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Water Supply and Sanitation Sector Reform

**Assessing the Costs and Benefits of Water Supply
and Sanitation Improvement in EECCA**

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This is a draft outline of the WHO contribution for Almaty+5 meeting

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**World Health Organization
Regional Office for Europe**

INTRODUCTION

Within the framework of Environment for Europe process, ministers of the eastern Europe, Caucasus, and central Asia (EECCA) adopted the Guiding Principles for Reform of the Urban Water Supply and Sanitation Sector in the EECCA in Almaty, Kazakhstan, in 2000. The Conference led to:

- the adoption by EECCA Ministers of Economy/Finance and Environment of Guiding Principles for the Reform of Urban Water Supply and Sanitation Sector;
- a mandate to the EAP Task Force to monitor the implementation of the Guiding Principles, and to develop a work program to support their implementation; and
- an agreement to hold a follow-up Conference in 2005. This Conference has now been scheduled for 17–18 November 2005 in Moscow, Russian Federation.

The Conference formed a lead-up to the adoption of the Millennium Development Goal 7/10, strengthened by the World Summit on Sustainable Development to:

Halve, by 2015, the proportion of people without sustainable access to safe water and sanitation.

At the “Environment for Europe” Ministerial Conference in Kiev, May 2003, the participants adopted EECCA Environment Strategy. The World Health Organization’s Regional Office for Europe (WHO) joined this effort to facilitate the water supply and sanitation area of work under the Strategy, in particular by cooperating with the EAP Secretariat at OECD.

Several assessments have been made to evaluate the likely cost of meeting the Millennium Development Goals. The total MDG investment cost was estimated at around 14.6 billion Euro for all EECCA countries for the entire MDG period [1]. However, the model used in this estimate addresses solely expenditures, and does not balance these expenditures with the economic benefit from disease avoided and productivity gained by reducing the burden of water-related diseases.

With the signature by France as sixteenth ratifying country to the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, this first international legally binding instrument for fighting water-related diseases will enter into force on 4 August 2005. WHO is currently supporting countries in developing the operational aspects of the Protocol, and expects to be in the position to contribute to the Almaty +5 conference by providing a methodology for the further strengthening of the cost benefit analysis through the introduction of a health-based component.

The WHO Almaty+5 paper aims to:

- (a) review the current information on access to water and sanitation in the EECCA region on both access and safety of the drinking water supply;
- (b) introduce the methodology adopted under the Protocol for assessing, goal setting and reporting of the safety of the water at tap and the quality of the service
- (c) assess the burden of priority water-related diseases (diarrhoea, typhoid, viral hepatitis A, cholera and dysentery). Additionally, interest is expressed for trachoma and helminth infections), and
- (d) explore the benefits that can be gained from several intervention scenarios.

WATER SUPPLY AND SANITATION COVERAGE ASSESSMENT

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) has been tasked to monitor the progress on access¹ to improved² water supply and sanitation targets cited in the MDG. Two caveats need to be clearly formulated before using the JMP data:

- (a) Due to the limited data available in the JMP database, any conclusions that can be drawn from the datasets are indicative rather than comprehensive. This is especially so in the EECCA region where coverage is geographically incomplete.
- (b) The definition of the parameters used in the JMP followed a technology-based approach. For the JMP premise to be valid, it is presupposed that the technology is fully operational. Failure in operation and maintenance make that in many EECCA countries technology is not operating as planned, thereby voiding one of the basic premises of the JMP.

With these two caveats recognized, three important aspects of the water supply and sanitation situation in the EECCA region can be reviewed using JMP data: level of coverage; progress made; and the gap between the situations in urban and rural areas.

