
**Agriculture, Nutrition, Water and Sanitation:
A Situation Analysis for Bangladesh and BRAC Experiences**

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Outline of the presentation

- Agricultural growth and water resources
- Situation of poverty and nutrition
- Incidence and change in the situation of water, sanitation, and health
- BRAC development interventions on agriculture and water and sanitation

Agricultural Production and Its Pressure on Availability of Water Resources

Structural transformation in Bangladesh economy

(% share of GDP)

- At independence Bangladesh economy was predominantly rural with agriculture accounting for 62% of the GDP.
- The economy grew at 4 percent per year during 1970-90. The growth accelerated to 5.0% in the 1990s, and further to 6.0% in the last decade .
- Agriculture's share declined to 37% in 1990/91, and further to 18% at present due to slower growth compared to industry and services.
- But agriculture is still important. Almost half of the labor force depend on agriculture for employment and livelihoods

Sectors	1969/70	2011-12
Agriculture	62	18
Industry	13	28
Services	25	54
GDP	100	100



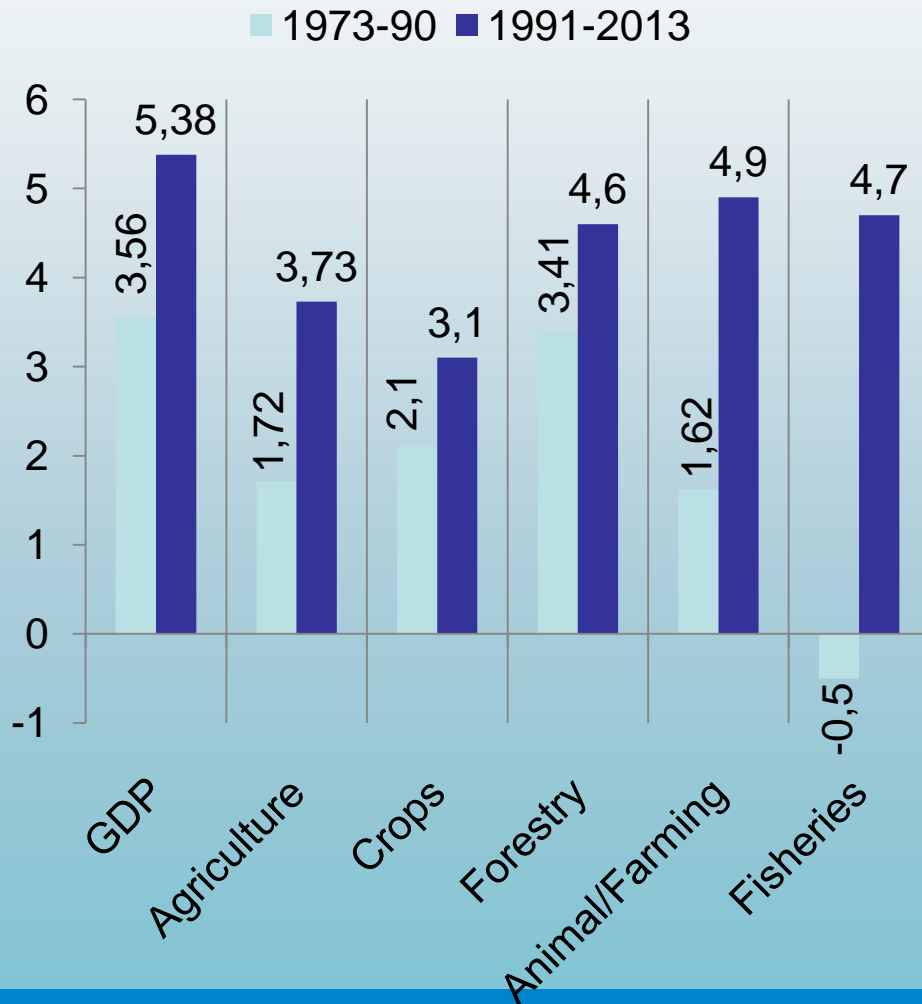
Structure of the agriculture sector

(% share of agricultural GDP)

- Crop farming is the dominant sub-sector accounting for 56% of agricultural GDP
- Fisheries accounts for one-sixth of the GDP and has become the fast growing sub-sector
- Rice farming is the predominant economic activity accounting for over on-third of agricultural incomes.
- Rice is the dominant food staple and a strategically important commodity that affect socio-political stability and promotion of industrial growth.
- The government's strategy and policies for agriculture gives highest priority to rice farming

Sub-sectors	1990/91	2012/13
Crops and horticulture	70	56
(Rice farming)	(50)	(34)
Livestock and poultry	10	15
Forestry	8	9
Fisheries	12	20
Agriculture (billion USD)	100 (9.6)	100 (24.1)

Growth of Economy and Agriculture in Bangladesh, 1973 - 2013



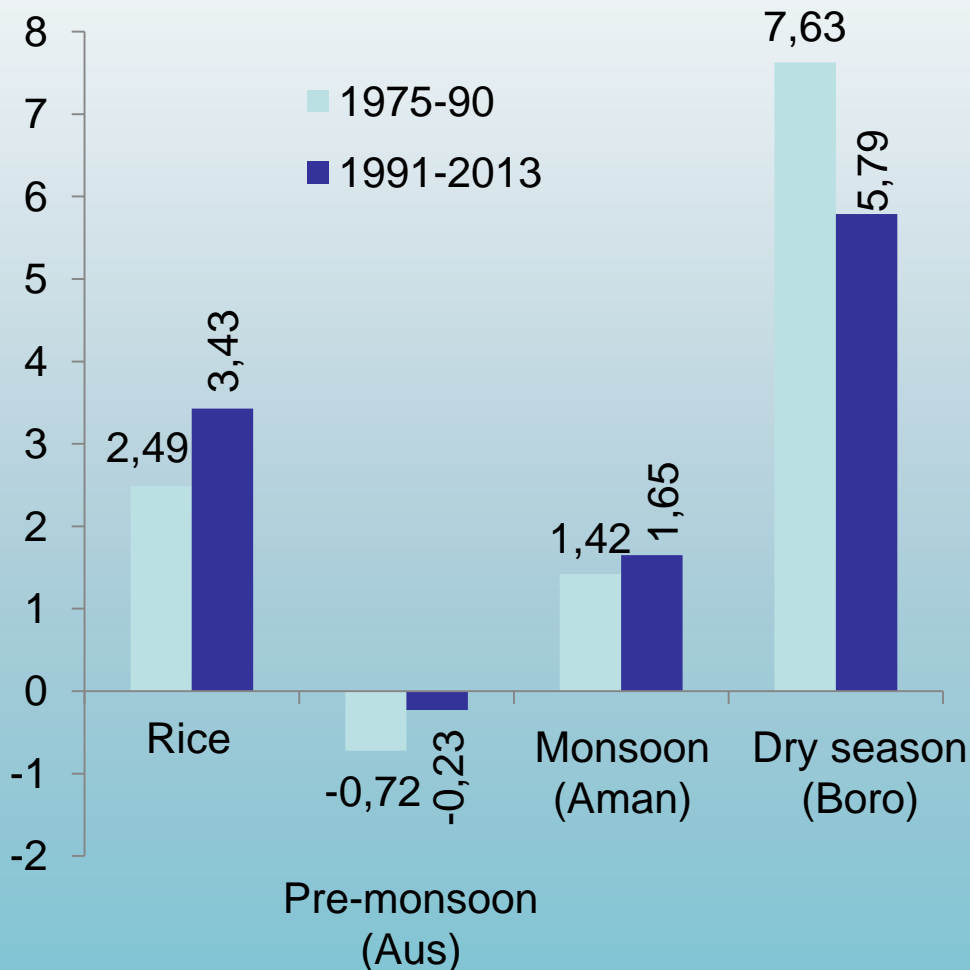
- Both economic and agricultural growth has accelerated since 1990
- Agriculture grew at a respectable 3.7% per year over 1990-2013, compared to only 1.7% during 1973-90
- But the growth of crops was also respectable at 3.1% per year, about 1.0% higher than the rate during 1973-90.
- The fastest growth in recent times was in the fisheries, another subsector that uses water resources.

Importance of different crops, 2011/12

- Rice is the pre-dominant crop and is grown in three seasons- boro (winter), aus (pre-monsoon) and aman (monsoon)
- Potato and maize and vegetables have emerged recently as the first growing crops.
- Pulses, oilseeds and sugarcane has declined in importance over time. The import dependence for these food items has been growing
- Rice, Jute and vegetables are most water using crops

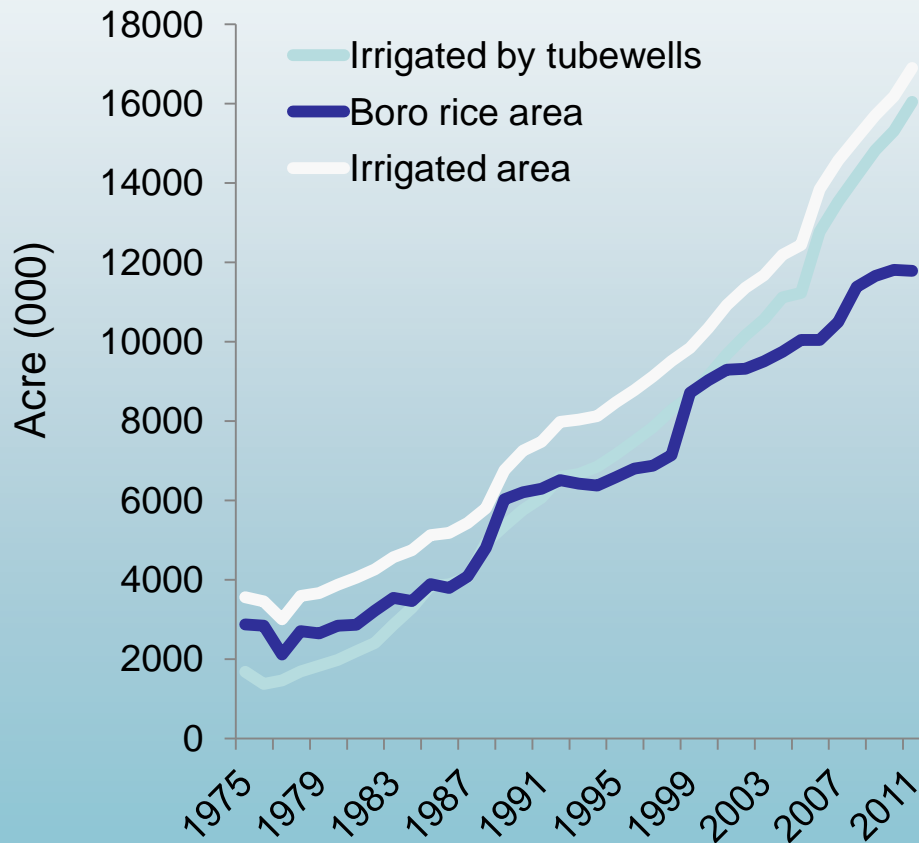
Major crops	Share(%) of crop income
Rice	63
Wheat	1.2
Maize	2.3
Jute	2.5
Pulses	1.5
Oilseeds	1.8
Potato	7.7
Other vegetables	5.3
spices	5.4
Sugarcane	1.7
Tea	0.6

