

Partnerships in Practice



Industry, Fresh Water & Sustainable Development

Rupert Gasser, Nestlé
Robert Walker, Severn Trent



About the WBCSD

The World Business Council for Sustainable Development (WBCSD) is a coalition of 130 international companies united by a shared commitment to the environment and to the principles of economic growth and sustainable development. Its members are drawn from 30 countries and more than 20 major industrial sectors. The organization also benefits from a thriving global network of national and regional business councils and partner organizations.

The WBCSD aims to be a catalyst for change and fosters closer co-operation between business, government and other organizations concerned with the environment and sustainable development. It also serves as a forum where leading business people can exchange ideas and best practice in this field. The organization's work program reflects the determination of many in business to engage in an action-oriented approach. In particular, the WBCSD carries out a program covering the following focus areas: eco-efficiency; sustainability through the market; corporate social responsibility; technology, innovation and sustainability; climate and energy, and natural resources. The organization also offers a platform for member-led projects on sustainable mobility, the cement industry, and the mining and minerals industry.

The WBCSD is uniquely positioned to look at areas where industry's voice can make a difference. It seeks to collaborate with others in order to create framework conditions that will allow business to remain competitive while contributing effectively to sustainable development.

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Disclaimer

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Although the report has been written by Albert Fry, case study information has been provided by members of the WBCSD. The WBCSD is not responsible for the contents of the case studies. We provide a contact point within each company so that those wishing to explore the facts in more detail can do so directly with the company in question.



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Introduction

In April 1998, the World Business Council for Sustainable Development (WBCSD) and the United Nations Environment Programme (UNEP) published **Industry, Fresh Water and Sustainable Development**. This report included 20 case studies—showing how progressive companies are already protecting and using less water, re-cycling or re-using it and preventing pollution—clearly demonstrating that individual companies are able to improve the efficiency with which they use and manage water within their own operations.

Threats and opportunities for business

In a sense, this initial report put down a marker—for industry to ignore at its peril! Why? Because fresh water problems pose both threats and opportunities for businesses, and especially those which plan to expand investment in the developing markets of the world. In these very markets, a sustainable supply of fresh water and proper sanitation is the number one priority for many who do not have adequate water or must rely on unsanitary sources of water or walk long distances to collect water for basic needs. For a large proportion of these populations, a solution to their water problems would represent a crucial first step out of poverty onto the road to development and a better standard of living. So, companies pinning their hopes on these markets for their own future growth would be wise to concern themselves with the wider water needs of the populations in these areas.

Better to be part of the solution than the problem

Water being what it is, the issues surrounding it are bound to flow far beyond just the level and cost of a company's usage. As we all know, water—fresh or otherwise—is a crucial element in the life of any society or community. In most of the developed world, its continuous availability is virtually taken for granted. In other regions, however, and for many billions of people, access to fresh water is one of the most emotionally-charged issues of daily life. And a company that is manufacturing or doing any type of business in those parts of the world—quite apart from its own interests as a user in securing a dependable source of water supply—surely cannot fail to recognize its wider corporate social responsibility toward the protection and supply of fresh water to the community within the immediate area or region of its operations.

Furthermore, by anticipating the future water problems of an urban center or region and working with other stakeholders at an early stage, industry will avoid being left out of the debate if water scarcity occurs and when crucial decisions about supply priorities have to be made. Business can thus be in a position to obtain a fair share in the allocation of scarce water resources. In the earlier case studies, the WBCSD and UNEP addressed water issues “*within the fence line*” of the company and hence largely within its own control. In these six new case studies, the WBCSD is addressing broader water issues “*outside the fence line*” and therefore beyond the control of the individual enterprise.

Essential to form partnerships

On a global scale, the myriad of water problems facing the world today is far too complex even for business as a whole, let alone individual companies, to resolve on its own initiative. As we stated in **Industry, Fresh Water and Sustainable Development**, “*industry can't do it all alone*”.

The particular characteristics of global water issues demand that new and creative partnerships be formed, ideally involving all stakeholders. What is needed is for the private

and public sectors to work together, and for governments (at all levels), business, farmers, individuals and environmental organizations to cooperate. These new kinds of partnerships are going to be essential if society is to have any hope of meeting the fresh water needs of the 8 to 10 billion individuals who will inhabit the earth in the 21st century—while still reserving adequate fresh water to protect crucial natural ecosystems. And this cooperation must lead to fresh and innovative solutions.

A 'business as usual' approach on the part of governments, individuals or business itself would simply mean that the nexus of existing or emerging water problems will never be properly tackled. But if governments, especially local municipal governments, set the correct framework conditions, then the economic and technical power of the private sector could be unleashed to tackle some of the most pressing water issues.

Successful partnerships in practice

This short report demonstrates how several companies have successfully formed new partnerships to address water-related issues of global importance—proof that the WBCSD and its members want to move beyond rhetoric into action. We present six pragmatic cases of just such action having been taken, and the encouraging results achieved through some refreshingly new kinds of stakeholder cooperation.

- **DuPont** • The Chesapeake Farms Project: Searching for sustainable agriculture
- **Rio Tinto** • Project Platypus: Restoring degraded river basin catchments in Australia
- **BCSD-Gulf of Mexico** • Restoring the Gulf of Mexico by reforesting Mississippi river banks
- **Severn Trent International** • A partnership to improve water sanitation in Flanders
- **Nestlé** • Working with communities to improve water availability in South Africa
- **Suez-Lyonnaise des Eaux** • Sustainable solutions for water needs of low-income communities



Some vital statistics

Our intention is not to repeat, again in this report, the litany of fresh water stress and scarcity in the world. Nevertheless, we list here some vital facts and figures as a quick reminder (as well as for those coming new to the subject) of the sheer scale, diversity and complexity of the issues surrounding this precious natural resource. In fact, what is most needed now is not more talk of the problems or more dire predictions of gloom and doom, but positive action.

