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**CHALLENGES AND STRATEGIES IN MANAGING WATER RESOURCES:
EXPERIENCES OF ESCAP IN THE PROMOTION OF SOUTH-SOUTH
COOPERATION**

(Background document prepared by the UNESCAP Secretariat)

**OFFICE OF THE CHAIRMAN OF THE GROUP OF 77
NEW YORK**

Challenges and Strategies in Managing Water Resources: Experiences of ESCAP in the Promotion of South-South Cooperation

INTRODUCTION

The Second South Summit, held in Doha, Qatar from 12 to 16 June 2007 reiterated its commitment to South-South Cooperation as contained in the Havana Programme of Action and underscored its importance in the effort to eradicate poverty and achieve sustained economic growth and sustainable development in the South. In this regard, the Summit agreed to implement the measures and the initiatives contained in the Marrakech Framework for Implementation of South-South Cooperation. The initiatives were expected to involve the convening of a Water Forum with a view to promote cooperation in the exchange of scientific and technological know-how in sourcing, efficient management, preservation and sustainable use of water, in accordance with the existing and relevant provisions of international law.

In this connection, the Government of the Sultanate of Oman has kindly agreed to host a Ministerial Forum on Water in Muscat, Oman from 23 to 25 February 2009 and the Chairman of the Group 77 in New York kindly invited ESCAP to submit to the Ministerial Forum a background document on the status of cooperation among developing countries in the field of water within the purview of ESCAP. This paper was thus prepared in that context with the hope to present a brief picture of the challenges, progress in meeting the challenges and possible future directions.

I. COMMON CHALLENGES AND PROGRESS IN DEVELOPMENT

Asian-Pacific citizens stand at the brink of an age of scarcity – in food and energy, but also in the water essential for inclusive and sustainable development. At the heart of the Millennium Development Goals, access to water is recognized as central to achieving progress on all fronts of development. While advancement on many international targets exists, a dearth of action has nevertheless left hundreds of millions in Asia-Pacific disconnected from improved water sources for personal as much as productive use, forcing them into a perennial state of human insecurity.

Water security encompasses this inherent duality: without it there is no development, but with it the most vulnerable can leave poverty behind. Adopting an Asia-Pacific development agenda holding water security at its center holds potential to resolve lasting conflicts and to accelerate attainment of a basic

right—the human ability to live a long and fulfilled life.

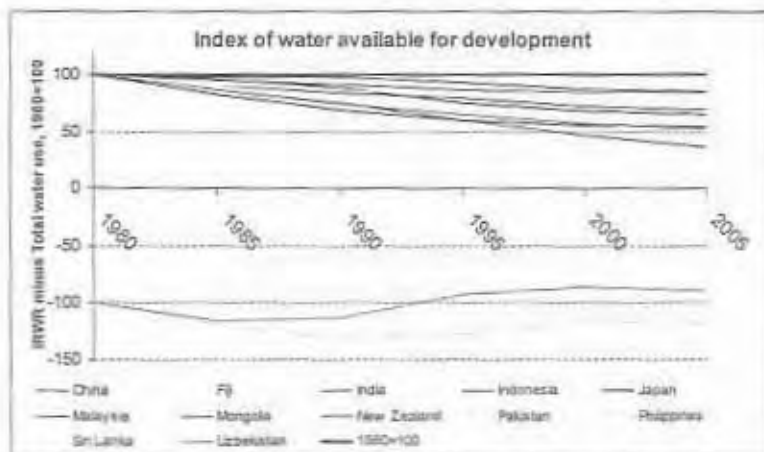


Figure 1. Reduction in water availability

Some countries, including Pakistan and Uzbekistan, long overexploiting their water resources, hold starting points at -100 on the index. What this water stress highlights is precisely how human 'mis-use' and 'over-use' undermines prospects for harnessing water for development opportunities.

1. Important facts related to water in Asia-Pacific

- Despite good progress made on poverty reduction during the past three decades in the region (from 80 to 18 per cent in East Asia and from 80 to 40 per cent in South Asia), Asia-Pacific still has 950 million people live in poverty.

- 655 million people are still without safe drinking water and 1.9 billion without access to basic water sanitation in our region.¹
- Between 2001 and 2005, 62,000 people were killed annually by water related disasters in the Asia-Pacific region (compared to 13,000 people killed by such disasters in the rest of the world).²
- 542 million, or two-thirds, of the world's hungry people live in Asia³. Agriculture consumes an average 79% of the region's renewable water resources and faces the challenge of increasing food production, degraded ecosystems and competition for land.
- Asia's rivers average 20 times more lead than the rivers in the industrialized world, and average 50 times more bacteria from human feces than WHO guidelines allow.⁴

2. Critical issues on water management in the region

a. Water use and water security

In some parts of Asia, like Bangladesh, water is everywhere. It sits on lakes and ponds, runs through rivers and falls like rain. Yet water security is an increasing concern of many people across the region, including presumably water rich regions.

Being water secure means having access to sufficient quality water to meet basic needs and ensuring access to water for productive purposes, including agricultural and industrial uses. Defining how much water is enough for household, agricultural and industrial uses is not a strict science and varies from place to place, depending on the nature of the economy and the livelihood needs. On average, when annual per capita renewable freshwater availability is less than 1,700 cubic meters, countries are said to begin experiencing periodic or regular water stress. Below 1,000 cubic meters, water scarcity begins to hamper economic development and human health and well-being. From data available in the Asian and Pacific region, two countries are already in severe water stress: the Maldives and Singapore, with only 98 cubic meters and 135 cubic meters per person per year respectively. India, the Republic of South Korea and Pakistan are already experiencing periodic water stress, as all three countries have per capita renewable water of less than 1,700 cubic meters per year.

Although these worrisome results appear to be quite localized, analyzing existing data from a new, development angle reveals wider trends. ESCAP recently led a study to establish an Index of Water Available for Development (IWAD). The Index is defined in terms of total internal renewable water resources minus total water withdrawals. It measures the balance of water availability of the internal renewable water resources as a result of water withdrawal for agricultural development, domestic supply and industrial development. Overall water available for development across the region is on steep decline. It should be noted that the information presented reflects only the average conditions at the national level. The situation could be more serious if the difference in spatial water resources distribution is taken into account.

The ESCAP region has shown a clear trend of withdrawing water in a very unsustainable manner. Countries of North and Central Asia have had the most serious reductions of water available for development, with Turkmenistan, Uzbekistan and Azerbaijan withdrawing the most.

In the Asia-Pacific, water withdrawal for agriculture outweighed withdrawal for other purposes, accounting for 79 per cent of total withdrawals in 2002. However, this share has dropped since 1990 in all subregions, with the exception of some countries, such as Iran, Turkey and Kazakhstan, where the proportion of water used in agriculture has marginally increased since 1990. As expected, in 2002 high-income economies withdrew only 62.4 per cent of total water for agriculture, middle-income economies withdrew 77.3 per cent and low-income economies withdrew a total of 90.9 per cent.

