

# Delivering Access to Safe Drinking Water & Adequate Sanitation in Pakistan

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# Introduction

- ❑ Provision of safe drinking water, adequate sanitation and personal hygiene are vital for the sustainable environmental conditions and reducing the incidence of diarrhoea, malaria, trachoma, hepatitis A & B and morbidity levels.
- ❑ Not having access to water and sanitation is a courteous expression for a form of deprivation that threatens life, destroys opportunity and undermines human dignity.

# Introduction (Contd.)

- ❑ Thus, investing in the provision of safe water supply and adequate sanitation is not only a development oriented strategy in itself, it can also yield other socio-economic benefits in terms of improved health status, quality of labour force and reduced burden-of-disease.
- ❑ Water and Sanitation (WATSAN) is the neglected sector in Pakistan. Most of the households in Pakistan do not have access to safe drinking water and lack toilets and adequate sanitation systems.

# Introduction (Contd.)

- ❑ As of 2005, approximately **38.5** million people lacked access to safe drinking water source and approximately **50.7** million people lacked access to improved sanitation in Pakistan.
- ❑ By year 2015, if this trend continues, **52.8** million people will be deprived of safe drinking water and **43.2** million people will have no access to adequate sanitation facilities in Pakistan.

# Research Focus

- ❑ It is not to calculate what percentages of population have access to a particular service so far and how much numbers of beneficiaries will be added by year 2015; it is to investigate that even if we meet the national and/or regional targets in Pakistan, how much population will still be deprived of these most basic human needs.
- ❑ Access to Improved Facility Concept
- ❑ Coverage Projections (2015)
  - ❑ Access to WATSAN
  - ❑ Financing the WATSAN Sector
  - ❑ Linking Access to Public Expenditure

# Literature Review

- ❑ Consumption of contaminated drinking water, improper disposal of human excrete, lack of personal and food hygiene and improper disposal of solid and liquid waste have been the major causes of many diseases in developing countries
- ❑ A direct relationship exists between water, sanitation, health, nutrition, natural environment and human well being. We are made of water, more or less: 70 percent of our tissues and 55 percent of our blood; moreover, two-third of the planet's surface is covered by water. Thus to control water is to control life  
(Total Sanitation in India, 2006)

# WATSAN and Hygiene links to Health

- ❑ Disease is usually to do with poor hygiene and failure to confine wastes containing dangerous bacteria. Safe disposal of excreta and hygienic behaviors are essential for the dignity, status and well-being of every person, be they rich or poor, irrespective of whether they live in rural areas, small towns or urban centers.
- ❑ The available literature on the health, impact of safe drinking water and environmental sanitation indicates that access to piped water and presence of latrine in a household have direct benefits of lowering infant and child mortality and reducing exposure to water-borne diseases (PIDE-UNICEF, 2002)



# WATSAN and Hygiene links to Health

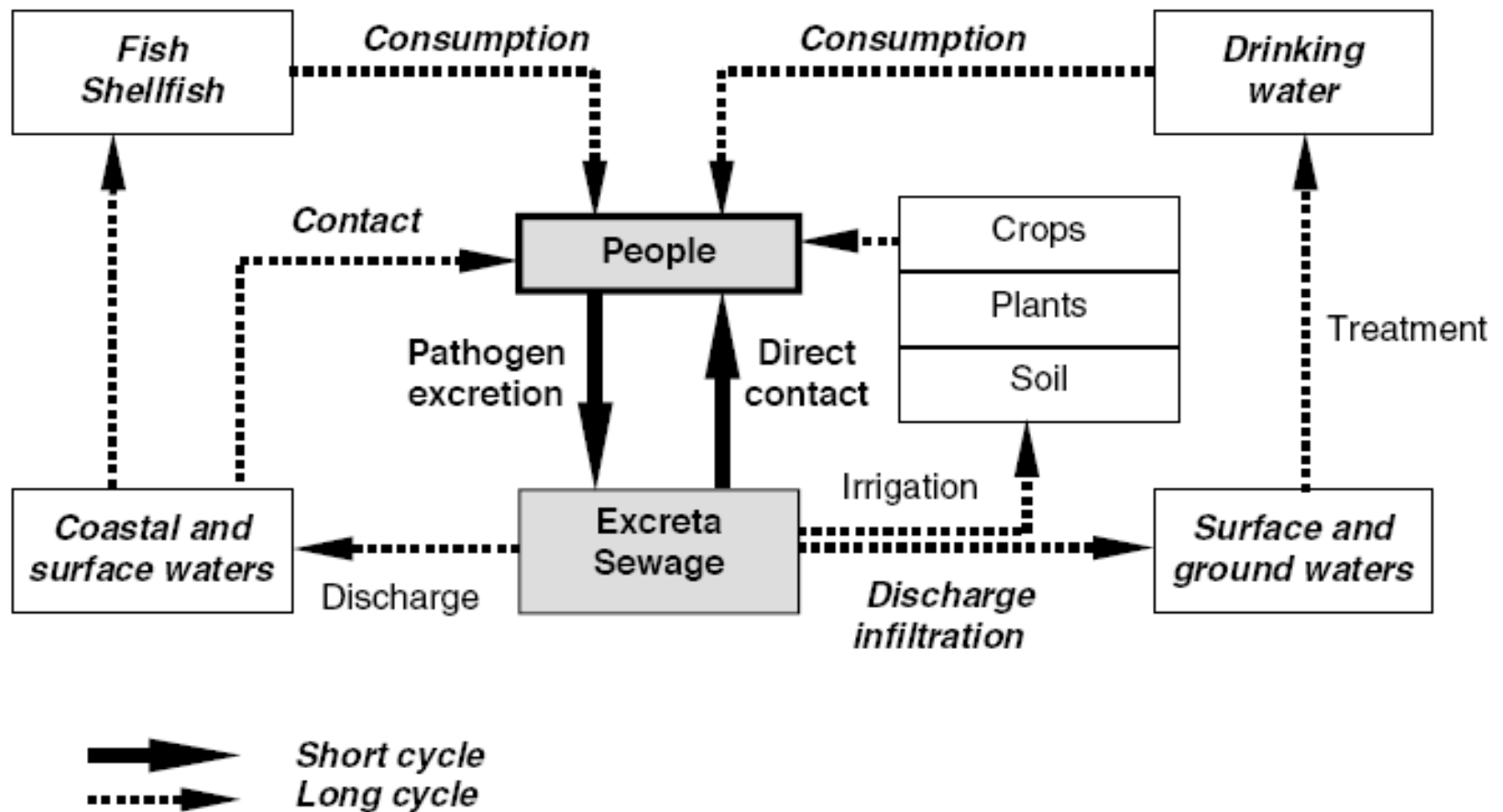
- ❑ According to the World Health Organization (WHO), **1.8** million people die every year from diarrhoeal diseases (including cholera); 90 percent are children under 5, mostly in developing countries. 88 percent of diarrhoeal disease is attributed to unsafe water supply, inadequate sanitation and hygiene.
- ❑ **1.3** million people die of malaria each year, 90 percent of whom are children under 5.
- ❑ **500** million people are at risk from trachoma.
- ❑ **133** million people suffer from high intensity intestinal infections (i.e. ascariasis, trichuriasis, hookworm) disease, which often leads to severe consequences such as massive dysentery, or anaemia.
- ❑ There are **1.5** million cases of clinical hepatitis 'A' every year

# WATSAN and Hygiene links to Health

- ❑ Hygiene interventions in the WATSAN sector, including hygiene education and promotion of hand washing, can lead to:
  - ❑ a reduction of diarrhoeal cases by up to 45 percent;
  - ❑ improvements in drinking-water quality through household water treatment, such as chlorination at point of use, can lead to a reduction of diarrhoea episodes by 35 to 39 percent;
  - ❑ better management of water resources reduces transmission of malaria and other vector-borne diseases;
  - ❑ basic sanitation reduces the schistosomiasis disease by up to 77 percent; and, improving access to safe water sources and better hygiene practices can reduce trachoma morbidity by 27 percent.

(World Health Organization, 2004)

# Main Pathways of Human Exposure to Pathogens in the Aquatic Environment



# WATSAN Quantity & Quality Issues

- ❑ It is essential to recognize that every human being living on this planet earth has access to water except in emergency situations.
- ❑ But, the issue is, how much water is available on per-capita consumption basis and whether it safe or unsafe for human health?
- ❑ Same for the sanitation, as poor or no-sanitation is dangerous for human health and that poor hygiene practices, due to non-availability of adequate sanitation facilities, cause a number of diseases and illness, increase environmental problems and deteriorates the water quality due to improper disposal of waste-water and solid waste.

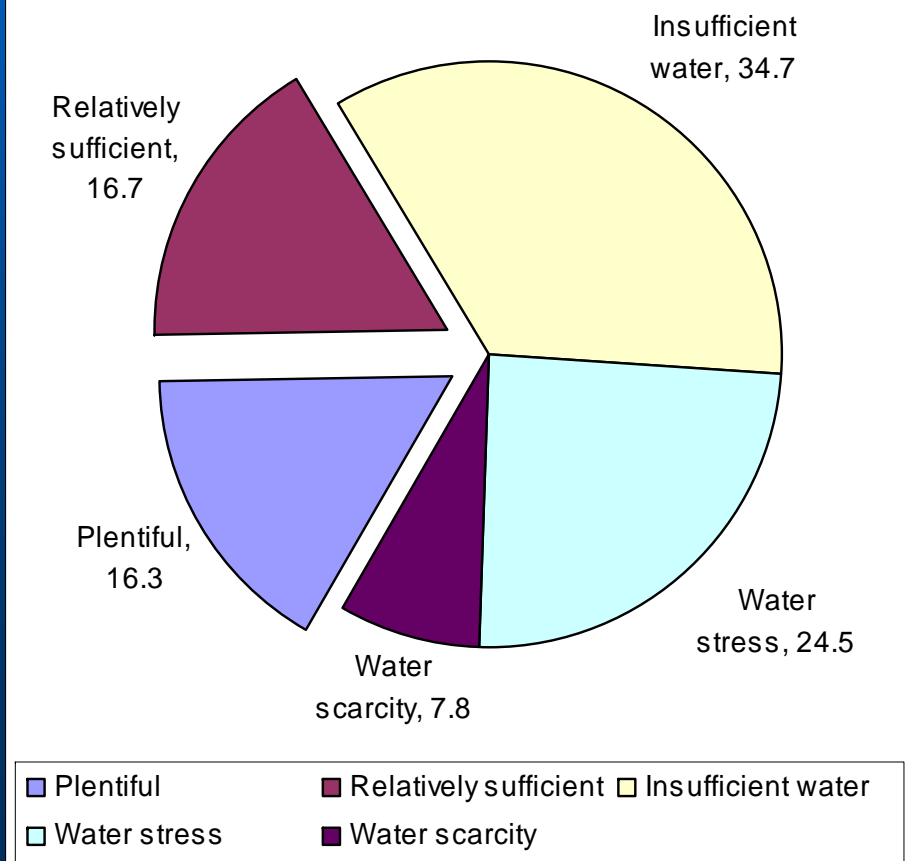
# WATSAN Quantity & Quality Issues

Sufficiency and insufficiency (quantity) availability of water to the world's population

➤ Only **33** percent (*16.7 relatively sufficient and 16.3 plentiful*) of the total world's population has sufficient access to water against **34.7** percent insufficient access, **24.5** percent facing water stress, and **7.8** percent world's population is under water scarcity.

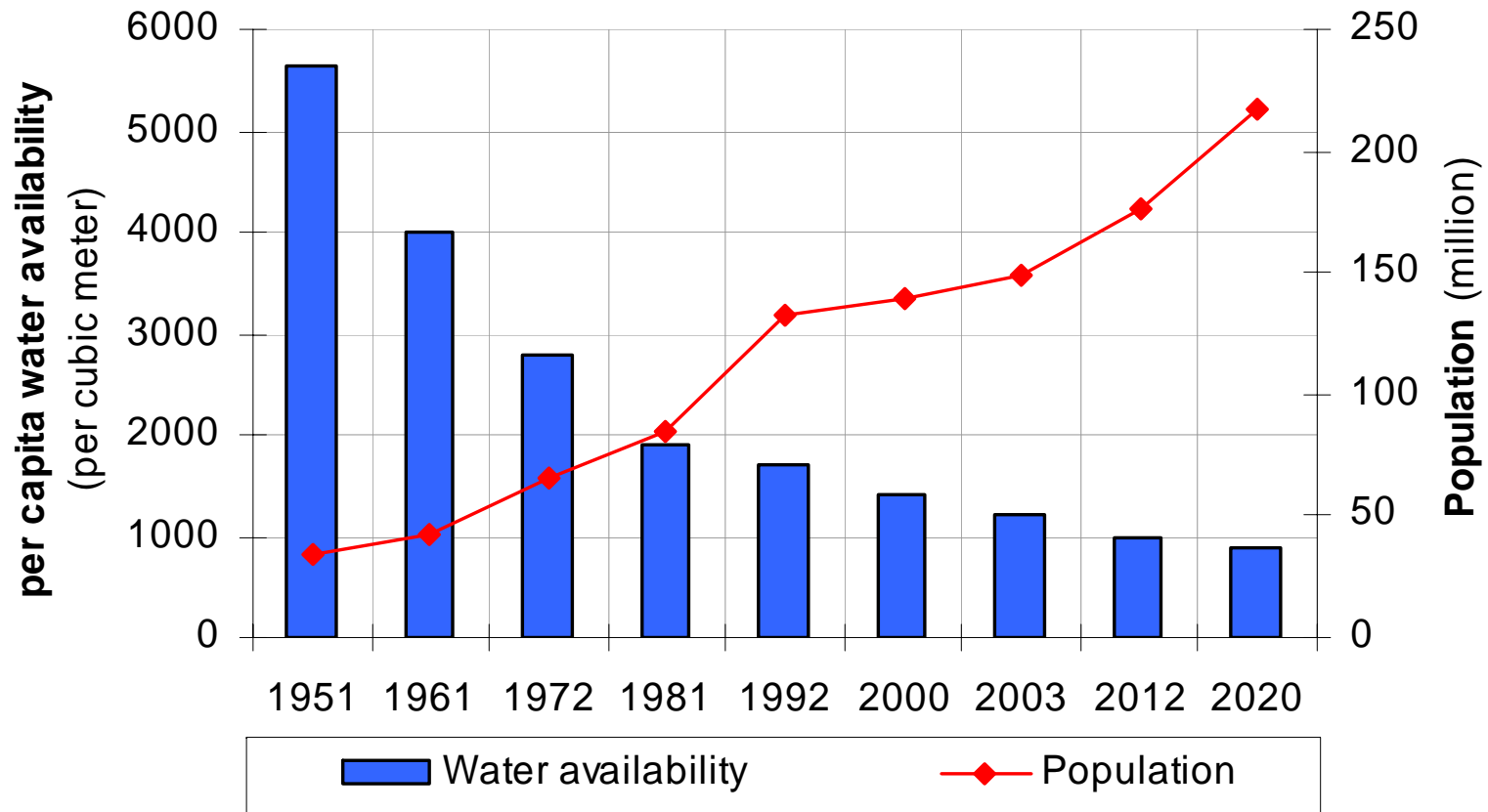
Source: Robin Clarke and Jannet King (2004)

Figure 2: Percentage of the World's Population with Different Water Availability (2000)



