the environmental features designed for the activity resulting from the 22 CFR 216 process are being implemented effectively and whether there are new or unforeseen environmental consequences arising during implementation that were not identified and reviewed in accordance with 22 CFR 216.

- Based on the above described monitoring and evaluation initiate, modify or end activities as appropriate.

- Provide the Operating Unit with any issues on environmental compliance and a schedule for any activities which must be reviewed under 22 CFR 216 to facilitate advance planning and provide information for the environment section of the R4.

204.5.5 MISSION ENVIRONMENTAL OFFICER (MEO) AND REGIONAL ENVIRONMENTAL OFFICER (REO)

* Each Mission Director shall appoint a Mission Environmental Officer. These officers normally serve as a core member of each SO Team in the Operating Unit in order to advise the Teams on specific needs and approaches to meet 22 CFR 216 requirements. The MEOs frequently take the lead in overseeing 22 CFR 216 document preparation on new activities and monitoring compliance on ongoing activities. However, the ultimate responsibility and accountability for successfully meeting 22 CFR 216 requirements belongs to every member on the Team and in particular to the team leader.(See Mandatory Reference 22 CFR 216)

In some cases a regional support mission may exist and have a Regional Environmental Officer who is available to the cluster of Operating Units it supports. In these cases the Regional Environmental Officer provides technical support and regional coordination to Mission Environmental Officers.

E204.5.5 Mission Environmental Officer (MEO) and Regional Environmental Officer (REO) - N/A

204.5.6 BUREAU ENVIRONMENTAL OFFICER (BEO)

* After consultation with the AEC, the Assistant Administrator (AA) for each operational Bureau in Washington shall appoint a qualified BEO based in Washington. This includes all regional Bureaus plus all operational Central Bureaus (i.e. G and BHR). The BEO reviews and provides guidance on the environmental section of the R4; monitors overall 22 CFR 216 compliance of all Operating Units in the Bureau; approves all 22 CFR 216 documents, and performs the other specific functions described in 22 CFR 216. When staffing patterns permit, each AA shall also appoint a qualified Deputy BEO who can act on official 22 CFR 216 actions when the BEO is absent. (See Mandatory Reference 22 CFR 216)

E204.5.6 Bureau Environmental Officer (BEO)- N/A

204.5.7 AGENCY ENVIRONMENTAL COORDINATOR (AEC)

* The AEC shall oversee Agency-wide implementation of 22 CFR 216 to support the process in achieving its intended results. The AEC shall advise the Administrator, AAs, and other senior Agency management about issues that arise under 22 CFR 216, and with advice from the Office of the General Counsel, interprets how 22 CFR 216 should be applied to new or unusual situations. Specific additional responsibilities are described in 22 CFR 216. (See Mandatory Reference 22 CFR 216)

E204.5.7 Agency Environmental Coordinator (AEC) - N/A

204.5.8 DECISION-MAKING AUTHORITY

Within the operating unit the officer who has the authority to obligate funds for a program or activity signs the request for IEE, Categorical Exclusion or Exemption of the program or activity; and, if appropriate the Scoping Statement and EA or EIS (note: all of these 22 CFR 216 terms are defined in within 22 CFR 216). This officer submits these documents to the BEO for review and written concurrence. In certain cases outlined in 22 CFR 216 additional reviews and approvals in Washington may be required (e.g. requests for Exemptions, Deferrals, and EISs). After receiving the BEO's written concurrence the Operating Unit's decision-making officer must consider the environmental findings and recommendations made in the approved IEE, EA, or EIS when designing and approving funding for a program or activity. Additional decision procedures are described in 22 CFR 216. (See Mandatory Reference 22 CFR 216)

E204.5.8 Decision-Making Authority - N/A

*204.6 Supplementary Reference - N/A

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INITIAL ENVIRONMENTAL EXAMINATION & ENVIRONMENTAL COMPLIANCE FACESHEET

Title of Project/ Project Number: FOREST

Country/Region: E&E/Russia

Funding Period: August, 2000-August, 2005.

Resource Levels/Amount(s): $ 20 Million

Statement Prepared by: Lyudmila Vikhrova/ Alicia Grimes Date: 10/25/00
Revised by: Mohammad Latif Date: 02/17/01

IEE Amendment (Y/N): N **Date of Original IEE:** n/a

Environmental Media and/or Human Health Potentially Impacted (check all that apply):
air _x__ *water* _x__ *land* _x_ *biodiversity* (specify) __x__ *human health* ___x_ *other*____ *none*_____

`Environmental Action(s) Recommended (check all that apply):

__X_ 1. *Categorical Exclusion*(s)

__X__ 2. Initial Environmental Examination:

__X_ *Negative Determination*: no significant adverse effects expected regarding the proposed activities, which are well defined over life of activity. IEE prepared:
___ without conditions (no special mitigation measures needed; normal good Practices and engineering will be used)
__X_ with conditions (special mitigation measures specified to prevent unintended impact)

__X_ *Negative Determination:* no significant adverse effects expected, but multiple sites and sub-activities are involved that are not yet fully defined or designed. "Umbrella IEE" prepared.
__X__ conditions agreed to regarding an appropriate process of environmental capacity building and screening, mitigation and monitoring.

__X_ *Positive Determination*: IEE confirms potential for significant adverse effect of
__X_ EA to be / being / has been (circle one) conducted. Note that the activities affected cannot go forward until the EA is approved.

___*Deferral:* one or more elements not yet sufficiently defined to perform environmental analysis; activities will not be implemented until amended IEE is approved. Briefly describe the nature of the deferred activities: _small grants and loans_____

Summary of Findings:

Project Components: The Forestry Resources and Technologies (FOREST) Project consists of five components- four technical components and a cross cutting component to cover three discrete sub-components dealing with Forest Policy and Legal Reform, Applied Forest Research, and Forestry Grant/Loan issues. The five components will include providing technical assistance, research, training and grants to Russian partners to achieve the overall project goals of reducing the threat of global climate change and to preserve biodiversity through promotion of sustainable forest management. The FOREST project will be implemented through a cooperative agreement over a five-year period. The five project components are summarized as follows:

1. **Forest Fire Prevention:** Activities under this project component will include a mass media campaign and more focused campaigns at the local level is to reduce the number of man-made forest fires through increased awareness and concern among targeted populations.

2. **Pest Management:**. Activities under this project component will entail developing baseline information on previous pest outbreaks; establishment of a pheromone trapping grid for outbreak prediction and pest population monitoring, and development of strategy for preventing large-scale insect pest outbreaks.

3. **Non-Timber Forest Products and Secondary Wood Processing:** Activities under this project component will support sustainable economic growth in non-timber forest product and wood processing sectors by strengthening associations to better serve the needs of their constituencies.

4. **Renewable Energy Alternatives:** Activities under this project component will develop appropriate biomass technologies to meet industrial, commercial and large residential needs to integrate renewable energy into the Russian Energy System.

5. **Cross cutting component:** The four technical components presented earlier will be supported by the following three cross-cutting project sub-components :
    a. Forest Policy and Legal Reform
    b. Applied Forest Research
    c. Forestry Grant/Loan Program

Environmental Review Findings: The findings under Categorical Exclusions of 22 CFR 216.2 are not applicable to assistance for the procurement or use of pesticides or similar chemicals. In such situations, Pesticides Procedures cited under 22 CFR 216.3 (b) will be followed by the project implementor unless an Environmental Assessment covering a response to 22 CFR 216.3 (b) requirements has been prepared and duly approved by the Bureau Environmental Officer (BEO).

The proposed action, to be undertaken for the FOREST project activities under <u>Project Components 1, 5a and 5b</u>, and **<u>portion of activities under Project Components 3 and 4</u>**, involving technical assistance, training, research and stakeholder participation through workshops, is entirely within the classes of action cited in Title 22 of the Code of Federal Regulations (CFR) Section 216.2, (Applicability of Procedures) paragraph ( )(2), [22CFR216.2( )(2)] and therefore, are categorically excluded. Pursuant to 22CFR216.2( )(3), the originator of the proposed actions has determined that such activities under the FOREST project are fully within the following classes of action:

Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction) [22 CFR 216.2(c)(2)(i)].