¹ Meeting the MDG Drinking Water and Sanitation Target: The Urban and Rural Challenge of the Decade

² EM-DAT: The OFDA/CRED International Disaster Database – www.em-dat.net – Université Catholique de Louvain

³ FAO, 2008. The State of Food Insecurity in the World 2008.

⁴ Kristof, N.D. 1997. New York Times 11-28-97, "Across Asia, a Pollution Disaster Hovers," p. A1
<http://usinfo.state.gov/journals/itqic/0399/iige/qj-07b.htm>

Figure 1 Proportion of water withdrawn by agriculture, 2002

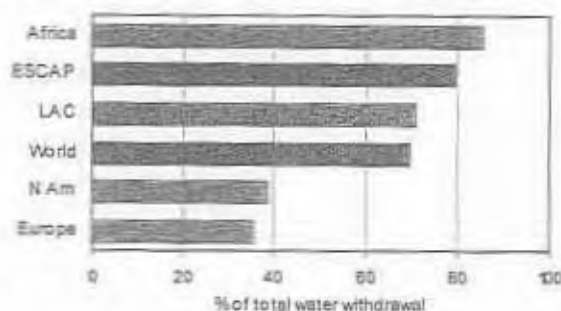


Figure 2 Proportion of water withdrawn by agriculture in selected countries, 1992 and 2002

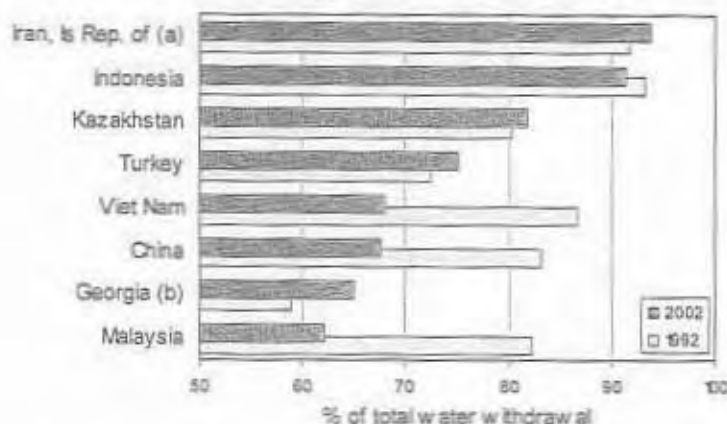
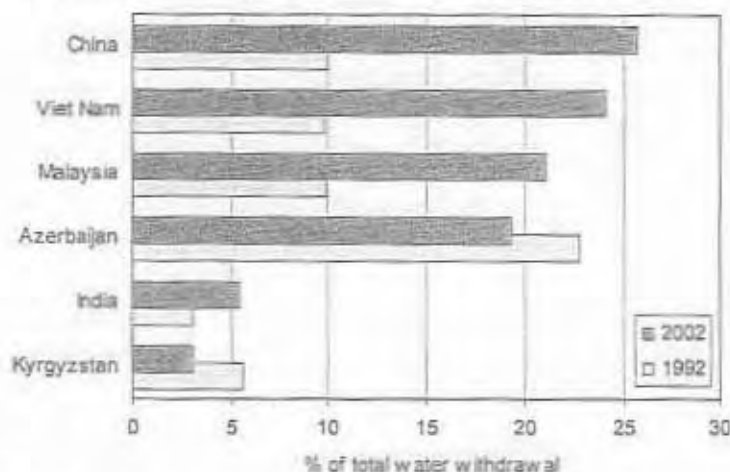


Figure 3 The share of water withdrawal for industrial uses in selected countries, 1992 and 2002



Industrial water use in the Asian and Pacific region has increased significantly between 1992 and 2002, especially in China and Viet Nam, where industrial water withdrawal has more than tripled. The average share of industrial water withdrawal reached 13.1 per cent in 2002. This rising trend is observable in all subregions, except for the Pacific islands economies where data is not available, and for some countries of North and Central Asia where the share actually fell by a couple of percentage points.

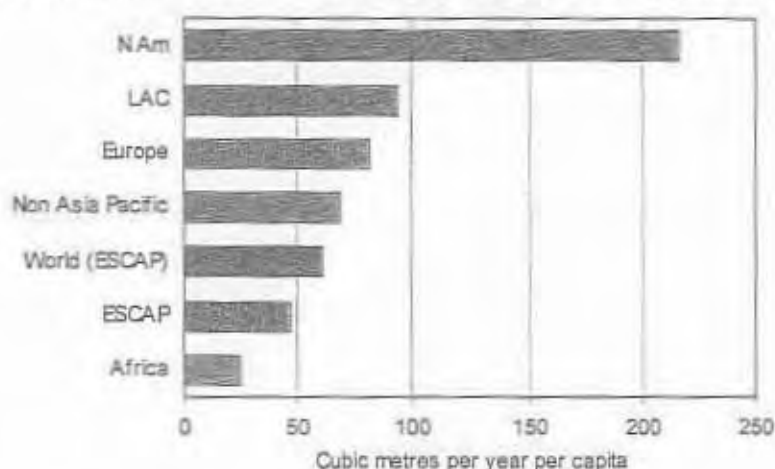
In addition, more recent data from the Caucasus region indicate the opposite trend, as the share of agriculture in total water withdrawal has increased by seven percentage points in Georgia, four in Azerbaijan and one in Turkey and the Islamic Republic of Iran.

Surprisingly, the share of domestic water withdrawal over total withdrawal in Asia and the Pacific, the most populated region in the world, is the lowest at 7.7 per cent, compared with Africa at 10 per cent and Latin America at 19 per cent. Even the per capita domestic water withdrawal, 47.5 cubic meters per year, is the second lowest level in the world, after Africa. Many countries, however, have achieved a rapid increase in the share of domestic water per cent withdrawals: Viet Nam nearly tripled, and Turkmenistan, India and Malaysia about doubled their volumes.

Armenia and New Zealand had by far the highest per capita domestic withdrawals, with 288.5 cubic meters and 258.4 cubic meters per year, respectively. On the lower end, per capita water withdrawal for domestic purposes was only 4.5 cubic meters per year in Cambodia, 7.1 cubic meters in Papua New Guinea and 8.8 cubic meters in Myanmar.

The access by the poor and vulnerable to water is an essential element of water. On average, per capita domestic withdrawals in the region's least developed countries were standing at 14.8 cubic meters per year, in comparison to the ESCAP average of 47.5 cubic meters per year and that of Africa at 24.7 cubic meters per year. The extremely low level signals a serious threat to human well-being.