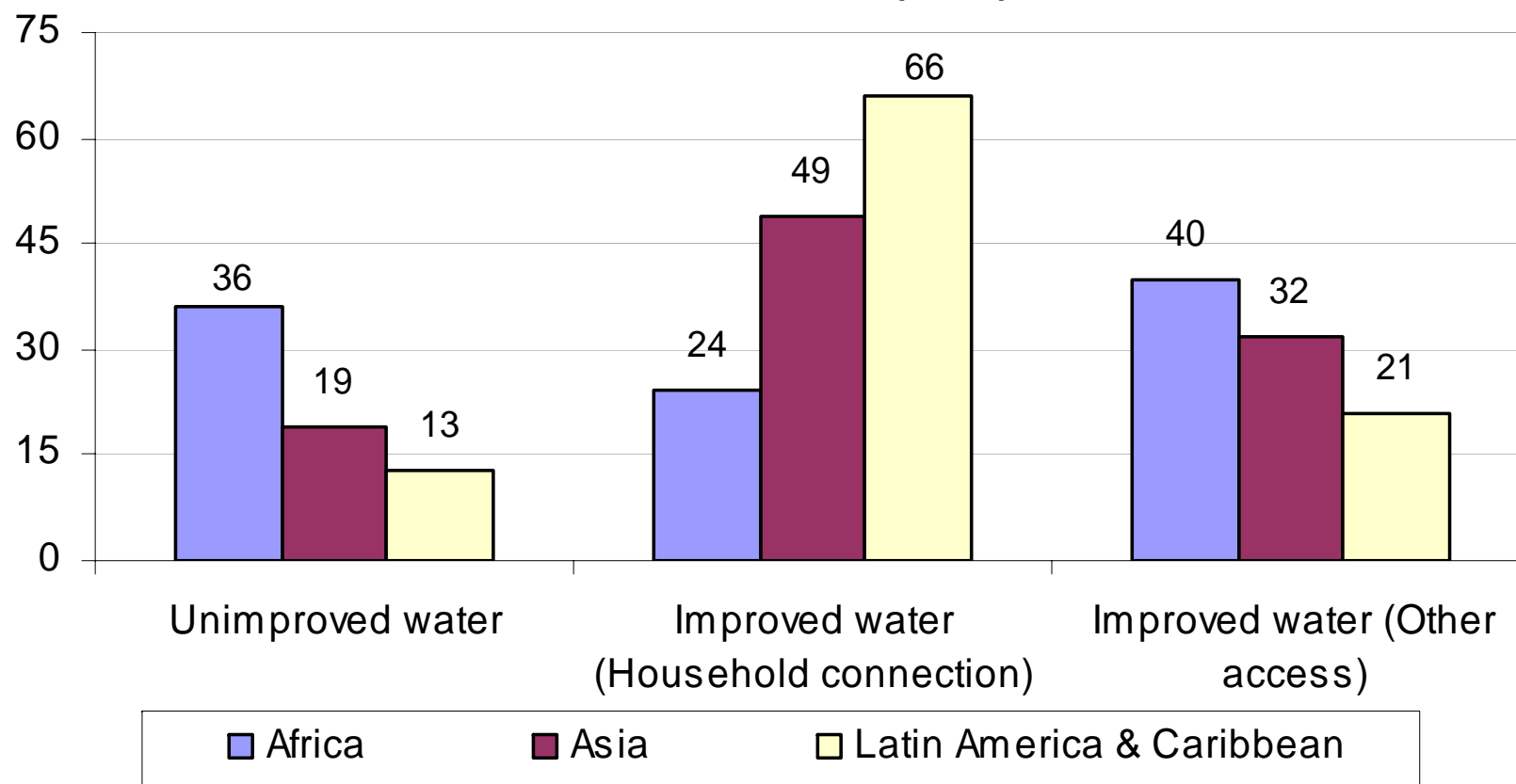
# WATSAN Quantity & Quality Issues

Figure 3: Water Availability versus Population Growth



# WATSAN Quantity & Quality Issues

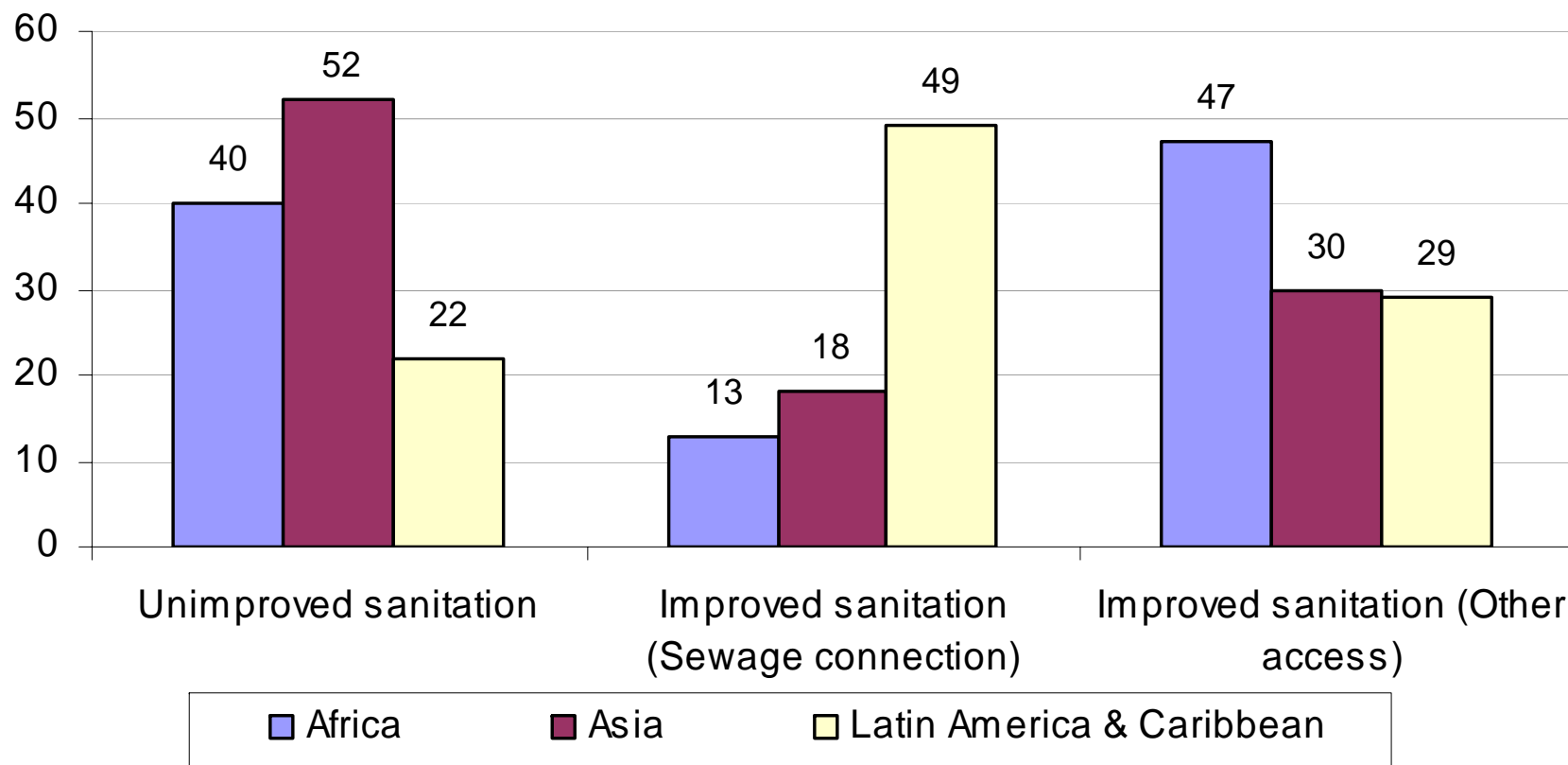
**Figure 4: Percentage of Population by Type of Access to Water (2000)**



Source: UNICEF, State of the World's Children (2004)

# WATSAN Quantity & Quality Issues

**Figure 5: Percentage of Population by Type of Access to Sanitation (2000)**

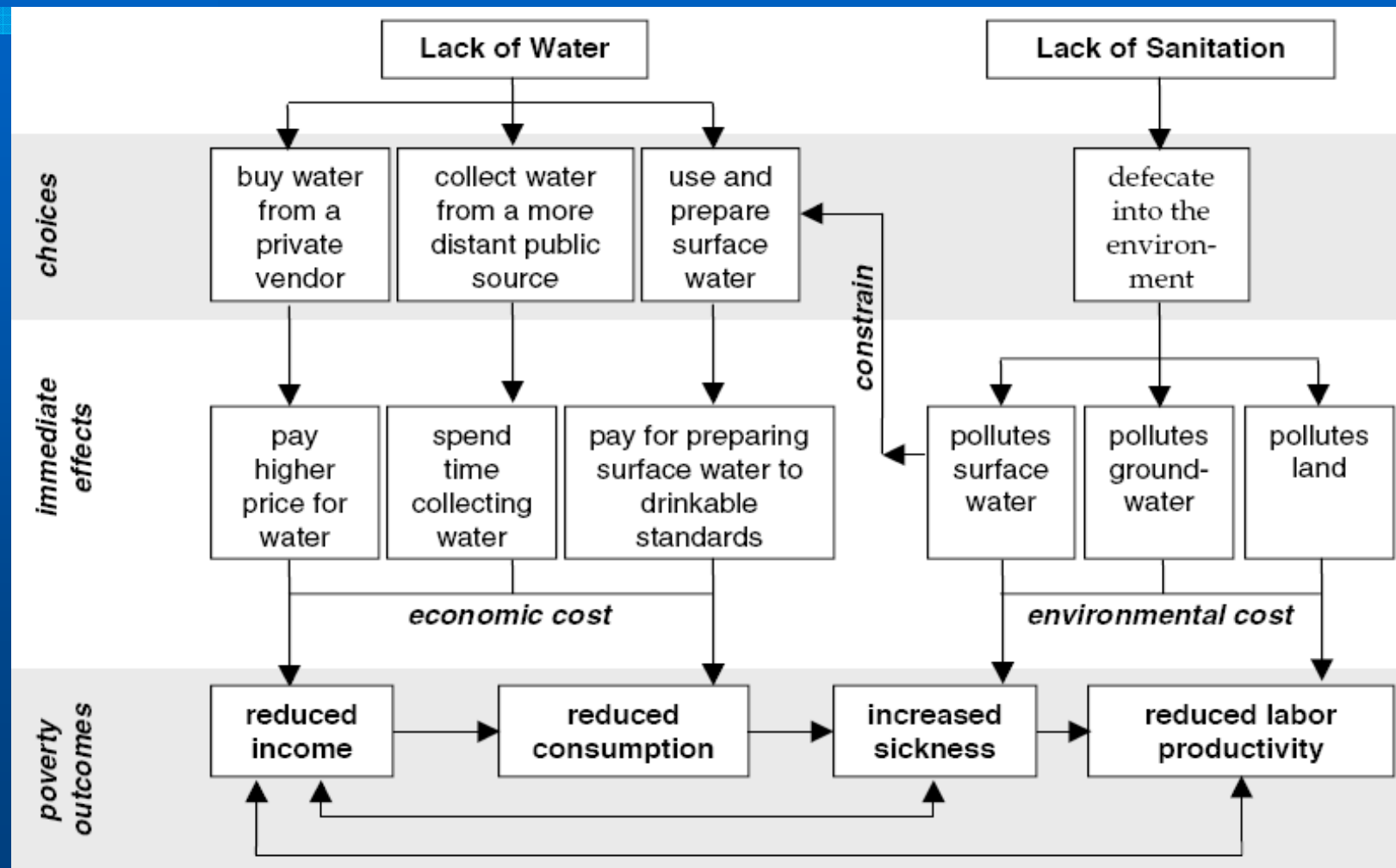




# Income and Consumption Effects

- ❑ Inadequate WATSAN services to the poor increase their living costs, lower their income earning potential, damage their well-being, and make life riskier.
- ❑ Lack of water and sanitation infrastructure has complex effects on income and consumption of a household, which deeply influence people's overall well-being

# Income and Consumption Effects

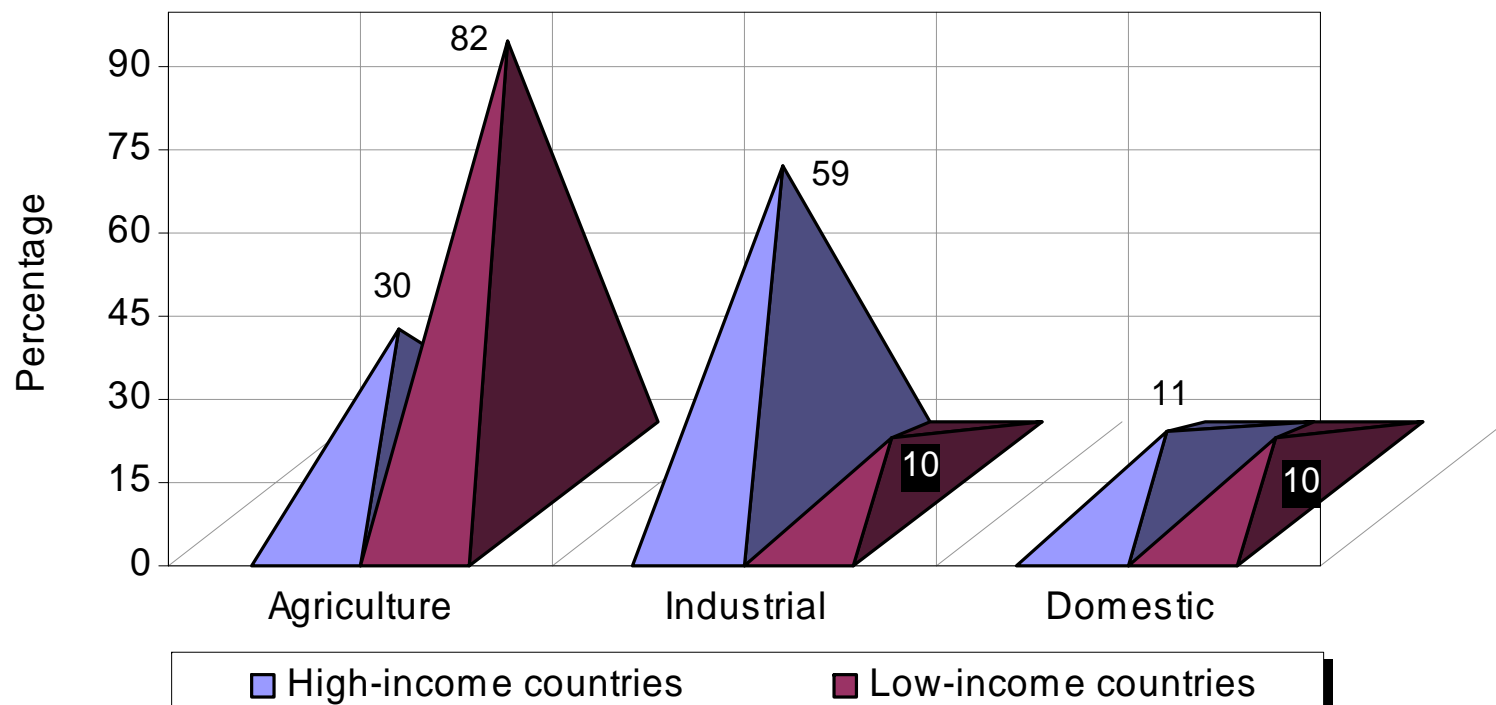


# Water Consumption Patron

- ❑ Growing populations, especially in developing countries, are an important factor in water stress.
- ❑ **500** million people were living in countries chronically short of water in 2000.
- ❑ By 2050, the number is expected to rise by **4** billion, around 40 percent of the world population. Consumption of water in industry, agriculture and domestic use is also rising.
- ❑ In 1900, around **350** cubic meter water was used per head; by 2000, this had risen to **642** cubic meter.
- ❑ At present, agriculture remains much the highest user of water with a global average of **70** percent, but industrial water use is much higher in higher-income countries and is proportionately rising

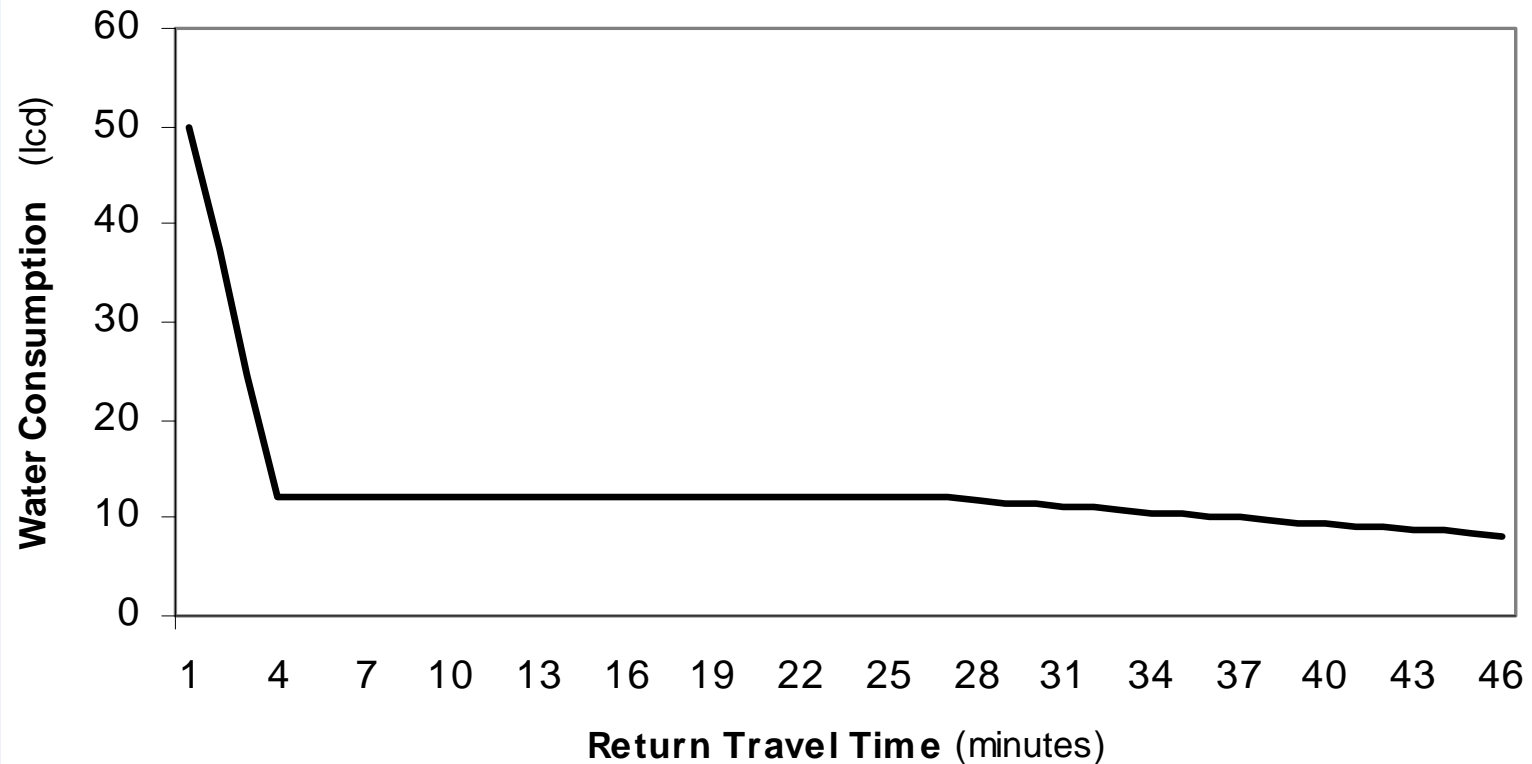
# Water Consumption Patron

Figure 7: Competing Water Users (2003)



