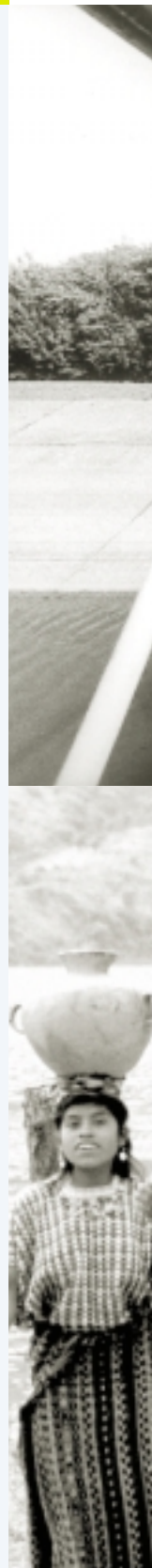


From Potential Conflict to Co-operation Potential: Water for Peace

Prevention and Resolution
of Water Related Conflicts





From Potential Conflict to Co-operation Potential: Water for Peace

Prevention and Resolution of Water Related Conflicts

The PC→CP: Water for Peace programme is a contribution towards:

- The World Water Assessment Programme.
- The Third World Water Forum.

And is supported by:

- The Government of Japan.
- The Ministry of Foreign Affairs, Department of Development Cooperation, The Netherlands.
- The Japan Water Resources Association.
- The Ministry of Foreign Affairs, Sweden.
- The Congress of Local and Regional Authorities, The Council of Europe.
- Suez Lyonnaise des eaux.

Contents

1. PC→CP: Water for Peace – A Joint Initiative
2. PC→CP: The UNESCO Component
3. Water for Peace: The Green Cross Component
4. Water Security and Peace: Report Summary*
5. Conclusions and Recommendations



*
The full Water Security and Peace report, in final draft stage, is available on the enclosed CD-Rom.

1 From Potential Conflict to Co-operation Potential: Water for Peace – A Joint Initiative

Our rivers and aquifers are the lifeblood of the planet. They must be shared amongst all who need them, and protected from the effects of conflict and over-exploitation.

In the past hundred years, the global population has tripled while demand for water has increased seven-fold. The signs of a looming water crisis are now evident. Since water is essential to every aspect of life, this crisis affects everything – from health to human rights, the environment to the economy, poverty to politics, culture to conflict. Just as water defies political boundaries and classification, the crisis is also well beyond the scope of any individual country or sector and cannot be dealt with in isolation.

Sustainable water resources development and management are major challenges of the immediate and long-term future. An increasing number of states are experiencing permanent water stress, yet in most cases mechanisms and institutions to manage disputes over water resources are either absent or inadequate. Competition over this precious resource could increasingly become

a source of tension – and even conflict – between states and sectors. But history has more often shown that the vital nature of freshwater provides a powerful natural incentive for co-operation.

// Fierce national competition over water resources has prompted fears that water issues contain the seeds of violent conflict.
... If all the world's peoples work together, a secure and sustainable water future can be ours."

UN Secretary General
Kofi Annan,
World Water Day 2002

However, many longstanding water related disputes still remain unresolved and the growing demand for finite freshwater resources heightens the risk of future conflicts developing. The need for integrated, cooperative solutions is particularly urgent in the 263 river basins which are shared by two or more states, and in which nearly half the territory and population of the world are located.

In the absence of strong institutions and agreements, changes within a basin can lead to conflict. When major water projects proceed without regional collaboration, they can become a flash point, heightening tensions and regional instability, and requiring years or even decades to resolve. Regional peace, economic development and cultural preservation can all be strengthened by states cooperating over water.

UNESCO and Green Cross International have joined forces in response to this growing threat, by launching their joint *From Potential Conflict to Co-operation Potential (PC→CP): Water for Peace* programme in 2001 to promote peace in the use of trans-boundary watercourses by addressing conflicts and fostering co-operation among states and stakeholders.

“Water has the power to move millions of people – let it move us in the direction of peace”

**Mikhail Gorbachev,
President,
Green Cross International**

The *PC→CP: Water for Peace* programme is guided by the principal goals of UNESCO and Green Cross: to nurture the idea of peace in human minds; and to prevent and resolve conflicts arising from environmental degradation, mismanagement and injustice. This programme is Green Cross and UNESCO’s contribution to the United Nations’ *World Water Assessment Programme*.

Together, *PC→CP: Water for Peace* provides a valuable channel of communication, joint analysis and transparency between governments, the scientific sector, local people and non-governmental organizations, essential to the task of finding mutually beneficial solutions to water-related conflicts. *PC→CP: Water for Peace* is essentially a human and institutional capacity-building and information programme.

The programme has sought answers to two questions: What is preventing the political will, active public participation, empowered institutions and investments needed to avoid conflicts and achieve co-operative basin management? How can these obstacles and conflicts be overcome?