Agriculture

- Agriculture uses over 2/3 of the world's fresh water
- Irrigation accounts for over 90% of water use in some developing countries
- In Europe, most agriculture is rain-fed and industry is the largest user of fresh water

Industry

- Industry uses about 20% of fresh water and is expected to expand dramatically in the next 50 years
- Industry is using less water, recycling and cleaning it for reuse while producing more goods and services than before

People

- Over 1.2 billion do not have access to piped fresh water
- Over 2 billion do not have any water sanitation service
- World population is expected to grow by 2.5 billion before 2050

Nature

- About 97% of the world's water is too salty to be used for drinking
- The world's natural water cycle produces 45,000 cubic kilometers of rainfall over land each year
- Nature has the capacity to clean up fresh water through natural processes
- Excessive pollution and water extraction can have devastating effects on nature

Lessons learned from partnerships

New, creative forms of partnerships between the public and the private sectors are going to be required if the world's existing and future fresh water problems are to be tackled effectively.

The six cases described in this report, involving WBCSD member companies, serve to show that focused, well-managed and properly funded cooperation between key stakeholders not only delivers a more successful and sustainable solution to a particular water problem, but produces—often unexpectedly—additional benefits for each of the different participants, and the causes they represent.

Overall, the general lessons learned so far from cases such as these, where the partnership approach has been applied to water problems, are that:

- The involvement and active participation of all the stakeholders in partnerships, from the outset, greatly improve the chances of finding **sustainable solutions** to complex and often politically sensitive water problems.
- **Productivity and profitability increases** can be achieved by industry from more efficiently managing water usage and wastewater disposal.
- Benefits can be gained by business, non-governmental groups, individuals and governments from **being involved** and being seen as involved in the resolution of water problems in a community or region.
- Real and lasting social benefits can be gained by partnership actions in terms of **improved accessibility to fresh water** for the local population, and all that this implies for their future development.
- Improved water service contributes to **poverty alleviation**.
- Solutions found by partnerships between public and private sectors are more likely to result in the **sustainable protection of the environment**—the best partnerships generate economic, ecological and social benefits.
- There are a wide range of mitigation actions which can restore damaged lands, water bodies or ecosystems—often water partnerships involve **land management, forest management and agricultural production systems**.
- Many of these partnerships serve to **empower individuals and communities**.
- Governments can be involved in partnerships to provide the **regulatory framework** which encourages action by business and other stakeholders and protects the public interest.
- Governments must be seen as neutral participants and must be prepared to **remove institutional barriers which thwart private initiative**.
- Industry's role can be crucial because, for example, an international company looking to develop its business in a new market contributes invaluable ingredients to any partnership including **technical, management and commercial expertise**—as well as experience.

All in all, when it comes to such a precious resource as water—with all that it means to so many—it is hardly surprising that the old adage *“the sum of the parts is greater than the whole”* applies.

Each of the six cases includes lessons learned that are specific to that case. But overall and in general, partnerships are proving to be the way forward.

The Chesapeake Farms Project Searching for sustainable agriculture

Chesapeake Farms is a 3,300 acre agricultural and wildlife management research, demonstration and education area located in Maryland on the Eastern Shore of Chesapeake Bay in the United States. Owned by DuPont since 1956, its location on tributaries of the Chesapeake Bay, its history of environmental stewardship, and position in the heart of a major grain producing region, provided an ideal location to conduct research into sustainable agricultural practices. DuPont Agricultural Products, in cooperation with 26 other partners, began experimenting with four different cash-grain cropping systems in 1994.

The partners

Agris, Inc.	Pioneer
American Society of Farm Managers and Rural Appraisers	Potash and Phosphate Institute
Case IH	Rodale Institute
Center for Integrated Pest Management	Skybit, Inc.
Conservation Fund	Starlink, Inc.
Cornell University	Topsoil Testing Service
DeKalb	US Environmental Protection Agency
Environmental Systems Research Institute	US Department of Agriculture
Farm Journal	University of Delaware
LeBoeuf, Lamb, Greene & MacRae	University of Maryland
Michigan State University	Wallace Inst. for Alternative Agriculture
Monsanto	Willard's AgriService
Natural Resources Conservation Services	Zeneca

A Sustainable Agriculture Project at Chesapeake Farms is a watershed-focused, long-term comparison of four cash-grain farming systems relevant to the mid-Atlantic region of the United States. Collaborators include environmental and agricultural non-profit organizations, government agencies, academia, agri-business and a group of concerned farmers. Each group contributes specific talents, diverse thinking and the resources needed to ensure the project's success. They also give the project the depth of thought needed to help meet the groups' common challenges.

The four systems were established in four separate fields, ranging in size from 9 to 25 acres. In addition, each system was established in four adjacent 1/4-acre plots. This approach allowed the monitoring of surface-water effects in the large fields (watershed fields), as well as weed and invertebrate populations, soil quality and soil pore water in the replicated plots where soil types were less variable.

All four systems used best management practices as defined by the United States' Department of Agriculture and no-till planting for at least one crop. No-till or minimum-till practices are increasingly being used in modern agriculture to reduce both soil erosion and energy-intensive plowing operations.

The four cropping systems



System A: Continuous no-till corn with and without a rye cover crop. A programmed approach to nutrient and pest management is used. In this approach, crop protection is accomplished largely through pre-planned applications of products known to control the anticipated pests.



System B: Two-year corn and soybean rotation with conventional tillage corn and full season no-till soybeans. A programmed approach to pest and nutrient management is used.

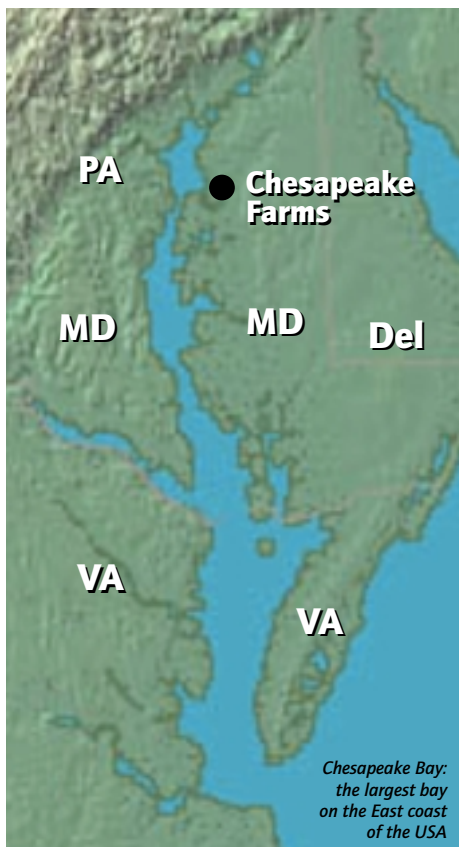


System C: Two-year corn, wheat, and soybean rotation with no-till corn, conventional till wheat and no-till, double-crop soybeans. A prescription approach to pest and nutrient management is used, i.e. crop protection practices and fertility applications are based on scouting and diagnostics.