# Water Consumption Patron

**Figure 8: Water Consumption versus Travel Time**



# WATSAN and the MDGs

- ❑ The Johannesburg World Summit on **Sustainable Development** announced a wide range of commitments underlining WATSAN.
- ❑ The UN General Assembly announced the year 2003 as the **International Year of Freshwater**
- ❑ Moreover, UN declares (2005-2015) Water for Life as the **International Decade for Action** and sets the world agenda on a greater focus on water-related issues
- ❑ The **UN Millennium Summit**, in September 2000, world leaders affirmed their commitment to work on time-bound and measurable agenda envisaging goals and targets for combating poverty and hunger, disease, illiteracy, gender discrimination and environmental degradation

# WATSAN and the MDGs

- ❑ **Goal 7 – Target 10:** Halve by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation; proportion of the population with sustainable access to an improved water source.
- ❑ **Goal 7 – Target 11:** Have achieved by 2020, a significant improvement in the lives of at least 100 million slum dwellers. Proportion of the population with access to adequate sanitation facilities; to halve by 2015, the proportion of the population who do not have access to basic sanitation.
- ❑ **Goal 4 – Target 5:** Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.
- ❑ **Goal 6 – Target 8:** Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

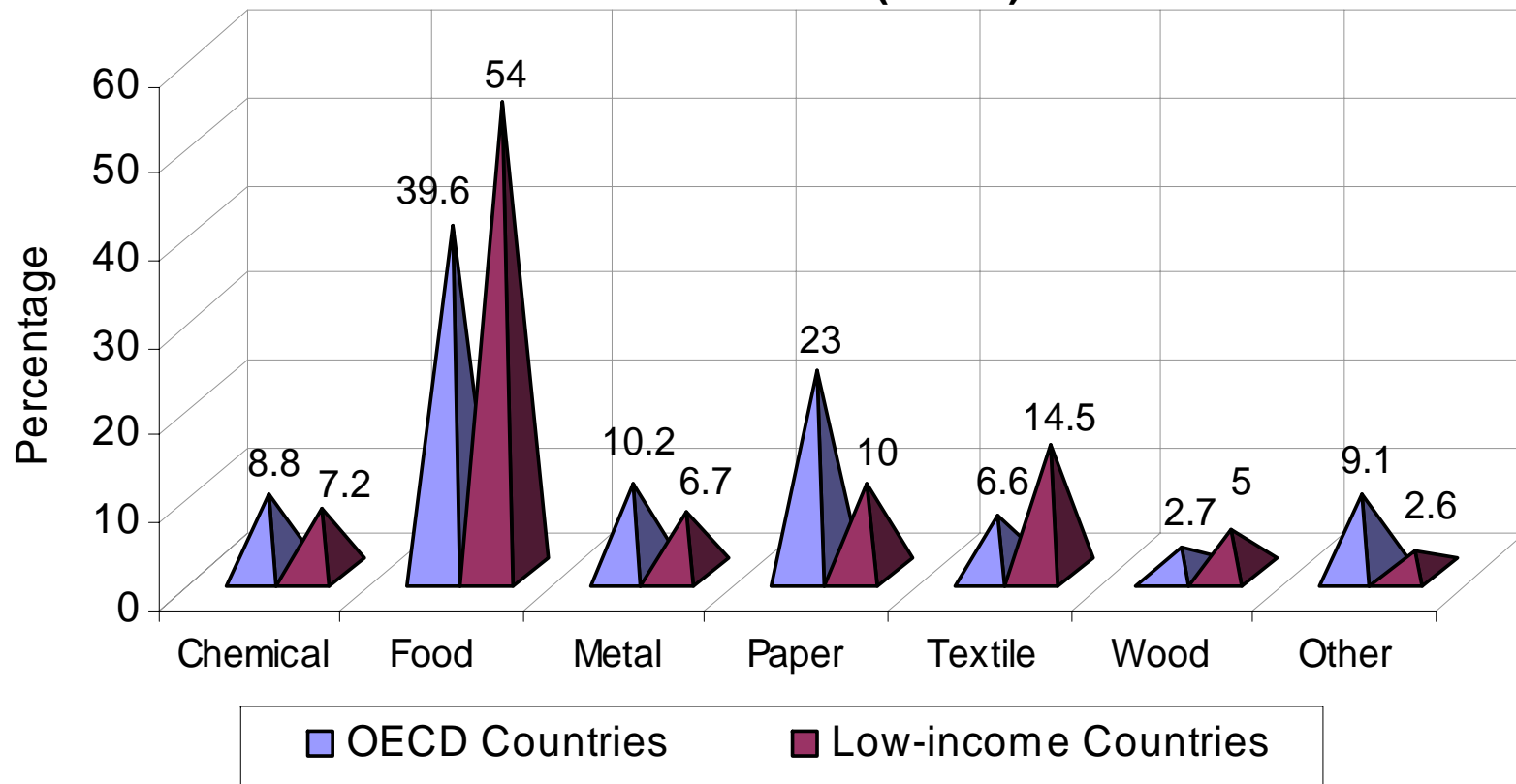
# Neglected Sub-Sectors

- ❑ Untreated Waste Water
- ❑ Poor Solid Waste Management
  - ❑ Most of the waste-water is not treated and with the expansion of urban settlements without waste-water-treatment facilities, it will continue to adversely impact the natural environment and public health. Worst impact is evident in areas which are close to industrial sites.
  - ❑ Many substances are discharged by industries into the worlds' rivers, lakes and aquifers, using up the vital oxygen in the water. Worldwide, 300-500 million tons of heavy metals, solvents, toxic sludge and other waste accumulate in water sources.



# Neglected Sub-Sectors

**Figure 9: Share of Organic Water Pollutants by Industrial Sector (1990s)**



# Public Policy Review

- ❑ National Drinking Water Policy
  - ❑ Clean Drinking Water Initiative
- ❑ National Sanitation Policy
- ❑ National Environment Policy

# National Drinking Water Policy

- ❑ Water is a source of life creation and survival of mankind. However, it is the dilemma of our time that a major proportion of country's population is deprived from safe drinking water.
- ❑ Reports of WHO and Pakistan Council of Research in Water Resources (PCRWR) revealed that the water supplied to the citizens of many parts of the country is contaminated and harmful for human health. This situation could lead to pressure on government's health budget and on the Poor's out of pocket expenses.

# National Drinking Water Policy

- ❑ The policy highlights the constitutional responsibility of the provincial and local governments (town and tehsil municipal administration) to provide drinking water.
- ❑ The policy asserts provision of safe drinking water to the entire population at an affordable cost in an impartial, efficient and sustainable manner. It also ensures reduction in the incidence of mortality and morbidity caused by water borne diseases.
- ❑ The objectives of the policy is to provide supportive ground and legal framework that could facilitates sustainable access to and provision of safe drinking water.

# National Drinking Water Policy

- ❑ The guiding principle underlines the right to water for drinking takes precedence over rights to water for all other uses, such as, environment, agriculture, industry, etc.
- ❑ The policy highlights that the existing inequalities in the provision of safe drinking water desires to be removed and ensures participation of the vulnerable and poor in decision-making for the sector at all levels; recognizing the key role that women and community plays.
- ❑ Moreover, the document also provides a financial framework within which the provision of water supply can be undertaken in a cost-effective, equitable and sustainable manner and that water treatment will be an integral part of all drinking water supply schemes.

# National Drinking Water Policy

- ❑ A set of policy instruments and strategies is also discussed to achieve the objectives of the drinking water policy. The core strategic thrust of the policy emphasizes on:
  - a) Targeting strategy
  - b) Legislative strategy
  - c) Protection of water resources
  - d) Institutional strategy
  - e) Technical strategy
  - f) Operation and maintenance (O&M) strategy
  - g) Drinking water quality standards
  - h) Water quality monitoring and surveillance
  - i) Gender strategy
  - j) Communication and dissemination strategy
  - k) Financial strategy
  - l) Monitoring and evaluation (M&E) strategy, and
  - m) Research strategy (for improved implementation and better outcomes)

# National Drinking Water Policy

## □ ***Clean Drinking Water Initiative (CDWI)***

- CDWI taken on part by the federal government with the assistance of provincial and local governments with an objective to provide clean drinking water to the community at large.
- The CDWI mega-scheme will provide water purification plants of 2000 gallons/ hour capacity in all Towns/Tehsils of Pakistan.
- In total 445 purified plants shall be installed in all Tehsils of the country, i.e., 54 in NWFP, 127 in Punjab, 131 in Balochistan, 92 in Sindh, 1 in Islamabad, 18 in AJK, 11 in FANA, and 13 in FATA.
- The Provincial/Local government departments will identify places where these plants are to be installed in the provinces keeping in view the criteria for site/location selection for public places.
- CDWI project will be completed in five years time, i.e. 2009.

# National Sanitation Policy

- ❑ Sanitation is one of the important indices for socio-cultural development of any country.
- ❑ Better sanitation results in improvement of health, reduced child mortality, improved water quality, household welfare, environment and economic growth of a country.
- ❑ Sanitation in this context refers to the immediate household and community need for human excreta management required for privacy, healthy living conditions and a clean environment.
- ❑ On a wider scale, it also encompasses wastewater and solid waste collection, treatment and disposal.



# National Sanitation Policy

- ❑ The prime objective of the sanitation policy aims at improving the quality of life of the people and their physical environment.
- ❑ For its achievement the strategy focuses on: ensuring an open defecation free environment; safe disposal of liquid and solid waste; and the promotion of health and hygiene practices to compliment the desired objective.
- ❑ To implement the primary objectives the policy envisages developing guidelines for the evolution of an effective institutional and financial framework and to link sanitation programs with environment, housing, water, and city and regional planning policies and programs.

# National Sanitation Policy

- ❑ For sustainable development, the national sanitation policy encourages mobilizing local resources and discourages foreign loans.
- ❑ It also supports programs that are implementable within available resources and enhanced capacities of institutions and communities.
- ❑ It also supports and accepts the role that communities, NGOs, and the formal and informal sectors are playing in the sanitation provision.
- ❑ The policy principles put emphasize to develop and use technologies which are simple and cost effective to install and maintain, and ensures the involvement of the O&M responsible departments/agencies in the planning of sanitation schemes.
- ❑ It also gives priority to the needs of women and children at all levels of planning and implementation and considers sanitation as a fundamental human right

# National Sanitation Policy

- ❑ The sanitation policy document offers policy measures which highlights:
  - a) Cross sectoral issues
  - b) Government vertical programs
  - c) Adoption of the component sharing model
  - d) Effluent quality monitoring
  - e) Capacity building
  - f) Awareness and education
  - g) Public toilets
  - h) Public-private partnerships
  - i) Urban and rural sanitation
  - j) Water efficient system, and
  - k) Consultations/communication

# National Environment Policy

- ❑ The national environment policy provides an overarching framework for addressing the environmental issues facing Pakistan, particularly pollution of fresh water bodies and coastal water, air pollution, lack of proper waste management, deforestation, loss of biodiversity, natural disasters and climate change.
- ❑ The strategy aims to conserve and regain Pakistan's natural environment in order to improve the citizen's quality of life through sustainable development.

# Delivering Access to WATSAN

- ❑ Global Water Status Review
- ❑ Global Sanitation Status Review
- ❑ Delivering Access to WATSAN in Pakistan
  - ❑ *Delivering Access to Safe Drinking Water*
  - ❑ *Delivering Access to Adequate Sanitation*
  
- ❑ Safe drinking water and adequate sanitation are among the most powerful drivers for human development.
- ❑ They extend opportunity, enhance dignity and help create a virtuous cycle of improving health and rising wealth.

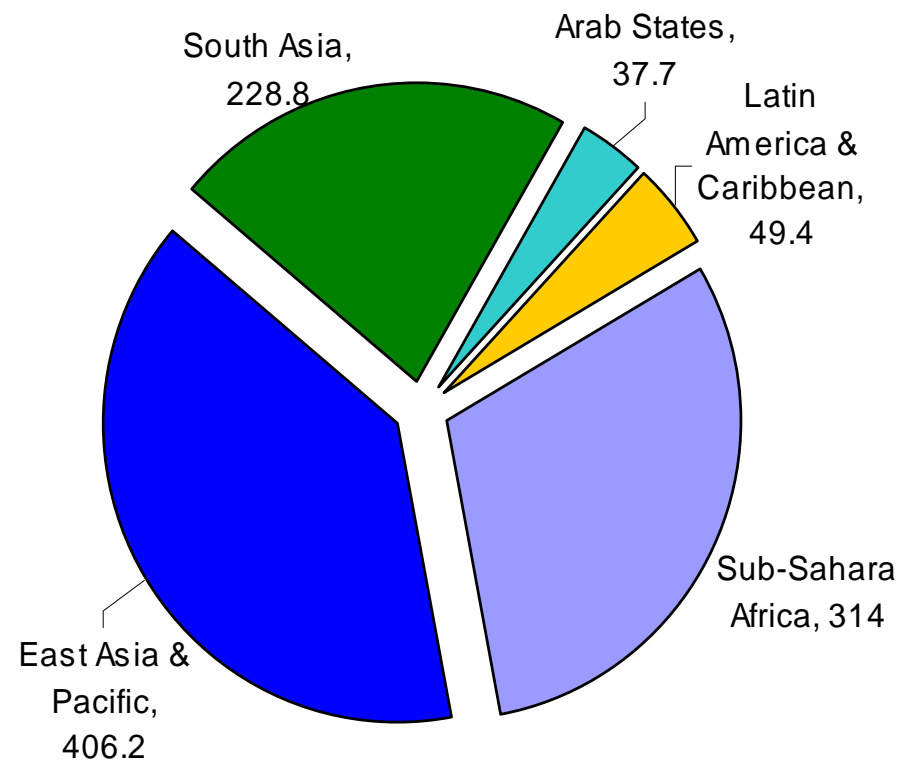
# Global Water Status Review

As of 2004, 1.1 billion people lacked access to improved water sources, which represented 17 percent of the world's population.

Of the total without improved water sources, 39 percent live in East Asia and the Pacific, 30 percent in Sub-Saharan Africa and 22 percent in South Asia.

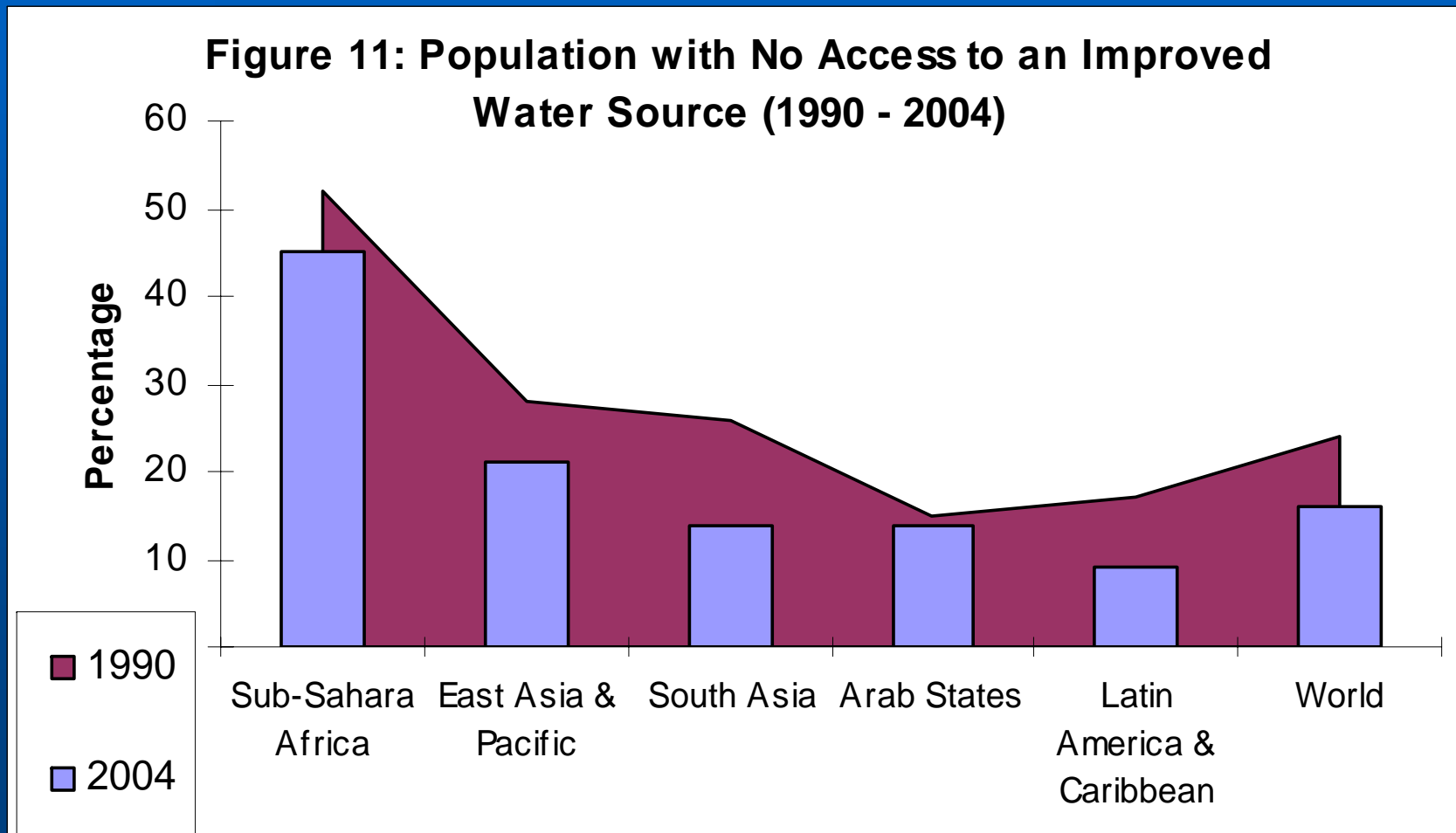
Source: HDR (2006)