In addition to activities on the ground and the vast research carried out by the programme teams, invaluable guidance and insight into these questions was provided at the international conference on *From Conflict to Co-operation in International Water*

Resources Management: Challenges and Opportunities, held by UNESCO and Green Cross in Delft in November 2002. Several hundred experts, government officials, international organizations, academics and NGOs gathered in Delft for three days of intensive debate aimed at identifying practical ways of shifting the balance from conflict to cooperation over the use and management of the world’s hundreds of shared surface and underground watercourses.

All of these shifts involve an important value and perception change: from seeing water as a commodity to be exploited, often at the expense of one’s neighbours and the environment, to seeing a region’s water as a shared and fragile resource to be used for the benefit of all peoples and as an avenue towards greater cooperation and trust.

Co-operation over water can be seen as an opportunity for some and as the only possible salvation from severe water crises and even conflict for others. The key to both components of the *PC→CP: Water for Peace* programme is to encourage the realization that everyone stands to gain from co-operation over water. What is often missing in the first step: the establishment of relations among water experts and policy-makers from the different riparian states and regions. Other elements needed include the awareness of the public and local decision makers; the

existence of mutually accepted and equitable agreements and treaties; and the setting up of joint institutions and mechanisms. It is therefore on these areas that the programme activities and recommendations have concentrated.

The joint initiative should facilitate, guide and inspire greater co-operation in the management of shared water resources around the world.

2 From Potential Conflict to Co-operation Potential (PC→CP): The UNESCO Component

Whenever there is competition for water there is a risk of it degenerating into conflict. This potential for conflict becomes more pronounced when the water resources cross administrative or sectoral boundaries. From the local to the international level, integrated water management requires, by definition, a perpetual process for achieving a *modus vivendi* before conflicts become unmanageable.

PC→CP has been designed with the overall objective of helping the parties involved in potential water conflicts to negotiate the way towards co-operation. A number of experts from around the world, chosen on the basis of their eminence in areas related to water management, were associated with this component of the programme. They sought to develop tools that can assist parties from different disciplinary backgrounds concerned with water management to tip the balance in favour of co-operation potential, away from potential conflict.

These experts have – among other topics – analysed historical experiences from the distant past of prehistory to the present, and identified the means for dealing with the relative scarcity of water created by increasing demands relative to water available when and where it is needed. They have also investigated the causes of the prevailing perceptions of water scarcity and the propagation of the idea that wars will be fought about water. These studies can serve as a basis for future planning.

A legal working group has presented the role of law and institutions in the transition from potential conflict to co-operation potential, and the tools available for the protection of water resources and related facilities in times of armed conflicts. It has identified the assets of the international legal system as well as its gaps. These legal studies are designed to be accessible to water managers with no professional legal background.

A number of studies on the techniques of negotiation were conducted. They draw, on the one hand, on the lessons learned from negotiations undertaken at intergovernmental levels in the preparation of international conventions, as well as lessons from the involvement of the civil society in the anticipation and the resolution of water conflicts. On the other hand, they explicitly set out the basic rules of alternative dispute resolution methods.

As for the techniques used by hydrologists, hydraulic engineers and other water resources managers, they are gathered in a specialized State-of-the-Art Report on Systems Analysis Methods for Resolution of Conflicts in Water Resources Management.

Real world water conflicts were considered through a number of case studies. They draw lessons from both the root causes of such conflicts as well as from examples of successful co-operation in shared water resources management. The case study reports are authored by experts involved in the management of the basins in questions. The experts are knowledgeable academics, politicians, and international officials in the service of regional UN agencies or non-governmental organizations, and senior professionals working for river basin organizations.

The case studies provide an important summary of data related to the hydrology of the river basins, in addition to substantial information on the historical management of the water resources. The legal, political and economical aspects which make every case unique were also analysed and assessed.

The aim of the project in its future phases is to increase the number of case studies and to involve a larger number of players in the preparation of these exercises. In 2001-2003, the basins that were given attention within this component of the programme are: The Mekong, the Aral Sea, the Jordan, the Nile, the Incomati, the Danube, the Rhine, the Columbia and the Trifinio.

Detailed studies on the review of applicable indicators provide the means for identifying international river basins at risk, and for monitoring the level of co-operation in the world's 263 international basins.

Finally, another key component of PC→CP is the development of educational tools addressing a wide target audience, ranging from post graduate students to high level decision makers.

A training course workbook on “Participation, consensus building and conflict management” techniques was prepared by the United States Army Corps of Engineers – Institute

for Water resources. This workbook teaches the set of skills which will help water resources decision-makers avert conflict, deal with water conflicts should they arise, and use water related agenda setting and decision making as an opportunity for dialogue when other subjects are closed to parties locked in various types of non water conflicts. In short, it teaches the necessary tools to help water resources decision makers take the PC→CP road.

The objectives of this course are to train the addressees to:

- Conduct management processes;
- Design and facilitate multi-disciplinary teams, (as needed in International Water Resources Management) and a variety of interactive workshops and meetings of various scales;
- Identify behaviour that escalates conflict during a dispute with other agencies, stakeholders, or the public – and identify behaviour that halts this escalation;
- Select and implement appropriate techniques for participatory processes;
- Design basin wide organizations and frameworks for action.