- ***The level of water supply and sanitation coverage:*** Table 1 shows the 2002 coverage level of improved water supply and sanitation in EECCA countries in comparison to the average of the WHO European Region average and other regions defined by the JMP. The figures show that the situation in EECCA is comparable or only slightly better than Northern African region.
- ***Progress made so far:*** Figure 1 illustrates progress in water supply and sanitation from the MDG base year 1990 till the most recent data in 2002 as well as targets at mid-term and at 2015. According to the data, improved water supply coverage for the urban population is the only parameter in which the EECCA region is doing well or, in fact, ahead of time. Rural areas are critical areas for water supply and sanitation, while sanitation remains a matter of concern in urban areas.

¹ Access to safe drinking water is estimated by the percentage of the population using improved drinking water sources, as described below¹. Similarly, access to sanitary means of excreta disposal is estimated by the percentage of the population using improved sanitation facilities. Improved sanitation facilities are those more likely to ensure privacy and hygienic use. Improved drinking water technologies are those more likely to provide safe drinking water than those characterized as unimproved. [2]

² The term 'improved' is based on definitions of technological means deployed:

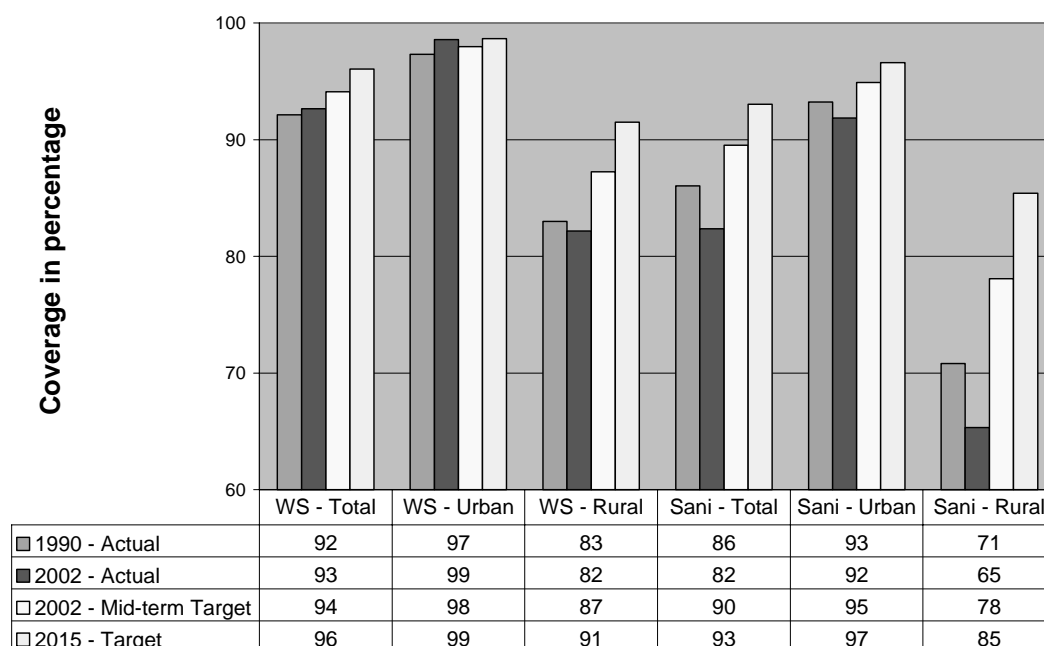
- Improved water supply means: household connection, public standpipe, borehole, protected dug well, protected spring water, rainwater collection
- Improved sanitation means: connection to a public sewer, connection to a septic system, pour-flush latrine, simple pit latrine, ventilated improved pit latrine
- Non-improved means unprotected well, unprotected spring, vendor-provided water, bottled water, tanker-truck provided
- Non-improved sanitation means: service or bucket latrines, public latrines, latrines with an open pit.

- **Urban-rural gap:** Among the EECCA countries, the gap between urban and rural areas should not be neglected. As the rural population constitutes 36% of the total population (2002 data), rural area should be considered for targeted intervention.