Figure 4 Comparative domestic water withdrawal per capita in the regions of the world, 2002



b. Access to water and sanitation

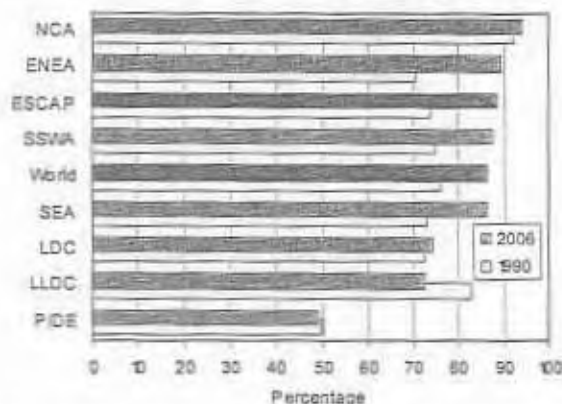
At the heart of the Millennium Development Goals, access to water and sanitation is recognized as central to achieving progress on all fronts of development. While advancement on many international targets can be showcased, hundreds of millions in Asia-Pacific are still disconnected from improved water sources for personal as much as productive use, forcing them into a perennial state of human insecurity.

Achieving water security consists of holding baseline access to sufficient quality water to meet basic needs, but it also means ensuring access to water for productive purposes, like agricultural and industrial uses (see chapter 27 on water use). Overall, the proportion of population having access to improved drinking water sources has increased in Asia and the Pacific, from 74 per cent in 1990 to 88 per cent in 2006. This means that 1.2 billion more people in the region have access to good water. Compared with other regions, the Latin America and Caribbean region still had the highest access rate among the developing regions of the world, with 91 per cent, while Africa had the lowest, 64 per cent. Both North America and Europe have achieved access to improved water sources for 99 per cent of the population.

Access to water improved in all ESCAP subregions, except in the Pacific developing economies. The most impressive increase was achieved in East and North-East Asia, access to improved water sources reached almost 90 per cent of the population in 2006, up from just 70 per cent in 1990. This surge was led by China, particularly the impressive improvement in rural population access, from 55 to 81 per cent. North and Central Asia is enjoying close to universal access to improved water sources (94 per cent), higher than both the regional and the world averages, and higher than the Latin America and Caribbean average. The only exception in that subregion is Tajikistan, where only 67 per cent of the total population had access to improved water in 2006.

On the other hand, however, least developed countries and landlocked developing countries still have access rates of just above 70 per cent, while the Pacific developing economies lag very much behind, with a low access rate of 49 per cent of the population. Throughout the region, many countries have lower access than the world average of 86 per cent. The lowest coverage is observed in some Pacific islands, like Papua New Guinea with 40 per cent and Fiji with 47 per cent. Many people in South-East Asia also lack access to proper water, particularly in Lao PDR, Timor-Leste and Cambodia, where 40, 38 and 35 per cent of the total population, respectively, still do not have access to improved water sources.

Figure 6 Proportion of total population with access to improved water sources in selected Asia and the Pacific country/area groupings, 2006



Like elsewhere in the world, urban dwellers in Asia and the Pacific have much better access to water than rural dwellers. The regional average 96 per cent compares favourably with Africa (84 per cent) and is almost at par with Latin America and the Caribbean (97 per cent). However, the relative improvement in urban areas since 1990 has been moderate (1 percentage point) compared with rural areas (19 percentage points). In fact, increasing urbanization in the least developed countries has led to a fall in access to improved water sources affecting many of the urban poor, from 88 per cent in 1990 to 80 per cent in 2006. This drop was driven by deteriorating access in many Pacific islands, as well as in Bangladesh, Myanmar and Nepal.

Figure 7. Proportion of the rural and urban population with access to improved water sources in Asia and the Pacific, 1990, 2000 and 2006

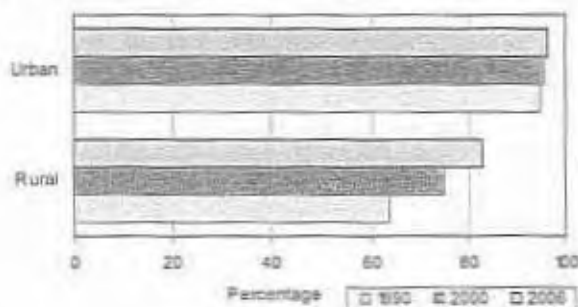


Figure 8. Proportion of the urban population with access to improved water sources in selected Asian Pacific countries, 1990-2006

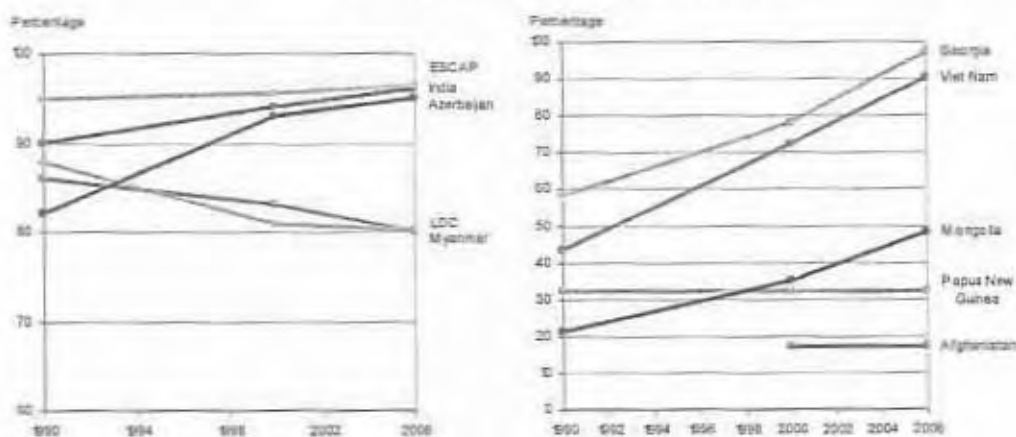
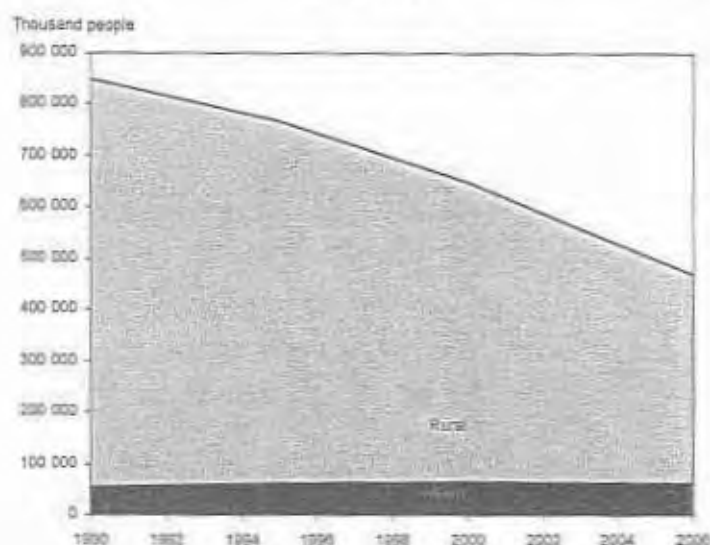


Figure 9. Number of people without access to improved water sources in Asia and the Pacific, 1990-2006



The rural parts of Asia and the Pacific have seen the most impressive improvements globally since 1990, with access to improved water sources increasing from the low starting level of 64 per cent to 84 per cent on average. All subregions contributed to the increase, except some island states.