In parallel to the other PC→CP activities, a University Partnership for Transboundary Waters has been initiated with Oregon State University. It is an international consortium of water expertise including ten universities on five continents, seeking

to promote a global water governance culture that incorporates peace, environmental protection, and human security. The Partnership provides innovative services for current and future transboundary water professionals to enhance cooperation among stakeholders in countries sharing surface and/or groundwater resources. The Partnership services are designed and implemented within three focus area programs:

- *Education & Training* – Specially designed courses and curriculum to educate and train a new generation of “transboundary water champions”;
- *Outreach & Information Resources* – Web-based, consolidated, multiscalar information tailored to the needs of multiple stakeholder groups, to enhance understanding and awareness of transboundary water issues; and
- *Coordinated Applied Research* – Multidisciplinary collaborative studies on cutting-edge issues, conducted by international research teams to promote global dialogue and build a common understanding of the global challenge of transboundary waters governance.

Target beneficiaries include: post-graduates and academics; practitioners from local, regional, and national agencies, and non-governmental organizations; policy-makers, diplomats, security

and military professionals, private sector representatives; and the general public.

Waternet (a network of ten universities in southern Africa and the UNESCO-IHE Institute for Water Education) has conceived and developed four course modules on:

- The Basics of Water Resources addressed to professionals and stakeholder representatives who wish to improve their skills in collaborating and communicating with water managers.
- Conflict Prevention and Co-operation in International Water Resources aiming at reaching middle level professionals, post-graduate students and stakeholder representatives.
- Conflict Prevention and Co-operation in International Water Resources aiming at reaching high-level professionals and stakeholder representatives.
- Advanced short course in Mediation Skills, for those who have followed one of the conflict prevention courses, and who wish to further enhance their negotiation skills.

The two courses on Conflict Prevention are accessible to participants with a natural science/engineering background and participants with a more sociological/legal/public administration/economic background. Enrolling both types of participants in the same courses has many advantages.

It enriches the professional experiences that the participants would bring to the course, and the potential of learning from each other.

Pilot lectures of both courses were held in November 2002 in Cape Town, South Africa and in Maputo, Mozambique and evaluated in collaboration with the many participants, who were mainly from countries of the Southern African Development Community.

In its next phase, PC→CP will strive to further develop these and additional educational modules to help parties involved in water management to improve their knowledge and skills.

3 Water for Peace: The Green Cross Component

Within the high politics of international water negotiations, the concerns of local people and the need to involve the public in the process of arriving at basin management strategies and agreements are often overlooked. The achievement of co-operation and resolution of conflicts over the world's international basins would bring major benefits, but without the participation of citizens and the involvement of civil society partners at all levels, none of these benefits will be secured on the ground.

The Green Cross *Water for Peace* project therefore encourages dialogue and action to penetrate right down to the most local level, and for water management to become more participative and equitable both within and across state borders. Unless stakeholders are involved and feel a sense of ownership in a political process it is difficult to implement the recommendations or achieve any tangible results at the community level. The *Water for Peace* initiative is working to ensure that the needs and concerns of civil society and the environment are integrated into the search for

solutions to transboundary water conflicts, and that local level government representatives are aware of their important role and basin-wide responsibilities.

The *Water for Peace* initiative is currently concentrated on six locally managed transboundary river basin projects in the Danube, the Jordan, the Okavango, the La Plata, the Volga and the Volta basins. These basins are all very different, but they share at least three common factors:

- 1 - they are the life-blood of their regions – environmentally, economically and culturally;
- 2 - their populations all suffer from the lack of effective co-operation between the states and people who share them, and contain potential and actual areas of conflict as a result;
- 3 - their integrated management is a potential source of great benefit to all the people in the region.

The *Water for Peace* objectives are to:

- Identify obstacles to and incentives for co-operative basin-wide water resources management in six international basins;
- Increase political and public awareness and understanding of the issues of integrated international water management, conflict prevention and sharing the benefits of co-operation;
- Develop a multinational sense of responsibility among the peoples of the region towards combating their water problems, in turn leading to more active participation;
- Strengthen dialogue between parties, particularly national and local government, civil society and private sectors.

The activities of the *Water for Peace* programme component have been directed at finding practical solutions at the local level which can contribute to solving wider transboundary problems. This component will also help ensure that civil society and local-level actors fully understand and have a proactive role in the political process as basin-wide principles, policies, projects and mechanisms for integrated water management are developed. Each basin project is managed by regional partners and shaped to suit the particular problems and political situation of the basin, with an overall focus on building partnerships and enhancing the role of civil society and local authorities in conflict resolution and the process towards co-operation.

In the Danube basin, activities have included a survey of and research into the roles and challenges of local and regional authorities, public participation and the privatisation process, and their relation with the broader transitions in governance, legislation and administration taking place in the region. Working with the Council of Europe, Green Cross' activities in the Danube basin have been stimulated by the direct engagement and support of several local authorities from different regions of East and West Europe, which will hold a regional conference to analyse the findings of the Green Cross work in Romania in April 2003.

