

5.



**Investing for
the Water Future**

***We are all stakeholders when it comes to water.
If each of us assumes the responsibility to act, we will start a
movement to bring about our Vision***

The World Water Vision has three primary objectives: to empower women, men, and communities to decide how we use water, to get more crops and jobs per drop, and to manage use to conserve freshwater and terrestrial ecosystems. It also specifies five actions critical to their achievement: involving all stakeholders in integrated management, moving to full-cost pricing for all water services, increasing public funding for research and innovation, cooperating to manage international basins, and massively increasing investments in water. Responsibility for implementing this Vision belongs to all of us: to governments; to multinational agencies; to women and men in households, communities, nongovernmental organisations (NGOs), academia, and research institutes; and to the private sector. The activities to implement the Vision are grouped here under four headings: policies, institutions, research and development, and investments (see page 62).

As the Vision exercise proceeded, the Global Water Partnership initiated a process to determine concrete actions to implement the Vision strategy. The Framework for Action Unit has been working closely with sectors and regional groups to develop action plans and investment requirements. Before the Second World Water Forum in The Hague in March 2000, the unit will have produced a framework for action that describes the main elements of that plan, available for discussion and debate in the forum, along with the Commission findings and the many Vision documents prepared through the consultations.

Closing the resource gap

Agenda 21, the report of the 1992 Rio Conference on Environment and Development, placed the additional investment cost of achieving global water security at \$56 billion a year. The Vision 21 report (WSSCC 1999), based on consultations organised by the Water Supply and Sanitation Collaborative Council, estimated that if more appropriate technologies were used, the costs for water supply and sanitation would be only \$225 billion, in addition to the costs borne

- **Water and sanitation's needs**
- **Industry's needs**
- **Environment's needs**
- **Agriculture's needs**

by households and communities. Yet in the European Union alone it is estimated that \$150–215 billion is needed to achieve sewerage compliance by 2010. In the United States the American Water Works Association estimates that investments in drinking water infrastructure over the next 20 years will be about \$325 billion, with \$12 billion to protect sources. The Water Environment Federation estimates that \$325 billion will be required over the same period for pollution control, with \$200 billion for treating sanitary sewer overflows.

When the needs of the rest of the world are also considered, it is clear that very large investments will be required. The world population is projected to increase by 1.5 billion people by 2025, roughly half of them in cities. Another 0.75 billion people will move to cities. About 2 billion urban dwellers already live without sanitation. At a conservative estimate of \$50 a person for urban water supply and sanitation, the cost of supplying 3.5 billion people will be nearly \$1.8 trillion.

None of these numbers includes the cost of industrial water supply and treatment. By 2025 annual industrial water withdrawals will have increased by 50 cubic kilometres, equivalent to the average water consumption of 1 billion people. Indeed, the growth in industrial use in developing countries will be twice this amount, partly offset by lower use in developed countries. Industrial waste is often more expensive to treat than sewage. It would seem reasonable to assume that the investment in industrial water supply and wastewater treatment will be equivalent to that for urban water supply and sanitation—that is, a second \$1.8 trillion. This assumption is conservative if one considers the needs to treat the industrial wastewater now discharged without treatment (including cooling towers for thermal energy plants) and to clean polluted land and water bodies.

By 2025 annual withdrawals for irrigation, under our Vision, will increase by 150 cubic kilometres. Related works would cost about \$225 billion, with \$75 billion for storage and the remainder for irrigation infrastructure through to tertiary systems. We have assumed that the remaining increase in food production will come from more productive use of water in existing agriculture (especially research, management, and technologies to increase the productivity of water in both rainfed and irrigated agriculture). Without knowing more precisely what these measures will be, it seems reasonable to

Table 5.1 Annual investment requirements for water resources

Investments have to increase by more than \$100 billion a year—with less for agriculture and more for industry and the environment.

