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**Overview Paper on
Water for Sustainable Development in Asia and the Pacific***

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Introduction

Water is the resource that sustains all life on earth and is a key element of sustainable development. It is essential if human beings are to enjoy healthy and safe lives or realize social and economic development. Ecosystems are also inextricably linked with water.

Historically, water had been regarded as an infinite resource. However, humans are dependent on a mere fraction of one percent of the earth's freshwater—that found in lakes, rivers, and groundwater aquifers—as that water is the only freshwater which is readily accessible. As population growth and economic expansion accelerated and intensified the use and abuse of water resources over the past few decades, a greater and greater imbalance between water availability and water demand has resulted. This imbalance has brought a veritable crisis with regard to water in many regions of the world, including but not limited to such problems as widespread water scarcity, water quality deterioration, and the destruction of freshwater resources. It is projected that by 2025, about 3.5 billion people—approximately 6.5 times as many people as in the year 2000—will live in water-stressed countries. There are at least 1.1 billion people without access to a safe water supply and about 2.5 billion without adequate sanitation systems, and the majority of them live in developing countries. The United Nations Millennium Assembly Declaration set 2015 as the target date for halving the population that is unable to access or to afford safe drinking water.

Crisis with regard to water also casts a shadow on sustainable development in Asia and the Pacific region. Deterioration of water quality has been observed in mega-cities in particular, causing both water-borne diseases and the destruction of natural resources downstream. Over-exploitation of water resources has brought land degradation, such as through salinization. At the same time, more than half of the population in the region lacks access to adequate sanitation systems. Water scarcity impacts food availability, human health, livelihoods and also economic development. It is said that the poor are the most vulnerable to the impact of this water crisis. For a region which is home to about 60 percent of world's population and about 70 percent of the world's poor, the conservation of and environmentally-sound use of freshwater resources is the crucial element for socio-economic development and poverty alleviation.

Reflecting the importance of sound water management in the promotion of sustainable development in the region, recent international and regional conferences highlight freshwater issues as a priority area for achieving sustainable development. For example, the ESCAP Ministerial Conference on Environment and Development in Asia and the Pacific (MCED) in 2000 identified conservation and integrated management of freshwater resources as one of the eight priority areas for the region. The High-level Regional Meeting for the World Summit on Sustainable Development held in Phnom Penh in November 2001 also paid special attention to freshwater resource management as one of the key issues for sustainable development in the region. The Ministerial Declaration issued at the International Conference on Freshwater held at Bonn in December 2001 also made a call to the Secretary General of the UN to strengthen the coordination and coherence of activities within the UN system on water issues in an inclusive manner. How can the needs of the increasing population of Asia and the Pacific be fully met without sacrificing the sustainability of the region's finite and vulnerable freshwater resources? This is the key question affecting water issues in the region.

This paper provides an overview of freshwater issues in Asia and the Pacific as a key issue for sustainable development in the region in order to facilitate discussion at the Asia-Pacific Forum for Environment and Development (APFED). In the first part, the paper overviews the status of and various perspectives regarding freshwater in the region in order to establish a common

understanding on which to base discussions. The second part will briefly review international dialogues on freshwater issues since 1970's. Finally, the paper will touch upon certain considerations pertinent to freshwater management policies in the region.