**Figure 10: Population with No Access to Improved Water (million)**



# Global Water Status Review

**Figure 11: Population with No Access to an Improved Water Source (1990 - 2004)**



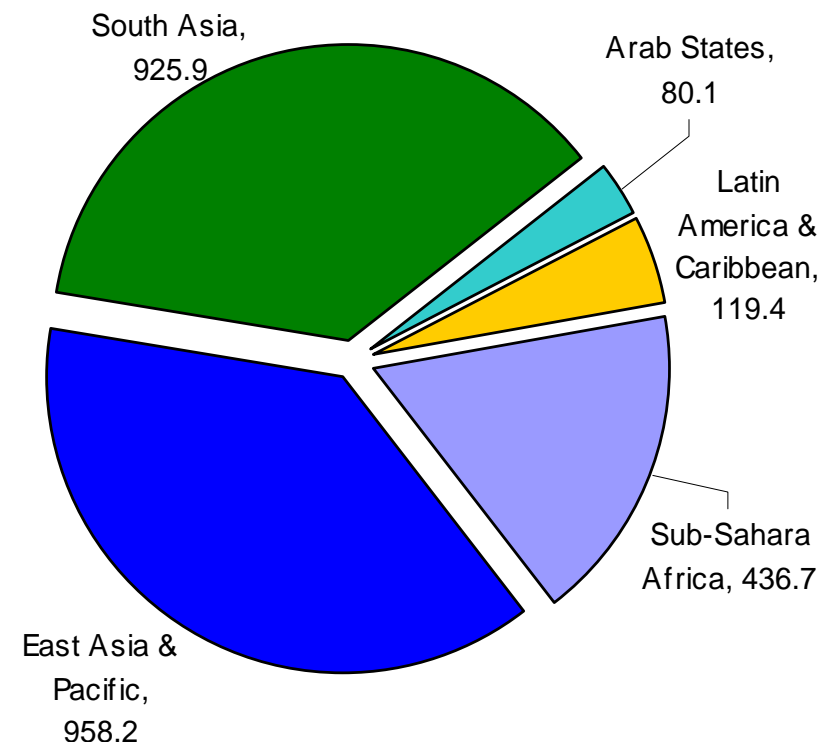
# Global Sanitation Status Review

As of 2004, 2.6 billion people lacked access to improved sanitation, which represented 42 percent of the world's population.

Of the total, with no access to improved sanitation, 38 percent live in East Asia and the Pacific, 37 percent in South Asia and 17 percent lack access to environmental sanitation in Sub-Saharan Africa

Source: HDR (2006)

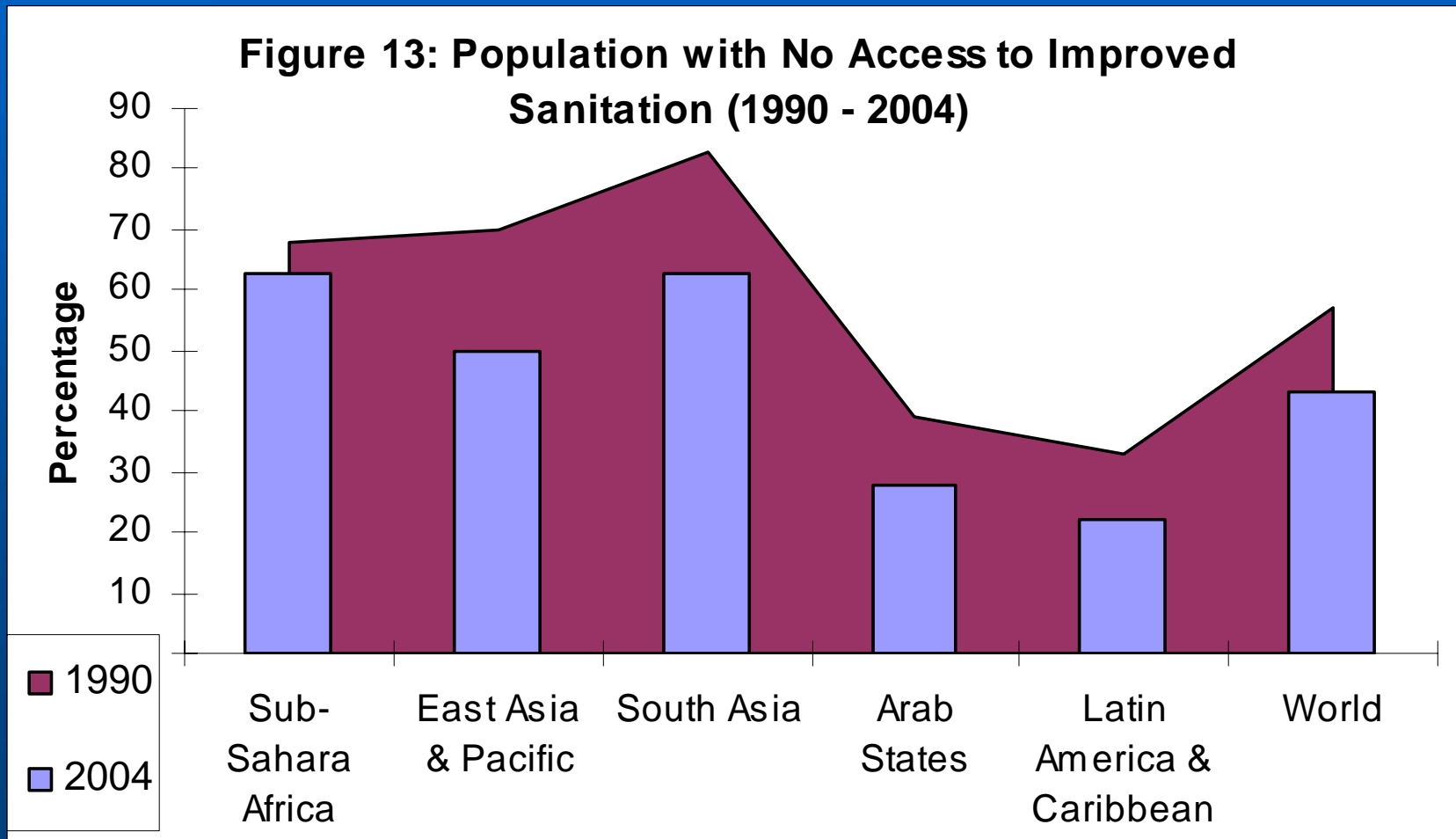
**Figure 12: Population with No Access to Improved Sanitation (million)**





# Global Sanitation Status Review

**Figure 13: Population with No Access to Improved Sanitation (1990 - 2004)**



# Global WATSAN Review

- ❑ The **Global Water Supply and Sanitation Assessment Report** (2000) report, of the **Joint Monitoring Program** for Water Supply and Sanitation (JMP), showed that, Asia and Africa are the regions where lack of access for both water supply and sanitation is highest
  - Of the total 1.1 billion people, lacked access to improved water supply, Asia and Africa alone accounted for **86 percent** of these (61 percent lived in Asia and 25 percent in Africa).
  - The JMP report also showed that about 2.4 billion people in the world lacked access to improved sanitation and Asia alone accounted for **79 percent** of it.

# Access to Safe Drinking Water (Pakistan)

## Main Source of Drinking Water by Province and Region

	Percentage								
	2001-02 PIHS			2004-05 PSLM			2004-05 PSLM (Redefined)		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
<b>Punjab</b>									
Tap Water	54	6	20	49	16	32	49	16	32
Hand Pump	16	69	54	15	52	34	15	26	26
Motor Pump	30	19	22	34	29	31	34	15	23
Dug Well	1	4	3	0	1	1	0	1	1
Other	0	2	1	2	3	2	-	-	-
<b>Sindh</b>									
Tap Water	67	4	30	71	20	45	71	20	45
Hand Pump	14	66	44	13	58	36	3	15	9
Motor Pump	11	4	7	10	3	6	5	2	3
Dug Well	1	14	9	2	8	5	1	2	1
Other	8	11	10	5	12	8	-	-	-
<b>NWFP</b>									
Tap Water	57	35	39	63	41	48	63	41	48
Hand Pump	7	11	10	8	11	10	8	11	10
Motor Pump	19	7	9	15	4	7	15	4	7
Dug Well	14	18	17	10	16	14	10	16	14
Other	3	29	25	3	28	20	-	-	-
<b>Balochistan</b>									
Tap Water	80	14	25	85	23	40	85	23	40
Hand Pump	2	1	1	2	4	4	1	2	2
Motor Pump	3	12	11	4	4	4	4	4	4
Dug Well	11	35	31	4	24	18	2	12	9
Other	5	38	32	6	45	34	-	-	-

**Redefined Improved Facility Concept** for water considers the region-wise safety levels.

*Tap Water* is considered to be cent- percent safe in all the regions and provinces; *Ground Water* is considered to be half- and/or quarter-percent safe in Sindh, Balochistan, and Rural Punjab, and *Other Sources* are considered 'not safe'.

# Access to Adequate Sanitation (Pakistan)

## Type of Toilet used by the Household by Province and Region

	2001-02 PIHS			2004-05 PSLM			2004-05 PSLM (Redefined)		
	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall
<b>Punjab</b>									
Flush	91	31	48	91	43	66	91	43	66
Non-Flush	2	2	2	2	7	5	1	3.5	2.5
No Toilet	7	68	50	7	50	30	-	-	-
<b>Sindh</b>									
Flush	91	17	48	88	17	51	88	17	51
Non-Flush	7	34	23	7	56	32	3.5	28	16
No Toilet	3	49	30	5	27	16	-	-	-
<b>NWFP</b>									
Flush	73	26	33	81	32	48	81	32	48
Non-Flush	23	38	36	13	36	28	6.5	18	14
No Toilet	4	36	31	6	32	24	-	-	-
<b>Balochistan</b>									
Flush	56	5	13	63	7	23	63	7	23
Non-Flush	38	39	39	33	48	44	16.5	24	22
No Toilet	7	57	48	4	45	33	-	-	-

Source: PSLM 2004-05

**Redefined Improved Facility Concept** for sanitation considers the technology-wise hygiene levels.

Flush is considered to be cent percent hygienic in all the regions and provinces; Non-flush is considered to be fifty-percent hygienic; whereas, No-Toilet facilities are considered zero-percent hygienic.

# Financing the WATSAN Sector

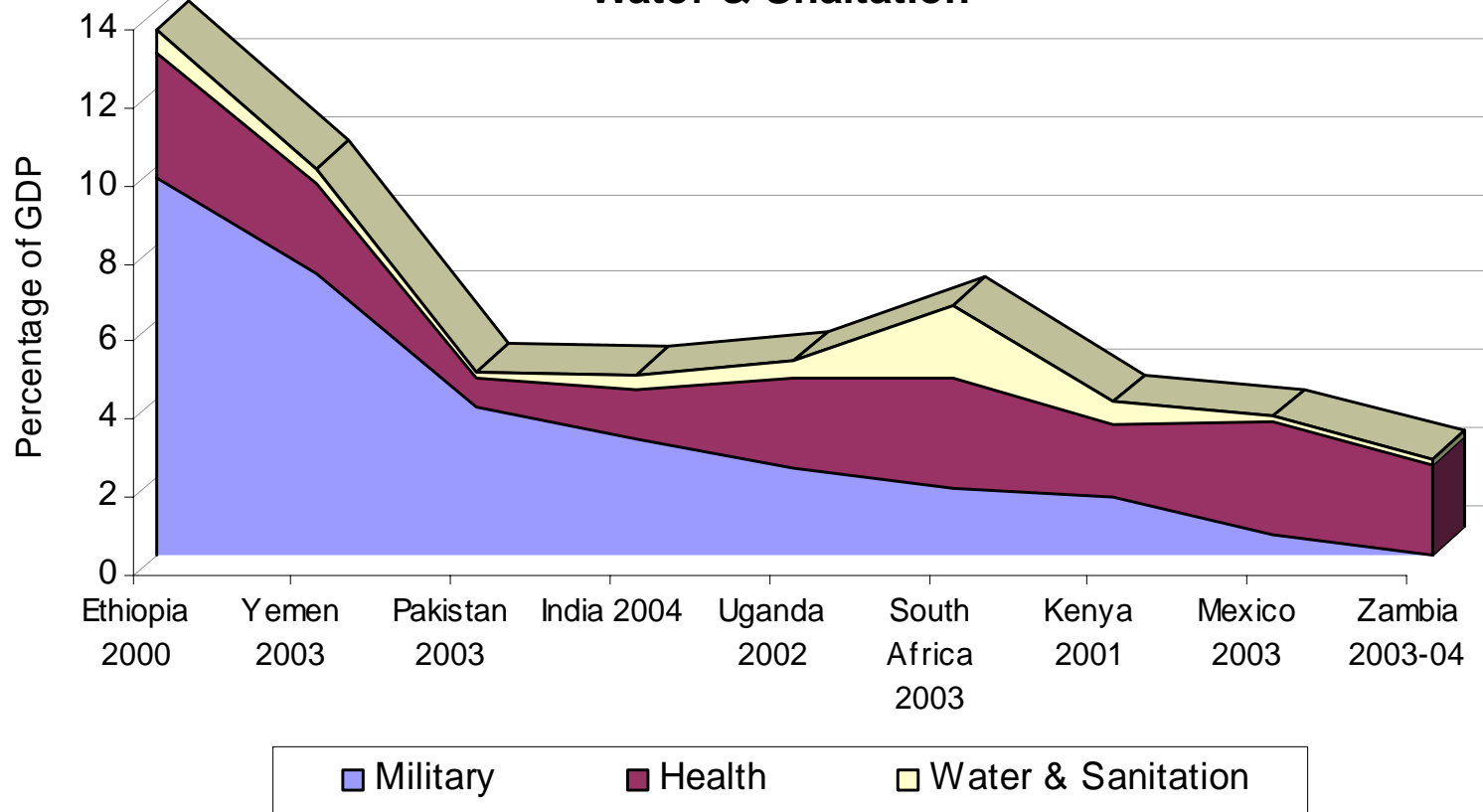
- ❑ Financing the WATSAN sector comprises three main components:
  - (a) Increased access requires new infrastructure and rehabilitation of non-functioning/ defective infrastructure;
  - (b) Sufficient fund must be made for O&M of new and existing infrastructure stocks, and finally,
  - (c) Finances are required for WATSAN sector development, including activities such as capacity building and awareness at community level, policy formulation and standard setting, and sector monitoring and regulation.