Among individual countries, Viet Nam and Georgia stood out as early achievers in exceeding MDG targets. In Viet Nam, 90 per cent of the rural population now enjoys improved water sources, compared with only 43 per cent in 1990. In Georgia, a noteworthy increase in rural access from 58 to 97 per cent in 2006 was observed.

In contrast to this picture, the rural population of conflict-stricken and land-locked Afghanistan had the lowest access to improved water sources in the region, at only 17 per cent of the rural population. Rural dwellers in the Pacific Islands also saw access to improved water sources deteriorate during the last decade. Papua New Guinea held the second lowest rank in rural access, at 32 per cent, and showed no signs of improvement between 1990 and 2006. In land-locked Mongolia, only 48 per cent of the rural population had access to improved water sources, even after managing to more than double the coverage during the period.

In total, low income countries achieved an 11 percentage point increase in rural water access between 1990 and 2006, while middle income countries improved access at double that rate. These figures illustrate that unless a dynamic effort is undertaken to quickly and aggressively correct limited access to water for rural population, the proportion with adequate access could remain low over long periods of time.

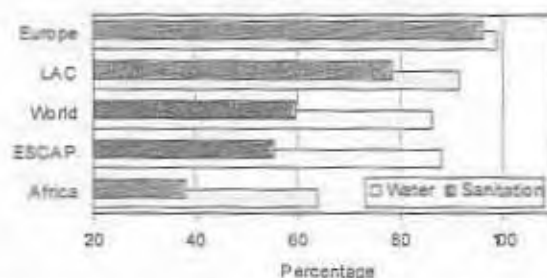
The benefits of achieving access to water, particularly in rural areas, are not limited to health benefits. It is no surprise that four out of the five ESCAP countries with the lowest percentage access to improved water sources (Afghanistan, Lao PDR, Papua New Guinea, Timor-Leste) are among countries with short life expectancy (see chapter 1). At the same time, countries where life expectancy was longer than 74 years all had 100 per cent access to improved water sources, except for Viet Nam where 92 per cent of the population had access in 2006. Access to clean water is clearly vital for living a long and healthy life.

The United Nations General Assembly declared 2008 as "International Year of Sanitation" to help improve the poor performance in sanitation coverage worldwide. For the ESCAP region, that would mean providing the access to improved sanitation facilities to those 45 per cent of the region's population who are currently without them. The challenge is greater for rural areas, where only 44 per cent of the people had access.

Improved sanitation facilities include household toilets or latrines connected to piped sewerage systems and also septic tanks and ventilated improved pit latrines. People without these facilities usually defecate in fields or dispose of faeces in plastic bags, bucket latrines or rivers. The discrepancy between rural and urban areas in access to sanitation is higher than in access to improved water sources.

While access to sanitation has improved significantly in almost all Asian and Pacific subregions, the regional average (55 per cent) is still lower than the global (60 per cent) or Latin American and Caribbean (78 per cent) averages but higher than in Africa (38 per cent). While all people in high income countries of the region have access to sanitation, there is no difference between middle and low income economies, in both a mere 54 per cent of citizens having access to adequate sanitation. This is very surprising at first, but is explained by one country, India, which with its low access to sanitation just 'graduated' to the group of middle-income economies, improving the average of low-income economies and dragging down the average of middle-income economies from a year ago.

Figure 10. Proportion of access to improved water sources and sanitation in Asia and the Pacific and World regions, 2006



Across subregions, the picture is varied. South-East Asia and East and North-East Asia achieved significant progress, with access to improved sanitation increasing since 1990 by 15 and 18 percentage points respectively.

In contrast, despite an almost fifty per cent more people having access to acceptable sanitation than in 1990, the average for the South and South-West Asia remains very low, 35 per cent in 2006. This low average hides relatively better performance of countries like Sri Lanka, Turkey, the Maldives and Pakistan. The access is very low in Nepal, India, Afghanistan and Bangladesh, although they have achieved significant relative improvements since. For example India improved rural coverage from a mere 4 per cent in 1990 to 18 per cent in 2006. Nepal also achieved noteworthy improvements, since a quarter of the rural population had access to improved sanitation in 2006, compared to only 6 per cent in 1990.

Progress in rural South-East Asia was led by Myanmar and Viet Nam, where access to improved sanitation increased 5.4 and 2.7 times respectively. Thailand and Malaysia both stood out, achieving almost universal access to improved sanitation for their rural population, at 96 and 93 per cent respectively. North and Central Asia, starting from high levels of rural coverage in 1990, continued comfortably standing above the regional average in 2006.

As was the case with access to water, the Pacific subregion as a whole has not been able to improve its sanitation since 1990. However, the overall access to sanitation is higher than access to water. As the Pacific average is driven by Australia and New Zealand, it does not reflect the fact that smaller islands are lagging very much behind. In fact, rural areas in the Federated States of Micronesia, the Solomon Islands and Kiribati had some of the worst access rates, with only 14, 18 and 20 per cent of rural population respectively enjoying improved sanitation.

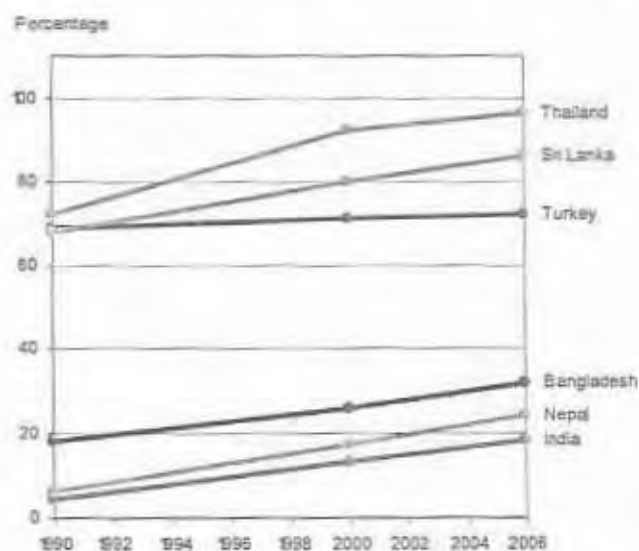


Figure 11. Proportion of the rural population with access to improved sanitation in selected Asian countries, 1990-2006