In the Jordan basin, Green Cross and partners have developed strategies to enhance levels of public awareness about water conflicts and the need for co-operation, and have investigated the potential of new sources of water. Green Cross has been active as a mediator between parties in the Jordan River Basin for several years, and proposes to help facilitate the strong inter-state co-operation needed for joint water projects. Assessments of the current level of public awareness related to water scarcity in the region, the best strategies for combating the problem, and the extent of riparian cooperation in terms of water resources management and conflict prevention strategies have been completed.

Three expert and stakeholder workshops as well as several public hearings have been held to ensure strong feedback from the public. Public opinion was also gathered through interviews, lectures and field questionnaires at all levels, which assessed opinions about the vital role of water as an important peace element.

In the Okavango basin, the Green Cross project is lending support to the river basin organisation, aiming to enhance the existing co-operation process by linking OKACOM with the scientific, expert and civil society communities to help develop an integrated basin plan. The project focuses on the problem that the basin is currently lacking an agreement to regulate the equitable sharing of the benefits derived from the resources of the basin. A Water for Peace workshop held in September 2002 brought OKACOM together for the first time outside of an official OKACOM meeting. This increased the level of trust between the representatives from the riparian states, and heightened awareness of the huge problems faced by upstream Angola as it recovers from decades of war. A set of policies to guide decision-making and a hydro-political model have been developed to map out the fundamental drivers of potential conflict, and discussed with OKACOM and other stakeholders at the 2nd workshop, in February 2003.

The purpose of this hydro-political model is to start the process of consensus building between the governments of the three riparian states in order that a negotiating climate can be created where trade-offs can be developed. The fourteen scientific papers produced for Workshop One are being compiled into a book: "An Introduction to the Hydro-political Drivers of the Okavango River Basin", and a BBC film – documentary on the Okavango situation was made during the workshop".

The La Plata basin project responds to water problems from the perspective of affected citizens, and facilitates the involvement of stakeholders in water project development. Work has begun in the important sub-basin of the Upper Paraná river, shared by Brazil, Argentina and Paraguay, where Green Cross' affiliates are stressing that effective water management, and in particular the plans for major infrastructure projects, must be framed within the broader territorial and human development strategy of the basin. Green Cross Argentina was invited to contribute to the resolution of the long-standing environmental and social conflicts created by the construction of the Yacyreta dam between Argentina and Paraguay. By acting as a mediator between the different parties, they helped to earn back the trust of the affected communities and the Green Cross project has seen the resettlement into more suitable housing of thousands

of people, the development of sources of employment and recreation, and the establishment of consultation centres where problems can be aired and resolved in a spirit of true partnership.

Pilot conflict resolution initiatives are also being launched in the Volga River basin between subjects of the Russian Federation, as well as public awareness and the promotion of new basin management legislation. The objective is the creation of the legal, institutional and social conditions to resolve existing and prevent future water-related conflicts in the Volga basin, where the current absence of co-operation and compensation mechanisms fuels disputes between upstream and downstream regions. Specific activities are being implemented to resolve the longstanding Cheboksary and Kuibishev hydroelectric power station conflicts. The project is also creating an organization of networking and cooperative public bodies for the control of water consumption by water users and to protect human rights of the local population in water conflict situations. A groundbreaking *Federal Law for the Integrated Water Resources Management of the Volga River Basin*, including tools for conflict resolution will be proposed.

Finally, in the Volta basin in West Africa, Green Cross is providing a forum for the involvement of civil society in the elaboration of a basin agreement and integrated management plan. This project is focused on civil society capacity building and has already carried out a basin-wide stakeholder consultation process and held two regional conferences to elaborate and approve a Volta Basin Declaration and a Strategy of Information, Communication and Sensitisation on water related conflicts in the Volta basin.

After one year of work, the project has contributed to a perceptible and growing awareness of the necessity to fill the juridical gap that prevails in the Volta Basin, and overcome the problems caused by the lack of a mechanism for conflict resolution between the basin's six states. The *Water for Peace* project has provided a bridge between the public, the basin governments, and the inter-governmental organisations increasingly involved in the Volta basin.

The Green Cross *Water for Peace* project has a strong awareness raising and communication focus. The objective is not only to generate understanding amongst people within the basins of the risks of conflicts over shared water, but also to encourage people to see their water from a new and wider perspective – as vehicle for peace and development across their entire region.

4 Water Security and Peace – Report Summary

By targeting both the highest political levels, and reaching and responding to local people and local authorities, the *Water for Peace* initiative is facilitating the process towards co-operative basin management and resolution of conflicts.

Just as strong institutions and legal instruments at the national and basin level can encourage good management at the local level, widespread active participation of and co-operation between stakeholders at the local level can have a “trickle-up” effect in enhancing security throughout a river basin.

During the next phase of the *Water for Peace* project, as well as continuing the regional activities, the findings of the six basin projects will be consolidated and further developed into a set of guidelines for participative management of international watercourses.