# Financing the WATSAN Sector

- ❑ Financing mechanism consists of three key channels through which the stakeholders play their productive role in the development process:
  - (a) Government/Public sector spending through budgetary and/or non-budgetary process,
  - (b) External economic assistance by the development partners, and
  - (c) Household self-financing through out-of-pocket expense

# Government Expenditure on WATSAN

**Figure 14: Government Expenditure on Military, Health and Water & Sanitation**

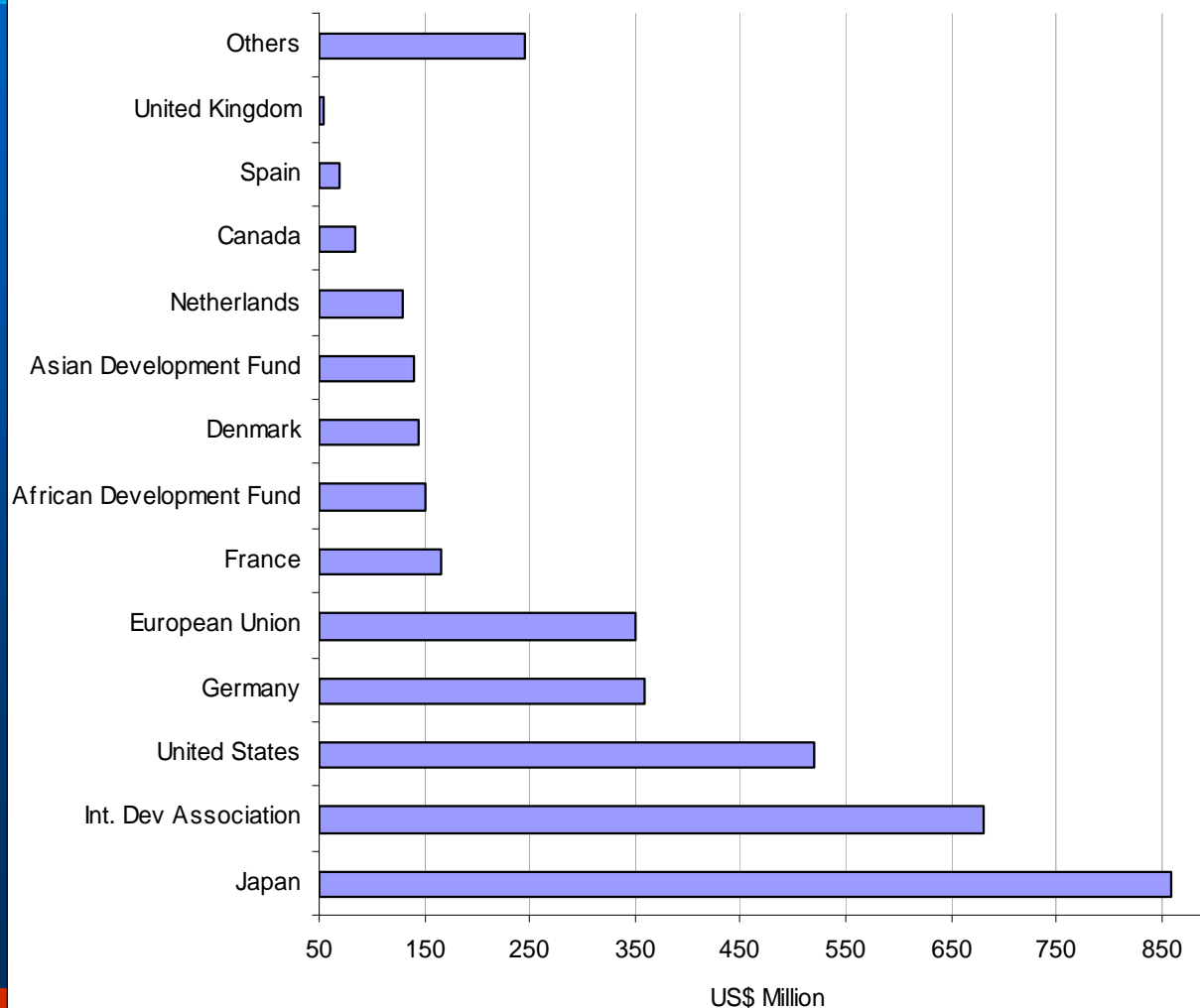


# Donor's Commitment to WATSAN

Taking out the large spike in development assistance for Iraq, total development assistance for water amounted to **US\$ 3.4 billion** in 2004; meaning that foreign assistance to the WATSAN sector has fallen as a share of overall development assistance, i.e., from 8 percent to 5 percent

Source: HDR (2006)

Figure 15: Donors' Commitment to Finance WATSAN





# Household Expense on Water

Inadequate WATSAN services to the poor increase their living costs, lower their income earning potential, damage their well-being and make life riskier.

Often the only choice for low-income household that has no/limited access to safe drinking water is to buy water from private sector vendors at a relatively high price. Sometimes even 100 times more than that provided by the public authorities

Source: Christophe Bosch, *et al* (2002)

## Ratio between Prices charged by Vendors and by Public Utilities

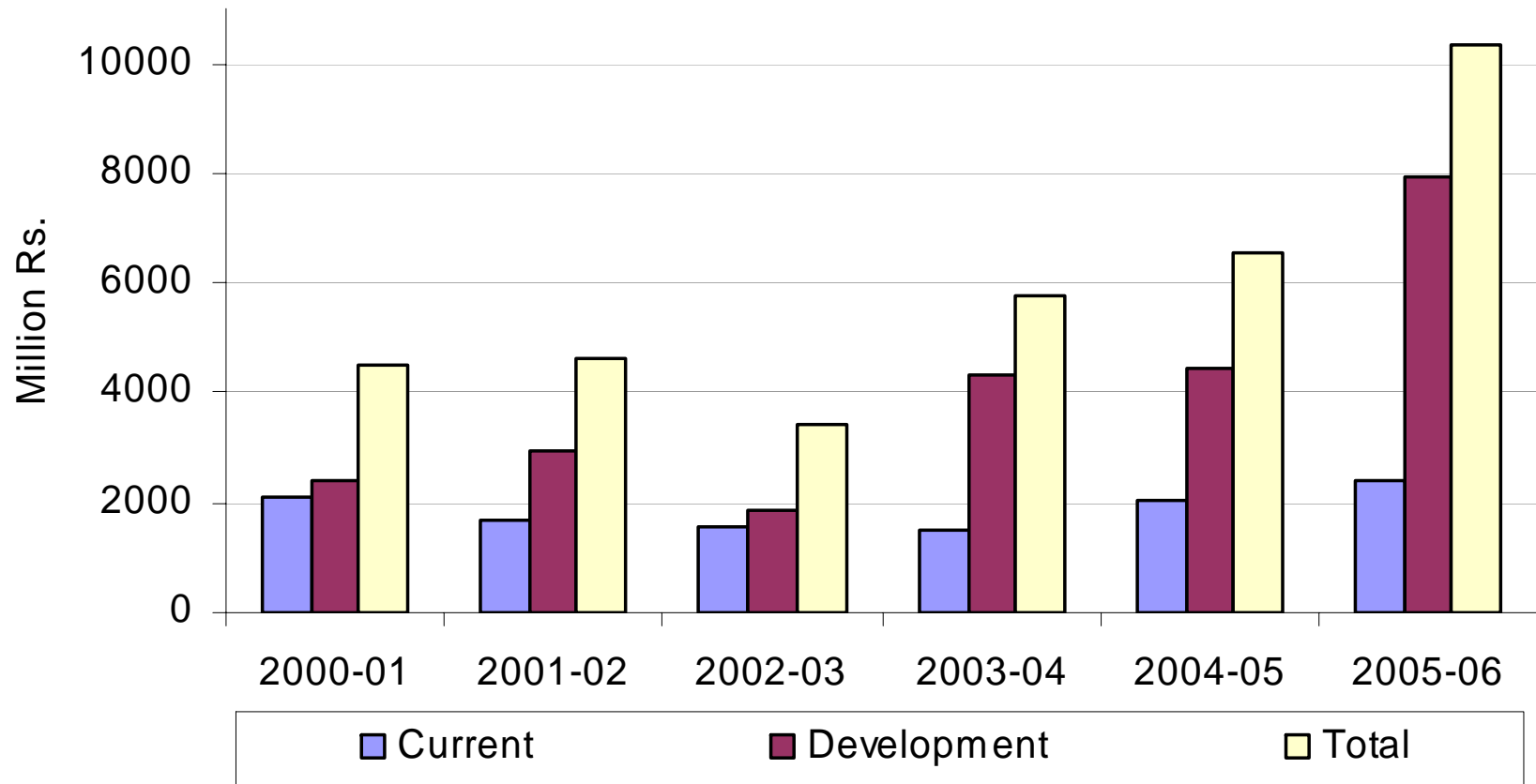
Country	City	Ratio
Bangladesh	Dacca	12-25
Colombo	Cali	10
Ecuador	Guayaquil	20
Haiti	Port-au-Prince	17-100
Honduras	Tegucigalpa	16-34
Indonesia	DKI Jakarta	4-60
Surabaya	Surabaya	20-60
Ivory Cost	Abidjan	5
Kenya	Nairobi	7-11
Mauritania	Nouakchott	100
Nigeria	Lagos	4-10
Onitsha	Onitsha	6-38
Pakistan	Karachi	28-83
Peru	Lima	17
Togo	Loma	7-10
Turkey	Istanbul	10
Uganda	Kampala	4-9

# Financing the WATSAN in Pakistan

- ❑ Public Sector Budgetary Expenditure
  - ❑ PRSP Expenditure Data 2000-01 to 2005-06
  
- ❑ External Economic Assistance
  - ❑ Economic Affairs Division (EAD)
  
- ❑ Out-of-Pocket Expense
  - ❑ Household self-financing (MIMAP)

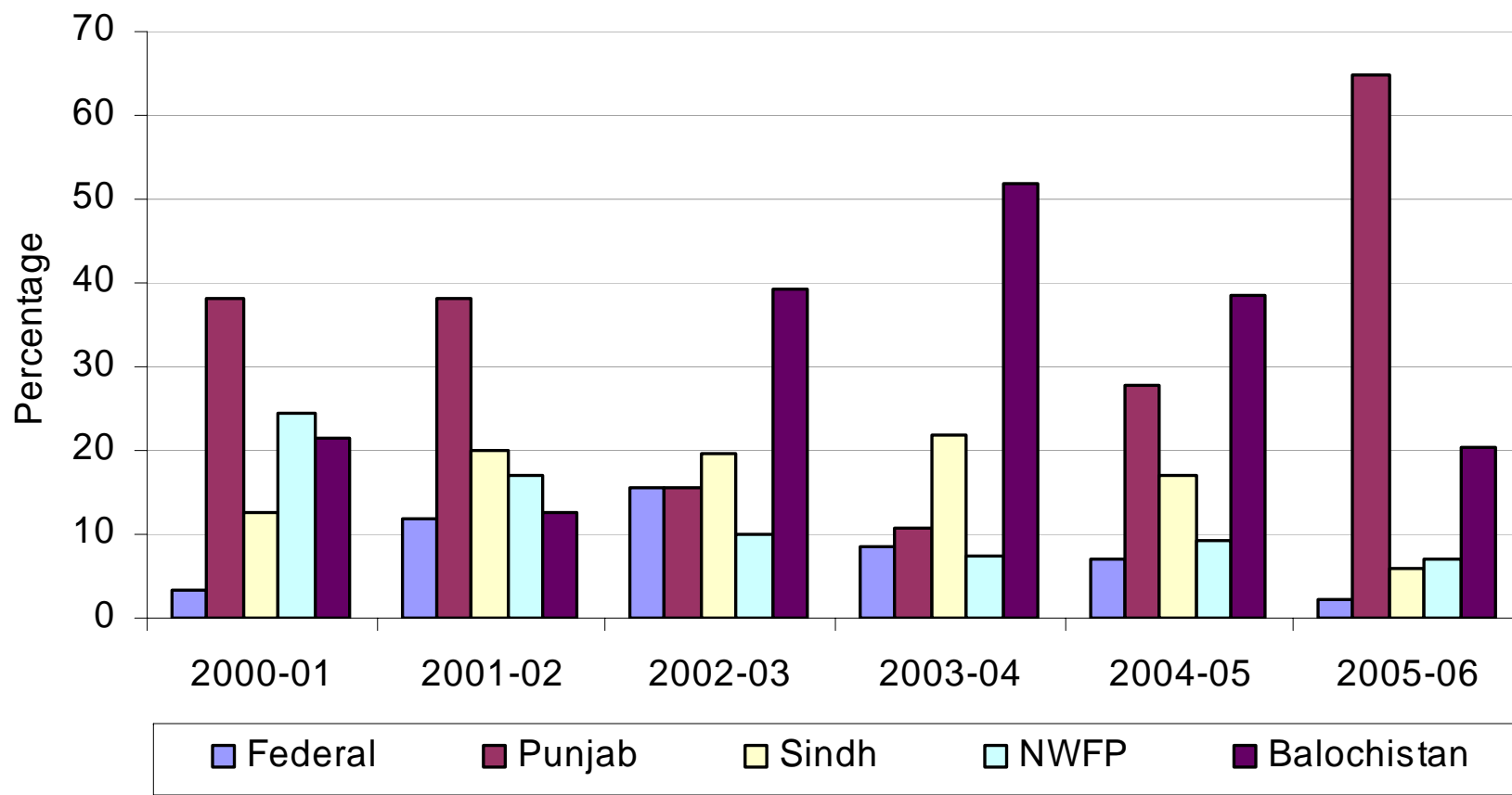
# Public Sector Budgetary Expenditure

**Figure 16: Total Public Sector Expenditure on WATSAN**



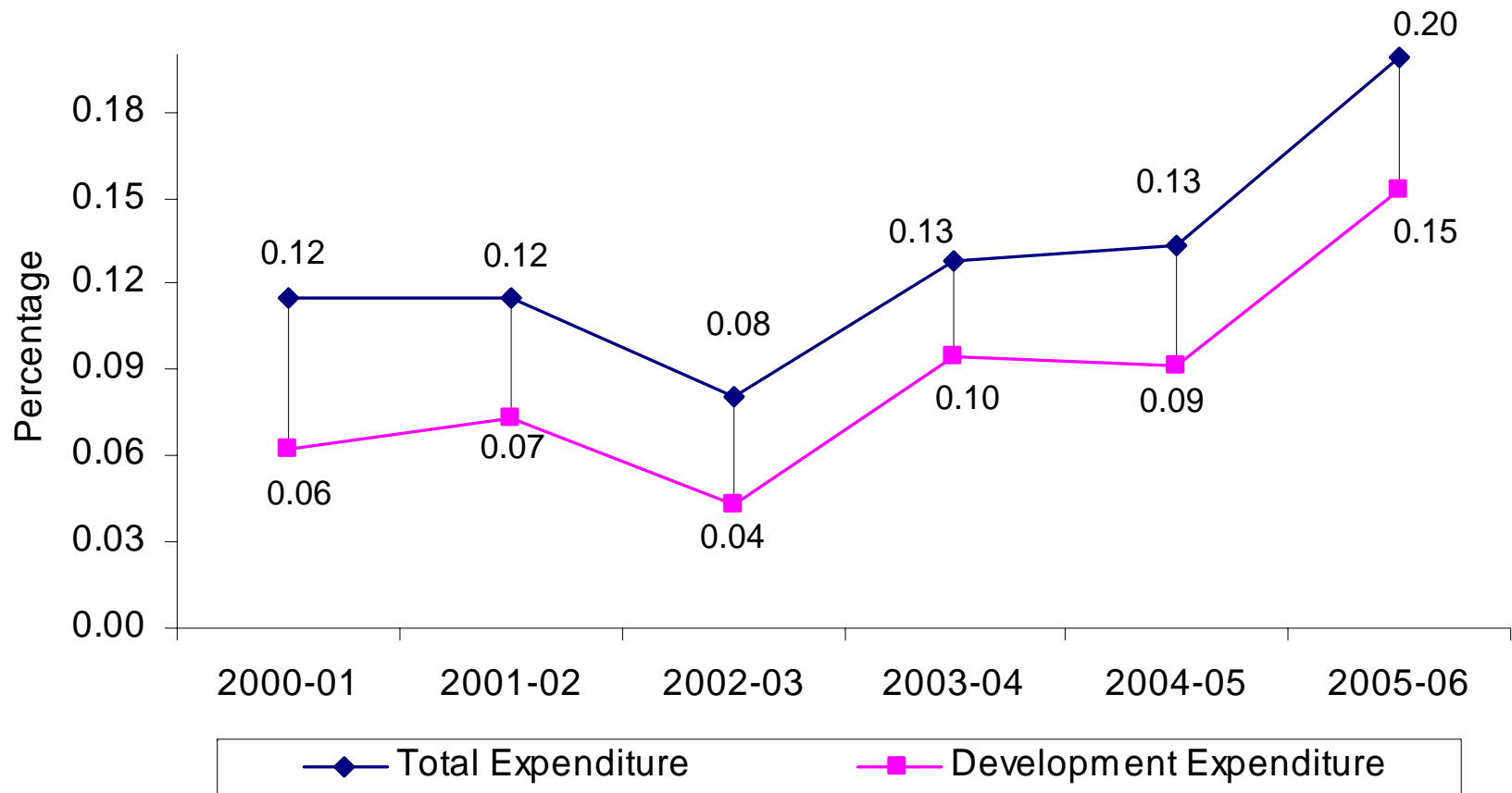
# Public Sector Budgetary Expenditure

**Figure 17: Share in Total Public Sector WATSAN Expenditure**



# Public Sector Budgetary Expenditure

Figure 18: Public Sector Expenditure on WATSAN as % GDP



# External Economic Assistance

## Donor-wise Foreign Economic Assistance in WATSAN

Million US\$

Agency/ Country	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
ADB	12.146	21.353	13.056	8.128	15.902	21.042
Germany	1.119	0.570	-	-	-	-
France	-	-	-	-	3.760	14.826
IDA	2.111	-	-	-	-	-
IDB	0.811	1.021	0.316	-	0.526	-
Japan	9.107	5.288	4.922	6.408	14.345	9.561
U.K.	4.107	2.507	2.491	-	1.792	0.525
UNDP	0.117	0.022	0.037	0.002	-	-
IBRD	-	-	-	-	-	0.125
<b>Total</b>	<b>29.520</b>	<b>30.760</b>	<b>20.822</b>	<b>14.538</b>	<b>36.326</b>	<b>46.079</b>
Loans	24.176	27.662	18.294	14.536	27.933	45.554
Grants	5.344	3.098	2.528	0.002	8.394	0.525

# Out of Pocket Expense

The problem of lack of water services hits the poor in the slum areas of the large cities and in the rural areas where WATSAN public services are not available or water is unsafe for health.

Apart from the public sector spending and development partners' assistance, a major component of financing in the human development is the households' expenditure termed as *out-of-pocket expenses*.

## Out of Pocket Expenditure

Monthly Rs.