System D: Three-year corn, wheat and soybean rotation with rye and hairy vetch cover crops. This system relies on cultural and biological management of nutrients and pests.

In the watershed phase of the project, surface water runoff from each system is monitored and analyzed for sediments, nutrients and pesticides. In the Chesapeake Bay watershed, non-point source pollution from agricultural areas is a critical issue. The states of Pennsylvania, Maryland and Virginia, together with the US Environmental Protection Agency, have entered into a cooperative agreement to protect the Bay from excessive nutrients which threaten the health and vitality of this huge national resource. In addition, Maryland and Virginia have mandated that farmers follow formal nutrient management plans to reduce the input of phosphorus and nitrogen into the waters of the Bay. In Maryland, the mandated plans must be followed from the beginning of 2002.



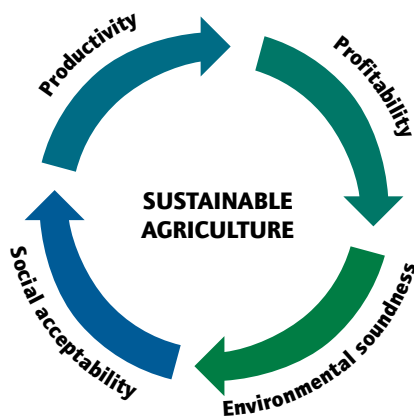
The Chesapeake Farms Project has demonstrated that sustainable agricultural practices can reduce discharge of pesticides and nutrients into surface and subsurface water. The results of this study clearly demonstrate that the amount of herbicide in surface water runoff and soil pore water is directly related to the amount of herbicide applied to fields. Thus, the average concentration in runoff water of newer chemistry, for example low use-rate herbicides such as DuPont's nicosulfuron is only 1/10 of older compounds such as atrazine that are applied at higher rates. In addition, the soil water beneath the continuous no-till corn with a rye cover crop in System A contained only 50% as much nitrogen as the corn without a rye cover crop in System B.

System C has the lowest environmental impact on the adjacent waters of Chesapeake Bay. This system, which relies on a prescription approach to pest and nutrient management, loses on average only 0.97 gram per hectare yearly of pesticides and very little nitrogen and phosphorus.

One objective of the project was to give farmers a clear picture of how different farming systems compare. Farm organizations have been involved in the design and conduct of the research because, in the final analysis, it is farmers who must make the decisions that affect land and associated natural resources. Farmers are stewards of the land, concerned with the vitality of nearby water systems for fishing, hunting and other recreation,

as well as the long-term viability of their agricultural operations. The lessons learned from this project are shared with farmers at the annual Chesapeake Farms Sustainable Agriculture Field Day. This event, attended by about 200 farmers and agricultural stakeholders, features informational displays on Project results, commercial displays related to the theme of the Field Day, and various product demonstrations. The event concludes with a picnic and guest speaker addressing current agricultural issues.

DuPont Agricultural Products and their 26 partners in the Chesapeake Farms Project clearly understand that farmers must be productive enough to meet society's need for food and fiber, remain profitable, protect the environment, and meet the long-term demands of society. These needs are the key messages of sustainable agriculture and sustainable development.



Lessons Learned

- 1** Industry, in cooperation with government, academia, non-profit organizations and farmers, can:
 - find ways to increase efficiency of crop production and reduce the use of fertilizers and pesticides
 - develop programs which reduce the runoff of fertilizers and pesticides into ground and surface waters
 - educate the public about the efforts farmers are making to be good stewards of land and water resources
- 2** This program is an example of eco-efficiency as farmers increase profitability while reducing unwanted environmental side effects.

Contact for further information

Dr. Mark Conner
 Chesapeake Farms Project
 7319 Remington Drive
 Chestertown
 MD 21620
 USA
 Tel: (1) 410 778 8402 • Fax: (1) 410 778 8405
 E-mail: mark.c.conner@usa.dupont.com

Case 2 Rio Tinto

Project Platypus

Restoring degraded river basin catchments in Australia

Portions of the Australian continent are harsh. Long periods of almost desert-like conditions give way to sudden torrential downpours. When these torrential rains occur, certain lands can be devastated. This is particularly the case when native trees and vegetation have been removed by farmers and landowners.



*Upper Wimmera, Western Victoria,
about 200 kilometers Northwest of Melbourne*

In the Upper Wimmera River catchment, about 86% of the native vegetation has been removed. As a result, portions of the Wimmera are plagued with severe streambank erosion and huge gullies scar the landscape. Siltation and sedimentation have caused damage to roads and dams and, during the rainy season, increase the frequency and severity of flooding. Another disastrous result of decades of land mismanagement has been the onset of dryland salinity. After native trees were removed, the water table rose and saline water seeped to the surface with devastating effects on soil productivity. Around 85,000 tons of salt have entered the river each year. Since the catchment is landlocked, the salt, silt and other pollutants have built up downstream and further reduced the productivity of the land. The photographs on the following page give visual evidence of the disaster. The entire local community agreed that something needed to be done.

In 1994, the Landcare groups in the Wimmera River catchment came together to address the problem. They agreed on a name, Project Platypus, chosen because the reappearance of the native Australian platypus would

indicate the return of a healthy waterway system. This name was changed to Rio Tinto Project Platypus when the mining company entered into the partnership as a major contributor (of funding, technical support and management advice) along with Wimmera Mallee Water and the Victoria State Department of Natural Resources and the Environment.

Two pilot projects, Astons Scour and Iron Pot Creek, were selected because they were typical of subcatchment areas contributing most of the salt and sedimentation degrading the Wimmera. Immediate remedial measures undertaken on Astons Scour included bulldozing over the enormous gullies that had been created, constructing new sediment control dams, introducing contour cultivation and the planting of indigenous species of trees and shrubs.