I. Status and Future Perspective

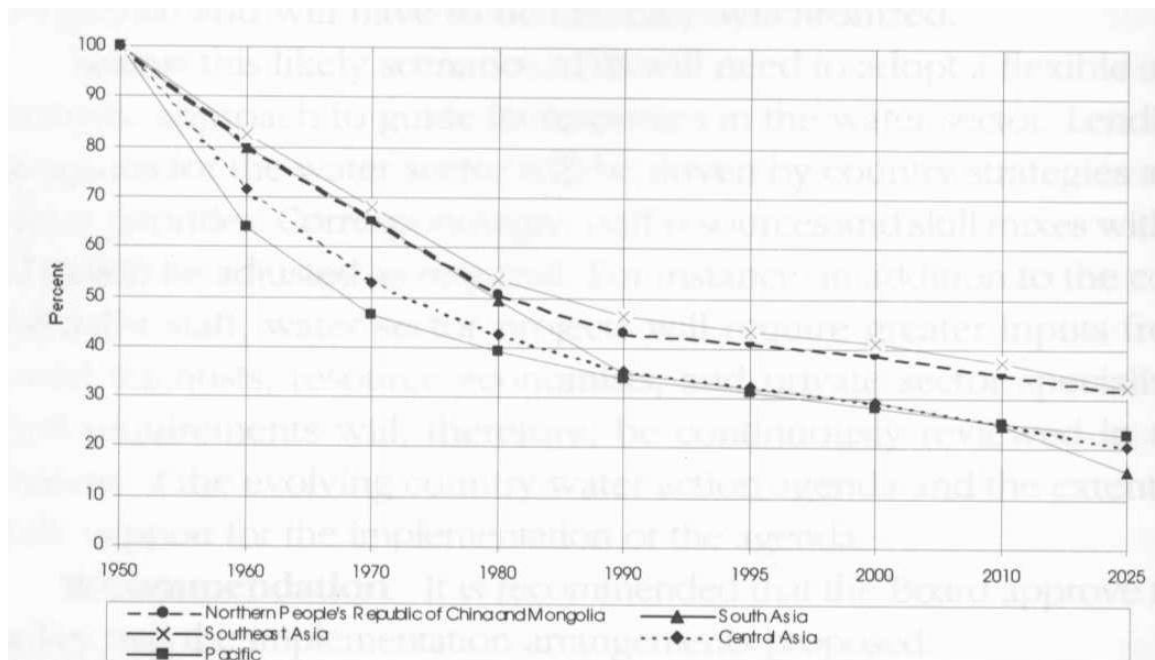
1. Increase in Water Stress

Water as a finite and vulnerable resource

In most regions of Asia and the Pacific, water availability has rapidly decreased. While Asia has the world's highest rate of increase of water withdrawal, water availability per capita ranks as least in the world -- 4,200m³/capita per year - a little more than half the world average of 7,000m³.

In 2025, water availability per capita in the region will be between 15 and 35 percent less than that of 1950 (ADB, 2001). In South Asia, which has the lowest level of water resources per capita, water availability per capita has already decreased by almost 70 percent since 1950. Other subregions have also experienced drops in water availability per capita, with North Asia having lost 60 percent and Southeast Asia 55 percent since 1950. It is well-known that Iran and Afghanistan suffer chronic water shortages. The Pacific countries also experience water shortages despite good rainfall because of the lack of appropriate investment and technology for water storage.

Figure 1: Decline in Water Resource Per Capita (1950-2025)



Source: Asian Development Bank, "Water for All: The Water Policy of the Asian Development Bank"

The amount of renewable water resources, however, varies greatly within the region. For example, annual per capita internal renewable water resources in Malaysia tops 21,000 m³, vis-à-vis about 172 m³ in Singapore. Singapore currently meets its freshwater demands by importing some of its supply from Malaysia (UNEP, 1999). Even in countries that have sufficient

renewable water resources, overuse and inadequate management of water resources may increase water stress. Climate change is a factor that will affect water availability in the region. Whether water stress can be mitigated in the future depends on how efficiently water is used and conserved.

Growing water demands

While water availability is decreasing, water demand for agriculture, industry and households is increasing in the region as a result of population growth and economic development.

In the Asia-Pacific region, the agricultural sector uses more water than any other sector. Furthermore, more water is needed to produce the additional food necessary to sustain the increasing population of the region. Currently, about 40 percent of Asia’s cropland is irrigated and this cropland is the source of about 70 percent of its food (ADB, 2001). Asia is home to 70 percent of the world’s irrigated areas, including the three countries which have the largest areas of irrigated land in the world, namely, the People’s Republic of China (PRC), India and Indonesia. It is projected that food production in Pakistan will face a shortfall of 11 millions tons by 2010, with the main cause of this shortfall being water scarcity. Current agricultural practices require large amounts of water, and food security in the region thus depends on how much water can be allocated to the agricultural sector. Meanwhile, water availability in the future of the region depends largely on the degree to which irrigated agriculture will be expanded.

Many counties depend on groundwater as their primary source of irrigation water. As food demand has increased, groundwater has been increasingly exploited in recent decades. Overexploitation of groundwater has disrupted hydrological cycles and damaged freshwater ecosystems. It has also caused land degradation such as salinization, which may eventually diminish both water availability and food productivity. It is necessary to develop more irrigated land to meet increasing demand. However, further development of large irrigation systems as in the past is not an acceptable option for a sustainable future not only from an environmental, but also from economic and social points of view.

Table 1 Water Use by Agriculture, Industry, and Domestic Sectors in Selected Countries of Asia & the Pacific

Country	Agriculture	Industry	Domestic	Country	Agriculture	Industry	Domestic
Bangladesh	86	2	12	Malaysia	76	13	11
Cambodia	94	1	5	Mogolia	53	27	20
PRC	77	18	5	Nepal	99	0	1
India	92	3	5	Pakistan	97	2	2
Indonesia	93	1	6	Philippines	88	4	8
Japan	64	17	19	Thailand	91	4	5
Rep. of Korea	73	16	11	Australia	70	6	12

(Source: World Resource Institute, “*World Resource 2000 -2001*”)

The amount of water used to meet domestic and industrial demands in Asia is increasing rapidly, with rates of increase between the years 1995 and 2025 projected to range from 70 to 345 percent (ADB, 2001). As economies grow, people’s lifestyles typically begin to include an overuse of water, and people’s attitudes accelerate the increase of domestic water demand. Production processes of industries consume a lot of water unless water saving and recycling technologies are introduced. The PRC, India, Indonesia, Malaysia, the Philippines, and Viet Nam are typical countries in that water consumption needs have been increasing as they move rapidly through the industrialization chain (ADB, 2001). It is easily projected that economic growth in the region in

the near future requires more water for industry and the people. In urban areas, which by 2030 will be home to about half of Asia's population, water stress will become more severe.

The increase in water demand in all sectors even as water resources are limited is expected to create conflicts among sectors and within each sector over water allocation. In Asia, many countries share international river basins as sources of water. Increases in domestic water stress would also bring more potential for conflicts among countries. On the other hand, such competition for water also provides opportunities for cooperation on allocation and sharing of water resources.