	Health	WATSAN
Pakistan	51.18	312.01
<i>Urban</i>	55.21	410.98
<i>Rural</i>	49.32	100.47
Punjab	51.98	324.99
<i>Urban</i>	54.10	394.29
<i>Rural</i>	51.01	143.95
Sindh	46.10	509.39
<i>Urban</i>	55.42	568.34
<i>Rural</i>	39.15	93.58
NWFP	61.97	48.15
<i>Urban</i>	69.96	56.7
<i>Rural</i>	60.38	45
Balochistan	36.59	72.21
<i>Urban</i>	37.43	89.61
<i>Rural</i>	36.38	32.39

# Out of Pocket Expense

This inflating trend must be questioned on ground of equity, since the majority of population, especially the urban poor, cannot afford high payments for water and health services. On the other hand, a huge number of people are denied safe drinking water and quality medical treatment owing to high costs.

Reducing such expenditures on water and health by poor people can be an effective way to rescue them from poverty.

## Percentage of Households who paid for Water

Province	2001-02	2004
Punjab	32.5	43.7
Sindh	48.4	61.2
NWFP	26.8	31.5
Balochistan	27.2	35.9
Pakistan	39.1	48.3

## Mean Monthly Payments made by Households

Province	2001-02	2004
Punjab	422	436
Sindh	373	472
NWFP	591	713
Balochistan	377	572
Pakistan	441	548

Source: Social Audit Report 2004-05, DTCE



# Linking Access to Public Expenditure

- ❑ The research analysis mainly focuses the provision of WATSAN services in Pakistan with respect to the public sector expenditure.
- ❑ It is to calculate the change in access to safe water and improved sanitation services with respect to public sector spending in WATSAN sector over time.
- ❑ The study envisages projecting the proportionate population access to improved water source and hygiene sanitation by 2015 from 2004-05.

# Linking Access to Public Expenditure

- ❑ The proposition behind this analysis is that with the change in (public sector) expenditure to a specific sector, to what extent the access to a particular service would change?
- ❑ It is not to calculate what percentages of population have access to a particular service so far and how much numbers of beneficiaries will be added by year 2015; it is to investigate that even if we meet the national and regional targets in Pakistan, how much population will still be deprived of these most basic human needs.

# Linking Access to Public Expenditure

- ❑ To analyze the future projections, actual elasticity for each province were calculated.
- ❑ Change in access is measured by elasticity between 2001-02 and 2004-05 from the formulae given below:

$$\eta_{AE} = (\Delta A / \Delta E) \times (E / A)$$

$$\Delta A = (\eta_{AE} \times \Delta E \times A) / E$$

Where,

$\eta_{AE}$  = Elasticity of Access with respect to Expenditure

$\Delta A$  = Change in Access, and

$\Delta E$  = Change in Expenditure

# Linking Access to Public Expenditure

## □ Data Used for Analysis

- Access to Water and Sanitation  
(PIHS 2001-02 and PSLM 2004-05)  
based on the *redefined improved facility concept*
- Public Sector Budgetary Expenditure  
(PRSP Expenditures 2001-02 to 2004-05)
- Population Projections  
(National Institute of Population Studies, Islamabad)

# Linking Access to Public Expenditure

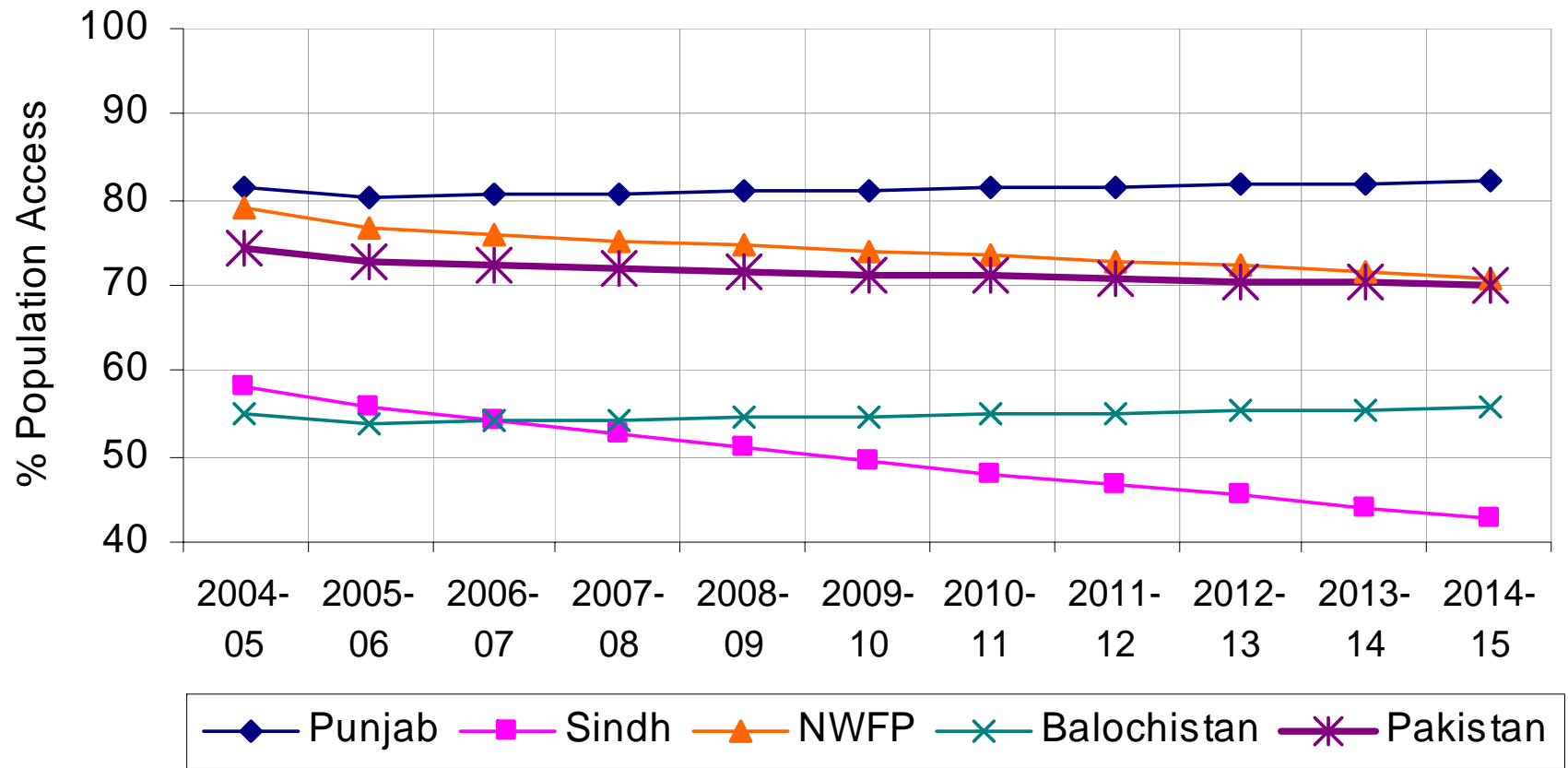
- ❑ To assess the access to safe drinking water and improved sanitation facility, primarily following assumptions are being made:
  - Constant GDP at 7 percent annual growth
  - Constant share of provincial expenditure as of 2004-05 in National GDP
  - Out of the total annual WATSAN expenditure, we assume fifty percent for each Water and Sanitation

# Linking Access to Public Expenditure

- ❑ The study realizes that the respective actual elasticities are calculated from the available data on access and expenditure over the time period of 2001-02 to 2004-05, however, data from last ten years, or more, on coverage and public sector expenditure may give us different elasticities.
- ❑ To address this issue, different scenarios are made on different elasticities. To obtain projected access, following alternative scenarios are developed:
  - Scenario 1: Use actual elasticity for respective regions
  - Scenario 2: Use actual elasticity at 0.1 change for respective regions
  - Scenario 3: Use actual elasticity at 0.2 change for respective regions
  - Scenario 4: Use constant elasticity at 0.1 for all regions
  - Scenario 5: Use constant elasticity at 0.3 for all regions

# Scenario 1: Actual Elasticity

**Figure 19: Scenario 1: Water Access Projections**



# Scenario 1: Actual Elasticity

- ❑ On the basis of the redefined figures, it is calculated that a total number of **5.72** million households (*approximately 38.5 million people*) lacked access to **safe drinking water** source in 2004-05.
- ❑ In Punjab, **2.41** million households (*approximately 15.9 million people*) lacked access to safe drinking water, followed by **2.23** million in Sindh (*approximately 14.7 million people*), **0.57** million in NWFP (*approximately 3.9 million people*), and **0.50** million households (*approximately 3.8 million people*) in Balochistan.

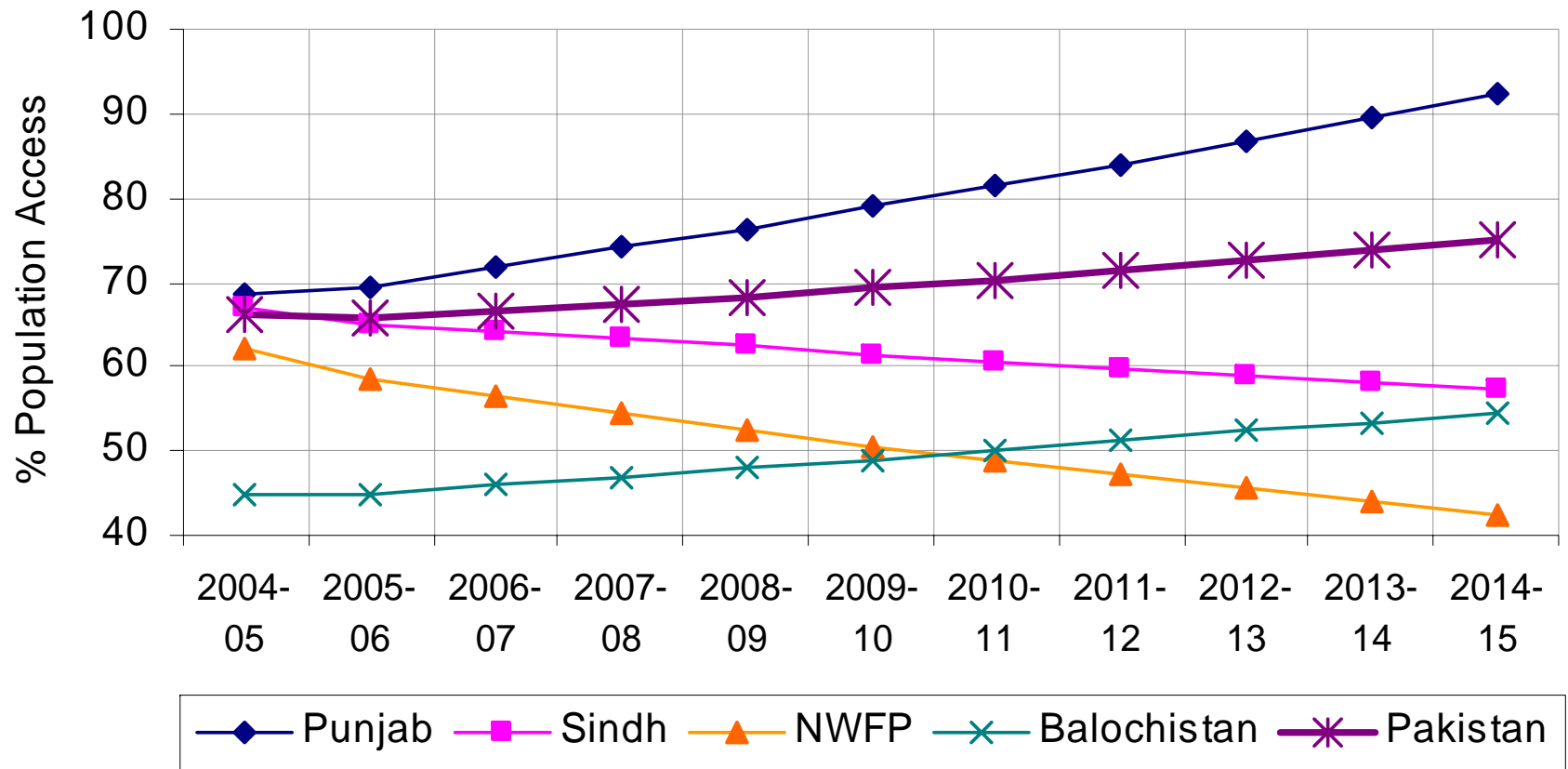


# Scenario 1: Actual Elasticity

- ❑ Access to **safe drinking water** projections, on respective actual elasticity, shows that, in year 2015, a total number of **7.84** million households (*approximately 52.8 million people*) will be deprived of safe drinking water.
- ❑ In Punjab, **2.73** million households (*approximately 17.9 million people*) will have no access to safe drinking water, followed by **3.56** million in Sindh (*approximately 23.4 million people*), **0.95** million in NWFP (*approximately 6.6 million people*), and **0.61** million households (*approximately 6.7 million people*) in Balochistan.

# Scenario 1: Actual Elasticity

**Figure 20: Scenario 1: Sanitation Access Projections**



# Scenario 1: Actual Elasticity

- ❑ On the basis of the redefined figures, it was calculated that a total number of **7.52** million households (*approximately 50.7 million people*) lacked access to **improved sanitation facility** in 2004-05.
- ❑ In Punjab, **4.11** million households (*approximately 27.1 million people*) have no access to hygiene sanitation, followed by **1.76** million (*approximately 11.6 million people*) in Sindh, **1.03** million in NWFP (*approximately 7.2 million people*), and **0.61** million households (*approximately 4.7 million people*) in Balochistan.

# Scenario 1: Actual Elasticity

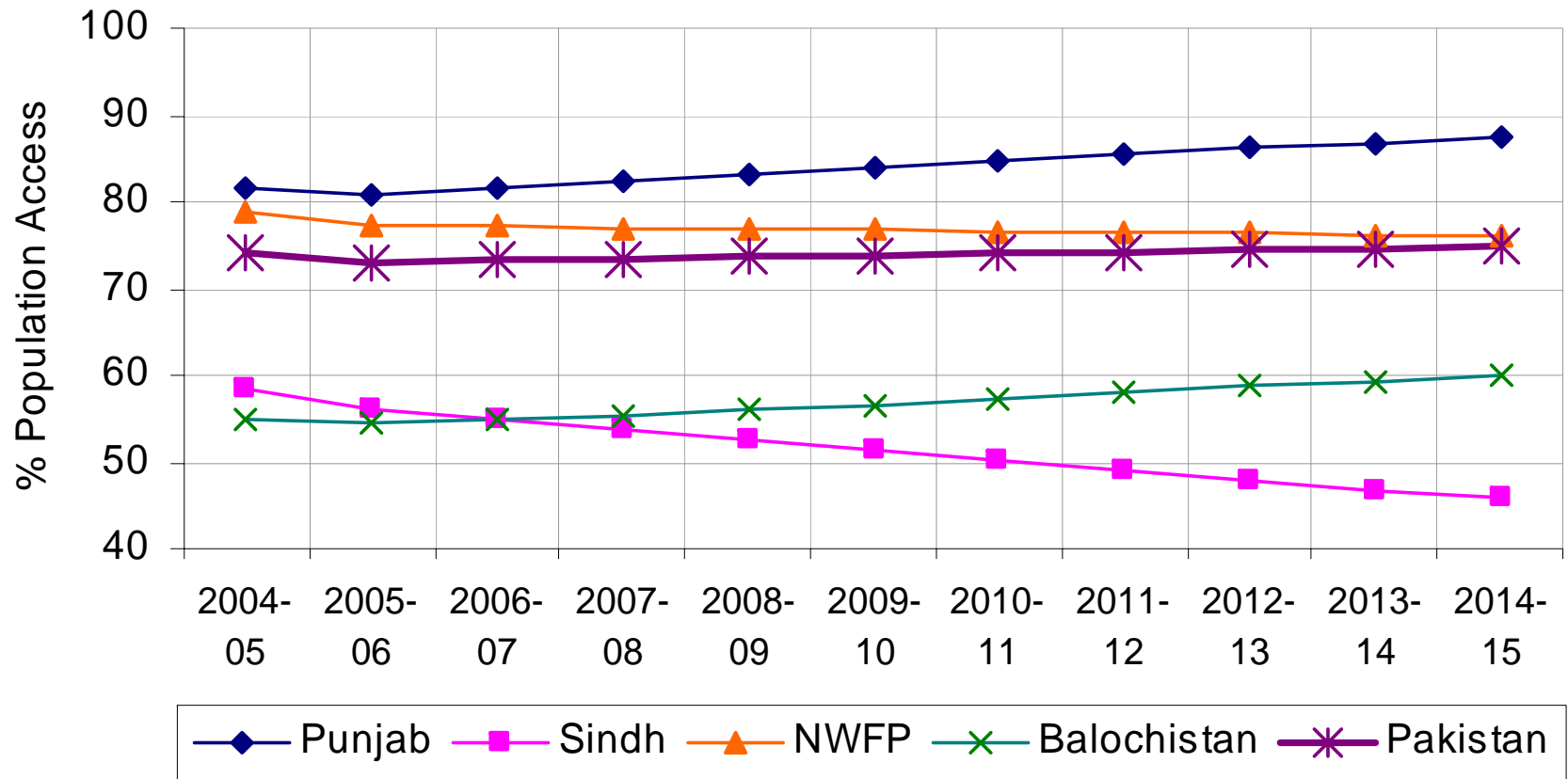
- ❑ Access to **improved sanitation facility** projections, on respective actual elasticity shows that, in year 2015, a total number of **6.34** million households (*approximately 43.2 million people*) will have no access to improved sanitation.
- ❑ In Punjab, **1.17** million households (*approximately 7.7 million people*) have no access to hygiene sanitation, followed by **2.65** million (*approximately 17.4 million people*) in Sindh, **1.90** million in NWFP (*approximately 13.2 million people*), and **0.63** million households (*approximately 4.8 million people*) in Balochistan.