These plantings were designed to attain three objectives:

- provide ground cover to slow the runoff rate and minimize erosion during the rainy season
- lower the groundwater level to prevent salt from rising to the surface and degrading the land and all vegetation
- increase biodiversity to enhance the environment

A monitoring system was put in place to measure the actual results. An extensive model was developed to investigate the hydrology of the Iron Pot Creek region. The objective was to establish a model for understanding and solving salinity problems on a local scale. All salt-affected areas have been located and mapped, and an ongoing data collection process has been established.



Earthwatch Australia and its volunteers are also helping to establish baseline data. Rio Tinto personnel and scientific advisers support the volunteers in monitoring programs. Dr. Melody Serena, a conservationist biologist with the Australian Platypus Conservancy, was invited to assess platypus populations in the Upper Wimmera River catchment. Research teams live in the field for two weeks at a time surveying platypus and freshwater invertebrates to help establish baseline data.



Now after three years there is both visual evidence of success on Astons Scour (see before, during and after pictures opposite) and technical data available to assist the planning of remedial works to be taken on Iron Pot Creek.

These two pilot projects will serve to validate that the causes of salinization are understood correctly and that the remedial actions are effective.



There are hundreds of similar areas requiring remedial attention. It is important to know that the assessment of the problem is accurate and that the 'fix' is the most cost-effective solution. Rio Tinto Project Platypus is in the process of restoring two small catchment basins. But, more importantly, it is providing information and developing models which will make it easier to attack similar problems throughout Australia and other arid areas. The Platypus

Conservancy reports that the platypus population in the Upper Wimmera catchment is still healthy enough to allow the species to recolonize other parts of the catchment as the remedial works of Rio Tinto Project Platypus begin to take effect.



Dr. Melody Serena with Platypus found at Campbells Bridge (Wimmera River)

Lessons Learned

- 1** It is possible to restore degraded river basin catchments if all parties are willing to invest time and effort.
- 2** In this case, volunteers from academia and the environmental community were able to play an important role in monitoring the projects and lending credibility to the efforts.

Contact for further information

Chris Leiner
 Rio Tinto Technical Services
 1 Research Avenue
 Bundoora
 Victoria 3083
 Australia
 Tel: (61) 3 9242 3189 • Fax: (61) 3 9242 3222
 E-mail: chris.leiner@riotinto.com

CASE 3

Case 3 BCSD-Gulf of Mexico

Restoring the Gulf of Mexico by reforesting Mississippi river banks

Each summer for the past four years, a red tide of algae growth has spread over a vast swath of the Gulf of Mexico from the mouth of the Mississippi delta all the way to the coast of Texas. Fertilizers and animal wastes from all along the fertile Mississippi valley feed this ugly tide. During the summer months, there is a virtual explosion in the population of algae. Then, when the algae die and decay, they sink covering the bottom of the Gulf with a layer of fine silt which cuts off oxygen and chokes all life in this normally highly productive fishery.

"There's nothing out there. No Shrimp. No fish. Maybe a snail," says Bill Foret, a Cocodrie shrimper.

This 'dead zone' now covers 6,800 square miles. Worse, it appears to be expanding. Fishermen and shrimpers avoid it like the plague. Most point-sources along the Mississippi, primarily factories and municipal sewage plants, have been well controlled for twenty or more years. It is non-point sources, mainly from thousands of farms, that are the primary cause of this new environmental menace. Addressing this issue will require a new partnership, one that involves thousands of farmers as well as business, government and environmental organizations.

Over the last 50 years, farmers in the alluvial plain of the vast Mississippi have cut down hardwood forests and planted crops, mainly soybeans, in much of the flood plain on both sides of the river.



'Dead zone' in the Gulf of Mexico south of Louisiana

They did so because it appeared to make good economic sense. The 'unproductive' forests which historically lined much of the river's edge actually provided valuable 'free' environmental services. The trees acted as a natural barrier during heavy rains and flooding. Further these hardwoods filtered out excess fertilizers and animal wastes which ran off farm

fields before they could enter the river. In fact, these woods thrived on these nutrients. It was only when these nutrients concentrated in the Gulf of Mexico, that the problems with unwanted algae growth occurred. These hardwood forests had been a favorite haunt for hunters and sport fishermen for generations. But the owners of the land could not obtain any gain from the free services provided to the natural environment. So they cut down the trees, made a one-time profit, and planted cash crops.

Now, however, with the price paid for trees rising while the value of soybeans is decreasing, and with growing incidences of flooding, many farmers and landowners may be willing to consider new alternatives. Reforestation has emerged as a preferred option which could alleviate the red tides that cause so much disruption. Government programs such as the Conservation Reserve Program (CRP) and others offer a way to put trees back on these lands, but funds are limited and such programs afford only a partial answer. The Business Council for Sustainable Development-Gulf of Mexico (the 'Gulf Council') had a different proposal and believed that farmers might actually be able to profit from reforestation. In 1995, together with the US Environmental Protection Agency, the Council brought together an informal alliance of government, industry, higher education and non-profit organizations to pursue this alternate reforestation plan.

There is no doubt that trees have value when they mature. But this often takes twenty or more years. Most farmers prefer annual cash flow in lieu of waiting twenty years to benefit from newly reforested lands. One possible solution is a contract arrangement between the farmer and a forest products' company. The forest products' company could provide quality tree planting stock, technical assistance and forest management know-how. The farmer would grow the trees and receive an annual payment while the trees were growing to maturity. Then when the trees were mature, the company would harvest the wood and the forestry cycle would be renewed, along with the cash payments. This alternative uses market forces to move toward a sustainable development solution. It represents a commercial operation, and one that could be self-financing.

To test this hypothesis, the Gulf Council hired a group of professors at Virginia Polytechnic Institute (VPI) to determine whether reforestation could be competitive with soybean agriculture. The study compared the net present value of returns from both reforestation and soybean production, factoring in both potential yields and future price fluctuations, along with production costs, insurance and tax concerns.

What was its conclusion? On a net present value basis, reforestation can be economically competitive with soybean production on certain marginal croplands in the Lower Mississippi Alluvial Valley (LMAV). In addition, the results indicated that the societal and ecological benefits of switching from crops to trees could justify non-timber payments that would ensure reforestation returns exceed current soybean returns.

In January 1997, armed with the results of the VPI study, the Gulf Council set out to obtain support for a series of demonstration projects to test out the concept. Forest products' companies International Paper, Temple-Inland, Westvaco and Weyerhaeuser all provided seed funding to launch the demonstration effort.