Deterioration of water quality

Deterioration in water quality is recognized as one of the most serious environmental problems in the region, especially in large cities and their surroundings. Biological oxygen demand (BOD) in Asian rivers is 1.4 times higher, and amounts of suspended solids 4 times higher, than world averages. Asian rivers also contain 3 times as many bacteria from human waste as the world average and more than ten times the level established in OECD guidelines (UNEP, 1999). Such poor water quality results in adverse impacts to society, such as reduced amounts of available freshwater, causing sanitation and health problems as well as destruction of water ecosystems. The main cause of pollution is untreated wastewater from households, industries and agriculture, but the exact nature of the pollution varies among sub-regions.

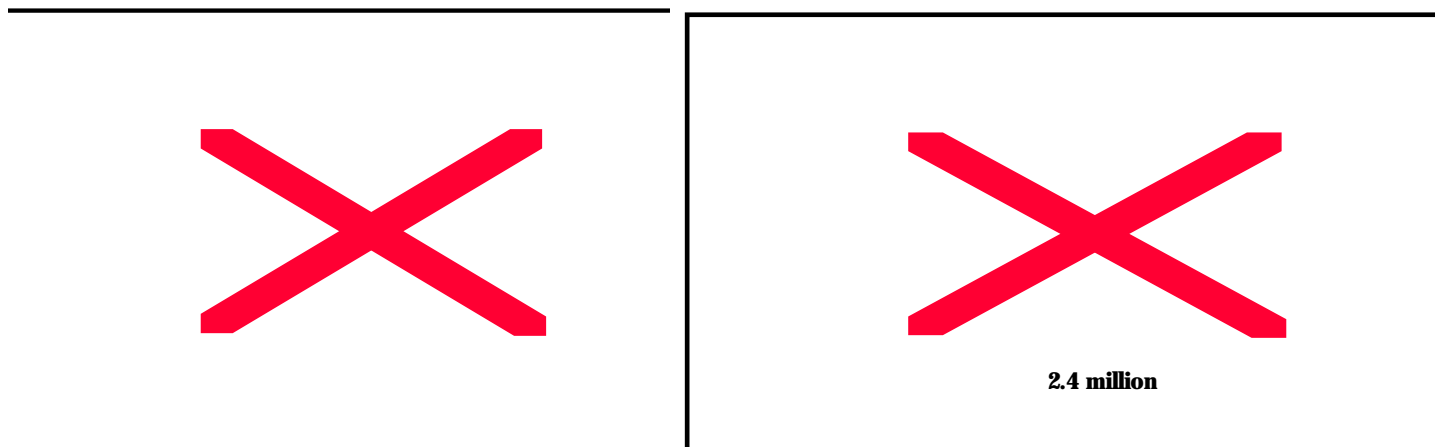
Eutrophication of lakes and rivers is a critical problem in the Asian countries. The main cause of eutrophication is nitrogen and phosphorus contained in fertilizers.

Pollution by heavy metals and toxic chemicals contained in effluent from industries and agriculture is also serious in Asia. Asia's surface water contains 20 times more lead than surface waters in OECD countries, mainly from industrial effluents (ADB, 1997). Arsenic pollution in groundwater has been a serious threat to the people of Bangladesh and some adjacent parts of India. Arsenic pollution is now becoming an increasingly important threat to human health in several other countries in the region (ESCAP Expert Group Meeting on Arsenic Contamination of Groundwater, May 2000). In June 2000, Bangladeshi officials stated that some 80 million people—more than 65 percent of the country's population—live in arsenic-tainted areas (Chowdhury, 2000). For Bangladesh, a country which depends on groundwater to meet 95 percent of its drinking water needs, arsenic pollution is the primary constraint to development of the country.

2. Water Supply and Sanitation

Water supply and sanitation coverage rates indicate a country's degree of social development. Currently, 20 percent of world population has no access to safe drinking water and 50 percent lacks access to adequate sanitary systems. From the 1980's, the infrastructure for safe drinking water has been provided, but it could not catch up with population growth. Poor sanitation causes high infant mortality and sickness. According to WHO's *World Health Report 1999*, water-related diseases caused 3.4 million deaths in 1998, with more than half of those being children. In Asia and the Pacific, there is much room for improvement in water supply and sanitation systems. In the region, there remains a great number of people lacking access to adequate water supply and sanitation systems. About 63 percent of the global population not served with improved water supply lives in Asian countries, and 80 percent of persons not served with improved sanitation lives in Asia (cf. Figure 2).

Figure 2: Distribution of the global population not served with improved water supply and sanitation



Source: WHO: Global Water Supply and Sanitation Assessment 2000 Report

Conditions regarding water supply and sanitation coverage differ by country as shown in the Table 2. Afghanistan and Cambodia have low coverage in both water supply and sanitation. Generally speaking, water supply and sanitation in Asia improved during the 1990s, but the WHO Assessment concludes that this accomplishment has resulted largely from the high rates of improvement in the PRC and India and should not be construed as across-the-board improvement for the region. Asia’s sanitation coverage stands at a mere 48 percent, the lowest of any region.