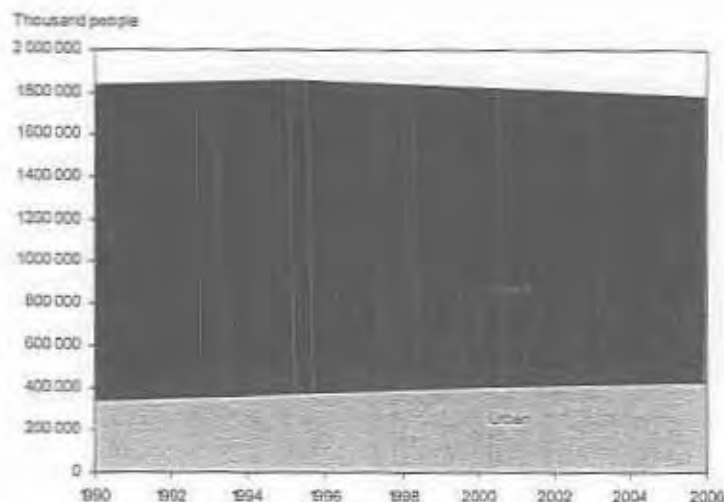
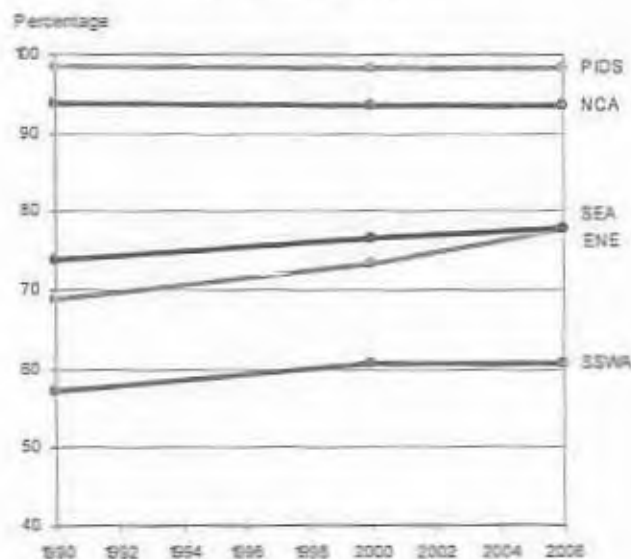


Figure 12. People without access to improved sanitation in Asia and the Pacific, 1990-2006

Although providing access to improved sanitation is relatively easier in urban environments, the region's urban average increased only moderately, from 69 per cent in 1990 to 74 per cent in 2006. Rapid urbanization and the increase in the number of people living in slums are probably largely responsible for this unimpressive performance. Land locked developing countries and Pacific developing economies faced the largest challenges, since the percentage of urban population with access to improved sanitation actually fell from year 2000. Few highly populated countries, like Indonesia and Bangladesh, have also recorded a worrisome decline in the proportion of the urban population with access to improved sanitation.

On the other hand, the urban dwellers of East and North-East Asian countries witnessed an improvement to access of nearly ten percentage points. Urban dwellers in South and South-West Asia also experienced a three percentage point increase in access to improved sanitation. Like in the case of rural access, North and Central Asia already started from very high coverage of over 90 per cent. As a result, small declines in access to sanitation for urban dwellers can also be attributed to the challenges of urbanization.

Figure 13. Average urban access to improved sanitation in the subregions of Asia and the Pacific, 1990-2006



The importance of access to water and sanitation to development cannot be overemphasized. They include personal benefits from higher school participation, better living standards, increased labour productivity and saved health care costs, as well as broader societal benefits like tourist revenues, foreign direct investment and improved aesthetics. A recent study of just four South-East Asian countries

estimated the total economic benefits of achieving universal access to sanitation to be between 5.4 and 26.5 billion US\$.

c. Water-related disasters

Asia-Pacific is the most vulnerable region of the world. In addition, countries in the Asia-Pacific region are expected to be severely affected by climate variability, for which they must establish adaptation strategies to cope with changing situations, in which adaptation to climate change will be the key. In view of the complexity of water-related disaster risk management, efforts are being made to development partnership for building resilience of communities to natural disasters. In this connection, national governments are encouraged to accept major responsibility to establish national disaster management strategies/plans as well as execution of major disaster management actions in proper collaboration with local governments, communities and other stakeholders. The real challenge, however, lies in striking and sustaining an optimal balance between the development needs of many Asian developing economies (especially influenced by population growth, food and energy security issues) and the risks associated with the use of flood-prone land, within given institutional structures and under given uncertainties concerning the future state of the water regime. The best-mix of both structural and non-structural measures need to be sought as measures for disaster management and climate change adaptation in the Asia-Pacific region, with the aim of optimizing use of limited available resources. Structural measures such as levees and water/sediment regulation facilities need to be steadily implemented for they would cover the physical protection level from disasters.

d. Water for development and food security

Asia-Pacific is the fastest growing geographic area in human history in terms of income. The developing economies in the region grew by 8.2 per cent in 2007, up from 8.1 per cent in 2006, and are expected to continue to grow by about 7.7 per cent in 2008 (ESCAP, 2007). This development both hinders and abets effective utilization of water resources across the region. While enhanced incomes facilitate, on the one hand, water investments for infrastructure and irrigation, they also, on the other, lead to increasing stress and competition among myriad users—moving hundreds of millions of Asia-Pacific citizens to the brink of an age of scarcity.

The water challenges described in the following pages were evident before the food and financial crises unfolded and were not close to resolution then. The recent food price hikes presented an opportunity for much needed investment in irrigated agriculture, as this chapter will show, since the relative importance in regional GDP increased. This process seems now temporarily derailed, as the financial crisis and economic downturn hit most Asian economies. While all countries batten down the hatches, bracing for a downturn, policy-makers should use this opportunity to study lessons learned from past irrigation projects, assess existing policies, identify methods and technologies for improved water productivity and work on shaping policies that promote water security.

As population grows and disposable incomes increase, there is need for increased food production. At the same time, a growing, richer population competes for the same finite natural resources. Already, strong competition for water among the socio-economic sectors has resulted to rapid increase in water withdrawal for industry and domestic supply, while the increase of water withdrawal rate for agriculture had slowed down significantly. This shift contributed to the soaring food prices in 2007 (ADB, 2008). Under a business as usual scenario, irrigation water in developing countries will be increasingly supply-constrained by 2025, a study revealed, causing annual global losses of 350 million metric tons of food production (Rosegrant, 2002). Water supply could be constrained due to fluctuation of natural sources (e.g. rainfall variability), increased non-irrigation withdrawal (for domestic or industrial uses) or infrastructure constraints (insufficient reservoir or withdrawal facilities.) The question then remains, how the same finite quantity of water can be best utilized to cover the needs and feed 50% more people.⁵

Water availability for meeting human needs and socio-economic development has been under threat, even before the recent food crisis. The changing financial, demographic and climatic backdrop is exacerbating already difficult conditions. With emerging struggles over water resources, inequality – in the power and politics conditioning who wins and who loses access to its benefits – meets dwindling physical resources to define the times of scarcity. Against this setting, the challenges of food security aggravate

⁵ It is estimated that by 2050 5,314 million people will live in Asia and the Pacific, nearly a 50% increase from today. Also, because of their larger and more urbanized population, developing countries in Asia will account for 43% of the projected increase in global cereal consumption, China alone accounting for half of that increase.

the harm inflicted to those who lack basic water access. Food security challenges also dampen gains held by those who do enjoy access to water— all mounting further stress on an ever-decreasing resource.