# Scenario 1: Actual Elasticity

- ❑ It was observed that at respective actual elasticities, only Punjab and Balochistan showed slight progressive trend underlining safe drinking water and growing trend in improved sanitation facilities.
- ❑ As Punjab by population represents the major proportion of Pakistan, and Sindh the second major proportion, their growing or declining trend in access impact the overall national progress.

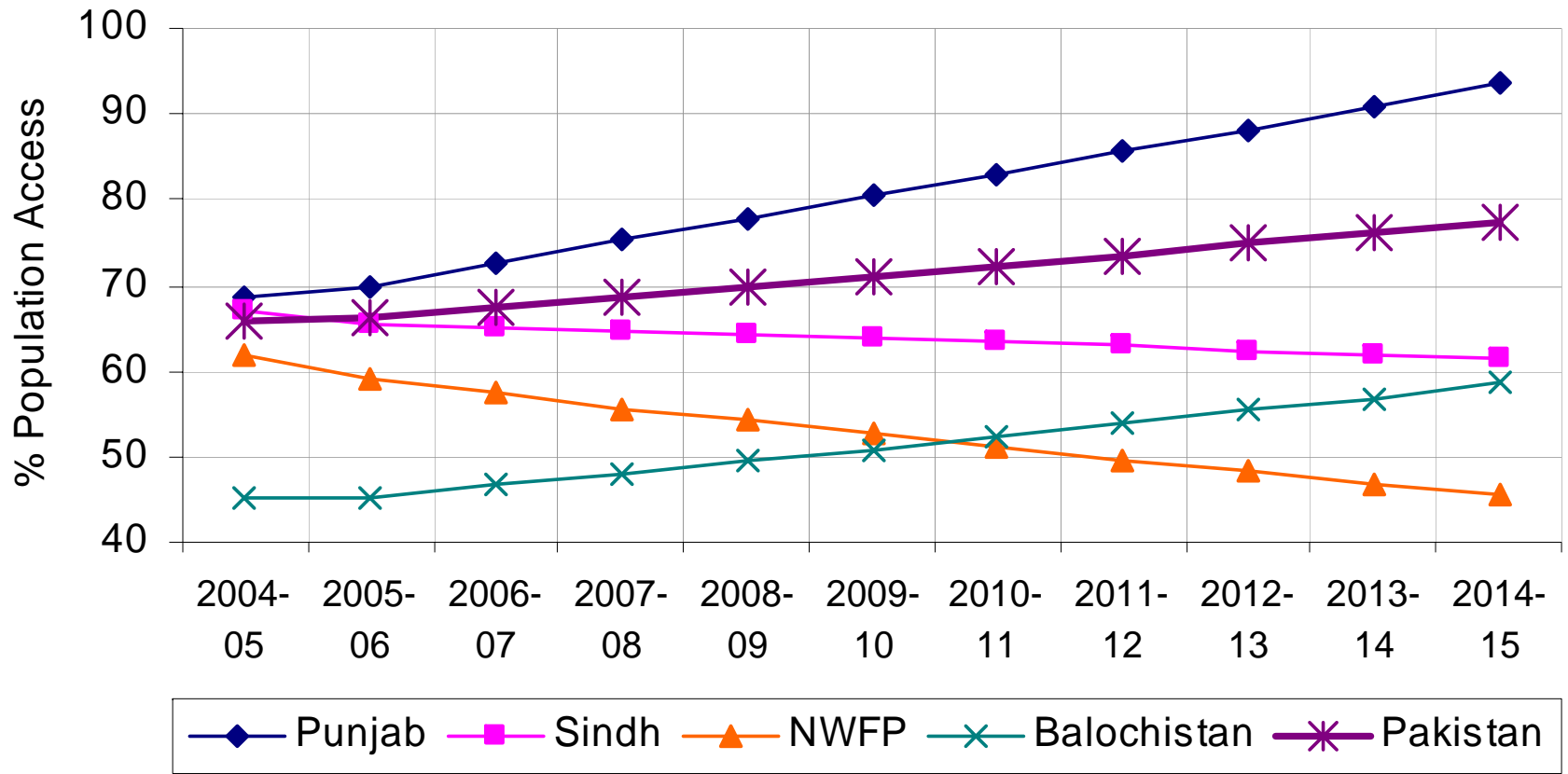
# Scenario 2: Actual Elasticity, 0.1 Change

**Figure 21: Scenario 2: Water Access Projections**



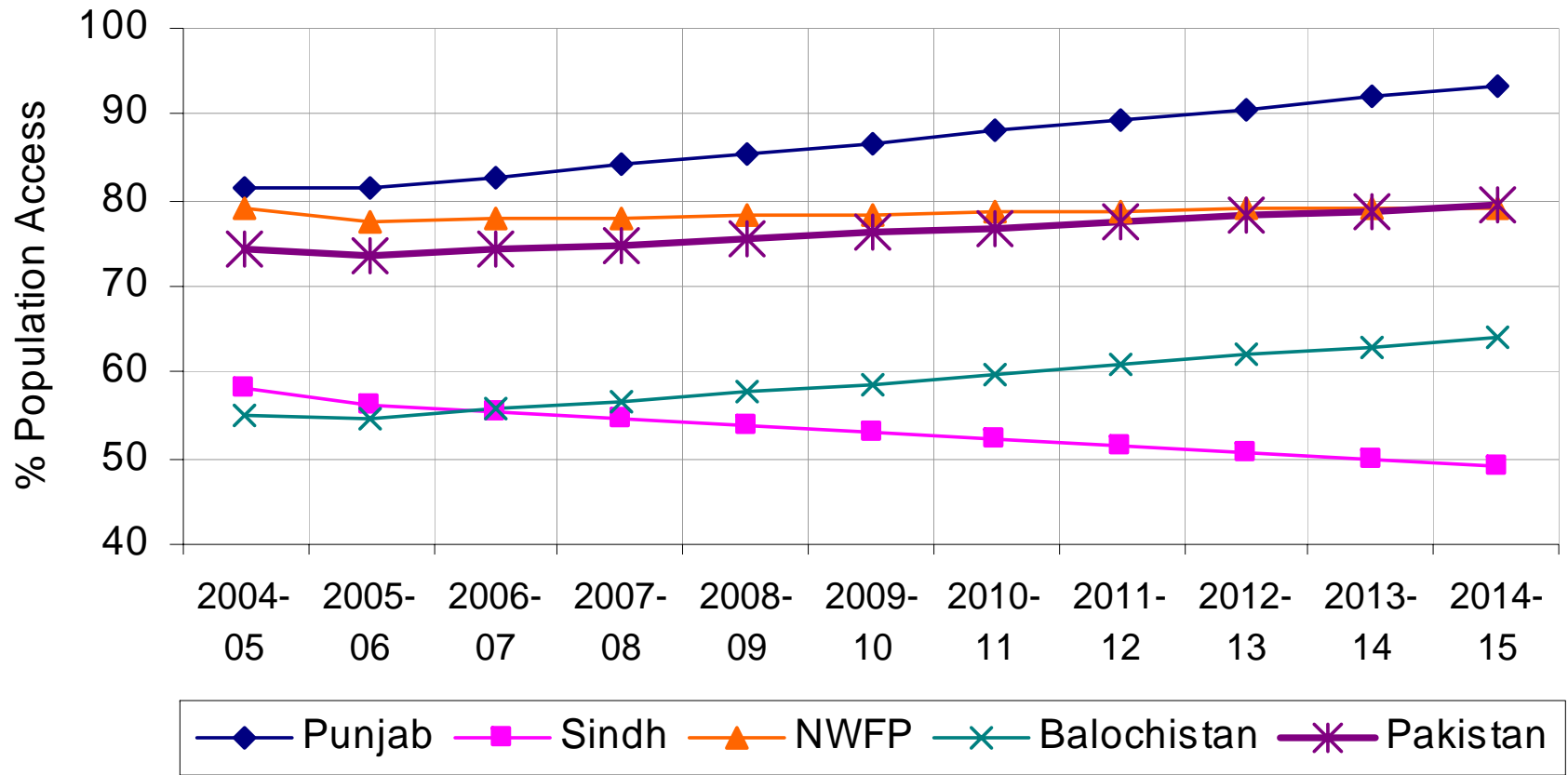
# Scenario 2: Actual Elasticity, 0.1 Change

**Figure 22: Scenario 2: Sanitation Access Projections**



# Scenario 3: Actual Elasticity, 0.2 Change

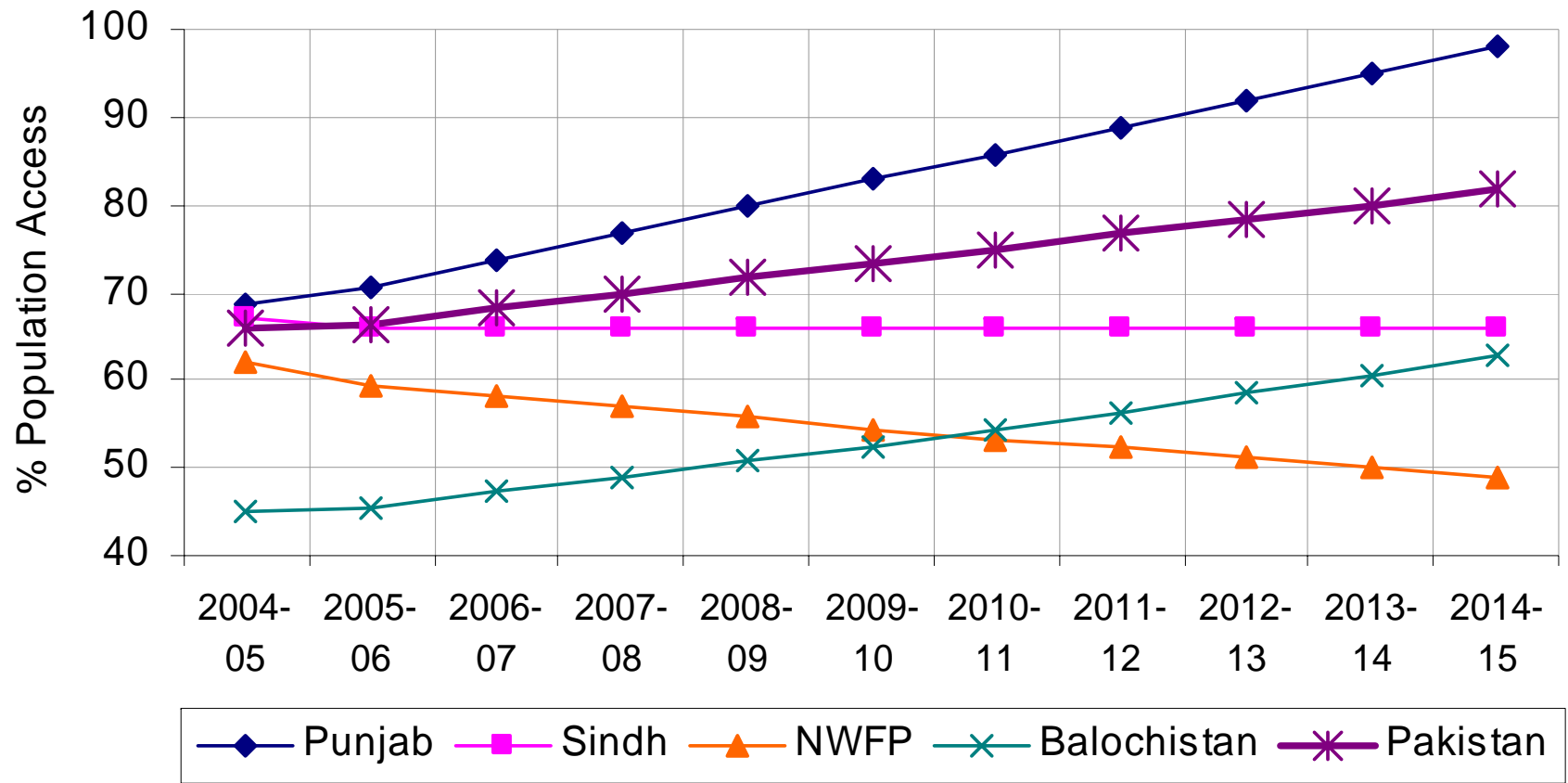
**Figure 23: Scenario 3: Water Access Projections**





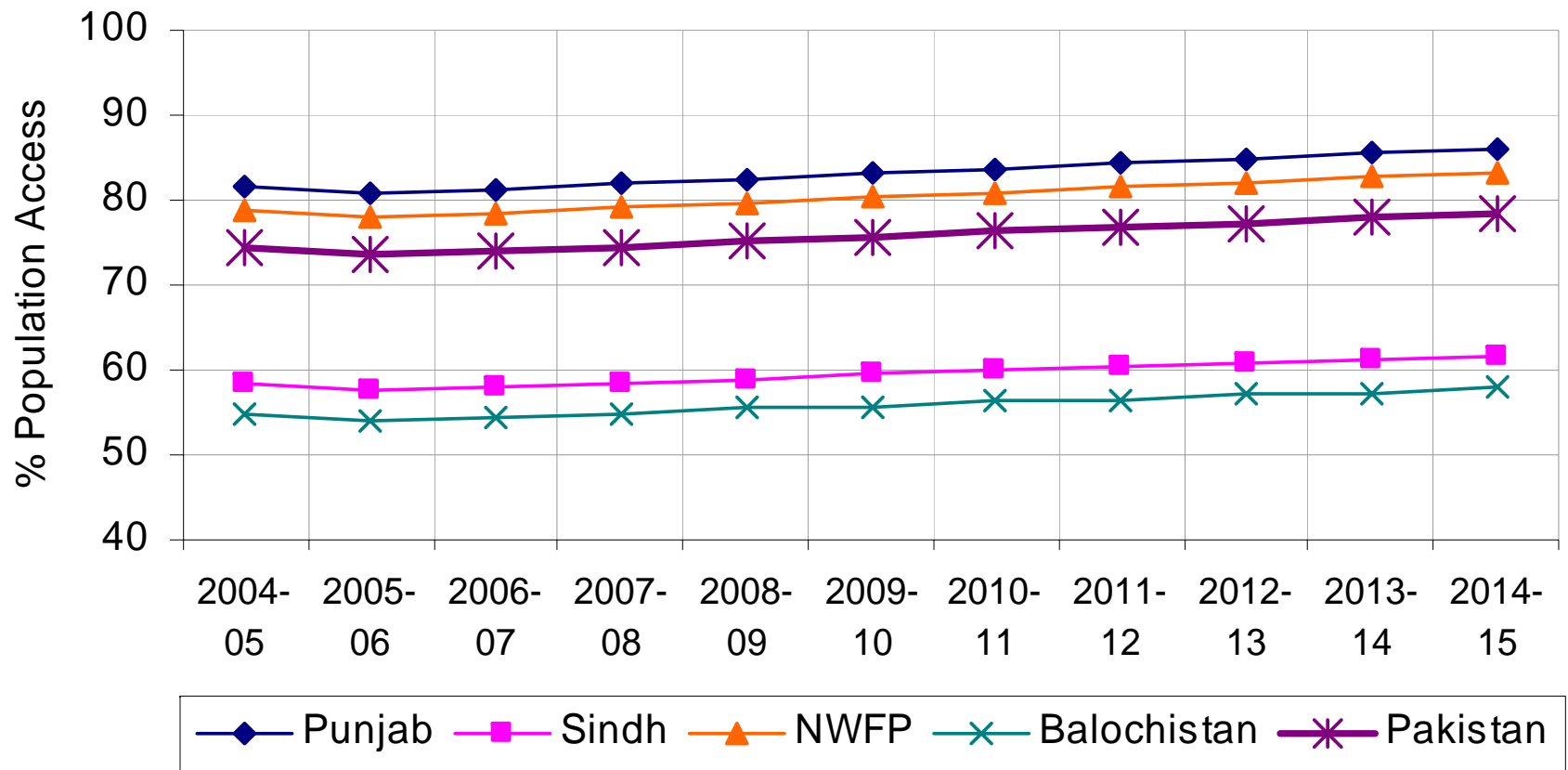
# Scenario 3: Actual Elasticity, 0.2 Change