As Table 2 also shows, urban populations generally have better access to water supply and sanitation systems more than people living in rural areas. With 63 percent of the Asian population now living in rural areas, it is necessary to pay more attention to improving water services in rural areas. That said, in consideration of estimates that 55 percent of its population will inhabit urban areas by 2030, there is cause for concern that the development of water-related facilities in these urban areas may not keep pace with the demographic shift. For instance, in Dhaka, Bangladesh, current daily water demand stands at about 1400 million liters. Assuming an increase of one percent in consumption and a doubling of the population, the projected daily demand by 2025 will reach around 2660 million liters. This demand level will clearly go beyond the capacity of city infrastructure.

Table 2: Water Supply and Sanitation in Selected Counties in 2000

Country	water supply coverage			sanitation coverage		
	total	urban	rural	total	urban	rural
Afghanistan	13	19	11	25	8	12
Bangladesh	97	99	97	82	44	53
Cambodia	30	53	25	58	10	18
PRC	75	94	66	38	68	24
India	88	92	86	31	73	14
Indonesia	76	91	65	66	87	52
Lao PDR	90	59	100	46	84	34
Mongolia	60	30	77	30	46	2
Nepal	81	85	80	27	75	20
Pakistan	88	96	84	61	94	42
Philippines	87	92	80	83	92	71
Thailand	80	89	77	96	97	96
Asia average	81	93	75	48	78	31

Source: WHO: Global Water Supply and Sanitation Assessment 2000 Report

The UN Millennium Declaration cites 2015 as the target date for halving the proportion of people without access to improved water services. To meet the target, an additional 1.5 billion people in Asia will need access to sanitation facilities, while an additional 980 million will need access to water supply (WHO 2000). Larger investments in the water and sanitation sectors are required to meet such targets. However, the average governmental investment in water supply and sanitation over the last decade was the lowest in the governmental expenditure, accounting for only 3.6 percent of overall governmental investment (ESCAP, 2001). Such insufficient investment is the main constraint to the development of water infrastructure. Cost recovery systems or expanded cost effectiveness development and management methods, such as privatization, have been introduced in certain countries¹.

Table 3: Distribution of Additional Population to be Served to Meet the 2015 International Development Target

Water Supply				Sanitation		
Region	Urban (%)	Rural (%)	Target (%)	Urban (%)	Rural (%)	Target (%)
Africa	13.1	12.1	25.3	9.7	9.1	18.8
Asia	38.7	22.6	61.4	31.0	38.4	70.6
Latin America & the Caribbean	7.7	1.5	9.0	6.0	1.5	7.4
Oceania	0.3	0.2	0.5	0.2	0.1	0.3
Europe	1.4	0.0	1.4	1.2	0.0	1.1
Northern America	2.4	0.0	2.4	1.8	0.0	1.8
Total	63.5	36.4	100	79.9	50.1	100

3. Water for poverty reduction

The poor are vulnerable to water-related problems. Poor people have less access to water supply and sanitation facilities than others. It is well-known that the poor have to travel far to obtain water for daily needs, and women often take this role. In the remote hill areas of Nepal, many poor communities need to fetch water from sources up to 15 kilometers away and tradition dictates that it is women and female children who carry water over long distances (ADB, 2001). It is observed that the poor in urban and rural areas often pay more for privately-vended water per cubic meter unit than those who have connection to public water supplies who deliver large amount of water in bulk (cf. Table 4). In many cases, the quality of the water provided does not satisfy water quality standards established for drinking water.

For the rural poor, whose livelihoods are heavily dependent on natural resources, the degradation of natural resources caused by overexploitation and pollution of water necessarily implies a corresponding deprivation of a source of income. To minimize such impacts, rural development should be promoted. Poor people, in particular those in rural areas, are also vulnerable to water-related natural calamities, i.e. flood and drought.

At present, poverty in all its forms is more common in rural areas than urban areas. However, within the next two or three decades, a majority of the region's population is expected to live in urban areas. Future development plans should pay due attention to urbanization, or else more urban poor will be constrained to live in an unsafe water environment.

¹ Large-scale involvement of the private sector is evident in the PRC, Indonesia, Malaysia, the Philippines and Thailand (ESCAP, 2001).

Table 4: Comparison of the Cost of Water Bought from Informal Vendors with the Cost of Water Supplies through House Connections

City	Cost of Water for Domestic Use (House Connections - 10 m ³ /month) (US\$/ m ³)	Price Charged by Informal Vendors (US\$/ m ³)
Vientiane	0.11	14.68
Bandung	0.12	6.05
Delhi*	0.01	4.89
Manila	0.11	4.74
Phnom Penh	0.09	1.64
Bangkok*	0.16	1.62
Ulaanbaatar	0.04	1.51
Hanoi	0.11	1.44
Karachi	0.14	0.81
Dhaka	0.08	0.42
Jakarta	0.16	0.31
Colombo*	0.02	0.10

* Some water vending but not common.