Controlled experimentation exclusively for the purpose of research and field evaluation which are confined to small areas and carefully monitored [22 CFR 216.2(c)(2)(ii)].

Analyses, studies, academic or research workshops and meetings [22 CFR 216.2(c)(2)(iii)].
<u>For Project Component 2 activities related to pest management and/or the procurement or use of pesticides or other chemicals</u>, Pesticides Procedures cited under 22 CFR 216.3 (b) will be followed by the project implementor (i.e., a Negative Determination with Conditions unless an Environmental Assessment (i.e., a Positive Determination) covering a response to 22 CFR 216.3 (b) requirements has been prepared and duly approved by the Bureau Environmental Officer (BEO).

For project component 3 and a pilot sub-activity of rest areas for component 1 activities, and pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the project proposes a Negative Determination with conditions requiring preparation of a check list by the implementor similar to the one attached to this IEE. This activity will support marketing of non-timber forest products which are not managed sustainably or which are restricted by CITIES, and increasing efficiency of wood processing to sustainable harvesting.

For project component 4, and pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the project proposes a Negative Determination with conditions requiring preparation of an Umbrella IEE requiring application of Environmental Screening Criteria similar to one which is attached to the IEE. The Environmental Screening Form will be developed by the implementor and approved by USAID. Under this component, environmental improvement measures will include introduction of biomass and other relevant technologies.

For cross cutting sub-component 5c activities, and pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the project proposes a Negative Determination with conditions requiring preparation of an Umbrella IEE.
For the grant/loan sub-component, grants will be reviewed by on a case by case basis using guidelines and/or Environmental Screening Criteria developed by the project implementors and approved by the BEO. At present, the specific details of activities to be supported by grants is not known, however, based on our previous experience, grants might include support for infrastructure in nature reserves, procurement of forestry or biomass equipment, forest pest research.

Revisions:

Pursuant to 22 CFR 216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Project might be "major" and the Project's effect "significant", this determination will be reviewed and revised by the originator of the project and submitted to the E&E Bureau Environmental Officer for approval and, if appropriate, an environmental assessment will be prepared.

USAID APPROVAL OF ENVIRONMENTAL ACTION(S) RECOMMENDED:

Clearance:

Mission Director: _____ Date: _____

Regional Environmental Officer (REO)/WDC _____ Date: _____

Concurrence:

Bureau Environmental Officer: _____ Date: _____

Approved: _____

Disapproved: _____

Optional Clearances:

Mission Environmental Officer: _____ Date: _____

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

Project Data:

Project Number: 110-0003
Country/Region: Russia
Activity Title: Forestry Resources and Technologies (FOREST)

1. BACKGROUND AND ACTIVITY DESCRIPTION

1.1 Purpose and Scope of the IEE

The purpose of this IEE is to respond to the requirements of the Agency (i.e., USAID) Environmental Procedures (i.e., 22 CFR 216) and Agency Automated Directives System (ADS) 201 and 204 requirements. The scope of the IEE includes preparation of Regulation 216 documentation pertaining to an environmental review of the activities of FOREST Project Components. This includes threshold decisions on discrete activities and conditions for implementation where appropriate. The IEE will also serve as the overall frame and starting point to guide USAID and its partners in complying with the agency's environmental regulations. The Scope of this IEE has been developed to be consistent with the structure of the FOREST project.

For Project Component 2 activities related to pest management and/or the procurement or use of pesticides or other chemicals, Pesticides Procedures cited under 22 CFR 216.3 (b) will be followed by the project implementor (i.e., a Negative Determination with Conditions unless an Environmental Assessment (i.e., a Positive Determination) covering a response to 22 CFR 216.3 (b) requirements has been prepared and duly approved by the Bureau Environmental Officer (BEO).

For a project component 3 involving Non-Timber Forest Products and Secondary Wood Processing, a sample Environmental Assessment Checklist is attached as a guide to the project implementor to prepare an appropriate Environmental Assessment Checklist that address response to environmental concerns under this project component.

Because component 5c of the FOREST Project will involve subgrants and loans to "multiple sets of activities that are not yet fully designed, " an ***Umbrella IEE"*** concept will be applied to that portion of this IEE. In addition,"an ***Umbrella IEE"*** concept will be applied to Component 4 dealing with Renewable Energy Alternatives. This concept will allow USAID/Moscow to: a) deal with grants in a more generic fashion and engage their implementation partners in a subsidiary environmental screening and review process for specific activities during the grant-making process and, b) approve subsequent environmental review of grants at the Mission level. A sample of Environmental Screening Form (ESF) is attached to this IEE for the Umbrella IEE. [1]

1.2 Background

USAID has been providing significant support to the forestry sector since 199(2?) and this assistance comprises the major part of the Mission's environmental portfolio under S.O. 1.6. Increased Environmental Management Capacity to Support Sustainable Economic Growth. Forestry activities under S.O 1.6 have contributed to both local economic growth and reducing the negative effects of global climate change. Areas of support have included reforestation/seedling production; policy and legal assistance on the federal forest code, forest fire assistance (equipment and training), non-timber forest product production and marketing; ecotourism; strengthening nature reserves and building institutional capacity in various aspects of forest management. Almost all of USAID's forestry support has been directed to Russia's Far East and Siberia. USAID has worked with a number of partners in activity implementation including the USDA Forest Service, the World Wildlife Fund (WWF) and the Institute for Sustainable Communities (ISC), and numerous other Russian partners.

[1] For more information on Umbrella IEE's, see Annex F "Information on Use and preparation of the Umbrella IEE and Use of Environmental Screening Form" from the E&E Bureau Internal site, www-environment.net/216).

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The Russia FOREST project will build upon and expand forestry initiatives previously supported by USAID/Moscow. The major goals of the project are to reduce the threat of global climate change and to preserve biodiversity through improved forest administration and monitoring and through the promotion of environmental awareness. Specifically, the project will achieve these goals through building and strengthening partnerships, stimulating broad public participation through the implementation of four technical components: a) forest fire prevention; b) pest management; c) non-timber forest products and secondary wood processing and d) renewable energy alternatives. Three "cross cutting components" will support these four components: e) forest policy and legal reform; f) applied forestry research and g) a forestry grant/loan program.

1.3 Activity Description of Project Components

Details of the activities of the FOREST Project Components are described as follows:

Component 1: Forest Fire Prevention: Forests in the RFE and Siberia have been severely and repeatedly affected by large forest fires which have resulted in economic losses and large amounts of carbon emissions into the atmosphere. While fire is an integral part of the boreal ecosystem in Russia, a significant portion of fires are human induced. The FOREST project will aim to reduce carbon emissions by reducing the number of man-made fires by developing public awareness on fires. The project team will work closely with the US Forest Service and other partners to identify and understand behaviors that result in fires and devise messages advocating alternative behaviors. The project will use mass media to raise public awareness as well as conduct more targeted campaigns focused on specific groups. During the first year, the project will focus its efforts in Khabarovski Krai and then expand to other areas. In addition to the educational component, a pilot sub-activity will be undertaken in at least one krai to develop a network of rest areas. This activity will be implemented in Year 3 of the FOREST Project. One negative result of uncontrolled recreation is the large number of forest fires caused by people. To promote a fire prevention culture, a system of forest rest areas will be designed and created in a selected region. The basic infrastructure of such areas may include small parking areas, grills, picnic tables, benches, and rest rooms. If visitors' fees are further imposed for using these areas, additional revenue will be generated and can be further used for maintaining and improving the constructed facilities as well as for forest protection. The project team will collaborate with World Bank project activities, the MNR, and regional administrations to: select pilot site for forest rest area development and conduct surveys on recreation needs and levels of use; field ecotourism specialists to advice on environmentally sound rest area design, use of facilities to communicate fire prevention information forest area users, and a system of permits or fees; identify local organizations (NGOs, community groups, youth and university clubs) to participate in a Forest Rest Area Adoption program aimed at involving local forest users in maintaining rest area facilities; analyze impact of rest areas on fire prevention and organize study tour visits to disseminate lessons learned.; refine public awareness campaign approach to replicate the rest area development program on other regions.