Use	Billions of U.S. dollars		Share (%)	
	1995	Vision 2025	1995	Vision 2025
Agriculture	30–35	30	43–50	17
Environment and industry	10–15	75	13–21	41
Water supply and sanitation	30	75	38–43	41
Total	70–80	180	100	100

Source: World Water Vision staff.

assume that this would cost about the same (\$225 billion). Additional storage capacity of 200 cubic kilometres will be needed to replace unsustainable groundwater overconsumption at a rough cost of \$100 billion. This would bring the total cost to \$550 billion to produce 40% more food (assessed as required to end hunger) and employment in rural areas.

None of these numbers provides for the replacement of existing systems because of age, neglect, or both.

Pending the completion of the cost estimates to be prepared at the regional level to accompany the Framework for Action, total investments are conservatively taken to be \$4.5 trillion over 30 years, or \$150 billion a year for 1995–2025. Since these added investments were not made in 1995–2000, the estimate for 2000–25 is even higher. Here we have used \$180 billion (table 5.1). It must be emphasized that these are estimated investments in new works.

For surface water storage alone, about 1% of the installed capacity of 6,000 cubic kilometres will need to be replaced each year through new construction or dredging, at a rough cost of \$30 billion a year. The estimates assume that operation and maintenance costs will be covered by existing revenue structures, even though this is seldom the case for irrigation systems today.

There is a role for all investor groups in meeting the financing challenge

Mobilising new financial resources

Total investment in water services today—excluding that directly by industry as part of establishment costs—is estimated at \$70–80 billion a year. The largest investor in services is government—the traditional public sector, which contributes about \$50 billion a year. The private sector, ranging from small water vendors to private municipal and metropolitan utilities, contributes around \$15 billion. International donors contribute a further \$9 billion for both water and sanitation services and irrigation and drainage. An investment newcomer—the international private sector—contributes about \$4 billion a year.

There is a role for all investor groups in meeting the financing challenge (box 5.1). The domestic private sector, already active and important in many places, offers great additional resource potential. At one end of the scale this includes sanitary wares such as latrines, water carts, and carriers; at the opposite end, major manufacturers and service delivery companies. Local consultants can be as qualified as much more expensive foreign consultants—and have a better understanding of local conditions. At one end of the scale in food production are water storage and harvesting devices and micro-irrigation equipment. At the other end are agroindustrial equipment manufacturers supplying major irrigation schemes. As noted, industry should also finance its own water supply and wastewater treatment facilities—or make capital contributions to installations that meet the needs of municipalities and large industry.

Proven social mobilisation approaches must be used more to engage the resources of those not served by water and sanitation systems. That may require subsidies. But it mainly requires the recognition that traditional central finance has simply not provided water and sanitation to all women and men. The value of the community approach has been demonstrated in the construction of water harvesting schemes in the Alwar District of Rajasthan (box 5.2).

Great hopes have been expressed for major investments by the international private sector: a recent stockbroker report suggested that an increase to \$100–165 billion is achievable. If governments accept the World Water Commission's recommendation of full-cost pricing for water services, this will be a great incentive not only for local investors but also for international private investment. Attracting this investment will also require good water governance—strong regulations, sound policies, and up-to-date laws.

Box 5.1 Examples of resource mobilisation actions

- Close the resource gap for provision of water services (treatment, supply, environmental protection) of \$100 billion or more a year.
- Mobilise new investment from the international private sector.
- Integrate service development with the local consumer economy to create enterprises and jobs based on water services and wares.
- Develop pricing and charging schemes that ensure the financial sustainability of water investments.
- Gain recognition for water investments among the ethical investment community—*Blue Funds* to complement *Green Funds*.
- Facilitate poor countries' access to water funds and develop microcredit mechanisms—such as the Grameen Bank in Bangladesh—for use at the community level, to support women and disadvantaged groups.
- Encourage local development banks (agricultural and industrial) to lend at concessional rates for water-related programmes.
- Enable developing countries to attract and benefit from private sector funds by having donors focus on institutional strengthening.
- Make concessional multilateral funds available for water supply and sanitation investments only in countries that have adopted the recommended policy and institutional changes.
- Ensure that water services are recognised for their contribution to poverty alleviation—enabling governments to use funds released by debt relief for water services.