Grate in rice farming, 1975 - 2013



- The growth in rice production has also accelerated during 1990-2013 compared to the previous two decades
- Aus and aman are rainfed rice crop while boro is fully irrigated
- The growth rice production came mostly from boro
- Boro contributed 91% of the additional rice production during the 1990s, and 72% during 2000-2013
- The food security has been achieved at the expense of heavy exploitation of water resource, particularly ground water

Trend in irrigated area and boro rice cultivation



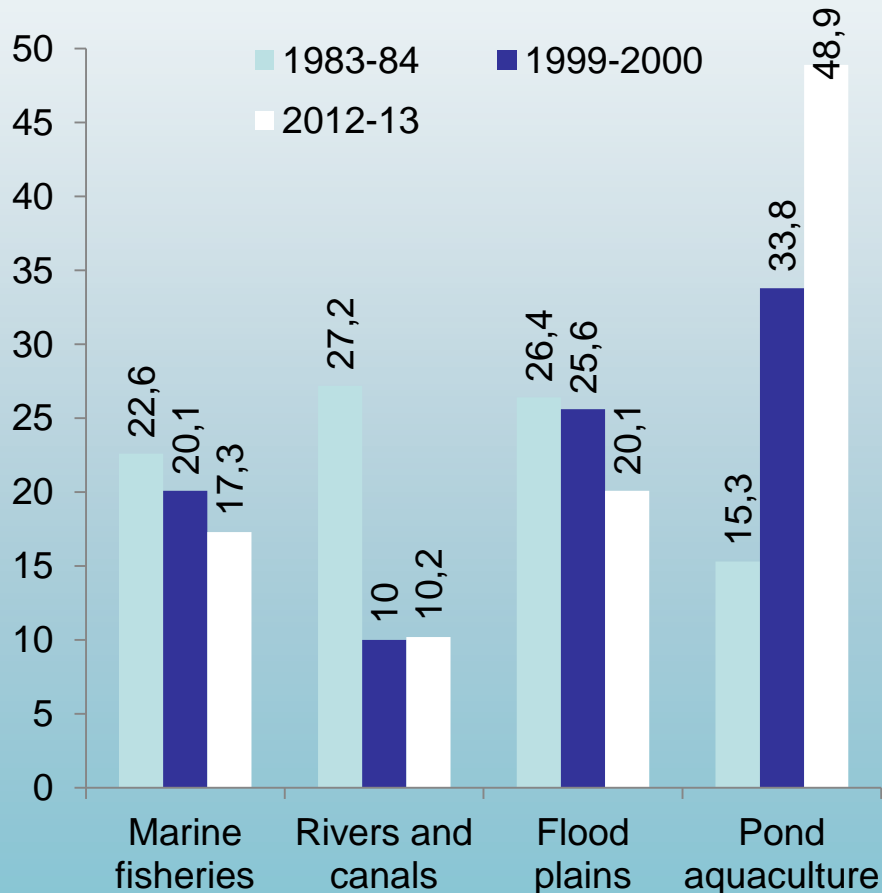
- The irrigated area has expanded fast over the last two decades
- Most of the expansion has been through private investment in small scale tube wells and power pumps.
- The expansion of boro rice cultivation has been facilitated by the expansion of ground water irrigation
- This development has put pressure on the supply and quality of drinking water

Resources and productivity of inland fisheries

- Bangladesh has a flood plain of 2.8 million ha (out of 14.4 m ha of land mass). It is a vast fisheries resource, but the yield is very low.
- The potential remains un-utilized due to problems associated with the use of common property resources.
- Pond aquaculture with commercial farming has gained importance over the last decade.
- Entrepreneurs (often from outside the locality) have been converting low-lying rice lands into fish ponds.
- Brackish water shrimp farming has expanded rapidly in the coastal areas since 1980s. But it has caused social and environmental problems. The progress has stalled recently

Fisheries	Area (000 ha)	Yield (kg/ha)
River & estuaries	1031	133
Depressed basins	114	680
Flood plains	2,832	270
Ponds	305	2,600
Shrimp farms	218	600

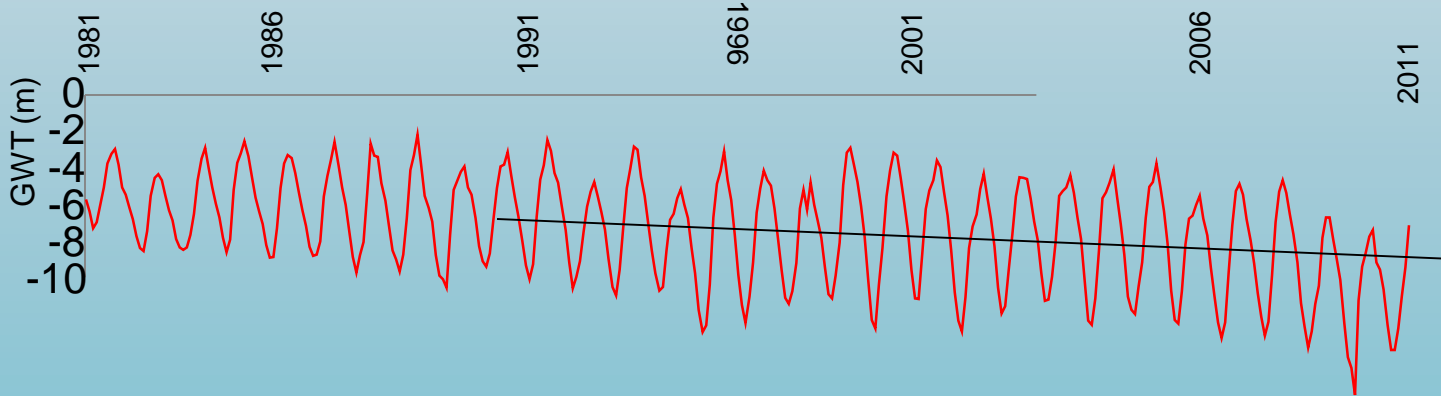
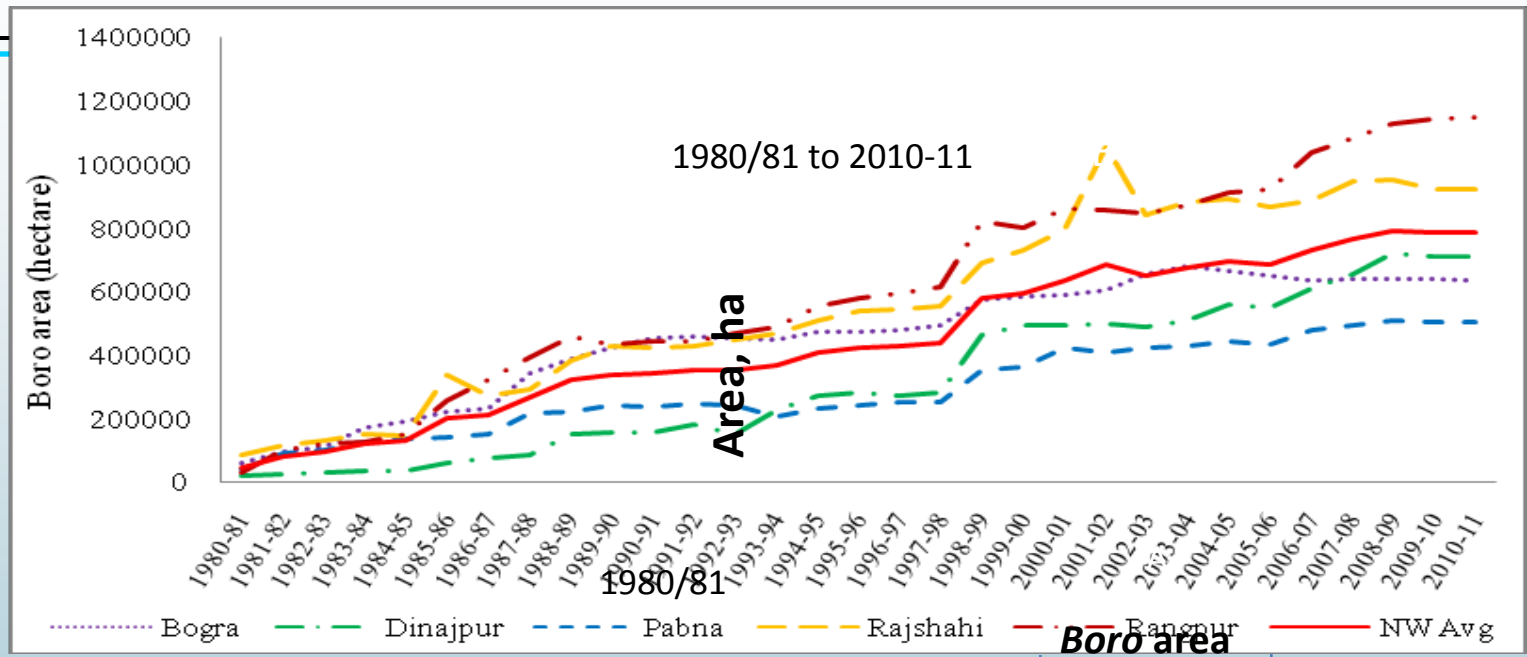
Share of different sources to fisheries production, 1983 - 2013



- Marine fisheries and fisheries from rivers contributed almost half of the fish production earlier but the share fell to only 27% in 2012-13.
- Bangladesh has not succeeded in exploiting the vast flood plains for fisheries. Fish stocks in rivers and canals have also been depleted.
- The contribution of ponds to fish production has increased from only 13% to 50% over the last three decades.
- This development has contributed to loss of wet lands and deterioration in water quality