Component 2: Pest Management: In addition to fire, the forests of Russia have been severely affected by massive pest outbreaks by such insects as the Siberian moth, Gypsy moth and Nun moth. The Pest Management Component of FOREST will assist Russians to improve pest monitoring and outbreak prediction by supporting improved data collection and analysis methodologies and by supporting research. Activities include the following: a) creation of a large-scale grid of pheromone traps for monitoring forest pest insects in selected regions, and integrate this method with existing monitoring systems operated by the forest service. This will involve the selection of 500-900 permanent monitoring sites separated by at least 20 km in areas most likely to have pest outbreaks to cover an area 500km by 500km. Location of the monitoring sites will be identified using a Global Positioning System (GPS). Defoliated areas will be detected and mapped from aircraft. Results of monitoring will be converted to electronic form and stored in a common comprehensive database. This approach will use a sequential spatial resolution technique in monitoring pests. Depending on the abundance of pest counts, a denser degree of traps (e.g. a 5-km grid) may be deployed in that location. If moth counts are significantly high, then egg mass sampling would be scheduled; b) development of a risk-assessment and decision-support system to control outbreaks of forest pest insects. The risk assessment and decision-support system developed for the USDA *Slow-the-Spread* project (www.ento.vt.edu) as a prototype will be used. This system will include the identification of areas where pest management actions are needed and will evaluate their success. This analytical system will recommend potential areas for more intensive sampling or treatment. However, treatment will not be funded under this project. Besides, it is generally not recommended unless sufficient sampling has been done in the previous year. The Sequential Spatial Resolution Technique in pest monitoring makes treatment more effective. Finally a Working Group on pest monitoring will organize a pest monitoring lab and a lecture series on relevant topics. It will also facilitate the restoration of pheromone trap production in Russia, establish cooperation between trap manufacturing companies in Russia and USA.

Component 3: Non-Timber Forest Products and Secondary Wood Processing: Non-timber forest products (NTFPs) and secondary wood products are a significant source of livelihood in Russia's Far East and hold great potential to expand broad-based economic growth. Traditional NTFPs include furs, ferns, berries, medicinal plants and mushrooms, most of which are not endangered species and are widely spread throughout the RFE, except some medicinal plants like ginseng. In addition, it is widely felt that value-added processing to lumber products would greatly increase the return on wood sales while also reducing waste. This component will seek to improve the effectiveness and efficiency of producers by strengthening associations to better serve their constituencies. The FOREST Project will promote the use of participatory approaches through which association members can identify priorities for improving their businesses, such as training, technical expertise, study tours, access to information, and access to financial resources. The project will begin by studying the sector to collect better baseline data on the value and volumes of product as well as the extent and scope of harvesting impacts at the Krai level. Directories and databases on producer associations created under earlier projects will be updated, and information will be sought about problems and needs facing individual organizations and the entire sector. Targeted market studies focussing on selected NTFP and secondary wood products will be conducted to better understand factors affecting domestic and international supply and demand for these products. The project will also facilitate annual meetings for associations to provide a participatory forum for discussion of association priorities and strategic plans. Once the Grant Loan (crosscutting) component is initiated, associations will be eligible to apply for grants and small loans to businesses may be feasible.

Component 4: Renewable Energy Alternatives: Fossil fuels are a major source of greenhouse gas emissions. One strategy to reduce overall GHG emissions is the promotion of fuels with lower emission levels, including biomass energy. A greater percentage of Russian energy needs are expected to be satisfied with renewable energy alternatives, and in particular biomass energy from wood wastes. In the RFE and Siberia there are considerable resources of wood wastes (for example from pest infestations) which could be used for fuel. Currently much of the waste is under-utilized and can increase fire hazard by contributing to the fuel load in the forest. FOREST will identify available feedstock supplies, determine possible locations for biomass mini-grids and diesel replacement, conduct feasibility studies, and provide technical assistance in the introduction and application of appropriate state-of-the-art technologies for biomass energy. The FOREST Energy team will work with partners to identify financing (for biomass projects that have been found to be feasible, and encourage private development of biomass systems at the selected sites. Under this project component it is not planned to provide funding for biomass construction purposes. However, partner organizations will be eligible to apply for grants/loans for co-financing biomass development projects. In that case, further environmental analysis will be done. A key goal of this component is to create a conducive environment for the commercialization of biomass energy by ensuring legal, policy and contractual protections for private investments. Project activities will also build capacity for implementation of biomass energy projects. The FOREST Project will work closely with USAID, local NGOs' utilities, researchers, manufacturers and others to identify ways to increase the use of renewable resources in the region. The Energy team will utilize the services of the Russian Intersolarcenter in Moscow and will empower local Non-Government Organizations (NGOs) and Private Organizations (PVOs)
to ensure integration of renewables into the Russian energy system.

Component 5 (i.e., 3 Cross-Cutting Sub-components):

5a. Forest Policy and Legal Reform: Policy and Legal constraints are expected to be factors impacting the achievement of project goals under any or all of the four technical components above. The LOE devoted to policy and legal assistance will be based on the need determined during implementation by the project and its stakeholders as well as other factors such as manageable interest, cost/benefit, receptivity, and chances for success. FOREST has resources for analytical studies, policy dialogue, training and technical assistance on policy issues as required.

5b. Applied Forestry Research: The research component will serve as a management tool to measure results of all FOREST project components and will require a responsive, flexible, demand-driven approach. Studies will be required to collect baseline data for each indicator, as well as to collect information needed to prepare annual work plans for each technical component, and to carry out monitoring and evaluation. An overall indicator of project success will be the extent to which critical carbon sinks in the RFE and Siberia are conserved and sustained. FOREST will establish a collaborative research network for measuring changes in greenhouse gas emissions and changes in carbon stocks in the Russia FOREST project areas. The project will work with partner organizations to harmonize carbon monitoring methodologies and to obtain a clear picture of the impact of various activities on carbon stocks in the project permanent sample plots to generate carbon vegetation maps of the project areas.

5c. Grants/Loan Program: The Forestry Grant/Loan Program will provide funding to local institutions, NGOs, and enterprises to implement activities in support of project objectives under the four technical components. Implementation of the grants/loan program will not begin until the second year of the project. During the first year the Project team will consult with other USAID grant-making projects such as ROLL and Eco-links and develop grant criteria and processes. Grants are expected to cover such themes as public awareness, feasibility studies for biomass facilities, research, development of forest rest areas, non-timber forest product marketing, equipment procurement, and others, but there is not sufficient information at this time to specify further. During year two, the project team will assess the feasibility of developing an environmental lending program to facilitate participants' access to credit. If it is determined to be feasible, the team will work with local financial institutions and credit programs to prepare a business plan.

2.0 Country and Environmental Information

With a total forested area of some 764 million hectares, Russia accounts for over 22 per cent of the world's forested area, 78 per cent of which is located in the Russian Far East (RFE) and Siberia. Russia's vast expanse of forests provides a major carbon sink that may represent as much as one-seventh of the earth's territorial carbon pool and about 75 percent of estimated net carbon storage capacity of the total boreal forest ecosystem. It is also an area of great cultural diversity, the home of numerous indigenous people, many of whom still practice traditional economies based on hunting, fishing, reindeer herding, and the use of non-timber forest resources. Moreover, the huge size of the forests of Siberia and the RFE and the biodiversity of their plant, and animal life and habitats make these forests an environmental factor of tremendous importance to Russia and the world from a sustainability standpoint which is akey to appropriate economic development in country like Russia.