The Water Security and Peace report, which is the principal output of the joint *PC→CP: Water for Peace* initiative, traces the trends in both conflicts and cooperation over water resources from the beginnings of human civilization to the modern day challenges of big dams, climate change and mega-cities. Drawing on the many research papers, case studies, identified tools and mechanisms and field work of the joint programme, this report provides a unique account and analysis of the myriad intricate and interdependent links between water, security and peace.

The report clearly shows that there has always been competition, and sometimes conflict, over water since the earliest human settlements; but what matters most in preventing conflicts is a community’s capacity to cope with and adapt to water stress, and the institutions available to them to deal with competition between users. Both our capacities and institutions have evolved over the centuries, but while the need to develop the technical means to address shortages through diversion or storage of water has always received attention and resources, less focus has been placed

on human capacity building and the development of effective institutions to manage water wisely and equitably. This neglect of the institutional side is largely responsible for spawning the water management crisis experienced across the world today. Chapter 1 of the report examines the question of competition for water. Conflicts over water are looked upon as consisting of three key spheres: hydrosphere, economic and political. There is a strong potential conflict between the ecosystems’ needs for water and human needs. Even within the context of human needs, conflicts over water are often affected by problems in the economic and political spheres as much as those generated within the water sphere itself. Inequities are increasing between the rich who can afford to cope and the poor who cannot. This has led some to claim that water wars are inevitable, but a counter-movement claims that learning to cooperate in sharing water will build peace.

The middle chapters of the report provide the historical, ideological and legal foundations of the issue, and identify the most important tendencies observed in international water conflicts and cooperation initiatives. These chapters include: A History of Man and Water, that demonstrates that in the past societies have always found ways to co-operate over water management. A chapter on Ethics – The Ideal and Only Long – Term Solution makes the case that sustainable solutions must be based on the human values of justice and equity. In Legal Approaches – Basic but Insufficient and Trends – Emerging Issues and Opportunities, it is shown that while a legal framework does exist to settle disputes, conflicts can be resolved by other mechanisms before they escalate. The chapter on Public Participation – a Key Trend shows that the involvement of civil society is now valued and increasingly used to reach sustainable solutions to water management problems.

Chapter 7, Obstacles to Co-operation, notes that the challenges faced include potential for socio-economic political disturbances; poverty and socio-economic underdevelopment; lack of information; inequalities in water allocation, knowledge, and military force; geographic advantages; and weakness of globally ratified laws and conventions, especially enforcement mechanisms. The water sector suffers greatly from weak institutions, and in particular from the lack of democracy and good

governance, absence of political will, relative lack of trained human capacity and insufficient financial and other support for the development of institutions.

Decision-makers cannot act everywhere at once. It will therefore be useful to identify those places where action can head off potential conflict and build the capacity of enduring institutions. Much research has already been done to identify the factors that should be included in such indicators. These are discussed in Chapter 8, Indicators of Potential for Co-operation. In Chapter 9, Lessons Learned from Recent Experience, examples from several basins studied show that co-operation is an iterative process that begins with sharing information and building trust and confidence.

Institutions with clear mandates must be created for efficiency, effectiveness and sustainability. These are discussed in Chapter 10, The Critical Role of Institutions. Changing institutions means changing value systems and therefore takes time – perhaps generations. However, some of the problems faced today cry out for faster solutions – which is why the report also describes the basket of tools and mechanisms, identified by the *PC→CP: Water for Peace* exercise, that can be used to develop trust and build the institutions that secure co-operation.

History and a review of experience in the past one hundred years both demonstrate that it is possible to manage the scarce resource that is water so that all benefit in a just and equitable manner. There remain many challenges ahead that emerge from changing global physical systems and in reaction to our evolving socio-economic and political systems. However, initiatives such as *PC→CP: Water for Peace* build the capacity and resilience needed to cope with these challenges, and identify future actions to add to our toolbox. Chapter 12, Towards the Future, demonstrates that there is every reason to hope that the next generations will live in a world with Water Peace.



*

Please read the full report, available on the enclosed CD-Rom, and send us your comments.

5

Conclusions and Recommendations

Conclusions

At the end of this important first phase of the *PC→CP: Water for Peace* initiative, it is already possible to make observations and draw preliminary conclusions. The field-work, river basin workshops, case study and thematic research, Delft conference on From Conflict to Co-operation in International Water Resources Management: Challenges and Opportunities, and the Water Security and Peace analysis all support the premise that water can indeed bring people and nations together and foster peace and development across a region. However, it has also been amply demonstrated that there is no room for complacency as water-related conflicts remain prevalent and are not being effectively addressed in many transboundary basins. Unilateral management and diversion of shared watercourses continues, paving the way for more conflicts to emerge in the future, and there is no international framework in force to control such actions or to resolve the inevitable disputes.

Water can and should be a source of cooperation, but negotiating the terms of this cooperation in an international basin is a complex and lengthy process.