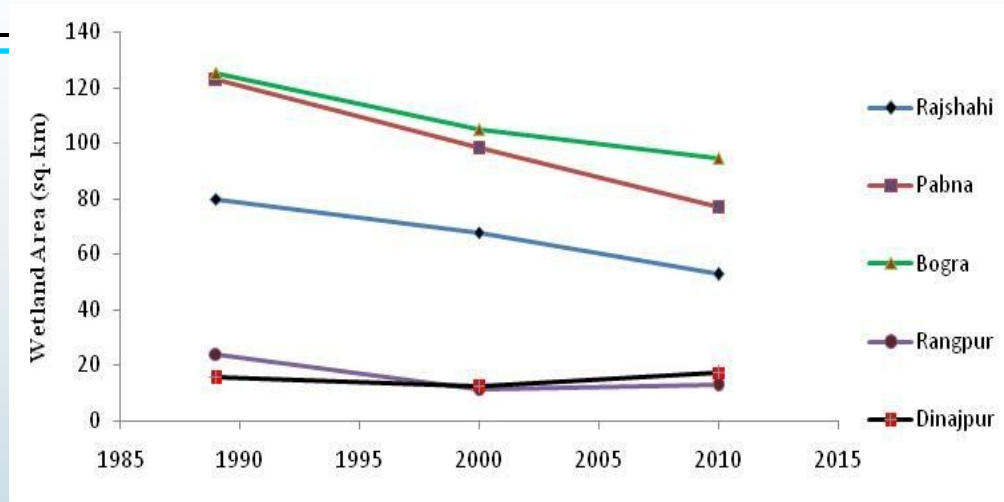


Decline of GW for increased *boro* area, the north-west region

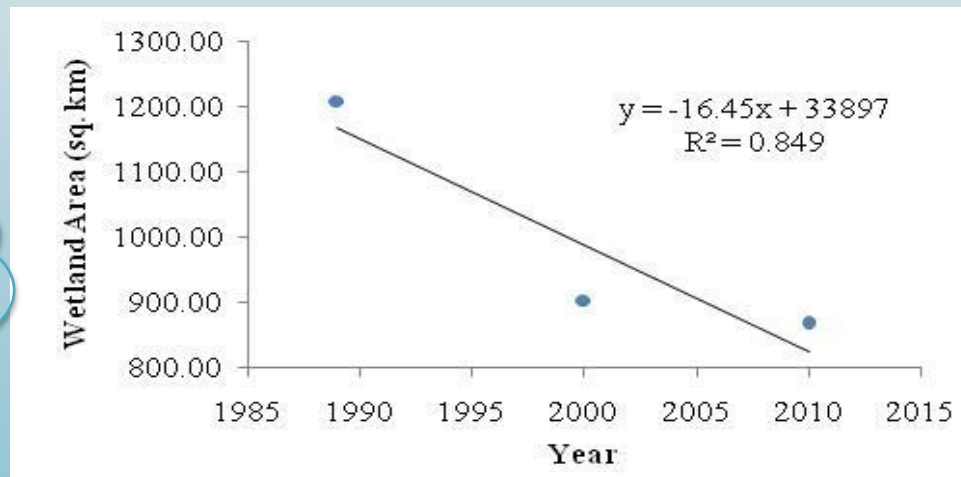


(Source: Study under NFPCSP of GOB and FAO, 2013)

Decline of wetland area in the NW region



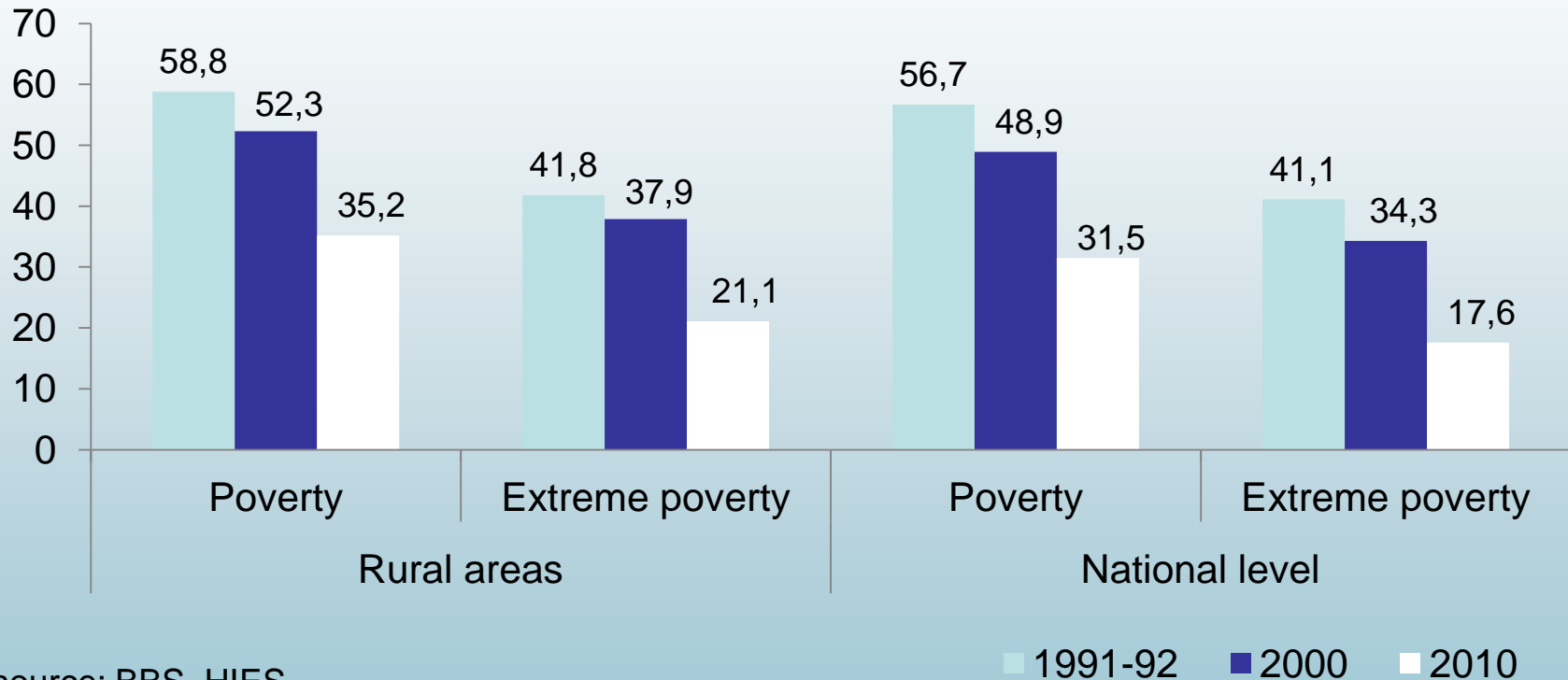
Wet lands became half in 15 years



Poverty and Nutrition



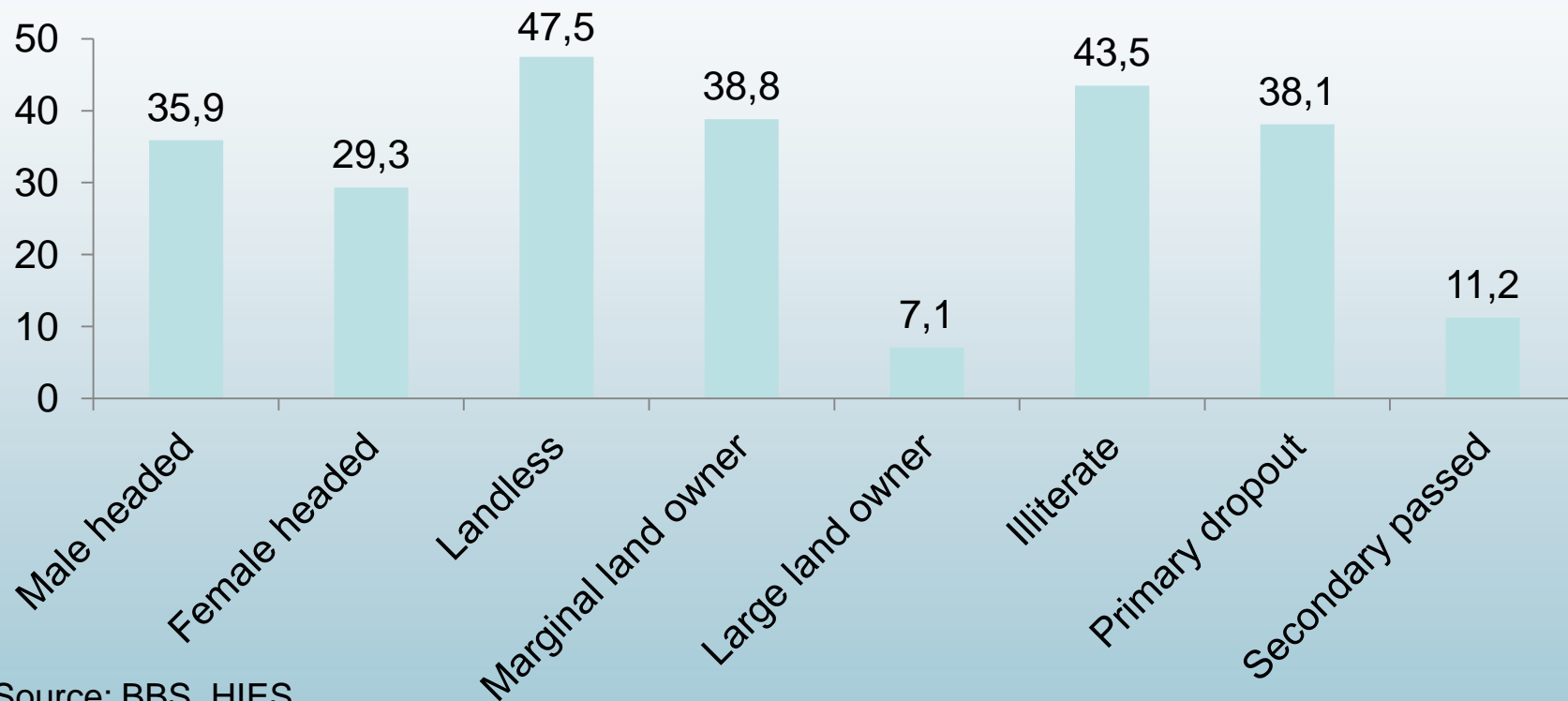
Incidence of poverty (head-count rate), 1991 - 2010



- Bangladesh is about to achieve the MDG on poverty. The head count ratio has declined from 57% in 1990/91 to 31.5% in 2010. The rate of reduction has been at 1.7% per year over 2000-2010
- The progress in poverty reduction has been almost the same for moderate and extreme poverty
- The incidence of extreme poverty is still high at 18% nationally, and 21% for rural areas