However, many years of central planning policies in Russia led to unsustainable forest management practices which were exposed with the introduction of a market economy. The lack of budgetary funding for forest protection activities, low and unpaid salaries of forestry officials, gaps in the current forest legislation and its enforcement mechanisms, as well as high levels of unemployment among local populations have resulted in uncontrolled and unsustainable use of forest resources.

Substantial progress has been made in the area of forest policy and legal reform in the RFE. This includes analysis of the Russian Federal Forest Code, development and adoption of a Regional Forest Code for Khabarovski Krai, as well as development a draft forest code for Amurskaya Oblast. Now with the assistance of forestry experts from the RFE, this experience is being replicated in Siberia, where a forest code for Krasnoyarski Krai is under development. Development of these regional forest codes is an excellent first step towards introduction of sustainable forestry legislation.

Insects and disease play an important natural role in the evolution of forest ecosystems, but similar to fires, inappropriate human activity can greatly increase the intensity and frequency of pest and disease outbreaks. Total forest losses due to pest or disease outbreaks could be as high as the estimated losses due to forest fires.

A great deal of experience has been already gained in the area of pest control and management both in Siberia and the RFE. For example, in Krasnoyarski Krai, the World Bank funded a USD 5 million project on suppression of the Gypsy moth outbreak. While this project was successful, it focused primarily on suppression as opposed to prevention. Because outbreaks are difficult to suppress on such large territories, the early prevention method is more effective, both in terms of management and costs.

3.0 Evaluation of Project Issues with respect to Environmental Impact Potential

1. Component 1: Fire Prevention: The first sub-component has no potential for environmental impacts as it is solely focused on generating public awareness through the use of mass media and other educational methods.

The second sub-component will have adverse impact on the environment and will be implemented under the major assumption that only existing forest areas which are already used for uncontrolled recreation will be involved in the Forest Rest Area Network Development program. The current situation is that these areas are located without any consideration of environmental concerns, including the places with vulnerable or seriously damaged ecosystems. These areas are not controlled at all in terms of number of visitors and caused environmental impact. There is no

even a basic infrastructure allowing visitors to minimize their negative environmental impact as a result of garbage that is not disposed off properly, parking cars and having barbecue all over the area, which may cause forest fires. The purpose of the proposed effort is to put this recreation process under control and to reduce negative environmental impact as well as a number of forest fires started by tourists through arranging an environmentally sound system of forest rest areas and using them for public fire prevention education. There will be no tree cut for any construction purposes associated with this activity. Any minor soil movements such as creep, settlement, subsidence or swelling, if necessary will be closely monitored for any signs of movement, controlled to prevent damage to property and living organisms and followed by restoration activities. As a result the forest rest area development subcomponent, the sites will have a positive environmental impact on forest ecosystems in a selected project site.

2. Component 2: Pest Management: This component's purpose is to establish effective pest monitoring and early detection systems which, based on sound scientific data may identify areas for further treatment. Appropriate protocols as given in the IEE will be followed to address mitigation of adverse impacts on the environment and people.

For the monitoring system, the scale of the grid (size of the research area) reflects the distance between traps, and is based on sound statistical analysis and experimental design related to the populations of the pest species and their movement in these large forest areas. Adequate data collection will require the use of pheromone trapping methods and will be using a pheromone that has been synthesized but not registered with any government. All pheromones, by definition, only attract males of the same species although in some cases, males of closely related species are sometimes attracted. The traps are supplied with "Vapona" strips, which is a fumigant that kills any insects flying into the traps, so they can be easily identified when the traps are emptied. However, the traps are carefully designed so that the entry holes are large enough only to allow the specific insects to enter, and there is relatively little chance for other organisms to enter the traps. To date, we have no knowledge of there being any endangered species that might be negatively effected by this system.

In fact, it the establishment of this monitoring system is critical in light of the "without project" scenario. As mentioned, pest outbreaks in Russian forests have had severe economic and ecological consequences. Valuable timber is not only damaged and destroyed but large areas of trees are weakened and made vulnerable to forest fires and other disturbances. In the case of Russia, hundreds of thousands of hectares of trees have been defoliated by uncontrolled pest outbreaks, contributing to heavy fuel loading and serious fire risk. The U.S has a direct interest, because these pests are also a danger to US Forests. Russia has been treating past outbreaks of defoliators with a chemical known as Bacillus Thurengiensis or Bt. While relatively innocuous and safe, large areas were sprayed in the past because pest outbreaks were not detected early enough. Predicting population trends will allow early treatment over much smaller areas, more effectively and will result in a decrease in the use of pesticides. Any habitat that will be lost (extremely minimal) will be offset by new habitat being created along with lots of new green "browse" and soft mass production which is beneficial to wildlife.

3. Component 3: Non-Timber Forest Products and Secondary Wood Processing: The impacts of this component are expected to be minimal as the primary activity is providing training and technical assistance to producer associations.

However, there are a number of potential indirect environmental issues of extracting NTFPs and value added processing of timber. These include: a) the unsustainable harvest of a wild plant or animal or their parts, to the point of it becoming a threat to that species (for example Siberian ginseng; Amur Tiger)b) careless harvest of wood or wood products that does not pay attention to physical impacts (for example, when felling and skidding a tree; or constructing nature reserve infrastructure) c) worker health and safety at the mill, including the use of proper safety equipment and eye protection when working with caustic chemicals, machinery, etc. (substandard conditions observed in operations in Vladivlostok).

4. Component 4: Alternative Renewable Energy Resources: Activities under this project component will develop appropriate biomass technologies to meet industrial, commercial and large residential needs to integrate renewable energy into the Russian Energy System, therefore, adverse impacts of such activities should be evaluated using the Umbrella IEE concept presented in the IEE.

While the project will be promoting energy technologies that result in burning of wood waste, the "fuel switching" to this renewable form of energy will have far less adverse impact than carbon emissions given off by fossil fuels.

5. Component 5:

5a: Forest Policy and Legal Reform: This cross cutting sub-component is expected to have little to no environmental impact since activities will consist solely of technical assistance and training.

5b. Applied Forestry Research: This cross cutting component will have no significant impact on the environment and will in fact result in a positive impact as it is researching critical environmental, ecological and forest management questions through science. It will not be intrusive and will be of minimal scale required and be closely monitored. This component essentially represents the projects "monitoring and evaluation" element, which is designed to keep USAID and project partners informed as to environmental impacts and necessary interventions to correct these.

5c. Forestry Grant/Loan : Activities resulting from the loan/ grant component may have adverse impact on the environment and the impact of such activity needs to evaluated using an Umbrella IEE concept given in the IEE.

The Grant/Loan component will not be implemented until year 2 of the project. Insufficient information exists as to the types of activities. Based on past grant projects in the sector, applications might include requests for equipment, funds for construction of trails or facilities (rest areas) on nature reserves; technical assistance in marketing products, or other types of activities. Because activities will be numerous and fall under a broad spectrum, the impact on the environment is not known at this time. If funds are decided to be provided for biomass energy construction or other activities with potential negative environmental impact, additional evaluation of program issues with respect to environmental impact potential will be conducted on project to project basis. Also, implementors will be required to evaluate the adverse impacts and insure that AID funded activities under this component do not result in negative physical environmental impact.

4.0 Recommended Mitigation Actions (Including Monitoring and Evaluation)

Pursuant to 22 CFR 216.3 (a) (2) (iii), the originator of the proposed project has reviewed the potential environmental impacts of the activities summarized in the foregoing IEE. Each of the components has been reviewed separately and been given the following threshold decisions (determinations):

4.1 Forest Fire Prevention: Subcomponent 1. No mitigation is required.

Subcomponent 2 will involve basic infrastructure construction for forest rest area development in a selected project site. It may have adverse impact on the environment. Construction will be limited by only some of the existing rest areas improving them in terms of comfort and environmental compliance done by use of the evaluation and mitigation according the Environmental Assessment Checklist. This activity will be closely monitored and controlled. Project implementers will keep USAID informed of any environmental issues, which arise.