Food insecurity conditions create a host of 'winners' and 'losers.' While high food prices unjustly bar food access to the most vulnerable in the region, the steep rise also carries incentives for enhanced agricultural production, to the extent that these higher prices favor food producers. Agriculture being the major source of income for the majority of the region's population, its growth holds potential to act as a significant driver of inclusive and sustainable development in Asia-Pacific—yet the rise in food production also necessarily goes hand in hand with a rise in water use for agriculture. This is where the risk for water security lies. Compounded with other pressures, mismanaged use of water to cope with food insecurity may be the tipping force leading the region straight into an era of water scarcity, threatening the very prospects for socio-economic development. Policies need to be implemented in Asia-Pacific countries that ensure new investment in agriculture is of adequate quality, addresses the constraints of the vulnerable, and limits the potential harms due to competition or ecosystem degradation.

e. Monitoring of investments and results

The Economic and Social Survey of Asia and the Pacific pointed out that the Asia-Pacific region has made major strides in economic and social progress during the past half-century and per capita income growth has been much faster than elsewhere in the world. In this connection, the apparent strong relationship between life expectancy at birth and access to safe drinking water in the region in Figure 14 demonstrates the importance in achievements by the progress made in the region by the advancement of MDGs in water. The increasing complexity of water resources management in the region has called for further improvement in investment and water resources management policy reform. Effective monitoring of investment and results of policy reforms is increasingly recognized as a prerequisite for effective and efficient management of water resources for sustainable economic growth and sustainable development.

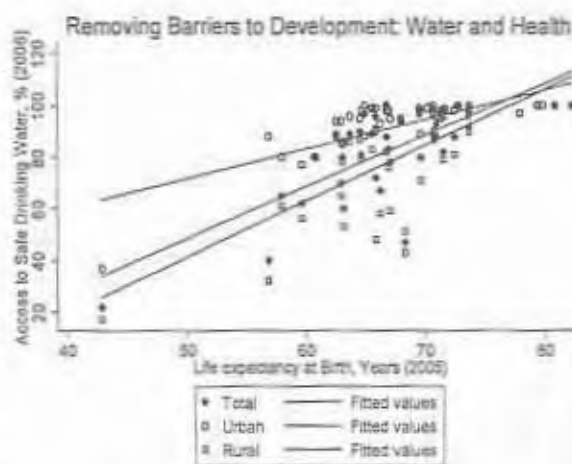


Figure 14. Relationship between access to safe drinking water and life expectancy at birth

II. EXPERIENCES OF ESCAP IN THE PROMOTION OF SOUTH-SOUTH COOPERATION IN WATER RESOURCES MANAGEMENT

1. Experiences of the promotion of strategic planning and management of water resources

With financial support of the Development Account, ESCAP was implementing the three phases of the implementation of the project on "Capacity Building in strategic planning and management of natural resources in Asia and the Pacific" during the period from 2000 to 2004 and to demonstrate good practices of the application of the strategic planning and management approach to the development of integrated water resources management (IWRM) plans were developed in the region.

a. Phase I of the application of strategic planning and management (SPM) into water resources management

Under phase I of the project, which took place in 2000 and 2001, efforts were made to review achievements in water resources management in the region, including those of ESCAP to form the basis for preparing a set of guidelines on strategic planning and management of water resources development. Important achievements made by the ESCAP secretariat identified in the review included the results of studies on "Integration of Water Resources Management into Economic and Social Development Plans in Asia and the Pacific" and "A Synthesis of Experience from the FAO-ESCAP Pilot Project on the Formulation of National Water Visions to Action". These results together with international experiences and inputs from invited water resources experts in the region were compiled to form the first draft of the Guidelines on Strategic Planning and Management of Water Resources, which was discussed at the Regional Workshop

to Finalize the Guidelines on Strategic Planning and Management of Natural Resources Development, held in Bangkok in December 2001.

At this regional workshop, the expert group also identified the overall framework for the introduction of SPM into the national development process taking into account the application of SPM at the national/basin, sectoral and organizational levels. In that context, the expert group identified priority purposes of the application of SPM, key elements or components of SPM, and initiation and implementation of SPM at these three levels. In order to ensure adequate preparation for the subsequent phases of the project, the expert group also identified priority follow-up activities at the subregional level as well as possible coordination of regional efforts on this subject.

b. Phase II of the application of strategic planning and management into water resources management

During phase II, the draft Guidelines was then used for training at five workshops for South-East Asia (July 2002), Central Asia and the Pacific (August 2002), South Asia (September 2002) and North-East Asia (October 2002). In addition, the draft Guidelines was posted on the website of ESCAP to encouraged interested water resources management experts to contribute to improving its applicability. In order to increase the applicability of the Guidelines for the preparation of integrated water resources management plans, several suggestions were solicited participants of the five subregional workshops to form the basis for the introduction of a new chapter on "Monitoring Outcomes of Strategic Planning in Water Management: Using Indicators Effectively" in the draft Guidelines, which was then posted on the ESCAP website in July 2003.

As part of the process on networking building on application of SPM to water resources management, the five subregional workshops were organized in cooperation with subregional counterparts as follows:

- a. The subregional workshop for South-East Asia in July 2002 in cooperation with the Mekong River Commission Secretariat (MRCS) in Phnom Penh, Cambodia. The number of participants was 40, including 21 officials from eight countries of South-East Asia, namely Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand and Viet Nam, 19 experts from the Global Water Partnership (GWP), International Water Management Institute (IWMI), the MRCS and ESCAP.
- b. The subregional workshop for the Pacific in August 2002 for both the energy and water sectors in cooperation with the South Pacific Applied Geoscience Commission (SOPAC) in Sigatoka, Fiji. 22 participants, including 18 officials from 12 countries of the Pacific, namely Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga and Tuvalu, three experts from SOPAC and an ESCAP Consultant participated in the Workshop on water resources.
- c. The subregional workshop for Central Asia was held in cooperation with the Inter-State Commission on Water Management Coordination (ICWC) in Cholpan Ata, Kyrgyzstan, and was attended by totally 49 participants, including 25 officials of ICWC from the five countries of Central Asia, namely Kazakhstan, Kyrgyzstan, Tajikistan, Turmenishtan, and Uzbekishtan; 13 officials representing the local organizers and the Scientific Information Centre of ICWC; and 12 international experts representing six international organizations working in the subregion, namely Canada International Development Agency, Swiss Development Cooperation (SDC), United States Agency for International Development (USAID), the World Bank, the Asian Development Bank (ADB) and IWMI.
- d. The Subregional Workshop for South Asia on Application of Guidelines on Strategic Planning and Management of Water Resources in cooperation with IWMI and the Interim-National Water Resources Authority (INWRA) of Sri Lanka in Colombo from 10 to 13 September 2002. The Subregional Workshop was attended by totally 25 participants, including 20 officials from the eight countries of South Asia, namely Bangladesh, Bhutan, India, Islamic Republic of Iran, Maldives, Nepal, Pakistan and Sri Lanka; two participants representing the local NGOs, one international expert provided by the Department of Foreign International Development of the United Kingdom and two officials of IWMI.
- e. The subregional workshop for North-East Asia was organized in cooperation with the Ministry of Water Resources of China in Beijing from 22 to 25 October 2002, which consisted of two parts: the International Forum and Subregional Workshop for North-East Asia on Application of