The centrality of capacity building and strong institutions both in effective transboundary water management and in preventive hydro-diplomacy cannot be over-emphasised. There is no blue print for the institutions and skills needed for good transboundary water management. However, it is clear that water management will increasingly rely on sophisticated information management technology, and that adaptive, participative and adequately resourced river basin organizations, with full political commitment from all basin states, greatly improve the chances of cooperation at the basin level.

In all of the world's 263 international basins, joint management should be built on a system of effective inter-dependence; a pooling rather than a restriction of each nations' sovereignty, concentrating on sharing the many benefits and opportunities which

good regional management of water will bring. Different national agendas within a basin must be recognized and common paths identified. There can be no unilateral solutions to essentially transboundary water problems and there is no miracle cure to any region's water stress, but a package of solutions.

One serious shortcoming in trans-boundary water management is the lack of active public participation. This is due both to the fact that the sharing of major watercourses is considered a "high politics" issue and is often decided at the highest level, and to the lack of awareness of the public regarding the inter-state perspectives of their water source. Greater efforts are needed to include all stakeholders in the management of international watercourses, as participatory processes not only strengthen democracy but can also help level the playing field and incorporate a larger range of values into management decisions. They help stakeholders understand how their water is a shared resource and appreciate the effects that flow up and downstream. Education, communication and the involvement of local authorities, parliamentarians and stakeholder representatives in decision-making should be incorporated into water management strategies whether at the local, national or international level.

There are many means and tools for managing shared water resources which include mixtures of building human skills and using the latest technology. Some of these are related to developing shared values that support justice and equity. Others are related to improving processes of conflict avoidance and resolution. Sharing these tools through professional networks and partnerships between basins will help establish better management practices.

The most positive sign of Water for Peace is the growing awareness of the links between water and security across many spectrums, from the highest political level to the grass-roots. The idea that tangible benefits will spring from the responsible and equitable management of river basins has become widespread and is increasingly an element of regional security and sustainable development strategies. There are already many excellent initiatives at different scales, but much more needs to be done, and in a more integrated and coordinated way.

International law and development support for the integrated management of shared river basins and aquifers are both currently insufficient to meeting these challenges. The vast majority of States have failed to reconfirm their commitment to cooperate over shared water by neither including this goal in the Johannesburg World Summit agreements, nor ratifying the UN

Convention on the Non-Navigational Uses of International Watercourses (so far ratified by only nine states). Greater political will and commitment are urgently needed.

Recommendations

– **Sharing benefits:** The focus of discussions on transboundary co-operation should move away from the conflict-prone approach of sharing or dividing water, and restricting sovereignty. Instead they should highlight the myriad benefits to be gained by all states from the recognition of interdependence and implementation of integrated management plans both at a basin and aquifer level.

– **Environment:** The natural functions of aquatic ecosystems must be respected in the terms of interstate and basin agreements. The most well-meaning goals for equitable water access and cooperation will remain insignificant if investment in the health of rivers as the source of water for people and nature is ignored.

– **Participation:** Local people, authorities, government representatives, the research community, farmers, industries, women and minority groups all need to be fully involved in the development of basin and aquifer strategies, agreements

and institutions. Stakeholder representatives and local authorities must be given a permanent and official role in decision-making and implementation.

– **Communication:** Awareness raising and education strategies should be implemented to ensure that people learn how to best take up the challenges of sharing water. A range of education and training tools are required, including basic education of all citizens, training of managers, planners and decision-makers and university education for a new generation of water professionals. Decision-makers, water planners and managers also need to develop skills in designing and conducting processes that draw together partners, stakeholders and the wider public, resulting in decisions that enjoy broad cross sector, and even transboundary, public support.

– **Institution & Capacity Building:** More support should be given to supporting the development of information technology and decision-making tools, and furthering the process towards creating strong river basin organisations and agreements which include clear mechanisms for resolving conflicts. An integrated water resource decision-making environment requires new sets of skills which reach across disciplines to consider alternatives that in the past were often not evaluated. It would be desirable to establish an Outreach and Information Resources

Programme to assist regional authorities to develop accurate and credible information for delivery among stakeholders, in order to raise understanding of the complexity of managing shared water resources at multiple scales. The programme could also develop and maintain a global hydro-diplomacy database of consolidated and compatible biophysical and socio-economic data, and support communication networks linking transboundary water academics, professionals, students, and sister watersheds.

– **International law** should be strengthened to provide a clear framework for transboundary water conflict prevention and arbitration. Efforts should be increased across the world to reach integrated and effective basin-wide and shared aquifer management agreements among all states in each international basin. Wider regional agreements should also provide a framework for the effective management of all basins in an economic region (such as EU or SADC). States should immediately ratify the 1997 UN Convention on the Non-Navigational Uses of International Watercourses. Additional measures are needed to clarify and strengthen the protection of water systems during times of armed conflict and from terrorist attack.

– **Financial support:** Interstate cooperation over transboundary watercourses and aquifers is an intensive process. In many regions of the developing world there is no infrastructure for even the simple exchange of data between neighbouring countries. International financial commitment to support systems such as this is vital and should be increased. The creation of an International Shared Water Facility as a funding mechanism to support activities related to internationally shared water bodies is recommended.