4.2 Component 2 on Pest Management: Pesticides Procedures cited under 22 CFR 216.3 (b) will be followed by the project implementor (i.e., a Negative Determination with Conditions unless an Environmental Assessment (i.e., a Positive Determination) covering a response to 22 CFR 216.3 (b) requirements on mitigation of adverse impacts on environment will be prepared by the implementor.

4.3 NTFPs/Secondary Wood Processing: The project implementers will promote environmentally sound methods and values in its training and technical assistance interventions, where-ever possible, and evaluate/ mitigate adverse impacts using the Environmental Assessment Checklist developed by the implementor and approved by USAID.

4.4 Renewable Energy Alternatives: As this component will identify financing for renewable energy projects and may be expected to result in an adverse impact on the environment, evaluation and mitigation of adverse impacts will be done by the implementor using the Umbrella IEE concept given in the IEE.

4.5 a. Forest Policy and Legal Reform: No mitigation is needed.

4.5 b. Applied Research: No mitigation is needed.

4.5 c. Grant/Loan component: Multiple activities will be implemented in the future and there is not enough information to determine impact. Activities will be screened separately when they are proposed. The implementor

will set up a screening process with USAID approval to evaluate and mitigate the adverse impacts on the environment.

Russian laws and regulations for environmental protection and management will be followed in implementing the activities, unless specified otherwise.

5.0 Summary of Findings:

The findings under Categorical Exclusions of 22 CFR 216.2 are not applicable to assistance for the procurement or use of pesticides or similar chemicals. In such situations, Pesticides Procedures cited under 22 CFR 216.3 (b) will be followed by the project implementor unless an Environmental Assessment covering a response to 22 CFR 216.3 (b) requirements has been prepared and duly approved by the Bureau Environmental Officer (BEO).

The proposed action, to be undertaken for the FOREST project activities under Project Components 1, 5a and 5b, and **portion of activities under Project Components 3 and 4**, involving technical assistance, training, research and stakeholder participation through workshops, is entirely within the classes of action cited in Title 22 of the Code of Federal Regulations (CFR) Section 216.2, (Applicability of Procedures) paragraph ( )(2), [22CFR216.2( )(2)] and therefore, are categorically excluded. Pursuant to 22CFR216.2( )(3), the originator of the proposed actions has determined that such activities under the FOREST project are fully within the following classes of action:

Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction) [22 CFR 216.2(c)(2)(i)].

Controlled experimentation exclusively for the purpose of research and field evaluation which are confined to small areas and carefully monitored [22 CFR 216.2(c)(2)(ii)].

Analyses, studies, academic or research workshops and meetings [22 CFR 216.2(c)(2)(iii)].
For Project Component 2 activities related to pest management and/or the procurement or use of pesticides or other chemicals, Pesticides Procedures cited under 22 CFR 216.3 (b) will be followed by the project implementor (i.e., a Negative Determination with Conditions unless an Environmental Assessment (i.e., a Positive Determination) covering a response to 22 CFR 216.3 (b) requirements has been prepared and duly approved by the Bureau Environmental Officer (BEO).

For project component 3 and a pilot sub-activity of rest areas for component 1 activities, and pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the project proposes a Negative Determination with conditions requiring preparation of a check list by the implementor similar to the one attached to this IEE. This activity will support marketing of non-timber forest products which are not managed sustainably or which are restricted by CITIES, and increasing efficiency of wood processing to sustainable harvesting.

For project component 4, and pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the project proposes a Negative Determination with conditions requiring preparation of an Umbrella IEE requiring application of Environmental Screening Criteria similar to one which is attached to the IEE. The Environmental Screening Form will be developed by the implementor and approved by USAID. Under this component, environmental improvement measures will include introduction of biomass and other relevant technologies.

For cross cutting sub-component 5c activities, and pursuant to 22 CFR 216.3(a)(2)(iii), the originator of the project proposes a Negative Determination with conditions requiring preparation of an Umbrella IEE.
For the grant/loan sub-component, grants will be reviewed by on a case by case basis using guidelines and/or Environmental Screening Criteria developed by the project implementors and approved by the BEO. At present, the specific details of activities to be supported by grants is not known, however, based on our previous experience, grants might include support for infrastructure in nature reserves, procurement of forestry or biomass equipment, forest pest research.

Revisions:

Pursuant to 22 CFR 216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Project might be "major" and the Project's effect "significant", this determination will be reviewed and revised by the originator of the project and submitted to the E&E Bureau Environmental Officer for approval and, if appropriate, an environmental assessment will be prepared.

Attachments:

- **Environmental Screening and Report Form**
- **Environmental Assessment Checklist**

ENVIRONMENTAL SCREENING & REPORT FORM

Background : The present Environmental Screening and Reporting Form (ESF) is designed to be consistent with the Initial Environmental Examination process, and to assist USAID Missions and their implementing partners design and implement activities in an environmentally sound manner in accordance with all salient agency policies and procedures. Use of the ESF will greatly reduce the need for review and approval of activities at the regional or Washington levels.

Introduction to Use of this Form: *This form is intended to be adaptable to unique circumstances.* Thus, its final contents and conditions of use are to be refined and jointly determined among the affected partners including PVO, NGO, USAID, host country agencies, etc. To the extent possible, the form should reflect host government environmental policies and procedures.

In using it, adjustments can be made in consultation with the Regional Environmental Officer and Bureau Environmental Officer. It is strongly advised that the Mission Environmental Officer make on-site visits prior to finalization of the ESF, and that the ESF be rational and fully defensible and without ambiguity as to how the conclusion was reached that the activity (ies) will have no significant impact.

ENVIRONMENTAL SCREENING/REPORT FORM FOR CNFA ACTIVITIES & GRANT PROPOSALS

Implementor: _____

Other Implementing Partner(s)[if Appropriate]_____

Activity Name: _____

Duration (proposed start and completion dates): _____

Geographic Location: _____

Activity Description (paragraph(s) describing purpose/outputs and potential environmental impacts):

[add space as needed]

Determine the Nature of the Activity

a. **Environmental Review Report Needed.** Does the activity include funds to support any physical natural resource management activities (e.g., land clearing, irrigation), or any community and rural development services (e.g., agroforestry, tree-planting), infrastructure (e.g., dams or water catchments), public facilities (e.g., water and sanitation systems), road construction or rehabilitation? Does it involve development of income-generating or resource management systems? It will likely require an Environmental Review of the kind described in Step 4 of this form. Determine which Category the activity falls under, to establish the need for the Environmental Review.

b. **No Further Environmental Review Required.** Does the activity exclusively provide technical assistance, training, institutional strengthening, or research, education, studies or other information analysis, awareness-building or dissemination activities *with no foreseeable negative impact on the biophysical environment*? This probably qualifies as a Category 1 activity—no further environmental review or action may be necessary. Complete form to establish this circumstance.

c. **Multiple Categories.** Many activities will have components in more than one category. Simply mark all that apply. The form will guide you to the appropriate next steps.

Step 1. Determine Category of Activity.