Source: Global Water Partnership 2000.

Box 5.2 Water harvesting costs in India

Where Indian communities have taken up water management themselves, they have ensured that the total investment costs were low and contributed substantially to these costs. Tarun Bharat Sangh, an NGO, has been working with more than 500 villages in the Alwar district of Rajasthan, encouraging them to build through their own efforts almost 2,500 water harvesting structures. These villages have contributed as much as 92% to the total cost of these structures—and, with the success of these efforts, the share of village contributions has been increasing.

In 1997–98 the total investment in the water harvesting structures was 150 million rupees, with 110 million from the villagers. The structures built by the village communities are extremely low cost—ranging from 0.2 rupees (\$0.0004, or four-tenths of a cent) per cubic metre of storage capacity to 3 rupees (\$0.07). No engineering organization, public or private, can match these costs for storage.

Source: Agarwal 1999.

Activities to implement the Vision strategy

Stakeholder	Policies	Institutions
International organisations, including private foundations	Promote social and financial solidarity by sharing information on efforts to reduce the growing gap in access to safe water and environmental services between the rich and poor. Promote transparency, accountability, and participation. Promote precautionary principle in management of water risks.	Promote stable and fair food markets through the World Trade Organization. Reform, strengthen, and provide more resources to the United Nations Agency Coordination Committee, Subcommittee of Water Resources (ACC-SWR). Coordinate reform of water resource education to integrate environmental concerns through the International Hydrological Programme.
Governments, including government agencies and universities	Facilitate mechanisms to allow management of land and water at the basin and catchment levels. Adopt formal policy of full-cost pricing of water services. Empower communities to develop their own water and sanitation systems based on their needs and willingness to pay. Devise incentives (including pricing) to encourage sustainable water use. Develop regulations that encourage the private sector while protecting the interests of society. Accept limited sovereignty over water in international watercourses.	Dispel idea that water management is primarily a government responsibility. Review structure and coordination mechanisms between water agencies to avoid conflicts and inefficiencies. Promote transparency, accountability, and rule of law in all institutions. Assign responsibility and resources for municipal water supply and sanitation to the city or community level. Establish participatory market processes for water allocation.
Private sector, local and international	Be responsible to society as well as to shareholders.	Foster community representation in corporate governance structure. Include an ethics subcommittee.
Nongovernmental organisations and communities	Accept primary responsibility for water; be guardians of water resources; delegate upward only what cannot be managed locally (subsidiarity principle).	Participate in management of water supply and irrigation schemes.

Research and development	Investments	Stakeholder
International water and environmental standards setting and national monitoring, with ACC-SWR in the lead and with biannual reporting through World Water Development Report. Innovative research of institutional and technological approaches to better water management.	Training and education on integrated water resource management. International monitoring of water availability, quality, and productivity. Provide loans only when sustainable integrated water resource management policies are in place.	International organisations, including private foundations
Nationally adapted water research management programmes. National laboratory testing and certification of safe biotechnology for food production and waste treatment. Systematic data collection and reporting on water resource availability, renewal rates, quality, and uses. Extensive training and credit systems for small holder farms.	Capacity building, including redundancy payments for marginal staff and appropriate salary structure for public agencies. Public goods such as flood protection, with the public sharing pollution control costs. Targeted subsidies to low-income and disadvantaged groups to satisfy basic needs for water, sanitation, and hygiene.	Governments, including government agencies and universities
Water-saving technologies. Desalination. Safe biotechnology for food production and waste treatment.	Urban water supply and domestic and industrial wastewater treatment. Irrigation systems. Water storage.	Private sector, local and international
Regional and global networking to share community-based solutions.	Rainwater harvesting. Household-based water supply and sanitation. Community microcredit schemes.	Nongovernmental organisations and communities

- Sources of water resource investments
- Launching a movement

Table 5.2 Sources of water resource investments

These are investment costs for new infrastructure only. Cash-flow calculations will require adding provisions for replacement costs and operation and maintenance.