**Figure 24: Scenario 3: Sanitation Access Projections**



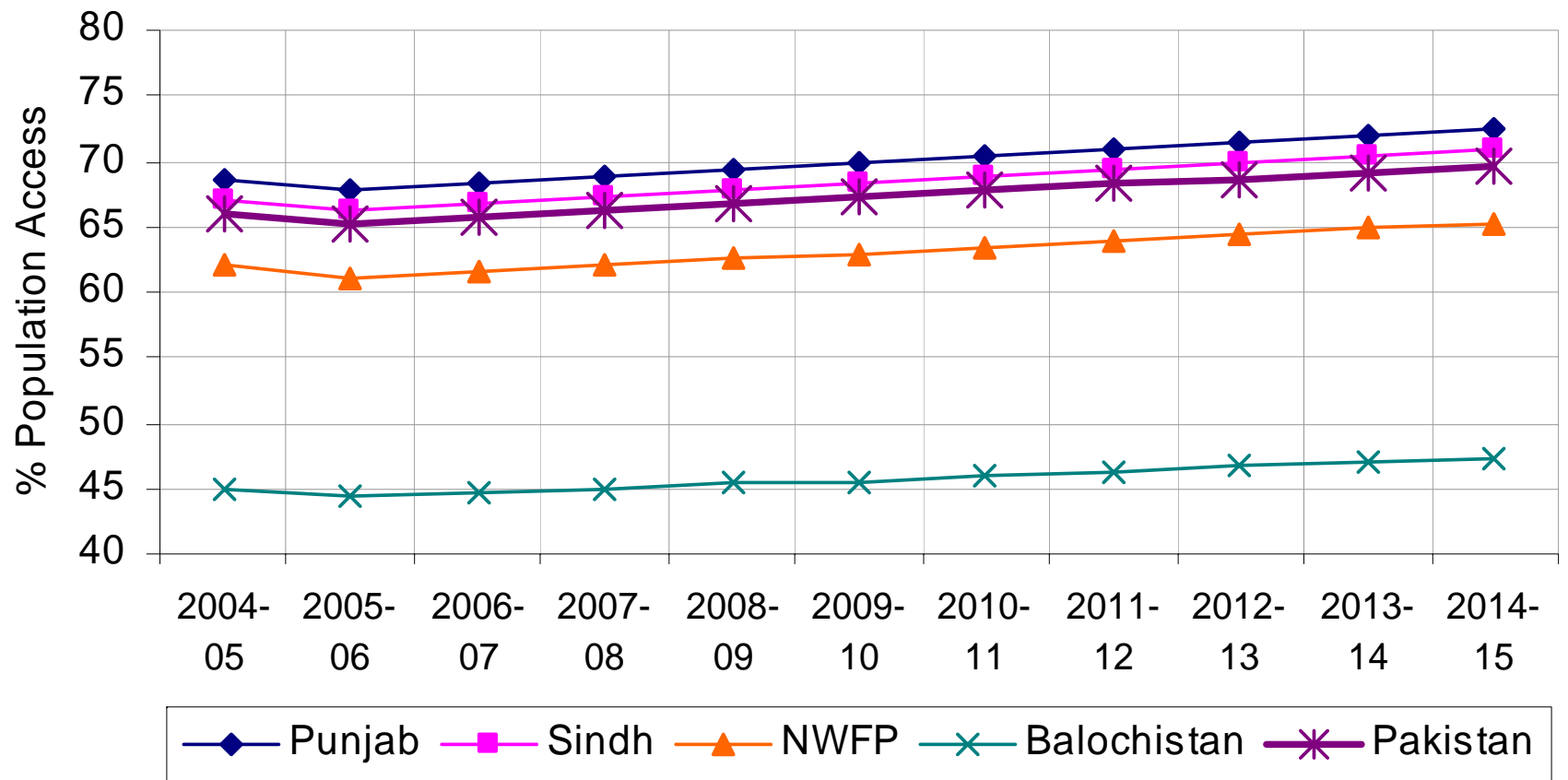
# Scenario 4: Constant Elasticity, 0.1

**Figure 25: Scenario 4: Water Access Projections**



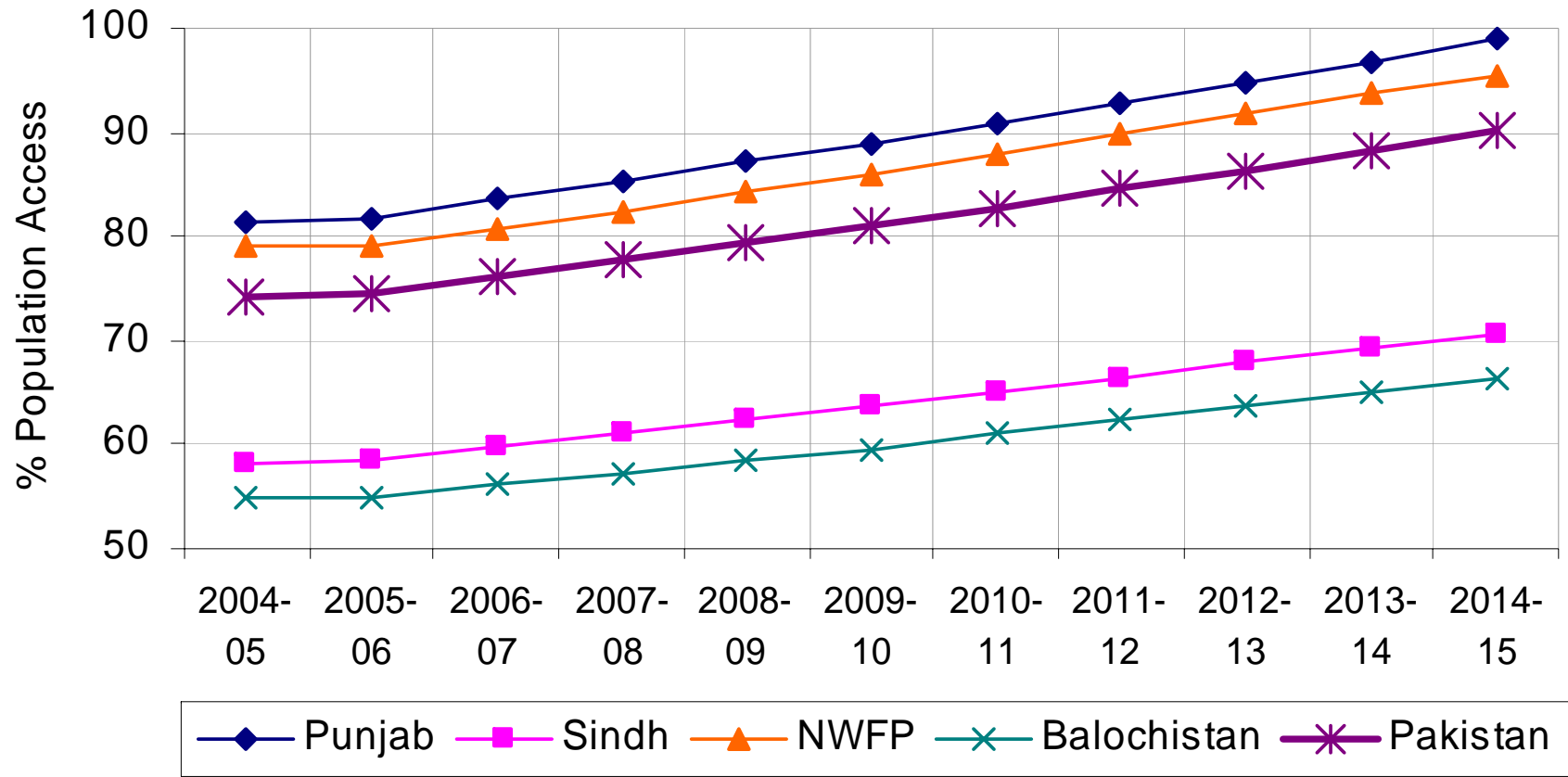
# Scenario 4: Constant Elasticity, 0.1

**Figure 26: Scenario 4: Sanitation Access Projections**



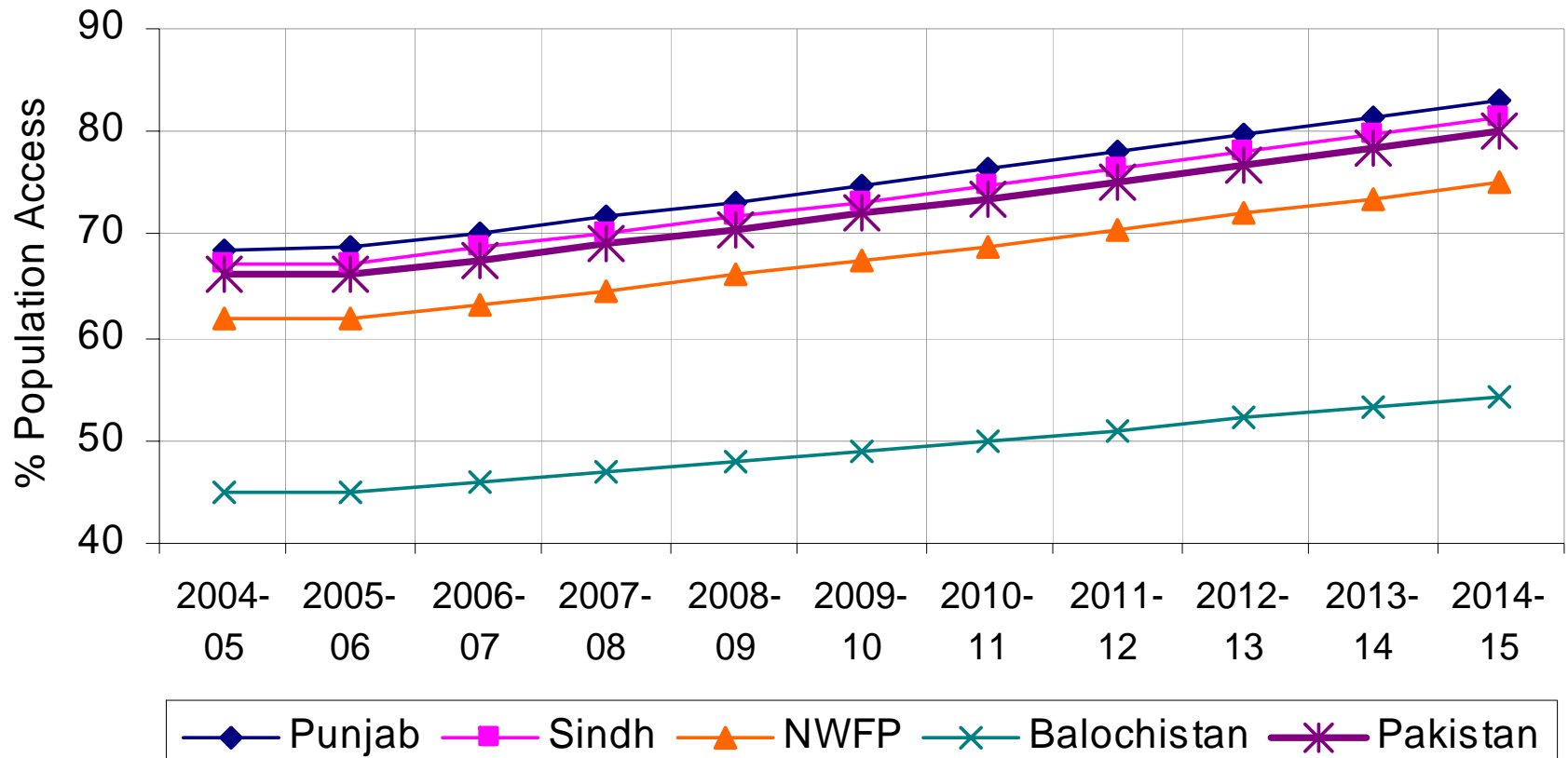
# Scenario 5: Constant Elasticity, 0.3

**Figure 27: Scenario 5: Water Access Projections**



# Scenario 5: Constant Elasticity, 0.3

**Figure 28: Scenario 5: Sanitation Access Projections**



# Findings

- ❑ Water and sanitation are a fundamental building block for poverty reduction, community empowerment and sustainable development. Access to safe drinking water is a top priority for poor communities, and often one of the first development projects in at community levels.
- ❑ A direct relationship exists between water, sanitation, health, nutrition, natural environment and human well being. A demand-led water scheme has integrated sanitation and hygiene promotion considers environmental impacts, and lead to improvements in family health, girls' attendance at schools and improved living status.

# Findings

- ❑ Consumption of contaminated drinking water, improper disposal of human excrete, lack of personal and food hygiene and improper disposal of solid and liquid waste have been the major causes of many diseases in developing countries.
- ❑ Poor people, mostly living in rural areas or urban slums, are not only deprived of financial resources, but they also lack admittance to basic needs such as education, health, safe water supply and environmental sanitation facilities

# Findings

- ❑ Inadequate WATSAN services to the poor increase their living costs, lower their income earning potential, damage their well-being, and make life riskier.
- ❑ The continuing, nearly universal deterioration of the surface and underground water sources on which people survive means that water and sanitation pressures will simply become worse in the future.
- ❑ Lack of water and sanitation infrastructure has complex effects on income and consumption of a household, which deeply influence people's overall well-being.



# Findings

- ❑ Continuing urbanization, growing populations and increasing industrialization have increased water consumption and correspondingly generating higher volumes of waste-water and solid-waste. Untreated waste-water and poor solid-waste management are threats to human health and natural environment.
- ❑ Regrettably, the public and the private sectors, in developing countries including Pakistan, are giving insufficient attention to the unsafe disposal of waste-water and solid waste; which is causing severe environmental and health problems.

# Findings

- ❑ Review of the national policy documents shows that the government is committed to provide safe drinking water, however, the execution and monitoring departments could not address this issue due to limited resources, increasing population, fast growing urban development, industrialization, extensive system losses, inadequate operation and maintenance and poor cost recovery, lack of private sector participation, inefficient institutional capacities, and poor linkage among urban and rural water development projects.

# Findings

- ❑ Clean Drinking Water Initiative (CDWI) by the federal government is an encouraging step to deliver safe drinking water. However, it is obvious that when we build a complex system we need more resources to keep that system operational. Same is the case with the water filtration plants, we need more resources to cope operation and maintenance cost. If the water filtration plants do not get proper and regular attention, the water from these filtration plants would be more contaminated and dangerous for health as of that collected earlier from other primary sources.

# Findings

- ❑ Though, according to the PCRWR figures on per capita water availability Pakistan is a water-stress country, there is more than enough water in the for domestic purposes, for agriculture and for industry. The problem is the sub-optimal use and inadequate storage capacity of available water resources.
- ❑ WATSAN is the neglected sector in Pakistan. It is evident from the current study that government spending in the WATSAN sector is the least when comparing to other social sectors spending. The review of shares underlining the WATSAN sector in the PRSP total expenditure and as percentage of GDP

# Policy Recommendations

- ❑ If we are committed to decrease poverty, to improve the health and living standard of our people, to increase the productivity levels and if social exclusions are to be minimized, then there is a desired need of coherent policy framework and investment in the WATSAN sector underlining the quantity and quality issues of water and environmental sanitation.
- ❑ The national water and sanitation policies documents provide a broader framework of action. However, the policies must be revised after every five years including an independent mid-term and post evaluations.

# Policy Recommendations

- ❑ The water supply and management agencies should own the responsibility to maintain water quality in the water distribution system up to the consumer's level for which booster chlorination be ensured at different pumping stations.
- ❑ The role of the development partners and the private sector is critical for development in WATSAN sector. Government should encourage the private sector to deliver the WATSAN services as in the case of other social sector provision, e.g., health and education.

# Policy Recommendations

- ❑ Provision of WATSAN services is the legal responsibility of the Provinces and Local Government bodies, therefore, the policy makers and Provincial and Local Government representatives/ authorities must realize the worsening situation and should support to boost up the share of WATSAN expenditure in the National GDP.
- ❑ Under the Local Government System, 25% of the total Provincial Development Budget is bound to spend through Citizen Community Boards (CCBs). Awareness building regarding the outcomes through CCBs can bring change in poor's living conditions. Communities should be encourages to spend through CCBs for their own benefit.

# Policy Recommendations

- ❑ The Government and the Private Sector support the microcredit schemes for income generating opportunities only. They must also consider releasing microcredit to communities and/or households to invest in their infrastructure. These experiments were successful in Bangladesh and India; which finally improved their health conditions and living standards.
- ❑ Government should support cost effective and low cost maintenance WATSAN schemes. Moreover, offering subsidies to households underlining treatment of drinking water at consumer/ household level should be considered instead of spending a lot of money in complex and costly schemes.



# Policy Recommendations

- ❑ Leakage and wastage of water must be minimized causing 30 to 50 percent loss of the total drinking water supply. Awareness must be propagated to minimize the thoughtless and wasteful activities like using running tap water to wash cars or irrigating the lawns and home garden unnecessarily. Each of us has to realize that less water used means less wastewater produced.
- ❑ For effective awareness, educational institutions, mosques, including mass media should be used for building awareness about the importance of water quality and quantity among the users

# Policy Recommendations

- ❑ The water supply agencies should install meters to charge the consumers on the basis of “**pay as you use**”.
- ❑ The public sectors is giving insufficient attention to the neglected WATSAN sub-sectors, i.e. **waste water treatment** and **solid waste management**. If immediate actions will not be taken to address these issues, the remaining water quantity and quality will adversely affect the health, education and economic sectors.

# Policy Recommendations

- ❑ The Environmental Protection Agency (EPA) should ensure higher treatment coverage, underlining safe disposal of waste water from households, commercial and industrial units before discharging it to the mainstreams, and improved drainage network. As this has an implication for quality of water for drinking (especially, downstream).
- ❑ The WATSAN expenditure, as given in the PRSP, presents a collective outlay which does not tell the proportionate share of water and sanitation separately. Therefore, to assess the impact of expenditure on the coverage of water and sanitation separately is not viable without making assumptions.



**Thank You**