- ***Category 1*** **-- no further environmental review needed:**

***Does the activity involve (mark yes, if applicable)*:**

___ Provision of education, technical assistance, or training. Does *not* qualify for "Category 1" if such programs include activities directly affecting the environment.
___ Community awareness initiatives.
___ Controlled experimentation exclusively for the purpose of research and field evaluation confined to small areas (normally under 4 ha., i.e., 10 acres) and carefully monitored (when no protected or other sensitive environmental areas could be affected).
___ Technical studies and analyses and other information generation activities not involving intrusive sampling of endangered species or critical habitats.
___ Document or information transfers.
___ Nutrition, health care or family planning. Such programs do *not* qualify for "Category 1" if (a) some included activities could directly affect the environment (construction, water supply systems, etc.) or (b) biohazardous (esp. HIV/AIDS) waste is handled or blood is tested.
___ Rehabilitation of water points for domestic household use, shallow, hand-dug wells or small water storage devices (when no protected or other sensitive environmental areas could be affected). *Note that USAID guidance on potable water requires water quality testing for arsenic, coliform, nitrates and nitrites.*
___ Construction or repair of facilities if total surface area to be disturbed is under 10,000 sq. ft. (approx. 1,000 sq. m.) (*and* when *no* protected or other sensitive environmental areas could be affected).
___ Support for intermediate credit arrangements (when *no* significant biophysical environmental impact can reasonably be expected).
___ Programs of maternal and child feeding conducted under Title II of Public Law 480.
___ Food for development programs under Title III of P.L. 480, when <u>no</u> on-the-ground biophysical interventions are likely.
___ Studies or programs intended to develop the capability of recipients to engage in development planning. Do *not* mark "yes" if these involve activities directly affecting the environment.

Category 2 **-- Negative environmental impacts possible, environmental review required (specific conditions, including monitoring, may be applied):**

***Note*:** The Environmental Review (Step 4 below) must address why there will be no potential adverse impacts on protected areas, endangered or threatened species or their critical habitat; or relatively undegraded forest, i.e., justify your conclusion that the proposed Category 2 activities do not belong in Category 3 or 4. Even for activities designed to protect or restore natural resources, the potential for environmental harm exists (e.g., re-introduction of species, controlled burning, fencing, wildlife water points, spontaneous human population shifts in response to activities undertaken, etc.). *If you do not find an exact match listed here for the activity you are undertaking, and it is not in Category 1, 3 or 4, then use the last item in Category 2 to describe the activity and treat it as Category 2 for purposes of environmental review.*

***Does the activity involve (mark yes, if applicable)*:**

___ Small-scale activities in agriculture, NRM, sanitation, etc. (*list and scale to be defined mutually among the appropriate partners* -- NGO, donor, host country agencies, etc.).

___ Controlled experimentation exclusively for the purpose of research and field evaluation *(areas of 4 ha. or more,* i.e., 10 acres) and carefully monitored, when neither protected or other sensitive environmental areas could be adversely affected nor threatened and endangered species and their habitat jeopardized.

___ Small-scale construction or rehabilitation of facilities or structures in which the surface area to be disturbed exceeds 10,000 sq. ft and funding level is not in excess of $200,000 and where no protected or other sensitive environmental areas could be affected.

___ Minor construction or rehabilitation of rural roads less than ca. 10 km (with no change in alignment or right of way), with ecologically sensitive areas at least 100 m away from the road and not affected by construction or changes in drainage; likewise, no protected areas or relatively undegraded forest should be within 5 km of the road.

___ Nutrition, health care or family planning, *if* (a) some included activities could directly affect the environment (construction, water supply systems, etc.) or (b) biohazardous (esp. HIV/AIDS) *waste is handled or blood is tested.*

_____ Construction or rehabilitation of small-scale water points or water storage devices for domestic or non-domestic use, not covered in Category 1, when neither protected or other sensitive. environmental areas could be adversely affected nor endangered and threatened species jeopardized *Note that USAID guidance on potable water requires water quality testing for arsenic, coliform, nitrates and nitrites.*

___ Quantity imports of commodities such as fertilizers.

___ Food for Development programs under Title II or III, involving known biophysical interventions with potential to cause environmental harm (e.g., roads, bore holes).

___ Support for intermediate credit institutions when indirect environmental harm conceivably could result .

___ Institutional support subgrants to NGOs/PVOs when the activities of the organizations are known and raise the likelihood of some environmental impact.

___ Technical studies and analyses and other information generation activities that could involve intrusive sampling, including aerial surveys, of endangered species or critical habitats.

___ Small-scale use of USEPA-registered least-toxic *general-use pesticides*, limited to CNFA/NGO-supervised use by farmers, demonstration, training and education, or emergency assistance. Environmental review must be carried out consistent with USAID Pesticide Procedures as required in Reg. 16 [22 CFR 216.3(b)(1)].

___ Other activities not in Category 1 and not in Category 3 or 4. Specify:_____

_____

_____

Were the following used by the PVO/NGO in designing the above Category 2 activities (mark yes, if applicable)?

Any applicable Programmatic Environmental Assessments: _____

_____

Other(s):_____

- ***Category 3*** **-- Significant environmental impacts likely. Environmental review required, and Environmental Assessment likely to be required:**

Does the activity involve (mark yes, if applicable):

___ River basin or new lands development

___ Planned resettlement of human populations

___ Penetration road building, or rehabilitation of roads (primary, secondary, some tertiary) over 10 km length, and any roads which may pass through or near relatively undegraded forest lands or other sensitive ecological areas

___ Substantial piped water supply and sewerage construction

___ Major bore hole or water point construction

___ Large-scale irrigation

___ Water management structures such as dams and impoundments

___ Drainage of wetlands or other permanently flooded areas

___ Large-scale agricultural mechanization

___ Agricultural land leveling

___ Procurement or use of restricted use pesticides, or wide-area application in non-emergency conditions under non-supervised conditions
___ Light industrial plant production or processing (sawmill operation, agro-industrial processing of forestry products)
___ Potential to significantly degrade protected areas, such as introduction of exotic plants or animals
___ Potential to jeopardize threatened & endangered species or adversely modify their habitat (esp. wetlands, tropical forests)

The above Category 3 activities are consistent with USAID criteria for activities that normally require a USAID-specific document with a defined format and procedure, called the Environmental Assessment (EA). It is recognized that some of these categories are ambiguous. Mark "yes" if they apply, and show in the Environmental Review (Step 4) the extent and magnitude of activities and their impacts, so that USAID and its partners can determine if an EA is necessary or not.

- ***Category 4*** **-- Activities not fundable or fundable only when specifically defined findings to avoid or mitigate the impacts are made, based on an Environmental Assessment[2]:**

Does the activity **involve (yes, no, N/A):**

___ Actions determined likely to significantly degrade protected areas, such as introduction of exotic plants or animals
___ Actions determined likely to jeopardize threatened & endangered species or adversely modify their habitat (esp. wetlands, tropical forests)[3]
___ Conversion of forest lands to rearing of livestock
___ Planned colonization of forest lands
___ Procurement or use of timber harvesting equipment
___ Commercial extraction of timber

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2 **Per Foreign Assistance Act Sect. 118 & 119 relating to overseas assistance affecting Tropical Forestry and Biodiversity.**

3 **Per USAID Environmental Procedures, §22 CFR 216.5, on Endangered Species**

___ Construction of dams or other water control structures which flood relatively undegraded forest lands
___ Construction, upgrading or maintenance of roads (including temporary haul roads for logging or other extractive industries) which pass through relatively undegraded forest lands.

Step 2. Summarize and Itemize Activities. List activities by all categories to which *Yes* was answered.

Category of activities as determined below (add entries as required):

Activity/Sub-Activity	Funding:	Category

Step 3. Determine Need to Prepare Environmental Review.

If all activities are in Category 1, sign and date the form. For any activities in Category 2 and 3, prepare an Environmental Review Report assessing all of these activities' impacts. For Category 3 activities, further documentation would be required, once USAID has confirmed the applicability of Category 3, based on the Review. If Category 4 is possible, consult USAID before proceeding with the Environmental Review to determine if activities can be funded and/or whether required EA findings could be made.

For all Category 2 and 3 activities, proceed to Step 4 to prepare Environmental Review.

Step 4. Prepare Environmental Review.

Suggested Format for Environmental Review

The Environmental Review should be about 5-10 pages long (more if required) and consist of following sections:

1. **Background, Rationale and Outputs/Results Expected** -- summarize and cross-reference proposal if this review is contained therein.