The demonstrations will test a system through which the diverse beneficiaries of reforestation work together to promote sustainable forestry. Westvaco Corporation has agreed to lead the first one, which will focus on a 50-mile stretch of the River directly south of Cairo, Illinois. In this 50-mile stretch, there are thousands of acres of land unprotected by the Mississippi River levee system. Known also as 'batture' lands, these unprotected areas flood every year and include much of the farmland which will have to go back into hardwood forests to reduce the sediment loading in the river.



The Westvaco pulp and paper mill in Kentucky along the Mississippi River

Recently, most batture farmers have lost crops to flooding in four of the past five years. As a result, many of them are looking for ways to reduce their risks from flooding, in some cases by exchanging their batture lands for available land behind the levees.

Through its Cooperative Forest Management Program (CFM®), Westvaco routinely provides non-industrial private forest landowners near their mills with technical assistance, including sustainable forest management plans and assistance with planting, cultivation, and harvesting. The company is also considering leasing or other payment arrangements with certain landowners in the region.

Other potential resources for landowner payments and other support include federal cost-share opportunities like the Conservation and Wetlands Reserve Programs, numerous public and private tree-planting programs, and support from Ducks Unlimited, Inc. for setting up duck, deer and other hunting leases.

By tapping into these and other programs, Westvaco and the Gulf Council hope to avoid approaching the hypoxia issue in a vacuum. Instead, the demonstration projects will address the issue within the larger context of several ongoing forestry issues and stakeholder concerns, including wildlife habitat, climate change, sustainable timber supply and other water quality issues. With the forest products' industry leading the way, this approach will help leverage all of the available resources poised to support reforestation, including private funding for hunting leases and carbon sequestration, and public funding for wetlands restoration and conservation.

The resulting project will provide a model for industry-led reforestation efforts that target successive segments of the river. Currently, there are more than a dozen major pulp and paper mills in the LMAV, each one a potential hub for a reforestation initiative and a potential tool for controlling sediment and other runoff before it reaches the Gulf of Mexico.



Lessons Learned

- 1** The causes for environmental degradation in receiving water bodies often lie far upstream from the source of environmental insult. In this case the cause of the environmental disaster in the Gulf of Mexico was determined to be non-point source pollution from farming along both sides of the Mississippi River far from the site of the degradation.
- 2** Problems such as this require creative new partnerships between farmers, governments, academia and, in this case, the forest industry.
- 3** Reconverting farmland alongside the Mississippi River to forested lands provides protection to water quality, slows the movement of flood waters, thereby reducing economic losses, and provides an economic return to the landowners.
- 4** In this case, the forest sector of tree growers were able to provide technical information to landowners and create economic incentives to grow trees rather than agricultural crops.

Contact for further information

David Groberg
 BCSD-Gulf of Mexico
 4425 South Mopac
 Building III, Suite 500
 Austin
 Texas 78735
 USA
 Tel: (1) 512 892 6411 • Fax: (1) 512 892 6443
 E-mail: groberg@bcsdgm.org

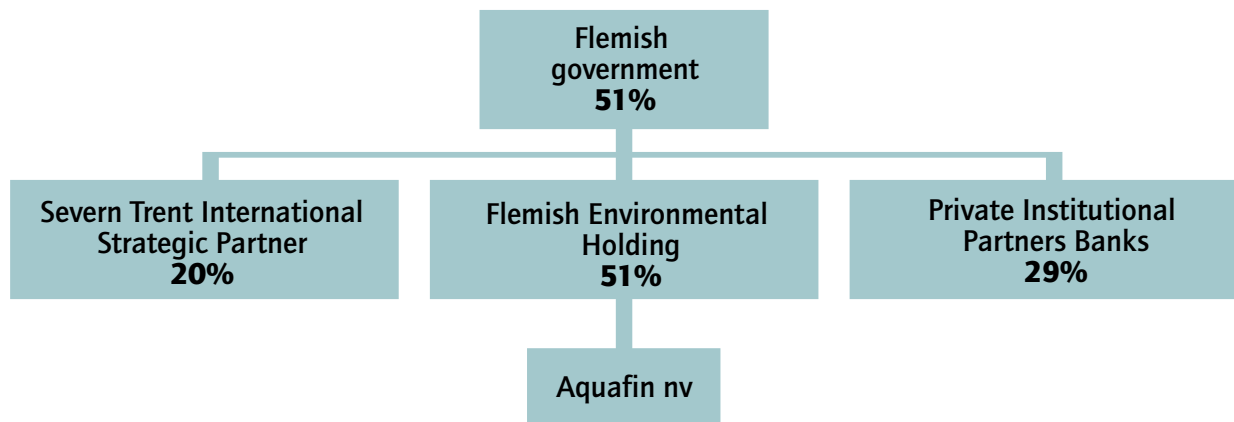
Case 4

Case 4 Severn Trent International

A partnership to provide water sanitation

Most OECD countries and regions have modern efficient water supply and sanitation systems. However, some regions have been slow to upgrade portions of these essential services. Flanders, the northern most portion of Belgium closest to the English Channel and the North Sea, found itself in that situation in the early 90s. The European Union issued a directive, 'Urban wastewater treatment' (91/272), to provide protection of the North Sea from wastewater discharges. While 79% of Flanders' population was already connected to sewers, only 29% of this wastewater was treated before discharge to public water ways. The government recognized the need for action and for massive investment.

The government of Flanders wanted to establish the most effective institutional framework to control this investment and obtain the best possible technical performance. Severn Trent International was appointed as an advisor to develop options for review by the government. Eventually, Flanders officials selected a public-private partnership arrangement with the following structure:



Aquafin, an acronym for water finance, would be the private sector company that designs, constructs, operates and finances waste water projects. VMM, representing the Flemish government, establishes priorities and monitors progress of the company. AMINAL, a second government group, provides the regulatory mechanism and controls charges for services.

The initial management team for Aquafin was seconded from Severn Trent International. The first priority was recruitment and training of local managers and engineers. This team now manages the entire business and Severn Trent International remains as a shareholder and continues to provide technical and managerial assistance as required.