– **Mediation:** As originally raised at the 2nd World Water Forum, there is a need to establish a facility to provide services to aid transboundary waters governance. This water mediation facility should be a joint endeavour of the appropriate United Nations entities with interdisciplinary approaches to water issues, an international legal institution, and a water-related international NGO with a wide scope of interest. It would provide advice, guidance, and tools for parties involved in the management of shared water resources, on their demand and assist them in the anticipation and resolution of their water conflicts. This mediation facility is envisaged to co-operate with the funding mechanism proposed and should be able to work with basin authorities, governments and other stakeholders to resolve particularly intractable water related disputes.

UNESCO thanks all those who have contributed to the successful conclusion of the first phase of PC→CP, and are particularly grateful to William J. Cosgrove for his invaluable and wise guidance in implementing the programme. UNESCO acknowledges the following authors and institutions for the studies they have completed and the activities they have initiated. All the related documents can be found on the enclosed CD-Rom. They will also be available as UNESCO-IHP technical documents – PC→CP series in the summer of 2003:

On the history and future of water resources:

- Fekri Hassan, *Water for Peace: A cultural Strategy and Water Management and Early Civilization*.
- Martin Reuss, *Historical Explanation of Water Issues*.
- Saint Peter's College, UK, *Multiscale Issues: from the Local to the International*.
- Christoph Bernhardt, *PC→CP Processes in History: The Model of the Upper Rhine Region*.
- Aaron Wolf, *Conflict and cooperation, Survey of the past & reflection for the future and Summary of History Think Pieces*.
- Julie Trottier, *Water Wars: The Rise of a Hegemonic Concept*.
- Pieter van der Zaag and Jennifer Mohamed-Katerere, *Up scaling indigenous approaches for water conflict resolution*.

On international water law:

- Fredrick Lorenz and The International Water Academy, Norway, *The protection of water facilities during armed conflicts*.
- Patricia Jones, Sergei Vinogradov, Patricia Wouters, *The role of law in the transition from PC to CP*.

On Systems Analysis:

- Institute for Catastrophic Loss Reduction (K.D.W. Nandalal, Slobodan Simonovic), *State-of-the-Art Report on Systems Analysis Methods for Resolution of Conflicts in Water Resources Management*.
- Sree Sreenath, Ali M. Vali, Gundo Susiarjo, *Long Term Development of the Limpopo River*.

On techniques of negotiation, mediation and facilitation:

- Yona Shamir, *Alternative Dispute Resolution and its Application*.
- Branko Bosnjakovic, *Negotiation of International Conventions*.
- Philippe Barret & Alfonso Gonzalez, *The Role of NGOs and the Civil Society in the Negotiations*.

Case studies:

- UNESCAP, *Mekong Case Study*.
- Viktor Dukhovny & Vadim Sokolov, *Aral Sea Case Study*.
- Munther Haddadin, *History of the Jordan Basin Management*.
- Uri Shamir, *Negotiation over the Jordan Basin*.
- Alan Nicol, *Nile Case Study*.
- Alavaro Carmo Vas & Pieter van der Zaag, *Incomati Case Study*.
- Peter Nachnebel, *Danube Case Study*.

- Jan Lentvaar & Ine Frijters, *Rhine Case Study*.
- Keith Muckleston, *Columbia Case Study*.
- FUNPADEM, *Trifinio Case Study*.
- Eric Mostert, *Conflict and co-operation in the management of international freshwater resources: A global review*.
- FAO, *Institutions for Water Related Management*.

On Education:

- Oregon State University, *The Universities Partnership for Transboundary Waters*.
- US Army Corps of Engineers, *Workbook on Participation, Consensus Building and Conflict Management*.
- IHE-Waternet, *Conflict Resolution Course Modules*.

On Indicators of water conflicts:

- Aaron T. Wolf, Shira B. Yoffe, and Mark Giordano, *Water resource scarcity & conflict: review of applicable indicators and systems of reference international waters: indicators for identifying basins at risk*.
- Pal Tamas, *Water resource scarcity & conflict: Review of Applicable Indicators and Systems of Reference*.

Green Cross would like to warmly thank the many colleagues without whom the Water for Peace project would not have been possible, in particular:

- Danube basin:** Cristiana Pasca, Carmen Danciu, Adriana Pienaru and Andrei Blumer from Green Cross Romania, and Anna Tarjan and Miklos Marek from Green Cross Hungary.
- Jordan basin:** Kamel Mahadin, Tarek Taraweneh, Global Green Jordan, M. K. Associates and The Peres Center for Peace.
- Okavango basin:** Anthony Turton and Anton Earle from the Africa Water Issues Research Unit at the University of Pretoria, and the Desert Research Foundation of Namibia.
- La Plata basin:** Marisa Arienza and Carlos Marschoff from Green Cross Argentina, and Celso Claro from Green Cross Brazil.
- Volga basin:** Alexander Kosarikov of the Ecology Committee of the State Duma of the Russian Federation, Natalia Davydova, and Green Cross Russia.
- Volta basin:** Ousséni Diallo, Moussa Sangare and Francis Dabire from Green Cross Burkina Faso, and the Volta River Basin Project of Ghana.