2. **Activity Description** -- Succinctly describe location, siting, surroundings (include a map, even a sketch map). Provide both quantitative and qualitative information about actions needed during construction, how intervention will operate and any ancillary development activities that are required to build or operate the primary activity (e.g., road to a facility, need to quarry or excavate borrow material, need tolay utility pipes to connect with energy, water source or disposal point or any other activity needed to accomplish the primary one but in a different location). If various alternatives have

been considered and rejected because the proposed activity is considered more environmentally sound, explain these.

3. **Environmental Situation** -- Affected environment, including essential baseline information available for all affected locations and sites, both primary and ancillary activities.

4. **Evaluation of Activities and Issues with Respect to Environmental Impact Potential** -- Include impacts that could occur before construction starts, during construction and during operation, as well as any problems that might arise with restoring or reusing the site, if the facility or activity were completed or ceased to exist. Explain direct, indirect, induced and cumulative effects on various components of the environment (e.g., air, water, geology, soils, vegetation, wildlife, aquatic resources, historic, archaeological or other cultural resources, people and their communities, land use, traffic, waste disposal, water supply, energy, etc.) Indicate positive impacts and how the natural resources base will be sustainably improved.

5. **Environmental Mitigation Actions** (including **monitoring** and **evaluation**) -- For example, indicate means taken to avoid, reduce or compensate for impacts, such as restoration of borrow or quarry areas, replanting of vegetation, compensation for any relocation of homes and residents. Indicate how mitigative measures will be monitored to ensure that they accomplish their intended result or what monitoring might be needed for impacts that one is uncertain about.

6. **Other Information** (as appropriate) -- where possible, include photos of the site and surroundings; list the names of any reference materials or individuals consulted.

Note: Specific plans for monitoring of key environmental indicators and mitigation of impacts during activity implementation are especially important; these must be addressed in the review. Information on monitoring results and mitigation of impacts are to be included in all progress reports. Important information and a criterion for evaluation of environmental soundness is showing how the activity is part of or guided by an integrated, community-based resource and land use plan or planning and management framework that considers the appropriate use of multiple resources.

Drafted by: _____ Date:

Reviewed by: _____ Date:

Clearances: (modify as appropriate)

Project Officer: _____ Date:

MEO (including recommendation that an EA be prepared, if called for):
_____ Date:

USAID Mission Director (if responsibility not delegated to MEO):
_____ Date:

ENVIRONMENTAL ASSESSMENT CHECKLIST

It is recommended that the Mission Environmental Officer or Regional Environmental Officer make on-site visit to validate the checklist that will be prepared by the implementers of the grant and/ or a subgrant.

The purposes of this *Environmental Assessment Checklist (EA Checklist)* are to determine whether the proposed action (scope of work) encompasses the potential for environmental pollution or damage and, if so, to determine the scope and extent of additional environmental evaluation, mitigation, and monitoring necessary to fulfill federal U.S. environmental requirements. The *EA Checklist* is intended to be used in conjunction with a brief Project Description prepared by the Project Director.

ENVIRONMENTAL CONSEQUENCES: Check appropriate column as Yes (Y), Maybe (M), No (N) or Beneficial (B). Briefly explain Y, M and B checks in next Section, "Explanations". A "Y" response does not necessarily indicate a significant effect, but rather an issue that requires focused consideration,

		Y, M, N or B
1.	**Earth Resources**	
	a. grading, trenching, or excavation > 1.0 hectare	___
	b. geologic hazards (faults, landslides, liquefaction, unengineered fill, etc.)	___
	c. contaminated soils or ground water on the site	___
	d. offsite overburden/waste disposal or borrow pits required > 1.0 ton	___
	e. loss of high-quality farmlands > 10 hectares	___
2.	**Agricultural and Agrochemical**	
	a. impacts of inputs such as seeds and fertilizers	___
	b. impact of production process on human health and environment	___
	c. Other adverse impacts	___
3.	**Industries**	
	a. impacts of run-off and run-on water	
	b. impact of farming such as intensification or extensification	___
	c. impact of other factors	___
4.	**Air Quality**	
	a. substantial increase in onsite air pollutant emissions (construction/operation)	___
	b. violation of applicable air pollutant emissions or ambient concentration standards	___
	c. substantial increase in vehicle traffic during construction or operation	___
	d. Demolition or blasting for construction	___
	e. substantial increase in odor during construction or operation	___
	f. substantial alteration of microclimate	___
5.	**Water Resources and Quality**	
	a. river, stream or lake onsite or within 30 meters of construction	___
	b. withdrawals from or discharges to surface or ground water	___
	c. excavation or placing of fill, removing gravel from, a river, stream or lake	___
	d. onsite storage of liquid fuels or hazardous materials in bulk quantities	___
6.	**Cultural Resources**	
	a. prehistoric, historic, or paleontological resources within 30 meters of construction	___
	b. site/facility with unique cultural or ethnic values	___
7.	**Biological Resources**	
	a. vegetation removal or construction in wetlands or riparian areas > 1.0 hectare	___
	b. use of pesticides/rodenticides, insecticides, or herbicides > 1.0 hectare	___
	c. Construction in or adjacent to a designated wildlife refuge	___

8. **Planning and Land Use**
   a. potential conflict with adjacent land uses ___
   b. non-compliance with existing codes, plans, permits or design factors ___
   c. construction in national park or designated recreational area ___
   d. create substantially annoying source of light or glare ___
   e. relocation of >10 individuals for +6 months ___
   f. interrupt necessary utility or municipal service > 10 individuals for +6 months ___
   g. substantial loss of inefficient use of mineral or non-renewable resources ___
   h. increase existing noise levels >5 decibels for +3 months ___

9. **Traffic, Transportation and Circulation**
   a. increase vehicle trips >20% or cause substantial congestion ___
   b. design features cause or contribute to safety hazards ___
   c. inadequate access or emergency access for anticipated volume of people or traffic ___

10. **Hazards**
   a. substantially increase risk of fire, explosion, or hazardous chemical release ___
   b. bulk quantities of hazardous materials or fuels stored on site +3 months ___
   c. create or substantially contribute to human health hazard ___

11. **Other Issues**
   a. Substantial adverse impact ___
   b. Adverse impact ___
   c. Minimal impact ___

EXPLANATION: explain Y, M and B responses

RECOMMENDED REVIEW, MITIGATION AND MONITORING MEASURES

RECOMMENDED ACTION (Check Appropriate Action):

(a) The project has no potential for substantial adverse environmental effects. No further environmental review is required.
(b) The project has little potential for substantial adverse environmental effects, however the recommended mitigation measures (listed above) will be implemented. No further environmental review is required.
(c) The project has substantial but mitigatable adverse environmental effects and required measures to mitigate environmental effects (listed above) will be will be implemented.
(d) The project has potentially substantial adverse environmental effects, but requires more analysis to form a conclusion. An Environmental Assessment will be prepared.
(e) The project has potentially substantial adverse environmental effects, and revisions to the project design or location or the development of new alternatives is required.
(f) The project has substantial and unmitigable adverse environmental effects. Mitigation is insufficient to eliminate these effects and alternatives are not feasible. The project is not recommended for funding.

APPROVAL

Project Director/ Chief of Party _____ Date _____

LATIF

EXECUTIVE ORDER 12114

ENVIRONMENTAL EFFECTS ABROAD OF MAJOR FEDERAL ACTIONS

HISTORY: Jan. 4, 1979; 44 FR 1957, 3 CFR, 1979 Comp., p. 356

By virtue of the authority vested in me by the Constitution and the laws of the United States, and as President of the United States, in order to further environmental objectives consistent with the foreign policy and national security policy of the United States, it is ordered as follows:

Section 1

Section 11-1. Purpose and Scope.