During this initial phase Severn Trent International provided the following services:

- Staff training
- Water treatment know-how and technology
- Project management including computer systems
- Development of reporting and monitoring systems
- Development of operating manual and work instructions
- Service and quality assurance for customers

From 1991 to 1998, 843 separate projects were initiated and completed. At the end of 1998, 300 additional projects were under construction. During this seven-year period Aquafin has delivered:

- one kilometer of new sewer per day
- one new pumping station per day
- one new sewage treatment plant per month (47 in total)
- sewage treatment capacity for 6 million people

This program has invested US\$1.8 billion in new infrastructure. Aquafin has now recruited and trained a staff of 700 employees. By 1998, 85% of the Flemish population was connected to sewers, up from 79% in 1991. Forty-five percent of wastewater is now treated—up dramatically from 29% in 1991. The objective is to treat 85% of all wastewater before discharge.

In 1997, for the first time, all 39 beaches in Flanders were open for summer bathing, as fecal coliform counts have dropped far below the international norms. Where new sewage treatment infrastructure has been taken into operation, the environmental results are bound to follow: the water quality is improving, fauna and flora are recovering.

Lessons learned

- 1** Private sector participation can take many different forms, in this case the public-private model selected has worked successfully.
- 2** Extensive investment can be provided and managed for public water sanitation infrastructure by a combination of public and private funding.
- 3** Aquafin demonstrated that public services can be delivered with private sector efficiency and management.
- 4** Government provided oversight, regulation and framework conditions, including pricing of services, so that the public interest was protected, investors earned profits to justify their investment, and environmental goals were attained.

Contact for further information

Ashley Roe
 Severn Trent International
 Marketing Director
 2308 Coventry Road
 Birmingham B26 3JZ
 United Kingdom
 Tel: (44) 121 722 6130 • Fax: (44) 121 722 6138
 E-mail: stwi.headquarters@severntrent.co.uk

Case 5 Nestlé

Working with communities to improve water availability in South Africa

The World Water Forum in the Hague of March 2000 has drastically shown that clean water is a resource which is becoming more and more scarce. It has also shown that to ensure water supply in sufficient quantity and quality will constitute one of the most important—if not the major—challenge the world will have to face in the 21st century.



Water supply is a major problem

Nestlé is not only the world's biggest food company, but also the global leader in bottled water. As such, Nestlé recognizes that the responsible management of worldwide water resources is an absolute necessity. Preserving both the quantity and quality of water is not only an environmental challenge, but also one that spans economic, political, social, cultural and emotional considerations. To help ensure a long-term, high quality, adequate water supply, Nestlé supports the sustainable use of water, strictly controls its use in the Company's activities and strives for continuous improvement in the management of water resources.

One of the regions of the world most severely affected by the scarcity of water is the southern part of Africa. The recent floods in that area have not improved that situation, as superficial observers may think, but, on the contrary, may have rendered it even worse. Water supply is a major problem above all in rural areas. Women can spend almost five hours a day collecting water for their families. In addition, the springs from which they collect water are often used by animals as well and can therefore be polluted.

Following are a few examples of how Nestlé cares about water supply far beyond its immediate needs, working together with government agencies and non-governmental organizations to help provide precious water to rural communities and to clean up the environment. The examples are taken from the country in the region where Nestlé has the strongest and most long-standing presence: South Africa.

Eco-Link: identify sources of underground springs...

Beginning in 1985, Nestlé South Africa helped to establish Eco-Link which provides under-served communities with access to skills, knowledge and resources to improve their own living conditions. Eco-Link supports many projects, one of which works to find ways to harvest limited water resources together with better water and waste management to help overcome problems with water-borne diseases.

Through Eco-Link, Nestlé is taking part in a project to help villagers establish a supply of clean water near to home. People were taught how to identify sources of underground springs and to channel rain water and store it in reasonably hygienic conditions. A number of relatively simple solutions have been identified which involve the community, are low cost, teach basic skills, create jobs and provide a vastly improved water supply. These solutions include the building of water tanks and capping the access to natural underground springs.

...capture and store rain water

The water storage tanks are very simple and easily constructed by the local population. The cost is minimal, an important factor in the region. They are designed to capture and store rain water from roofs of buildings such as schools. Construction consists of two inexpensive corrugated metal sheets to form a rough cylinder. The cylinder is then encircled with chain link fence, which is made on site by villagers with steel wire and a special machine. The tank is finished with a coating of cement, stone and sand. Provided with a simple wooden cover and tap on the bottom clean, drinkable water is made available to the local population.

Each water tank benefits some 500 people. In 1999 alone, approximately 40 tanks were built, thereby expanding the knowledge base and skills of the people, the latter being even more important for long-term sustainable development.



Water tank which captures rain water from roof tops

The Earthcare Program: recycling waste to encourage vegetable growth

Working hand in hand with the Eco-Link water project is its Earthcare Program which focuses on home and community gardens and nutrition education. A team of knowledgeable and dedicated instructors teach the trench gardening method with the emphasis on nutrition using relevant foodstuffs and low energy cooking methods. An important element of the trench garden involves the recycling of litter or the use of waste to encourage the growth of vegetables.

The Working for Water Program: clearing invasive alien plants from catchment areas

Nestlé South Africa has also joined forces with the Department of Water Affairs and Forestry in the Reconstruction and Development—Working For Water Program. This program, part of the National Water Conservation Campaign, involves clearing invasive alien plants from South Africa's mountain catchment areas, water courses and wetlands in low lying areas to increase the runoff of water.

Clearing these 'thirsty' plants can yield water at a mere 11 percent of the financial cost of even the most favorable dam option. It has the added benefit of providing work for thousands of unemployed people who have been taken on to clear the alien vegetation. Nestlé is financing the cost of producing videos to educate people on the program's many benefits including how clearing the alien plants improves water supply. These benefits have been shown to, and were well received by the Minister of Water Affairs and Forestry, as well as the then President Nelson Mandela and his Cabinet.

The LEAP Program: developing water harvesting projects

The LEAP Program for Sustainable Development in Mpumalanga runs environmental awareness courses for underprivileged rural communities and helps them establish their own local sustainable development programs. Nestlé has provided funds to help develop a water harvesting project which teaches the skills needed to build rainwater tanks, grow vegetables and establish a traditional healers plant nursery. In addition, these funds will also continue to support LEAP's work on the government's Working for Water Project. In fact, one rural community of nearly 8000 people which was badly affected by the devastating floods in Southern Africa has been helped by nearly 20 Nestlé water tanks installed as part of the program.