Green Cross International: Bertrand Charrier, Fiona Curtin, Sabine Arrobbio and Dorothy Slepyan.

Draft reports on the six Green Cross river basin projects and other background papers are available on the enclosed CD-Rom.

Unesco and Green Cross also gratefully acknowledge the many others who have contributed to our activities but whose names do not appear on this list.



The choice and the presentation of the facts contained in this CD-Rom and the opinions expressed therein are not necessarily those of UNESCO and do not commit the Organization.

The designations employed and the presentation of material throughout this CD-Rom do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or the delimitation of its frontiers or boundaries.

Credits:

Text: IHP/UNESCO – Green Cross

Photos:

Laurent Weyl

UNESCO/André Abbe

FAO/ H. Zang

UNESCO/Dominique Roger

Graphic design and layout:

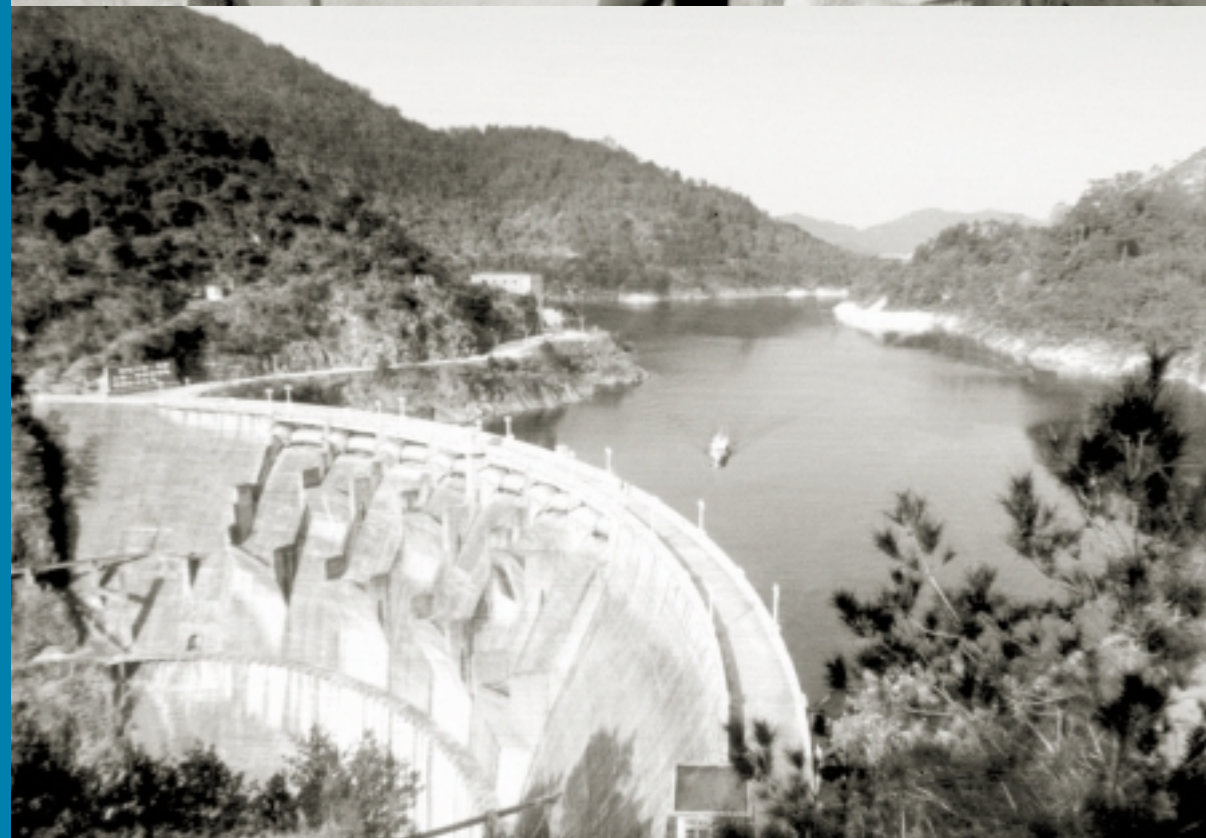
Atelier Takavoir – Paris

Printed by: ICM Company – Japan

© UNESCO and Green Cross International

Printed in Japan

on chlorine-free paper



Contacts:

UNESCO

Division of Water Sciences

1, rue Miollis

F-75015 Paris, France

Tel.: (+ 33) 1 45 68 41 80

Fax: (+ 33) 1 45 68 58 11

E-mail: pccp@unesco.org

Website:

www.unesco.org/water/wwap/pccp

Green Cross International

Water Conflict Prevention
Programme

160a route de Florissant

1231 Geneva

Switzerland

Tel.: (+ 41) 22 789 1662

Fax: (+ 41) 22 789 1695

E-mail: waterforpeace@gci.ch

Website:

www.greencrossinternational.net