Source: Second Water Utilities Data Book Asian and Pacific Region, Asian Development Bank, October 1997. (tables 11 and 18). (Compiled by C. Ertuna, Chief, Population and Rural and Urban Development Division, ESCAP)
from http://unescap.org/huset/urban_poverty/poorpaymore.htm

II. International and Regional Responses

1. International Responses

Mal del Plata to Dublin and Rio – toward water for people and the environment

In spite of the importance of conservation of freshwater resources, it is only since the 1970s that policymakers began to recognize the economic, social and environmental values of water. The starting point of international dialogue on freshwater is the Mar del Plata United Nations Conference on Water in 1977, the first intergovernmental meeting devoted exclusively to water. The result of the Conference led the UN General Assembly to proclaim the Declaration of the International Drinking Water Supply and Sanitation Decade (1981-90). National and international efforts during the decade and subsequent actions improved the status of water supply and sanitation systems to the point where safe and affordable drinking water had been provided for 80 percent of the exploding world population and sanitation facilities for 50 percent (World Water Vision), although the situation in developing countries continues to need drastic improvement.

Discussion in Mal del Plata focused on “water for people” rather than “water for the environment.” It is the International Conference on Water and the Environment held in Dublin, Ireland in 1992 that reviewed “freshwater management” from both development and environmental points of view. In the Conference, the scarcity and misuse of freshwater was recognized as “a serious and growing threat to sustainable development and protection of the environment.” Four principles for future action for freshwater resource conservation, known as the “Dublin Principles,” were adopted in the conference. These principles became navigation marks for freshwater management (cf. Box 1). The Principles introduced the basic idea of “Integrated Water Resource Management (IWRM),” generally characterized by integration of water and land resource management; special attention to the participatory approach and the role of women in water management; and recognition of water as an economic good². The concept

² There is no clear definition of “IWRM,” but the following definition by the Global Water Partnership is now

of IWRM has been the key for water management to the present.

The Rio Conference succeeded the results of the Dublin Conference. In Chapter 18 of Agenda 21, titled “Protection of the quality and supply of freshwater resources: Application of integrated approaches to the development, management and use of water resources,” freshwater resources were defined as “an essential component of the Earth’s hydrosphere and an indispensable part of all terrestrial ecosystems” and a necessity “in all aspects of life.” The chapter then defined the following program areas for protection of freshwater resources “to make certain that adequate supplies of water of good quality are maintained for the entire population of this planet.”

Box 1: Dublin Principles

Principle No. 1

Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment

Principle No. 2

Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels

Principle No. 3

Women play a central part in the provision, management and safeguarding of water

Principle No. 4

Water has an economic value in all its competing uses and should be recognized as an economic good.

- (a) Integrated water resources development and management;
- (b) Water resources assessment;
- (c) Protection of water resources, water quality and aquatic ecosystems;
- (d) Drinking-water supply and sanitation;
- (e) Water and sustainable urban development;
- (f) Water for sustainable food production and rural development
- (g) Impacts of climate change on water resources.

After Dublin and Rio – Freshwater as a major concern of the world

Although Agenda 21 includes a chapter devoted to freshwater resources, freshwater issues received less attention than climate change and biodiversity issues at the Rio Conference. It was only after the Rio Conference that freshwater became a central issue in the global agenda.

In 1997, the G8 Environmental Ministerial Conference and the subsequent Denver Summit recognized freshwater issues as a priority area for taking action for sustainable development. The UN Expert Group Meeting on Strategic Approaches to Freshwater Management was held in 1998, and the 6th session of the Commission on Sustainable Development (CSD) adopted a resolution on strategic approaches to freshwater management based on the report of the Expert Meeting. The resolution reaffirmed the seven action program areas defined in Agenda 21. In the decision, the CSD emphasized that “the development, management, protection and use of water so as to contribute to the eradication of poverty and the promotion of food security” is regarded as “an exceptionally important goal.” It also noted the importance of international and regional cooperation on freshwater issues to support local, national, and regional action.

Another impetus for international dialogue on freshwater after Rio was the second World Water Forum (WWF2)³, held in the Hague, Netherlands in 2000. At WWF2, three key outputs were

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

³ The World Water Forum (WWF) has been held every three years from 1997 under the initiative of the World

presented to the world: “World Water Vision⁴” by the World Commission for Water⁵; “Frame of Action⁶” by the Global Water Partnership (GWP)⁷; and the Hague Ministerial Declaration. These outcomes enabled WWF2 to increase global awareness of the water crisis and promote actions for sustainable use and development of water resources (cf. Box 2). After WWF2, the international dialogue has tended to focus on implementation of IWRM rather than rhetorical discussion. The third World Water Forum will be held in Japan in March 2003 and assess the progress of implementation at each level.

Box. 2 Identified Challenges and Priority Areas

A. Key Challenges Identified by Hague Ministerial Declaration

- 1.Meeting basic needs
- 2.Securing food supply
- 3.Protecting ecosystems
- 4.Sharing water resources
- 5.Managing risks
- 6.Governing water wisely

B. Priority Areas Identified by World Water Vision

1. Limiting the expansion of irrigated agriculture
2. Increasing the productivity of water
3. Increasing storage
4. Reforming water resource management institutions
5. Increasing cooperation in international basins
6. Valuing ecosystem functions
7. Supporting technical innovation

The Bonn Conference on Freshwater - For the Johannesburg Summit

In order to create momentum towards the Johannesburg Summit in the water sector, the International Conference on Freshwater was held in Bonn, Germany from December 3-7, 2001, under the theme “Water – a Key to Sustainable Development.”