Guidelines on Strategic Planning and Management of Water Resources. The Symposium was attended by totally 55 participants, including 11 foreign participants and 44 senior Chinese officials representing various Departments of the Ministry of Water Resources and the four major river basin commissions. The international participants included senior officials from Mongolia, Russian Federation and invited experts from UNESCO, World Bank, IWMI, Stanford University, Australia and the United Kingdom. The workshop was attended by 14 officials, including the international participants.

c. Phase III of the application of strategic planning and management into water resources management

Based on the interest generated at the subregional workshops, subsequent consultations were made with the focal points of interested countries. Case studies were then arranged for seventeen countries during the period from 2003 to 2004 for the development of strategic plans as follows:

- a. **Central Asia:** Case studies were made for the five countries, Kazakhstan, Kyrgyzstan, Tajikistan, Turmenishtan, and Uzbekishtan, within the framework of the Inter-State Commission on Water Management Coordination (ICWC) and in cooperation with ICWC Scientific Information Centre (SIC) for downstream areas of Syrdarya and Amudarya including whole Ferghana Valley. In addition, the Guidelines were also adapted using the experiences of these case studies for subsequent training of water resources engineers in the subregion. In this connection, one seminar was held in November 2003 in Tashkent in cooperation with SIC, IWMI, SDC and the United States Department of State to map out detailed application, a workshop to discuss the draft strategic plans in April 2004 in Tashkent and the training seminar was organized by SIC in November 2004.
- b. **North-East Asia:** Case studies were conducted for two river basins in China (Haihe and Huaihe) in cooperation with the Ministry of Water Resources of China and for overall water resources management in Mongolia in cooperation with the Ministry of Environment of Mongolia. The final workshops were held in October for these two countries.
- c. **Pacific:** Case studies were carried out for the Nadi River Basin in cooperation with the Department of Land and Water Resources Management of Fiji and for the Laloki River Basin in cooperation with the Water Resources Management Branch of Department of Environment and Conservation of Papua New Guinea. The final workshops were held in Nadi in September 2004 for Fiji and in Port Moresby in October 2004 for Papua New Guinea to discuss the draft strategic plans for the respective river basins.
- d. **South Asia:** Case studies were conducted in Pakistan and Sri Lanka in cooperation with the Pakistan Council for Research in Water Resources (PCRWR) and the Interim National Water Resources Authority (INWRA) of Sri Lanka, respectively. The final workshops were held in Islamabad in February 2004 to discuss the draft strategic plan for PCRWR and in July 2004 to review the draft strategic plan of INWRA.
- e. **South-East Asia:** Case studies were conducted for the following countries: the Lao People's Democratic Republic on strategic plan of the Water Resources Coordination Committee (WRCC) in cooperation with WRCC; Malaysia on strategic plan for the Langat River Basin in cooperation with the Malaysia Water Partnership and the Department of Irrigation and Drainage; Myanmar on strategic plan for the coordination of water resources sector: establishment of the national water resources committee in cooperation with the Irrigation Department; Philippines on strategic plan for the National Water Resources Board (NWRB) in cooperation with NWRB; Thailand on strategic plan for the water sector – Department of Water Resources in cooperation with the Water Resources Association of Thailand; and Viet Nam on strategic plan for the Vu Gia-Thu Bon River Basin in cooperation with the Institute of Water Resources Planning of Viet Nam. Six workshops were organized to discuss the respective draft strategic plan in July 2003 in Putra Jaya, Malaysia; September 2003 in Bangkok, Thailand; in December 2003 in Vientiane, the Lao People's Democratic Republic; in July 2004 in Manila, Philippines; in August 2004 in Da Nang, Viet Nam; and in September 2004 in Yangon, Myanmar. Subsequently, the Ministry of Agriculture and Rural Development of Viet Nam decided to hold a workshop to establish the Vu Gia-Thu Bon River Basin Organization on the basis of the strong recommendations of the case study and the related provincial authorities.

2. Lessons from the application of SPM to water resources

The key results and outcomes of the project "Capacity-building in Strategic Planning and Management of Natural Resources in Asia and the Pacific" in the water sector can be summarized in the following three aspects: important achievements of the project, key obstacles in application of SPM, and important lessons learned and best practices.

The important achievements of the project can be described in three main aspects: tool development, interest generation, and practical application of the methodology.

a. Tool development

The development of the Guidelines marked an important step in the application of strategic planning and management approach to water resource, since it was the first time that a specific set of guidelines were specifically developed for the water sector and derived mainly from the practical experiences of the region. This fact can be illustrated by the translation of the Guidelines into Chinese, Russian and Vietnamese by the respective technical agencies. In addition, several enquiries were addressed on the guidelines on application to water resources management in the forestry sector in Malaysia and to the development of integrated river basin management modules for the UNESCO-IHE Institute for Water Education.

b. Generated interest in SPM

The interest generated by the project on SPM of water resources was higher than expected in terms of the number of requests for case studies, which was higher than the project could deliver, although the actual number of case studies was much higher than the original number of case studies planned for the project, 17 in comparison with 10. Of particular interest was the decision of the Vice Minister of Water Resources of Uzbekistan to immediately apply the concept at the subregional workshop as reported in the Subregional Workshop report.

c. Best practices of SPM

The seventeen case studies on the application of SPM to the water resources sector were conducted for the practical purpose of formulation of related policies and strategies at all the levels as recommended at the regional and subregional workshops: national (Myanmar, Thailand, Sri Lanka, Mongolia), basin (China, Fiji, Malaysia, Papua New Guinea, Viet Nam and five countries in Central Asia), sectoral level (Pakistan) and organizational (the Lao People's Democratic Republic and Philippines). Out of these case studies, the momentum generated by the application for the case studies in Fiji, Myanmar and Viet Nam proved the immediate impacts of the project, in terms of immediate actions taken by the agencies concerned.

Good practices on strategic planning and management of water resources development in Asia and the Pacific are included in a publication, produced as a contribution of the Economic and Social Commission for Asia and the Pacific (ESCAP) to the implementation of the Johannesburg Plan of Implementation (JPOI) of the World Summit on Sustainable Development in the region. The JPOI identified the implementation of integrated water resources management plans as a priority, for which Governments were urged to establish integrated water resources management plans by 2005.

The good practices are selected from the outcomes of the project on "Capacity-building in Strategic Planning and Management of Natural Resources in Asia and the Pacific" implemented by ESCAP during the period from 2000 to 2004, with funding from the United Nations Development Account. The project was designed to address the priority identified at the nineteenth special session of the General Assembly in the implementation of Agenda 21, when it called for the initiation of "a strategic approach for the implementation of all aspects of the sustainable use of freshwater for social and economic purposes, including, inter alia, safe drinking water and sanitation, water for irrigation, recycling, and wastewater management, and the important role freshwater plays in natural ecosystems." The project was thus aimed to promote the application of strategic planning and management approaches to the integrated management of water resources in the region. The presentation of good practices on strategic planning and management of water resources development in that publication is intended to illustrate the importance of the application of the strategic planning and management approach in the development of integrated water resources management plans. Apart from the good practices, the publication also compiled relevant experiences on the application of strategic planning and management approaches to the development of integrated water resources management plans for possible application.