Source	Billions of U.S. dollars		Share (%)	
	1995	Vision 2025	1995	Vision 2025
<i>National</i>				
Public sector	45–50	30 ^a	58–71	25
Private firms	12–15 ^b	90 ^c	15–21	45
<i>International</i>				
Private investors	4 ^b	48	5–6	24
Donors	9	12	12–13	6
Total	70–80	180	100	100

a. Governments will need to maintain their annual budgets at \$50 billion to include direct subsidies to the poor who otherwise will not be able to afford the cost of accessing services provided by these investments.

b. Does not include investments by industry.

c. Includes investments by industry, excluding hydropower.

Source: World Water Vision staff.

Using the investment funds effectively and minimising the risks of exploitation by public agencies and local and foreign companies will require openness, transparency, stakeholder involvement, and efficient local management. When this happens, the local private sector will also take a greater interest—and since it will feel more at home with the risks, it will be a greater source of investment than international companies.

Private actors can thus provide the main source of infrastructure investment (table 5.2). Government resources will contribute a smaller share in direct capital investment and maintenance costs for traditional water supply projects. This will free up public and softer loan and grant resources for water-related projects that supply public goods (such as flood management) and for subsidies to low-income and disadvantaged women and men to pay the cost of their minimum water, sanitation, and irrigation needs. This explicit subsidy element accounts for the need for total government cash flows to remain at current levels. The key role of government is to provide a regulatory and policy framework for investments to ensure financial sustainability—investments based on social equity and other guiding principles in the national water policy.

Donors need to provide strategic assistance in developing policies, regulations, institutional capacity, human resources, and the technical and scientific competencies required to manage the resource base and water services in a fully integrated fashion. Donors are also important in helping countries provide for basic needs and environmental protection. The Global Environment Facility, for example, could be expanded to make even more funds available to support environmental research, the conservation of freshwater biodiversity, and the management of international waters and coastal areas. It is recommended that donors continue to support integrated management and social and noncommercial uses of water.

All investors can help meet the goal of doubling investment, with the balance among them to vary by region and by country. So far, most international private flows have gone to Asia and South America. Donors must direct funds to supporting the poorest countries, particularly in Africa and South Asia. The key is to identify each donor's role so that donors can operate in synergy rather than competition to produce the best result.

Launching a movement

In every country and for every activity concerning water and the environment, waste, authoritarian practices, and duplicated or fragmented efforts result in high transaction costs and misallocated resources. International systems are just as inefficient.

What can change this? Both public and private management of water will improve through greater accountability, transparency, and rule of law. Incentives must improve for all stakeholders. More community participation will provide a sense of ownership and empowerment to local stakeholders. The role of education in making this process possible cannot be overestimated. Public access to information will provide an incentive to elected officials and private operators, who will be held responsible for results, including maximising social welfare. It will also reduce opportunities for corruption and for the capture of the system by powerful elite. And it will increase opportunities for civil servants to be better trained, better equipped, and better paid.

At The Hague in March, stakeholders from around the world—politicians, civil servants, water and environmental professionals, NGOs representing communities, youth, women, and special interest groups—came together to



Both public and private management of water will improve through greater accountability to users, transparency, and rule of law. The role of education in making this process possible cannot be overestimated

debate the issues and recommendations in this report. They met in sessions of the Second World Water Forum, a Ministerial Conference, and a World Water Fair. Each of these stakeholders—we are all stakeholders when it comes to

water—will be asked to make a commitment to specific actions to start to create the water world we envision for 2025. If each of us assumes the responsibility to act, we will start a movement to bring about our Vision.