The Conference recommended priority actions under the three headings of “Governance,” “Mobilizing financial resources” and “Capacity building”. The recommendations requested that countries “should be in the process of developing water resources management plans by 2005” in consistency with other international agreements and dialogues such as climate change, trade and

Water Council (WWC) that was launched in 1996 with the participation of experts and international organizations related to freshwater management. WWF aims to discuss global freshwater issues with broad participation of stakeholders, including organizations working for freshwater issues, academics, governments, international organizations and NGOs. Now the Forum plays an important role in global freshwater dialogue.

⁴ “A Water Secure World – Vision for Water, Life, and the Environment in the 21st Century”

⁵ The Commission, consisted of twenty individuals with expertise of water issues was convened by the World Water Council (WWC) in 1998 to develop the vision for water management in the 21st century.

⁶ “Towards Water Security: A Framework for Action”

⁷ The Global Water Partnership is an international network open to all organizations involved in water resources management, including concerned national and international agencies and UN bodies. The Partnership was created in response to the need to promote integrated water resources management through it's central and regional Technical Advisory Committees (TACs) and through specialized sub-groups of network partners.

finance. The recommendation also reaffirms the UN Millennium Declaration target on drinking water, i.e. to halve by 2015 the number of persons lacking access to improved water service. As for financing on water, it is recommended that all sources of funding, including international and regional financial assistance, should be increased. Privatization and water tariffs were also taken up as main topics in the conference. In the field of capacity building and knowledge, there are three areas for focus: fostering education and training on water wisdom with due attention to the role of the mass-media; making water institutions more effective by reorienting their role and structure and also by enhancing its capacity; and sharing knowledge and innovative technologies between countries.

2. Regional Responses

ESCAP Ministerial Conference on Environment and Development in Asia and the Pacific, 2000, and the Phnom Penh Regional Platform on Sustainable Development for Asia and the Pacific

Freshwater issues are among the priority issues for the Asia-Pacific region. At the fourth ESCAP Ministerial Conference on Environment and Development in Asia and the Pacific (MCED), held in 2000, “freshwater resources” were designated one of the priority areas for action to achieve sustainable development in the region. The Action Programme for 2001 - 2005 adopted at MCED establishes the following mission in the water sector:

...to promote the sustainable use of freshwater by developing strategic approaches that integrate all aspects of water use and security to reduce water stress and to maintain, conserve and protect freshwater ecosystems to meet development needs in a sustainable manner (ESCAP, 2000).

In the Programme, the following four priority areas were identified: a) to improve Integrated Water Resource Management (IWRM) through enhanced strategic planning and management, effective demand management, better public participation, and improved institutional, legal and policy frameworks, including pricing mechanisms; b) to promote knowledge of overall national and sub-regional surface and groundwater resources to allow the establishment of realistic water budgets, c) to enhance water resource development and conservation; and d) to improve the status of surface and groundwater quality monitoring and information.

In the Programme, the Millennium Declaration’s goal of water supply coverage by 2015 was reiterated as a short-term target. Preparation of national water visions and action programs, enhancement of capacity building for effective planning and management, and development of IWRM strategies for hot spots were also included as recommended short-term national activities. As an implementation mechanism, the introduction of water pricing and promotion of partnership with the private sector were recognized as tools for promoting effective water management. As for sub-regional and regional cooperation in the water sector, the Programme calls for technical and financial assistance, especially in the areas of water quality monitoring, sewage treatment, water reuse/recycling, leak detection, database creation, non-point sources of pollution, and cleaning techniques for rivers and lakes. The Programme also includes a call to promote information exchange and technology transfer and to introduce regional and sub-regional water conservation programs.

In November 2001, ESCAP, with the collaboration of other international and regional organizations, formulated the “Phnom Penh Regional Platform on Sustainable Development” as

an outcome of a series of discussions in the regional preparatory process for the Johannesburg Summit. The Platform selected freshwater resource issues as one of the key policy issues, and reaffirmed the Action Programme. Special attention was paid to water scarcity in Central Asia and low-lying small island developing states, and the launching of the sub-region's initiative on freshwater resources was welcomed. Regarding implementation, the Platform urges governments to pay greater attention to water supply and sanitation as a basic human need.

Water policy of Asian Development Bank

Financing organizations such as the World Bank and the Asian Development Bank (ADB) have formulated their own water policies, based on the recognition of the urgent need for integrated and cross-sectoral approaches in the water sector.

In ADB's water policy, the aim was clearly stated as to "seek to promote the concept of water as a socially vital economic good that needs increasingly careful management to sustain equitable economic growth and to reduce poverty" (ADB, 2001). Complementary with the Bank's poverty reduction policies as well as private sector development policies, the water policy presented its seven principles as follows:

- (1) promote a national focus on water sector reform;
- (2) foster the integrated management of water resources, based on comprehensive water resource assessments and concentrating interlinked water investments in river basins.;
- (3) improve and expand the delivery of water services, mainly water supply and sanitation (urban and rural), irrigation and drainage;
- (4) foster the conservation of water and increase system efficiencies;
- (5) promote regional cooperation and increase the mutually beneficial use of shared water resources within and between countries;
- (6) facilitate stakeholder participation through the exchange of water sector information and experience; and
- (7) improve governance.