Profile of the rural poor (% of poor in the group), 2010



Source: BBS, HIES

- The incidence of poverty is high for landless households with illiterate members who are basically engaged in manual occupations such as agricultural labourers, construction workers and transport operators.
- The incidence of poverty is low for medium and large landowning households who has better endowment of land, capital and educated family members



Trend (%) in child malnutrition (6 to 59 months)

Indicators	1985-86	1995	2000	2011
Stunting (height for age)	68.7	64.2	48.8	41.3
Wasting (weight for height)	14.8	16.7	11.7	15.6
Underweight (weight for age)	71.5	68.3	51.1	36.4

Source: BBS: Child Nutrition Survey of Bangladesh, and NIPORT, 2009: Bangladesh Demographic and Health Survey, 2007, 2011

- Progress in reducing the incidence of stunting and underweight for under five children has been notable since 1995, but the present level is unacceptable and the rate of progress has been slow
- The incidence of wasting has not improved over time, and is alarmingly high



Status of child nutrition (% of population) by economic groups, 2011

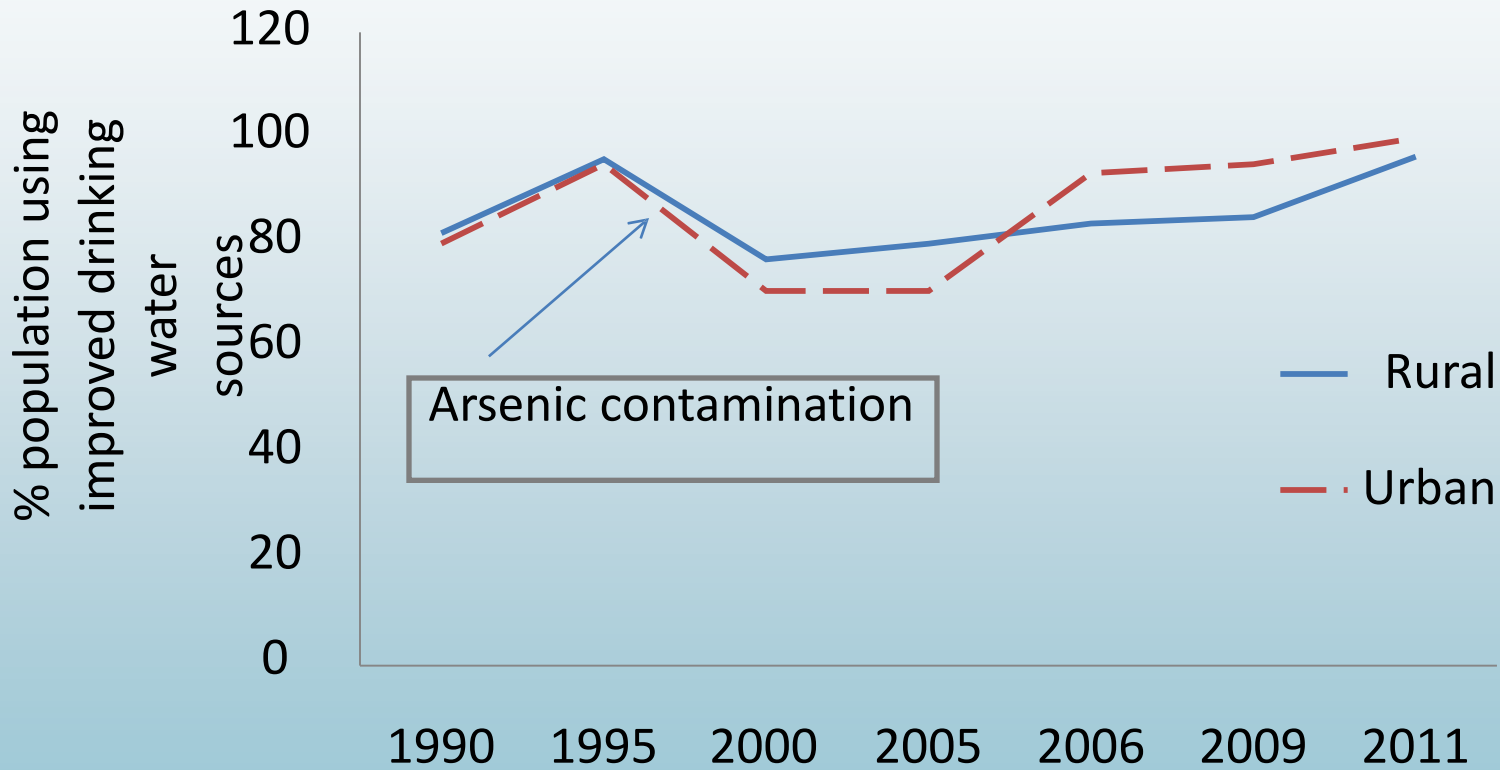
Wealth quintile	Stunting	Wasting	Underweight
Lowest	54	18	50
Second	45	16	42
Middle	41	18	36
Fourth	36	14	28
Highest	26	12	21

Source: Bangladesh Demographic and Health Survey, 2011

- The incidence of stunting and underweight is correlated with the wealth status of the household.
- The incidence of stunting is almost half for the top wealth quintile compared to that for the bottom 20% in the wealth scale.
- For wasting the relationship is weak.
- But the present level is unacceptably high for the top 40% of households
- It suggests the need for behavior change education for reducing malnutrition

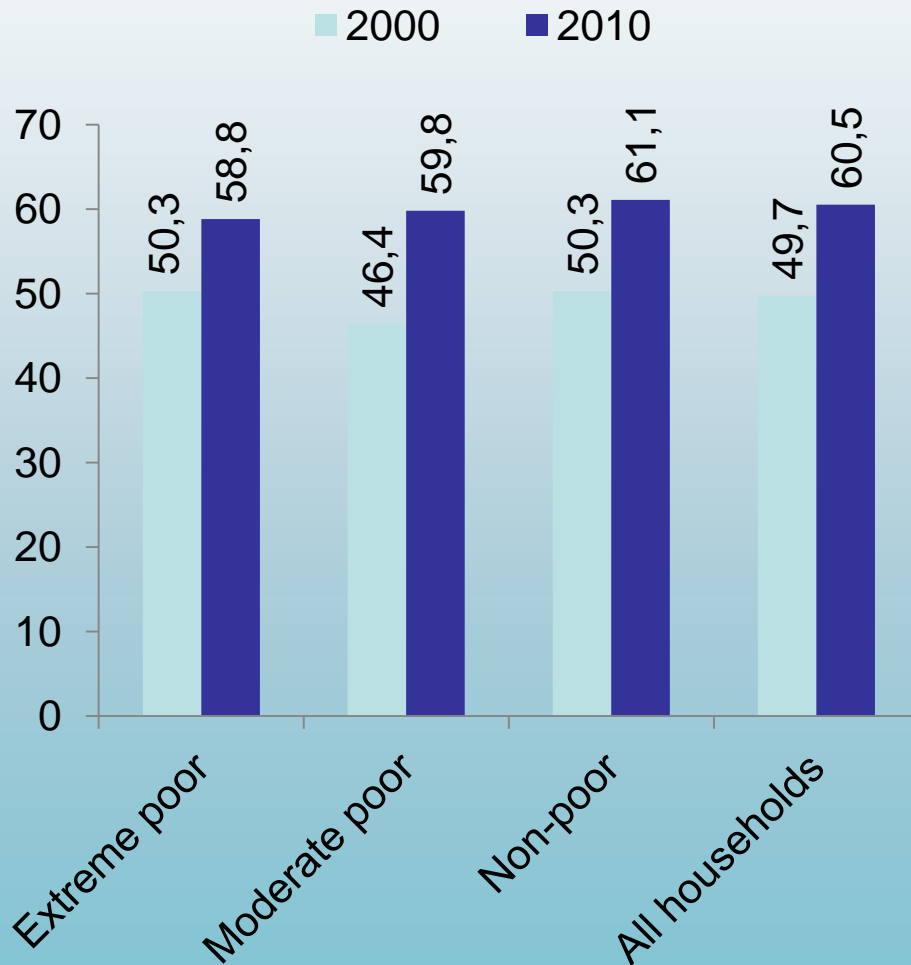
Water, sanitation and health

Access to safe drinking water



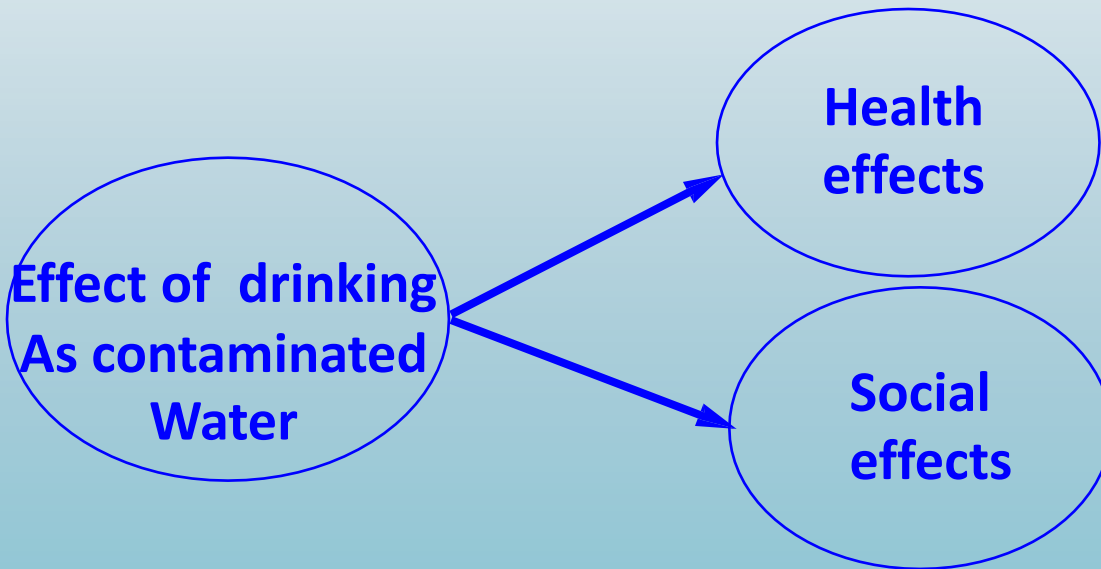
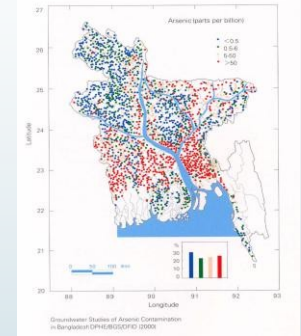
(Source: Data from Sth-Five Year Plan (2011-15), GOB)

brac Changes in the use of tube well water for Non-drinking purposes, by poverty groups