Nestlé South Africa provides financial support to many organizations, one important component of success in these projects. To ensure sustainability and success in the future, however, focus has been put on maintaining an active participation in management and administration of the programs and developing educational programs and materials which allow continual expansion of the knowledge and skills necessary to apply these simple technologies. For example Nestlé has developed posters and teacher guides for communities on vegetable/trench gardening and water harvesting.

Nestlé South Africa is also involved in certain other projects, e.g. the Highlands Water Catchment Program which is run by the Endangered Wildlife Trust with the goal of creating awareness of the threat to wetlands in South Africa, a crucial factor to conserve, preserve and clean the world's water supplies.

Lessons learned

Working with all these projects has taught Nestlé three basic lessons which may also be of interest to other companies wishing to get involved in similar ventures:

- 1** Partnership programs work best when they are 'grass roots up' not 'top down' oriented.
- 2** Skills and knowledge must be passed on so that people have the ability to solve their own problems. It must not be a hand out. People must be able to take charge of their own destiny and not become dependent.
- 3** Companies can partner and provide financial, managerial and administrative support for the development process.

For copies of the videos, posters or for further information contact:

Jacky du Plessis
Nestlé South Africa
PO Box 50616
Randburg 2125
Republic of South Africa
Tel: (27) 11 889 6058 • Fax: (27) 11 889 6083
E-mail: jackie.duplessis@za.nestle.com
Eco-Link Internet address: www.lowveld.com/ecolink

Case 6

Case 6 Suez-Lyonnaise des Eaux

Sustainable solutions for water needs of low-income communities

In the 1930s, Buenos Aires had 2.4 million people, and an extensive city water system supplied every household with drinking water. By the early 1990s, Buenos Aires had 9.1 million people and only 6.5 million were connected to potable water mains. Rapid population growth, especially in sprawling, poorly planned suburbs, had simply overwhelmed the government's capacity to provide water and sanitation services.

When the Buenos Aires water system was privatized in 1993, a key goal was to expand these services as quickly as possible. Lyonnaise des Eaux, leading the private Aguas Argentinas consortium which now operates the city water system (in partnership with Aguas de Barcelona inter alia), is playing a major role in this effort.



Given its mandate to provide universal services, Aguas Argentinas has worked with local communities, neighborhood organizations, non-governmental organizations (NGOs) and local governments in water and sanitation projects. In 1997, Aguas Argentinas signed an agreement with the non-profit International Institute for Environment and Development-Latin America (IIED-AL) to develop new strategies for water and sanitation supply in low-income areas. The work on policy and strategic design inputs included:

- Mapping and diagnosing of low income settlements in the concession area
- Definition of priorities for a 1997-98 action plan
- Operational support for specific neighborhoods included in the action plan
- Internal coordination through an IIED-AL project manager
- Development of a corporate capacity-building program on poverty issues

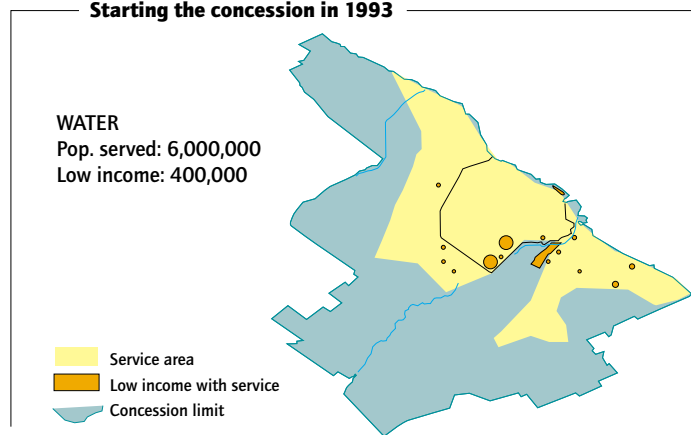
On the basis of the Buenos Aires concessionaires' experience, various public-private partnerships have emerged, using innovative technological solutions as well as appropriate institutional approaches. Participation of low-income communities is the crucial factor.

The main approaches are:

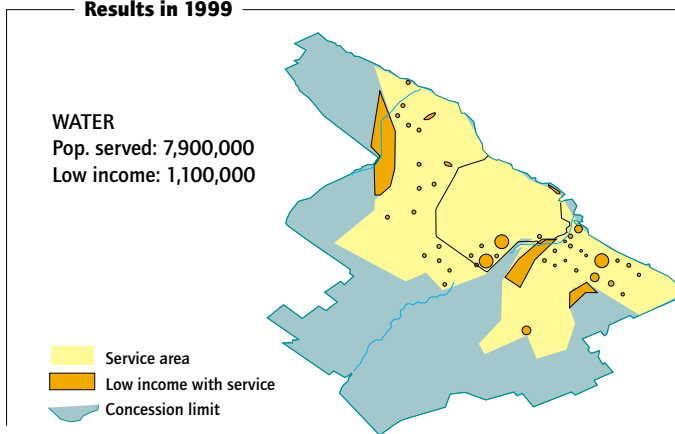
- **Participative Water Service Scheme:** Residents provide labor as a form of barter to pay for connections. This is a tripartite contract including the concessionaire, the municipality and the community. It is generally used in neighborhoods with populations of 500 to 2,500.
- **NGO Intervention Scheme:** This is a quadripartite contract including the concessionaire, the township, the neighborhood and an NGO. The NGO coordinates relations between the participants. This approach is generally used in neighborhoods with populations between 2,500 and 15,000.
- **Employment Generating Unit Scheme:** This is a tripartite agreement including the concessionaire, the provincial government and the municipality. The provincial government pays the cost of materials and advances the cost of labor. This approach can be used in communities with populations of up to 50,000.