The purpose of this Executive Order is to enable responsible officials of Federal agencies having ultimate responsibility for authorizing and approving actions encompassed by this Order to be informed of pertinent environmental considerations and to take such considerations into account, with other pertinent considerations of national policy in making decisions regarding such actions. While based on independent authority, this Order furthers the purpose of the National Environmental Policy Act and the Marine Protection Research and Sanctuaries Act and the Deepwater Port Act consistent with the foreign policy and national security policy of the United States and represents the United States government's exclusive and complete determination of the procedural and other actions to be taken by Federal agencies to further the purpose of the National Environmental Policy Act, with respect to the environment outside the United States, its territories and possessions.

Sec. 2

2-1. Agency Procedures.

Every Federal agency taking major Federal actions encompassed hereby and not exempted herefrom having significant effects on the environment outside the geographical borders of the United States and its territories and possessions shall within eight months after the effective date of this Order have in effect procedures to implement this Order. Agencies shall consult with the Department of State and the Council on Environmental Quality concerning such procedures prior to placing them in effect.

2-2. Information Exchange.

To assist in effectuating the foregoing purpose, the Department of State and the Council on Environmental Quality in collaboration with other interested Federal agencies and other nations shall conduct a program for exchange on a continuing basis of information concerning the environment. The objectives of this program shall be to provide information for use by

decisionmakers, to heighten awareness of and interest in environmental concerns and, as appropriate, to facilitate environmental cooperation with foreign nations.

2-3 Actions Included.

Agencies in their procedures under Section 2-1 shall establish procedures by which their officers having ultimate responsibility for authorizing and approving actions in one of the following categories encompassed by this Order, take into consideration in making decisions concerning such actions, a document described in Section 2-4(a):

(a) major Federal actions significantly affecting the environment of the global commons outside the jurisdiction of any nation (e.g., the oceans or Antarctica;)

(b) major Federal actions significantly affecting the environment of a foreign nation not participating with the United States and not otherwise involved in the action;

(c) major Federal actions significantly affecting the environment of a foreign nation which provide to that nation:

(1) a product or physical project producing a principal product or an emission or effluent which is prohibited or strictly regulated by Federal law in the United States because its toxic effects on the environment create a serious public health risk; or

(2) a physical project which in the United States is prohibited or strictly regulated by Federal law to protect the environment against radioactive substances.

(d) major Federal actions outside the United States, its territories and possessions which significantly affect natural or ecological resources of global importance designated for protection under this subsection by the President, or, in the case of such a resource protected by international agreements binding on the United States by the Secretary of State. Recommendations to the President under this subsection shall be accompanied by the views of the Council of Environmental Quality and the Secretary of State.

2-4 Applicable Procedures.

(a) There are the following types of documents to be used in connection with actions described in Section 2-3;

(i) environmental impact statements (including generic program and specific statements);

(ii) bilateral or multilateral environmental studies, relevant or related to the proposed action, by the United States

and one more foreign nations, or by an international body or organization in which the United States is a member or participant; or

(iii) concise reviews of the environmental, issues involved, including environmental assessments, summary environmental analyses or other appropriate documents.

(b) Agencies shall in their procedures provide for preparation of documents described in Section 2-4(a), with respect to actions described in Section 2-3 as follows:

(i) for effects described in Section 2-3(a), an environmental impact statement described in Section 2-4(a)(1).

(ii) for effects described in Section 2-3(b), a document described in Section 2-4(a)(ii) or (iii), as determined by the agency;

(iii) for effects described in Section 2-3(c), a document described in Section 2-4(a)(ii) or (iii), as determined by the agency;

(iv) for effects described in Section 2-3(d), a document described in Section 2-4(a)(i), (ii) or (iii), as determined by the agency. Such procedures may provide that an agency need not prepare a new document when a document described in Section 2-4(a) already exists.

(c) Nothing in this Order shall serve to invalidate any existing regulations of any agency which have been adopted pursuant to court order or pursuant to judicial settlement of any case or to prevent any agency from providing in its procedures for measures in addition to those provided for herein to further the purpose of the National Environmental Policy Act and other environmental laws, including the Marine Protection Research and Sanctuaries Act and the Deepwater Port Act, consistent with the foreign and national security policies of the United States.

(d) Except as provided in Section 2-5(b), agencies taking action encompassed by this Order shall, as soon as feasible, inform other Federal agencies with relevant expertise of the availability of environmental documents prepared under this Order.

Agencies in their procedures under Section 2-1 shall make appropriate provision for determining when an affected nation shall be informed in accordance with Section 3-2 of this Order of the availability of environmental documents prepared pursuant to those procedures.

In order to avoid duplication of resources, agencies in their procedures shall provide for appropriate utilization of the resources of other Federal agencies with relevant environmental

jurisdiction or expertise.

2-5 Exemptions and Considerations.

(a) Notwithstanding Section 2-3, the following actions are exempt from this Order;

(i) actions not having a significant effect on the environment outside the United States as determined by the agency;

(ii) actions taken by the President;

(iii) actions taken by or pursuant to the direction of the President or Cabinet officer when the national security or interest is involved or when the action occurs in the course of an armed conflict;

(iv) intelligence activities and arms transfers;

(v) export licenses or permits or export approvals, and actions relating to nuclear activities except actions providing to a foreign nation a nuclear production or utilization facility as defined in the Atomic Energy Act of 1954, as amended, or a nuclear waste management facility;

(vi) votes and other actions in international conferences and organizations;

(vii) disaster and emergency relief action.

(b) Agency procedures under Section 2-1 implementing Section 2-4 may provide for appropriate modifications in the contents, timing and availability of documents to other affected Federal agencies and affected nations, where necessary to:

(i) enable the agency to decide and act promptly as and when required:

(ii) avoid adverse impacts on foreign relations or infringement in fact or appearance of other nations, sovereign responsibilities, or

(iii) ensure appropriate reflection of:

(1) diplomatic factors;

(2) international commercial, competitive and export promotion factors;

(3) needs for governmental or commercial confidentiality;

(4) national security considerations;

(5) difficulties of obtaining information and agency ability to analyze meaning-fully environmental effects of a proposed action; and

(6) the degree to which the agency is involved in or able to affect a decision to be made.

(c) Agency procedure under Section 2-1 may provide for categorical exclusions and for such exemptions in addition to those specified in subsection (a) of this Section as may be necessary to meet emergency circumstances, situations involving exceptional foreign policy and national security sensitivity and other such special circumstances. In utilizing such additional exemptions agencies shall, as soon as feasible, consult with the Department of State and the Council on Environmental Quality.

(d) The provisions of Section 2-5 do not apply to actions described in Section 2-3(a) unless permitted by law.

Sec. 3.

3-1. Rights of Action.

This Order is solely for the purpose of establishing internal procedures for Federal agencies to consider the significant effects of their actions on the environment outside the United States, its territories and possessions, and nothing in this Order shall be construed to create a cause of action.

3-2. Foreign Relations.

The Department of State shall coordinate all communications by agencies with foreign governments concerning environmental agreements and other arrangements in implementation of this Order.

3-3. Multi-Agency Actions.

Where more than one Federal agency is involved in an action or program, a lead agency, as determined by the agencies involved, shall have responsibility for implementation of this Order.

3-4. Certain Terms.

For purposes of this Order, "environment" means the natural and physical environment and excludes social, economic and other environments; and an action significantly affects the environment if it does significant harm to the environment even though on balance the agency believes the action to be beneficial to the environment. The term "export approvals" in Section 2-5(a)(v) does not mean or include direct loans to finance exports.

3-5. Multiple Imports.

If a major Federal action having effects on the environment of the United States or the global commons requires preparation of an environmental impact statement, and if the action also has effects on the environment of a foreign nation, an environmental impact statement need not be prepared with respect to the effects on the environment of the foreign nation.

/s/ Jimmy Carter

THE WHITE HOUSE

January 4, 1979