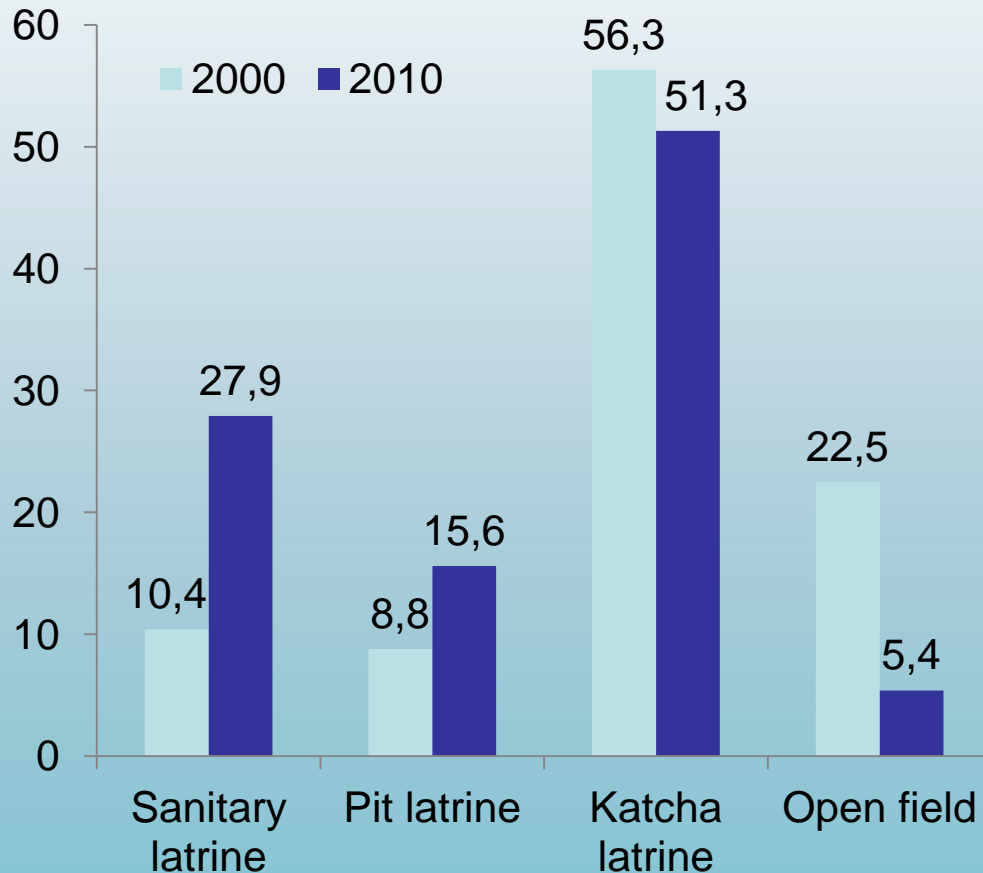
- Only 61% of the households use tube well water for non-drinking purposes
- The difference in the incidence of use of unsafe water (from ponds and rivers) for bathing and cooking is marginal across poverty scale
- It is a source of water borne diseases, particularly skin diseases
- This area needs attention in development interventions

20% people still don't get safe water (JMP 2102). About **13% drinks arsenic contaminated water beyond permissible limit**
[GoB and UNICEF (2010)]



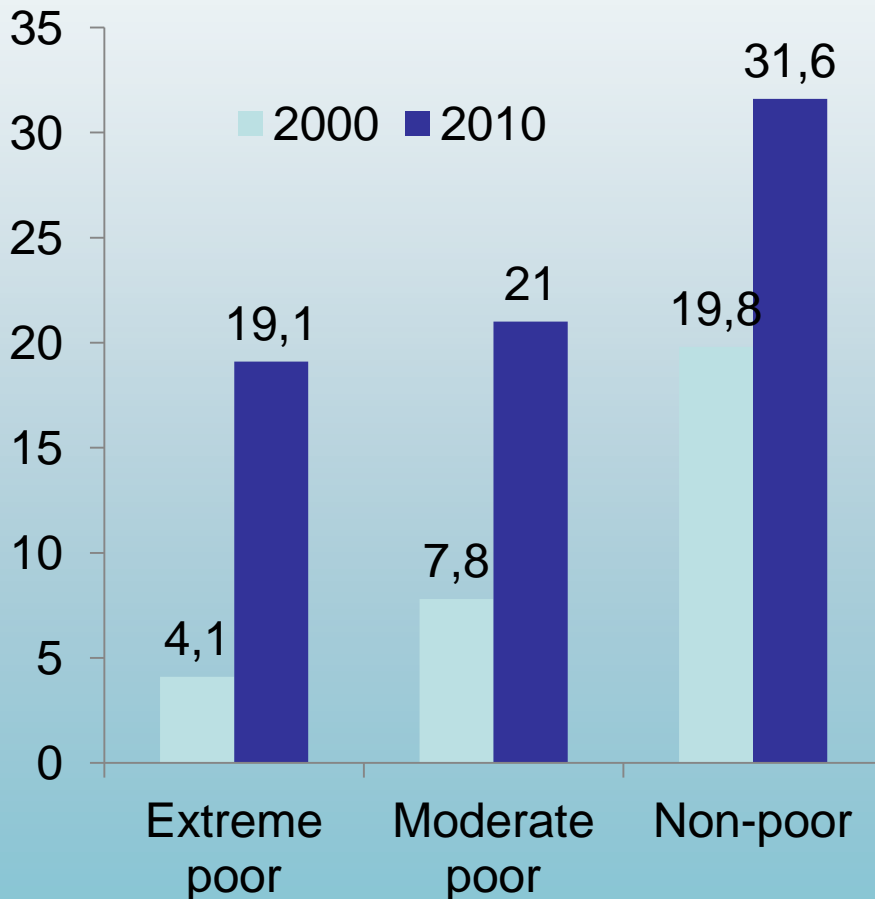
At Matlab of Chandpur District on 22 Aug 2013

Changes in the state of sanitation, rural area, 2000 – 2010 (Source, HIES, 2000, 2010)



- The situation with regard to sanitation is highly unsatisfactory.
- Only 28% of the households use sanitary latrines and another 16% use paved pit latrine.
- However, the situation has improved substantially during 2000-2010
- The reduction in the incidence of open defecation has been particularly impressive; a reduction from 23% in 2000 to 5.4% in 2000

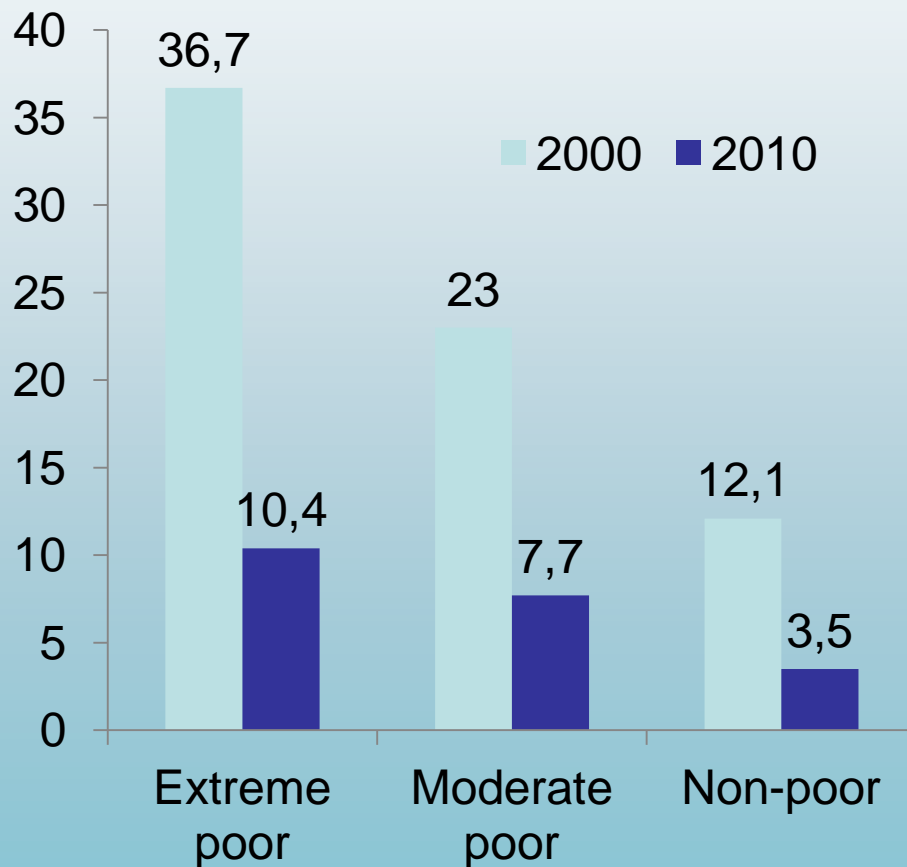
Changes in the use of sanitary latrine by poverty, rural Area, 2000 - 2010



- High differentiation exists in the use of safe latrines across the poverty scale.
- About one-third of the non-poor households use sanitary latrines compared to 19% for extreme poor, and 21% for moderate poor households
- The rate of progress in the use of sanitary latrine has been faster for the poor compared to non-poor households