Progress of the water supply service in Buenos Aires

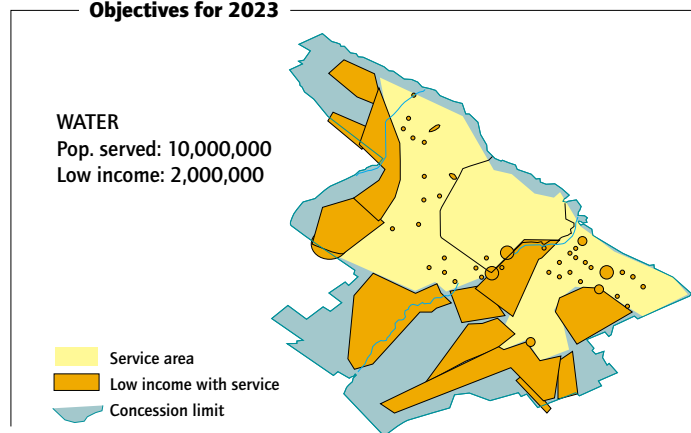
Starting the concession in 1993



Results in 1999



Objectives for 2023



Participatory Water Service and NGO Intervention Schemes have involved around 15 projects and 30,000 inhabitants served mainly in the northern and southern zones. The Employment Generation Unit Scheme has involved five projects with 115,000 inhabitants in the southern and western zones.

The NGO enables coordination and plays an important role as a facilitator or catalyst in the process. The objective is to change the working relationship from top-down to a participatory and strategic approach taking advantage of each institution's skills. The company is responsible for project design and supervision during the implementation phase. Local institutions (municipalities) offer logistic support and construction materials, and local communities volunteer labor. In such a scheme, the NGO provides social training to the company, coordination and technical assistance to the public institutions and internal organization, and capacity-strengthening to local communities and their leaders. Such public-private partnerships add value by:

- Anticipating the provision of services when neighborhoods are far from existing service area, in particular in areas where services may not be provided for more than 15 years
- Reducing investment costs to facilitate the provision of services
- Promoting ownership among the communities to foster security during the execution of work and subsequent maintenance stages, as well as adequate conditions for services payment and effective integration of underprivileged households into the regular system
- Promoting cooperation between the service operator, the communities and the local governments to ensure long-term sustainability of the systems implemented

These three types of public-private partnerships have led to varying degrees of success. The Participatory and NGO Intervention Schemes have proven successful and, in general, have reached their goals. Others, such as the Employment Generation Scheme, have had mixed results. Although these approaches have considerably increased service coverage in poorer areas like La Paz, Casablanca, Manila and Jakarta, their success are contingent on political and institutional factors.

Lessons learned

The provision of water supply and sanitation to low-income urban neighborhoods is feasible but relies on five main factors:

- 1** Important investment capacity.
- 2** Clear definition of contractual obligations.
- 3** Tariff structures that cover expansion and service management costs in areas where profitability is low or nil.
- 4** Efficient mechanisms of partnership and negotiations among the various actors involved.
- 5** Implementation within the company of a social policy to develop services that respond to the demand and willingness to pay of low-income dwellers and that are compatible with current tariffs and subsidies.

Contacts for further information

Alain Mathys
Project Director
Lyonnaise des Eaux
18, square Edouard VII
75316 Paris Cedex 09, France
Tel: (33) 1 46 95 50 14 • Fax: (33) 1 46 95 44 51
E-mail: Alain.mathys@lyonnaise-des-eaux.fr

François Kaisin
Environment Project Manager
(WBCSD liaison delegate)
Suez-Lyonnaise des Eaux
1, rue d'Astorg
75383 Paris Cedex 08, France
Tel: (33) 1 46 95 48 08 • Fax: (33) 1 46 95 47 54
E-mail: francois_kaisin@mail.suez-lyonnaise-eaux.fr

The way forward

The private sector clearly has a growing role to play in the supply and management of water resources. Within the corporate 'fence-line', many companies are taking innovative initiatives to reduce water use, recycle and reuse water, and minimize any pollution in waters discharged into nature. However, 'outside the fence-line', industry is only one stakeholder in the management of water resources. Companies have recognized that they cannot solve these complex issues alone—progress can only be made in partnership with other stakeholder interests.

This paper has made the case for new private-public partnerships to address water issues. Awareness of the issues has to be raised for without coordinated action by all users, demand for water in many regions could exceed potential supply. The WBCSD and its members recognize that action must be taken on both the supply and demand side so that water is available to meet basic needs. In this context, water pricing can be one of the most important drivers. Effective pricing of water as a valued resource sends both a conservation signal and an investment signal. Conservation encourages everyone to use less water, thereby leaving more to meet the needs of nature. At the same time, prices set to recover full costs encourage investment by the private sector in efficient water supply and sanitation services. Water prices should be established in an open and transparent process with the public interest protected by competent regulatory authorities. Local or national governments retain the right to provide the poor with subsidies from public resources.

Water shortages pose a threat to all of civil society and to the environment itself. Pumping out underground aquifers faster than the natural recharge rate passes on a legacy of shortages to future generations. Taking too much water out of a river or lake leaves little for nature. Further, water shortages are bad for business, employees, customers and sustainable development itself. The private sector would welcome new private-public partnerships which might serve to unleash industry's ability to mobilize the financial, technical and management capabilities needed to expand and improve delivery of water services. But governments need to play their part too by establishing the necessary framework conditions (financial, regulatory, environmental) which must be transparent in order to gain public acceptance.

WBCSD members are committed to employing best practice techniques in managing water within their internal operations. Industry can make an important contribution to preventing fresh water shortages by managing its water use more efficiently. Increasing production with less use of natural resources and lower impact on the natural environment is a core element of 'eco-efficiency'. However, the WBCSD recognizes that improved eco-efficiency is only a partial solution to the broader issue of fresh water for expanding populations, agricultural needs, industrialization and nature. This report demonstrates that private-public partnerships can contribute to the way forward.

Members of the 'Access to Water' working group

Aguas de Barcelona (AGBAR)
Anova Holding
Aracruz Celulose
Arthur D.Little
BCSD-Argentina
BCSD-Gulf of Mexico
Cargill
CH2M HILL
DuPont
Environmental Forum of Zimbabwe
Grupo IMSA
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Suez-Lyonnaise des Eaux
The Broken Hill Proprietary Co.
ThermoRetec Corporation
UPM-Kymmene
Westvaco
Weyerhaeuser
WMC Limited



World Business Council for
Sustainable Development

4, chemin de Conches
CH-1231 Conches-Geneva
Switzerland

Tel: (41-22) 839 31 00
Fax: (41-22) 839 31 31

E-mail: info@wbcsd.org
Internet: www.wbcsd.org