ADB has assisted water sector reform in several countries in the region, such as the PRC, LPD, Sri Lanka and Viet Nam. In Sri Lanka, ADB supported the establishment of the National Water Resource Authority (NWRA). With the participation of governmental and non-governmental stakeholders, NWRA prepared a comprehensive policy, including a legal and institutional reform package, which was approved by the Cabinet in 2000. In the PRC, the Bank also assisted the government in conducting comprehensive studies of strategic options for the water sector. The Bank also supports the Southeast Asia Technical Advisory Committee of Global Water Partnership to formulate and implement its work plan (2001-2003) for Southeast Asia.

GWP regional activities – action by NGOs

After presenting "A Frame of Action" for water security at WWF2, Global Water Partnership (GWP) has been strengthening its regional activities to promote IWRM via close links with local situations. Through the regional technical advisory committees (TACs), GWP supports regional efforts to put IWRM into practice. In Asia, there are three TACs, addressing the PRC, South Asia and Southeast Asia.

Under the initiative of the Southeast Asia Technical Advisory Committee (SEATAC), an establishment of country water partnership (CWP) is now promoted to exchange information and experience of IWRM. Malaysia has already established its CWP and launched country partnership capacity building network (MYCAPNET) in October 2001. Capacity building is a priority in CWP activities, and other SEATAC member countries (Indonesia, Philippines,

Thailand, and Viet Nam) will establish their own capacity building networks in 2002. SEATAC supports the formulation of national programs of action of member countries. Such activities will enhance the regional capacity to cope with water crises in the region.

III. Key areas and policy tools for sustaining freshwater resources in Asia and the Pacific

The water situation is becoming more serious in many regions of the world, and Asia and the Pacific are no exceptions to this, as we have seen. Water in most parts of the region is in critical condition in both quantity and quality. The ongoing intensified use and abuse of finite and vulnerable water resources will destroy freshwater ecosystems and land resources and will result in water stress even further. The water pollution currently observed widely in the region exacerbates water scarcity and damages human health. With imbalances between water availability and demand, conflicts over water will be observed more often at all levels – for example between countries, between cities and rural areas, and among community members. Natural calamities such as flood and drought are also threats, in particular to the poor who often live in marginal areas. Water supply and sanitation systems still need to be improved so that all people can enjoy safe and healthy lives. With ongoing growth of both population and the economy in the region, the water crisis will certainly be exacerbated. It constitutes a main constraint against sustainable development.

It is said that the root of the current water crisis is unsustainable use and management of water resources. Because of the diverse nature of water, more cross-sectoral, more integrated approaches should be taken, as opposed to the conventional sectoral approach. To cope with diverse and complex water issues, the following points should be noted for realizing sustainable water management:

Assessment

➤ ***Water quantity and quality assessment***

In the process of planning and implementing water policy, assessment of water quantity is a necessary element. Recent studies have estimated future water resources, but more regional and country-specific assessments should be promoted for practical water policy planning and management. Assessment of water quality on regular basis is also necessary for proper planning and management of water.

➤ ***Comprehensive assessment of water resources in a river basin context***

Integrated water resource management (IWRM) is a process to improve current unsustainable water management. To enhance IWRM, it is necessary to implement comprehensive assessment of water resources in the context of river basins that form the natural unit to manage water resources. The assessment will give us better understanding of the links between water and land use, and the environment and sustainable development.

➤ ***Socio-economic assessment; role of water in sustainable development***

As water is related to multiple aspects of human life, it is necessary to assess roles of water from not only environmental but also socio-economic viewpoints. The impact of land use change (including sprawling urban areas) is one of the key areas that need the comprehensive assessment. The impact of water crisis to the poor should be also studied.

➤ ***Forecasts to cope with vulnerability, including climate change***

The region's water availability is vulnerable to the effects of climate change. Extreme events such as flood and drought are also expected to increase in temperate and tropical Asia as a result of climate change. To cope with such vulnerability, scientific assessment needs to be promoted further.

➤ ***Valuing water***

As water is becoming an increasingly scarce resource, “full-cost pricing” of water is recognized as an effective tool for water management. However, full-cost pricing could force the poor to pay even more for access to adequate water services. Furthermore, water should not be evaluated only from an economic viewpoint, but also from social and environmental aspects. In this regard, assessment of water’s value (both in socio-economic and environmental terms) is necessary for the proper pricing and equitable allocation of water.

Planning

- ***Enhancing integrated water resource management with local perspectives***
Integrated water resource management (IWRM) is key for sustainable water use. However, how to integrate management of water with those of other sectors depends upon local situations and needs.
- ***Strengthening Strategic Planning and Management***
The challenges in water resources management can be addressed by adopting new approaches in strategic planning and management (SPM) to assist in decision-making in the context of rapid changes within the water sector. This requires all resources to be focused on achieving a mission, which is often embedded in a vision. The mission is clear and realistically achievable, with issues identified by stakeholders, rather than pre-set objectives determined by governments in isolation.
- ***Reforming water-related institutions***
Water policy should not be considered in the sole context of water. It should be considered in conjunction with policy areas such as land use, food security, environmental conservation, and poverty alleviation. A national body to formulate and review water policy with participation of related stakeholders should be established in each country. It is recommended that such bodies also be prepared at the local level.