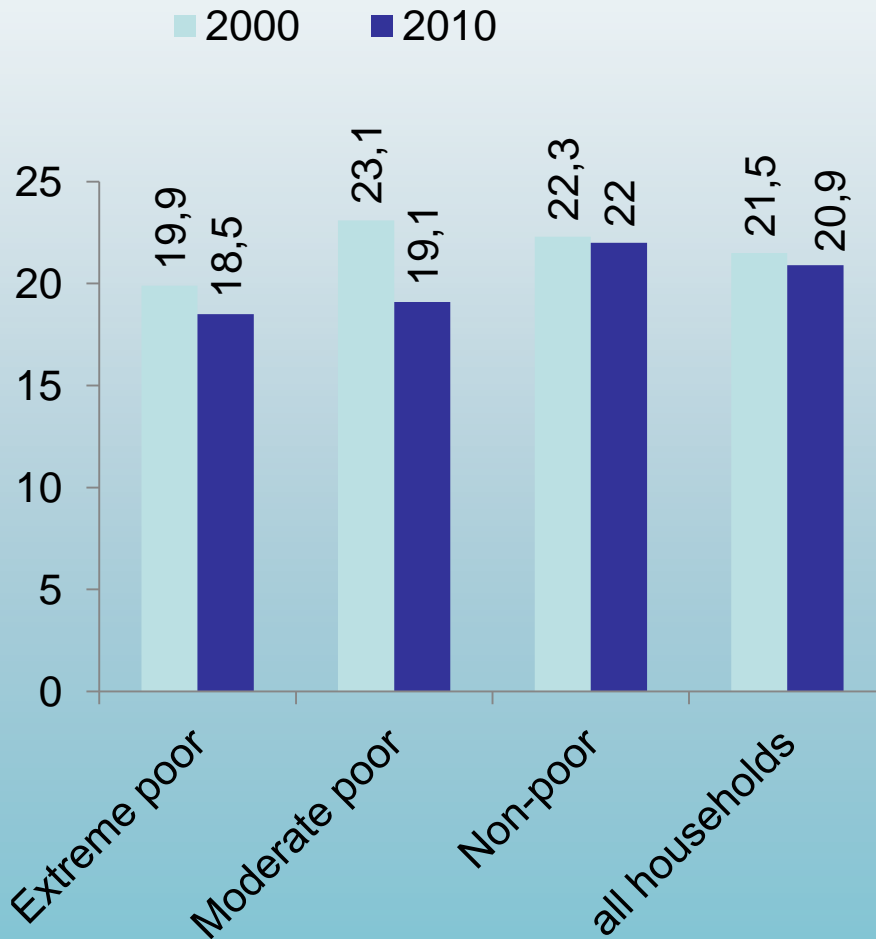
Changes in the practice of open defecation

By poverty, Rural Area, 2000 - 2010



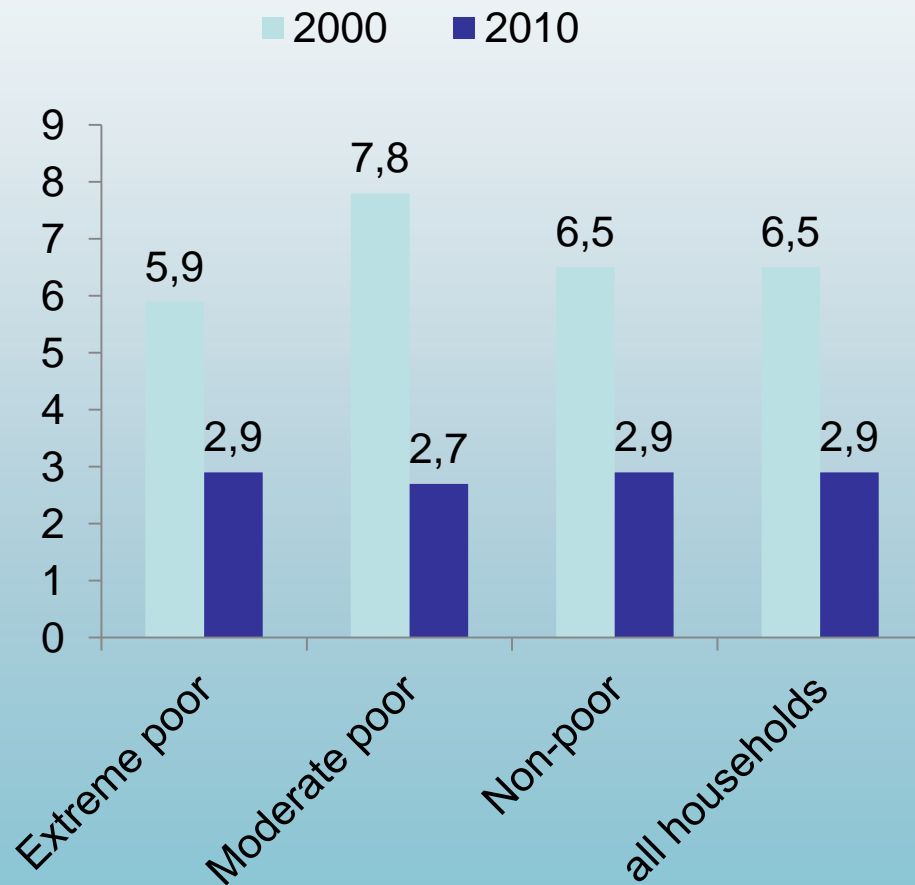
- The incidence of open defecation was very high at 37% for the extreme poor household and 12% for non-poor households
- Rapid progress has been made in this respect during the last decade for all economic groups
- Still 10% of the poor households and 3.5% of the non-poor households go for open defecation
- This is an area where behaviour change education is needed.

Members reporting illness during one month prior to the survey, rural area (source: BBS, HIES)



- The incidence of morbidity is quite high in Bangladesh.
- Households reporting illness of members during 30 days prior to the survey was 21% in 2010, almost the same rate found in 2000.
- The level of morbidity varies little across poverty groups.
- The findings suggest that development interventions on health should target households irrespective of poverty

Illness from diarrhoea, Children under five, rural area, 2000 and 2010



- The Household Income and Expenditure Survey 2000 conducted by BBS did not ask detail information on the type of illness suffered by members.
- So it is difficult to estimate the change in the incidence of water borne diseases.
- However, the information on diarrhoea is available from both surveys.
- The data shows substantial progress in the reduction of diarrhoea, from 6.5% for under five children in 2000 to 2.9% in 2010. The incidence in 2010 is almost the same across poverty groups

BRAC interventions in agriculture,
nutrition and water and sanitation

BRAC operates at scale

With over 100,000 employees reaching an estimated 125 million people with an annual expenditure of USD 900 million, BRAC is one of the world's largest non-governmental organizations.

Born in 1972 in Bangladesh as a relief and rehabilitation organization to settle returning refugees from India after the War of Independence from Pakistan, BRAC (Bangladesh Rural Advancement Committee) has grown as a major development organization in Bangladesh. Since 2002 it has become an international NGO from the South spreading its knowledge and experience of anti-poverty interventions to 10 other developing countries outside Bangladesh.

BRAC has multi-faceted development programmes related to microfinance, ultra poverty, agriculture and food security, education, health, disaster management, community empowerment, human rights and legal aid, and gender justice and diversity

Agriculture and food security programme

- Adaptive research for development of shorter maturity varieties with improved grain quality
- Farmer-participatory validation of climate resilient technologies, such as submergence-, drought- and salinity tolerant rice varieties, for fast tracking technology diffusion
- On-farm conservation of traditional rice, indigenous fish and medicinal plants
- Operates a seed system for supply of best quality seeds and diffusion of cutting edge technologies
- Provision of credit and extension services for marginal and tenant farmers



The program roll out: 2010 to 2013

Indicators	Cumulative position		Gender disaggregation		
	2010	Oct 2013	Female	Male	Total
Tenant farmer association (Nos)	7, 579	16, 517	8, 467	8, 050	16, 517
Members enrolled (000)	141	355	253	102	355
Active borrower (000)	109	267	197	70	267
Loan disbursement (US\$ million)	22.8	147.7	76.3	71.4	147.7
Loan outstanding Portfolio at risk (%)	1.2	4.8	-	-	-
Farmers trained (000)	51	148	45	103	148

Source: BRAC, Agriculture and Food Security Programme Department, MIS Report, November 2013



BRAC development interventions on nutrition

Promoting behavior change on Infant and young child feeding practices in 50 sub-districts

Messages are disseminated through front-line workers – Health Volunteers and Community Nutrition Promoters

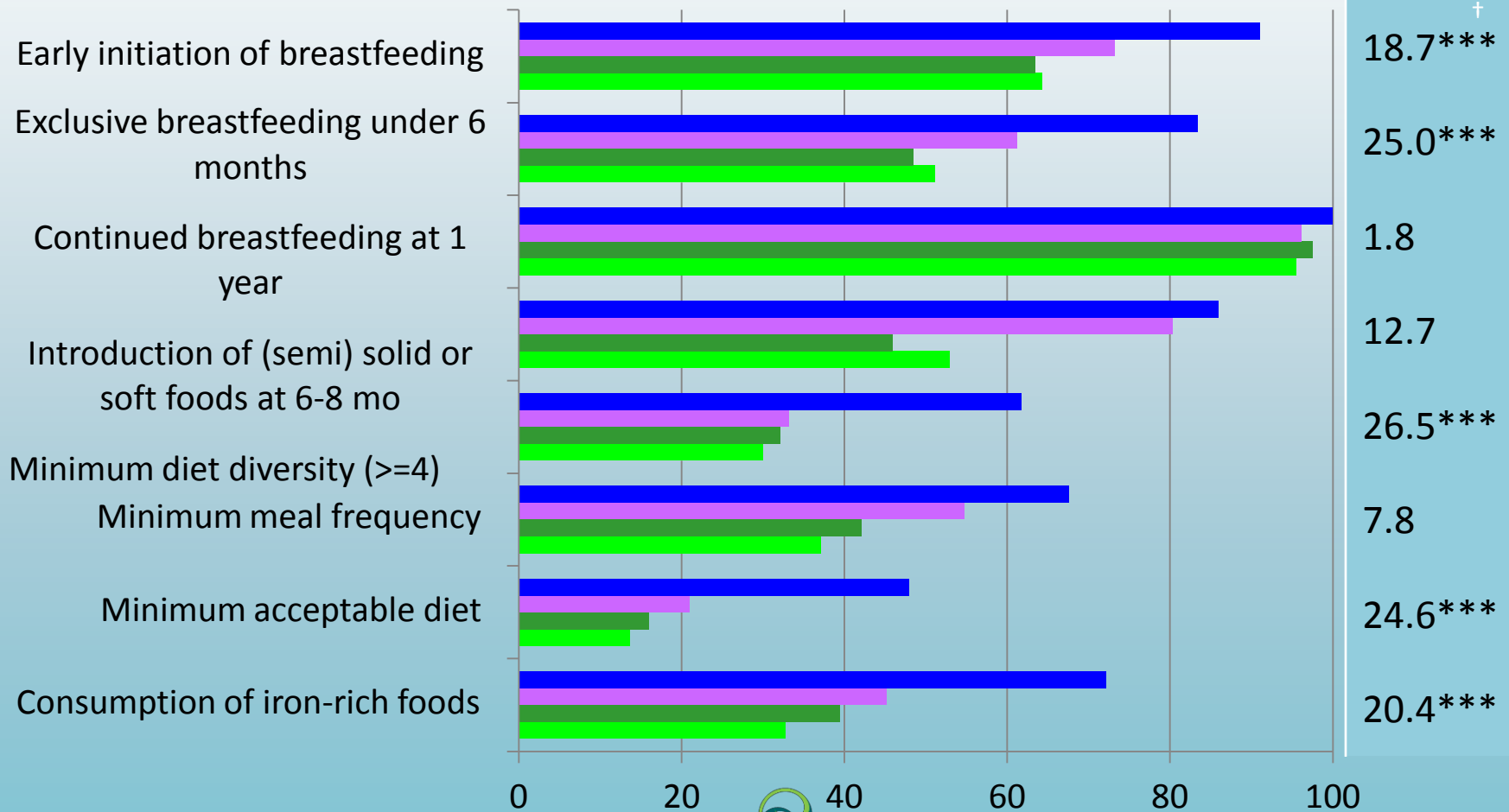
Messages disseminated:

- Breast feeding immediately after birth of the child
- Feeding only breast milk up to six months
- Feeding mashed family food for children over six months
- Feeding animal source foods for children over six months
- Cooking child's food with oil
- Add micronutrient powder to child's food



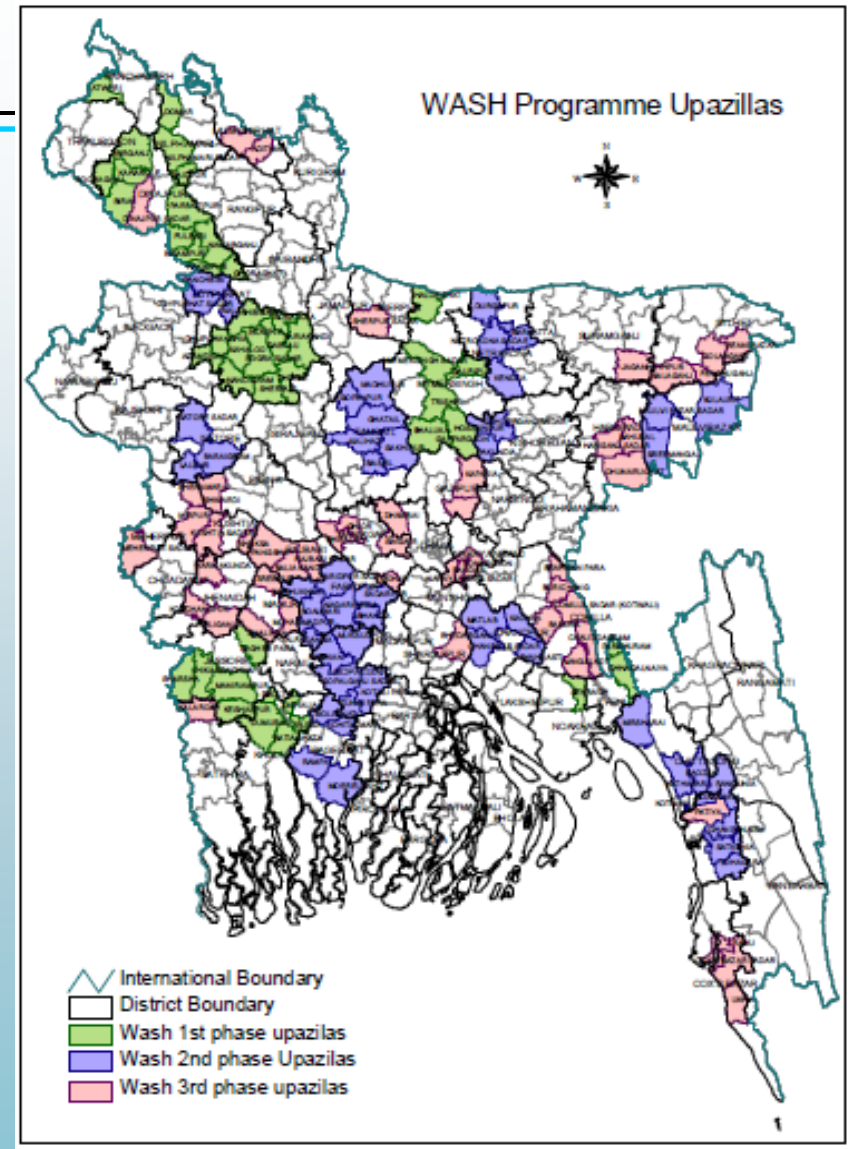
Core WHO IYCF indicators, in 2010 and 2013 (n=1977)

■ A&T Intensive 2013 ■ A&T Non-intensive 2013 ■ A&T Intensive 2010 ■ A&T Non-intensive 2010



BRAC Water, Sanitation and Hygiene program

- Operates in in 150 of 482 *upazilas*. Recently 96 new *upazilas* were included under the program
- The program is implemented in close collaboration with the government



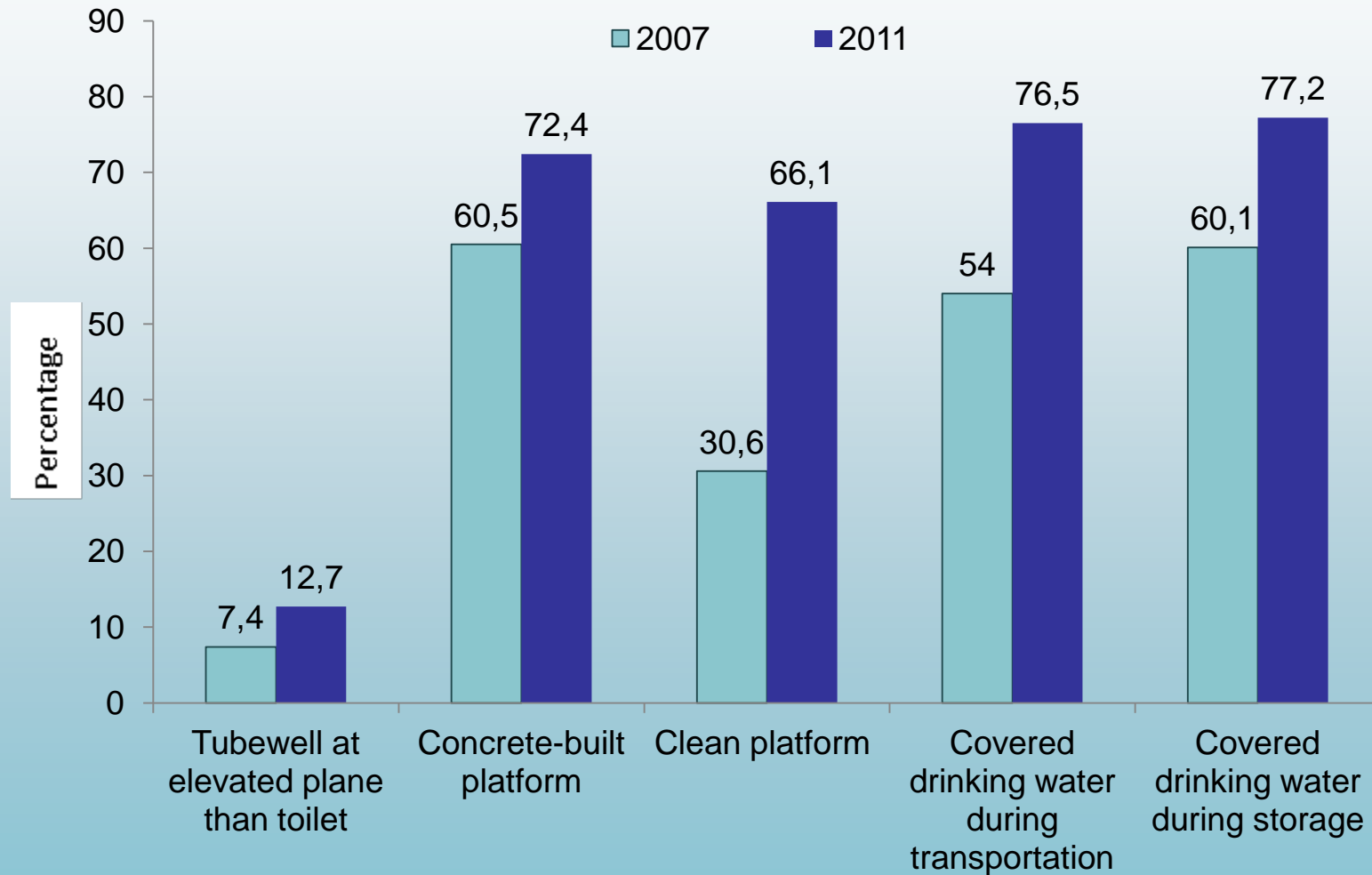
Programme approaches and components

- Formation of Village WASH Committee (VWC) for supporting behavior change education on the use of latrines and on good hygiene practices.
- Training for capacity building of stakeholders.
- Support for quality control in the production of water sealed latrines.
- Establishment of deep tube wells in arsenic hotspots and desalinization plants in coastal areas to supply safe drinking water.
- Provision of soft loans to poor households for installation of sanitary latrines
- Latrine for girls in secondary schools and promotion of sanitation and hygiene education