The publication is thus aimed primarily at providing examples of practical application of the strategic planning and management approaches to the preparation of integrated water resources management plans at various levels. In that context, it is aimed at assisting decision makers, planners and practising water resources experts in their efforts to enhance the effectiveness in the formulation and implementation of strategic plans for water related organizations for integrated water resources management. The publication is also intended to serve as a reference for planners and practising professionals working in other sectors when dealing with water resources development and should be used together with the Guidelines on Strategic Planning and Management of Water Resources, published by ESCAP in 2004.

2. Establishment of the Asia-Pacific Water Forum

In March 2006, the Japan Water Forum in cooperation with ADB and ESCAP initiated the establishment of the Asia-Pacific Water Forum at the Fourth World Water Forum in Mexico City. Subsequently, ESCAP was requested to act as the Team Leader for regional efforts on monitoring of investment and results as part of the preparation for the First Asia-Pacific Water Summit, which took place in Beppu, Japan in December 2007. Since then, ESCAP continued to promote regional cooperation, especially among developing countries, in strengthening monitoring of investment and results to provide essential information for more effective formulation of water resources policies and strategies.

3. Sanitation and South-South Cooperation

Today, more than half of the people of the region have access to improved sanitation facilities. However, this impressive performance still leaves a staggering 1.76 billion people without adequate sanitation. In fact, compared to other regions, the Asia-Pacific region has the largest number of people who have yet to gain access to basic sanitation. Resource allocation for sanitation in many Asian countries has been far from adequate, and what resources are available benefit the rich more than the poor. Consequently, the most vulnerable and marginalized populations in urban and rural areas suffer the worst forms of deprivation and the greatest burdens of disease.

In order to reverse this plight, countries in the Asia-Pacific region have a lot to learn from regional "leaders" in implementing programmes and projects to improve sanitation. The rise of newly industrializing and other middle-income countries offers opportunities for low-income countries to learn from experience that are more relevant to their cultural and development realities. For example, the Saemaul Undong Movement in the Republic of Korea, which was promoted as a government-led campaign, focused on improving living environments. Lessons learned from this initiative can be disseminated in other ESCAP member countries through South-South Cooperation mechanisms. In Thailand, 98.74% of all households have secured access to adequate sanitation. This impressive performance is a result of investments and campaigns that could be replicated in other ESCAP countries.

Successful examples can be drawn not only from industrialized and middle-income countries, but also from low-income ones. The Community-Led Total Sanitation & hygiene (CLTS) initiative, first implemented in Bangladesh, has already been replicated in countries like Nepal and Indonesia. Similar good practices should be disseminated across the region, to help achieve the MDG target on sanitation at the country, but also at the regional level. Regional organizations can play a key role in disseminating these good practices and providing appropriate research and capacity-building activities to national governments.

Furthermore, in promoting sanitation, regional organizations need to involve the private sector. South-South financial flows already weigh significantly in the national accounts many low-income countries. Usually driven by opportunities in larger markets or by natural resources abundance, Public-Private Partnerships (PPPs) in foreign countries could expand to water supply and sanitation service delivery, if the right incentives are provided. Small Scale Independent Providers (SSIPs) also have a key role to play in water supply and sanitation service delivery, particularly as governments face fiscal pressures from various sources. Regional organizations should advocate for higher private sector participation, within and across borders, and bring actors together to facilitate knowledge sharing.

In response to these imperatives, as the target year 2015 is fast approaching, ESCAP is proposing a series of activities that will further encourage member countries to work together towards achieving the MDG on sanitation (Project proposal on: "Promotion of Sanitation and Hygiene in Asia and the Pacific Region: Towards meeting MDG 7-Target 10"). The good progress already made towards enhancing

awareness, encouraging Governments to review policies and strategies on sanitation and mobilizing communities to change sanitation and hygiene practices, needs to expand to all countries of the region through South-South Cooperation.

4. Water resources management in the context of the Green Growth approach

As economies grow and population increases rapidly in Asia and Pacific region over last decades, developing countries face increasing demand of water resources, increasing acute water scarcity and serious socio economic impact of water related disasters, thereby threatening the sustainability of socio economic development efforts. The emerging lack of adequate availability of water resources is increasingly recognized as a major focus in the common efforts for socio-economic development to improve the quality of life in the region. Against this background, climate change casts gloomy expectation for its adverse serious impacts on water system, including water infrastructure, and particularly on the poorest and the most vulnerable countries in the region.

Under these circumstances, one of the most efficient ways to tackle these issues is to increase efficiency of water infrastructure management. Promoting the eco efficiency in water infrastructure could play a central role in terms of defining the overall objectives of development, which must include not only socio-economic benefits, but also sustainability of the efforts on infrastructure development. In other words, development efforts must contribute to sustainable economic growth, social improvement and environmental management.

In this connection, it is required to pursue socio-economic development through eco-efficient management of water infrastructure as opposed to the traditional approach focusing mainly on water supply management (e.g. the building of new dams, reservoir, hydropower plants, water distribution networks, and other water facilities). Although traditional approach to water management is important to maintain a safe and reliable water infrastructure, it is necessary to consider water management beyond physical infrastructure and take into account social infrastructure.

However, a new approach such as the development and application of eco-efficient water infrastructure requires different perspectives and considers other disciplines, including social sciences, economics, psychology, sociology and education, as well as special expertise and capacity to design and implement a long-term and comprehensive demand perspective programmes. Moreover, this new paradigm also requires strong collaboration among developing countries to share knowledge, experiences and good practices, as well as between donor countries and recipient countries to financial resources and transfer of technology and knowledge.

In this regard, there is an urgent need for raising awareness, building capacities and setting of clear goals and guidelines for social water infrastructure through training activities targeting at government officials, policymakers and other key stakeholders. In response to these imperatives, the Water Security Section of ESCAP took the initiative to promote the eco efficient water infrastructure in the region through south – south cooperation. ESCAP mobilized resource from Government of Korea to implement the project on "the Development of Eco Efficient Water Infrastructure for the Sustainable Development in Asia and the Pacific"

The project aims to build capacity of policy and decision makers for the development and implementation of a long-term, comprehensive policy framework and action plan for development of eco-efficient water infrastructure. Specifically, this initiative will focus on the promotion of South-South Cooperation between countries through the exchanges of knowledge, experiences, good practices, lessons learned and even resource mobilizations.

ESCAP, in close collaboration with developed and developing countries, has implemented following key activities; (1) identification, assessment and recommendation of country specific needs for institutional strengthening and capacity building; (2) development and organization of capacity building activities taking into account ESCAP's regional focus and gender concerns; (3) design and implementation of a pilot project to introduce and apply appropriate policy options in a selected country or city; and (4) development and dissemination of communication materials to raise awareness. ESCAP water prize for eco-efficient management of water resources will be established as a mechanism for capacity building, technology transfer and awareness raising among developing countries.