Management/implementation

- ***Provision of adequate water supply and sanitation systems***
Adequate water supply and sanitation systems are urgent needs for the region. Development of water service infrastructure should keep the pace with demographic changes and be planned to provide services to those who need them, such as poor people.
- ***Introduction of water demand management policies***
Water policies have been focused on how to supply water to all people. However, to cope with water scarcity, water saving efforts as well as effective usage of water should also be promoted. Water policy should adopt a “demand side approach” rather than the traditional supply-side management.
- ***Allocation of adequate financial resources to water sector***
Lack of finance is the major constraint on the implementation of water policy. Without an adequate budget, water supply and sanitation facilities in particular cannot be developed or well-maintained. To assure financial resources, the introduction of cost-recovery systems and privatization are possible solutions, with the caveat that such services should be provided at prices affordable for the poor. The public sector should prepare safeguards such as subsidies for water supplies for the poor.
- ***Promotion of contributions by and participation of private sector***
Fundamentally, the public sector should take the leading role in water management. However, participation of the private sector should be encouraged for effective water management.
- ***Facilitation of decentralization***
It is said that decentralization promotes effective planning and management, and encourages participation by various stakeholders. In many countries, local water management is the

responsibility of local entities, but decentralization without proper financial basis and implementation capacity may minimize the advantages of such decentralization. Supporting mechanisms which enhance the capacity of local governments should be considered.

➤ ***Promotion of effective and efficient implementation of water pollution control laws and regulations***

In many countries in the region, water-related laws and regulations have already been set up. However, their implementation is often weak and ineffective. To take substantial measures, laws and regulations should be reviewed and strengthened by the development of supporting mechanisms which facilitate implementation.

➤ ***Introduction of less water-consuming agricultural technologies and methods***

The agricultural sector is a key one in ensuring the sustainable use of water. To balance food and water security, new or conventional technologies and methods to produce foods with less water are needed. Indigenous methods to save water in agricultural activities as well as less-water consuming irrigation methods, such as sprinkler and dropping irrigation, should be encouraged.

➤ ***Preparation of safety nets for calamity damage***

Natural calamities are inevitable. Safety nets for extreme events should be prepared, such as country networks or regional insurance systems to support calamity damage.

➤ ***Contrivance of policy packages***

It should be noted that taking action in only one priority area or adopting only one policy tool will not work effectively. For example, improvement in water supply without appropriate water demand control will merely result in an increase of water consumption. Even if a good water national policy and action plan is formulated, it cannot be practical without the implementation capacity of staff. Pricing water without proper evaluation of the value of water would hinder poor people's access to water service. To maximize effectiveness of water management, policies should be implemented as packages formulated according to the particulars of national and local situations.

Supporting Actions

➤ ***Raising of public awareness and enhancement of participation of all stakeholders in decision making processes***

Water issues are closely related to the attitudes of the people who use the resource. Without people's understanding of the state of water issues, policy implementation cannot work effectively. Public participation is crucial to ensure integrated water development and management planning and implementation. Increasing awareness at all levels fosters conversation among stakeholders and supports the participatory approach.

➤ ***Promotion of capacity building in policy implementation***

Planning and management cannot effectively work in the absence of proper operation. For instance, it is often reported that lack of technical ability to maintain/operate water service facilities hampers the proper provision of water services in developing countries. Building capacity to foster all aspects of policy implementation is essential.

International/Regional Cooperation

➤ ***Promotion of regional and sub-regional cooperation***

Sharing knowledge and information about water at the regional and sub-regional levels will promote national actions. Collecting and sharing good practices regarding water policy and management as well as the technical knowledge to cope with water problems can facilitate local action.

➤ ***Encouragement of technology transfer***

Technology transfer should be promoted further to improve the current situation. It is

necessary to identify technologies that are appropriate to local situations. In the Asian context, the technology and/or techniques to make food production more water-effective is one of the most urgent needs. Capacity-building programs should take place right alongside the transfer of hard technologies. Technical and financial assistance, especially for infrastructure development and management of water services, should also be promoted.

➤ ***International river basin management***

To foster coordination of the sharing of international river basins, coordination bodies, such as the Mekong River Committee, or similar coordination programs should be established.

From the regional context, it should be noted that special attention should be paid to two social aspects in water management shown in the above: poverty and urbanization. Poor people are likely impacted by all aspects of water-related crises, including food provision, safe drinking water supply and sanitation systems and also environmental degradation. In the Asia-Pacific region where about 70 percent of the world's poor live, the needs of the poor should be primarily reflected in water development and management policies. The region's water policy should be linked closely with poverty alleviation policy. Rapid demographic shifts from rural to urban areas needs also to be considered during policy formulation. It could exceed the pace of water-related infrastructure development and exacerbate water shortage and pollution, eventually bringing serious impacts to land resources and freshwater ecosystems. Coordinated urban and rural development is a key for realizing sustainable future in the region. In addition, expansion of urban areas accelerates the conversion of forest and agricultural land and would result in changes in the hydrological cycle. Water development and management policies should also incorporate the impact of land use change.

Reflecting the diverse nature and roles of water, the scope of 'water policy' has been extended in recent years. International dialogues have identified key areas for action, and it is time for implementation. The key is how to mobilize people to take action and how to value water for equitable use for people and the environment.

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