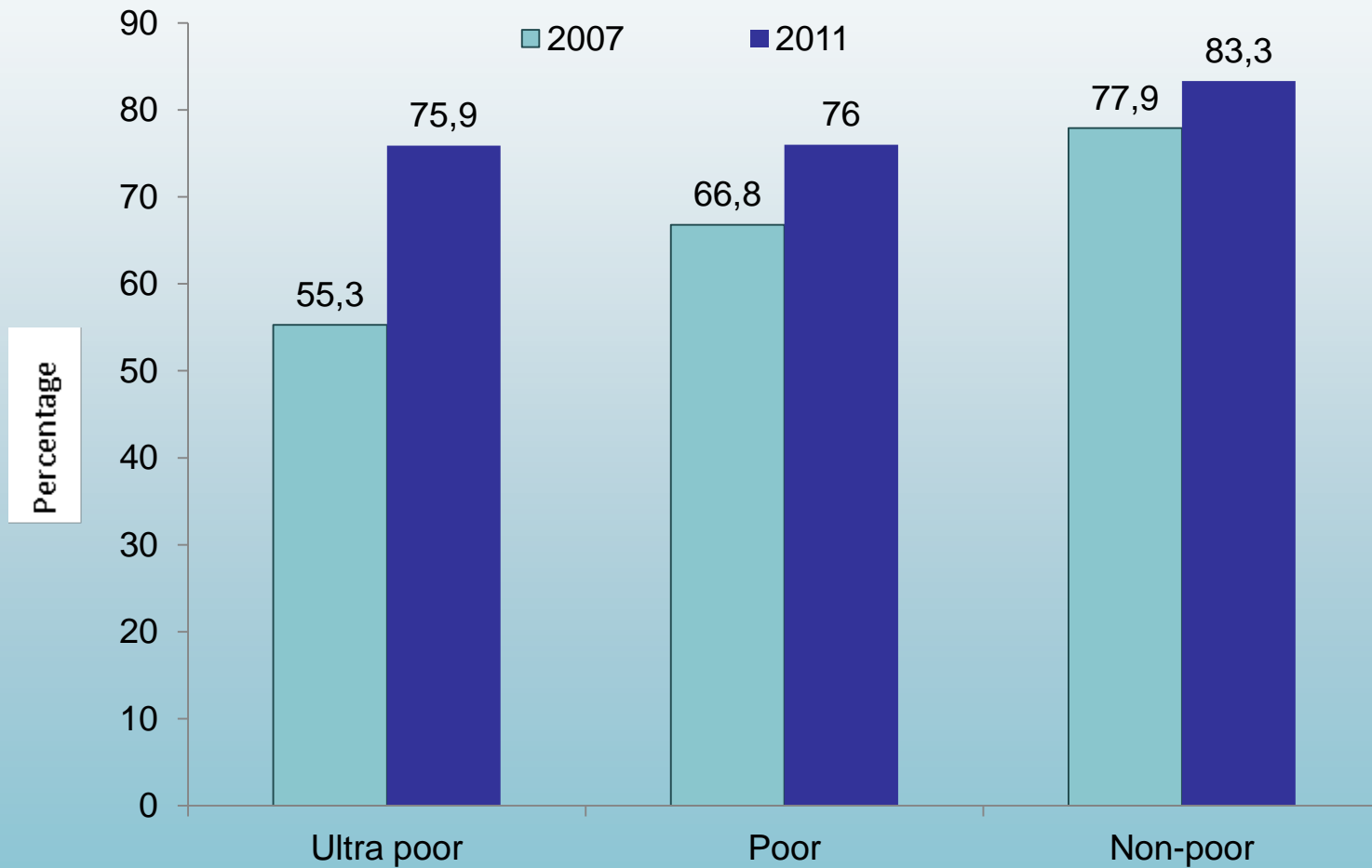


Study based on sample survey

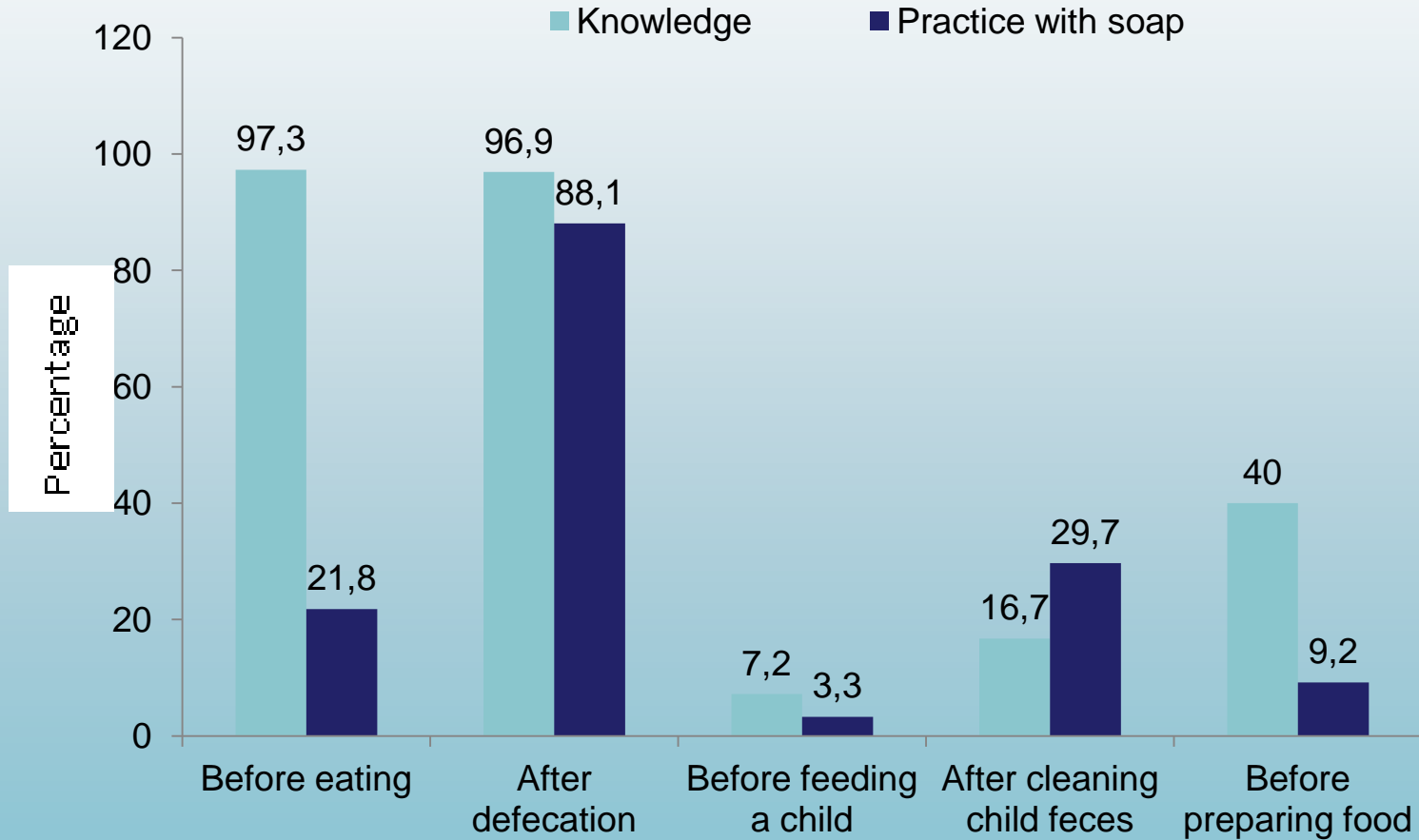
- 30,000 households randomly selected from 50 *upazilas* to assess sanitation coverage and water-related disease prevalence.
- 6,600 households randomly selected from 11 *sub-districts* to assess water safety practices.
- Baseline, mid-line and end line survey conducted at the household level in intervention and control areas to assess impact



Ownership of sanitary latrines by economic status

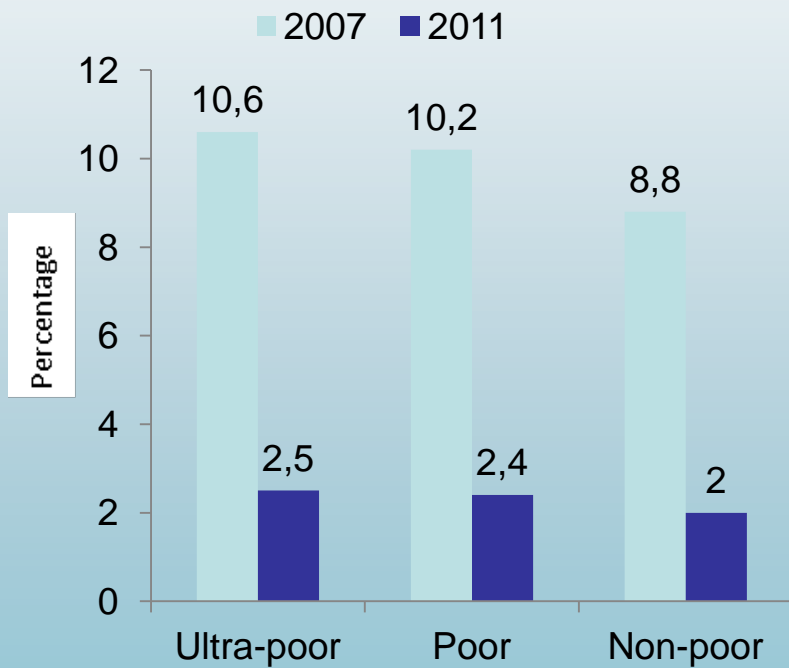


Gap between knowledge on and practice of hand washing with soap at critical times, 2011

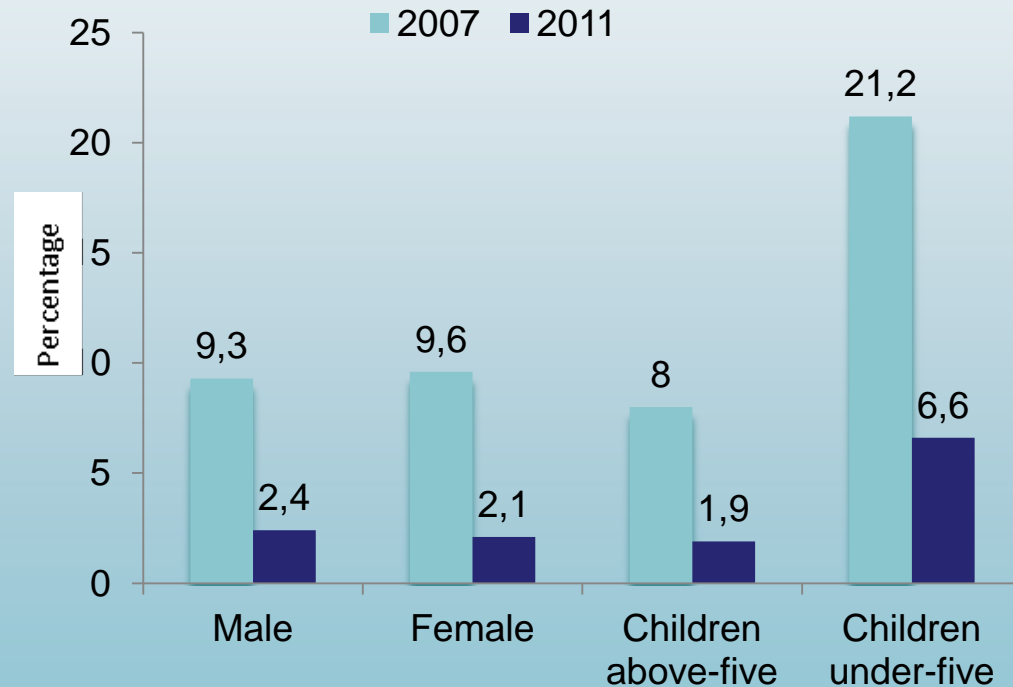


Prevalence of self-reported water-related diseases

Across poverty groups



Different household members





grow

nurture

nourish