Table 1: Comparison of water supply and sanitation status in 2002 between EECCA region and others classified by JMP

	Lacking household connection to water supply			Lacking improved water supply		
	Total	Urban	Rural	Total	Urban	Rural
Developed Regions	4	1	12	2	0	6
Europe and Central Asia	19	7	42	6	1	17
Latin America & the Caribbean	22	11	58	11	5	31
Northern Africa	27	11	46	10	4	16
EECCA	28	10	59	7	1	18
Western Asia	37	21	69	12	5	26
Eastern Asia	39	9	60	22	7	32
World	48	21	73	17	5	28
Developing Regions	58	29	79	21	8	30
South Asia	76	47	88	16	6	20
South-eastern Asia	77	55	92	21	9	30
Oceania	78	33	92	48	9	60
Sub-Saharan Africa	84	61	96	42	18	55

Source: JMP

Figure 1: Progress in EECCA in meeting MDG Target 10

Source: JMP

The above can be summarized into the following four points:

1. JMP data does not provide a realistic picture of the EECCA region when it comes to actual safe water supply and adequate sanitation provision, and further assessment is necessary to obtain more precise estimates on a wider geographical basis of water supply and sanitation coverage.
2. The EECCA region is the worst off part of Europe; it is comparable or only slightly better off than Northern African region.
3. Based on JMP, the EECCA region is lagging behind in achieving the MDG Target 10. Particularly, a targeted intervention in the rural areas is urgently needed as well as improvements in sanitation.
4. The urban-rural gap is large. With 36% of population living in the rural areas, special intervention should be brought in, as also mentioned in the point above.

WATER QUALITY AT TAP

3.1. Existing data

The report of the Danish Ministry of Environment published in 2004 [1] has in its annex a set of tables of country data for water supply and sanitation. The assessment indicates the quality of service, and table 2 provides information on the service coverage level by facilities in a decent state. Further, the report suggests that there is no EECCA country whose centralized water supply sources provide uninterrupted service.

Table 2: Percentage of population covered with "improved/safe" water supply sources whose network and equipment not in need of urgent repair

	Percentage of population covered with "improved/safe" water supply sources whose network and equipment not in need of urgent repair			Percentage of population covered with "improved/adequate" sanitation whose network and equipment no tin need of urgent repair		
	Total	Urban	Rural	Total	Urban	Rural
Armenia	66	69	58	89	90	89
Azerbaijan	54	68	41	80	85	65
Belarus	80	80	80	90	90	90
Georgia	55	66	43	89	89	89
Kazakhstan	66	69	64	89	89	89
Kyrgyzstan	44	63	34	75	78	58
Republic of Moldova	64	68	61	88	89	86
Russian Federation	80	80	80	90	90	90
Tajikistan	38	55	32	81	79	59
Turkmenistan	60	68	51	88	88	76
Ukraine	68	69	64	88	89	86
Uzbekistan	53	63	48	83	79	61
EECCA Total	71	75	64	88	89	81

Source: Danish Ministry of Environment, DANCEE ref. No. M 128/000-0051, 2004

Unfortunately, there is at present no systematic collection of data on the microbiological and chemical failure rates of water supplies in the European Region. However, incidental information on these problems is gathered in the context of the Environmental Performance Reviews of UNECE and partially from national data.

3.2. Methodology under the Protocol on Water and Health

Parties to the Protocol on Water and Health requested expert guidance on indicators for target setting and progress monitoring both in terms of water quality as well as in terms of service quality of the water supply and sewerage enterprise.

A first meeting of the expert group took place on 9-10 May 2005 at the WHO Regional Office for Europe in Copenhagen and the results will be communicated at the Paris meeting.

ASSESSMENT OF THE BURDEN OF WATER-RELATED DISEASES

In this section, EECCA data on disease prevalence collected by WHO for priority water-related diseases will be compared against EU and EURO averages, and their evolution since the MDG base year 1990 will be explored.

COST BENEFIT ANALYSIS

Present economic models do not take into account the direct and indirect costs resulting from unsafe drinking water, and the financial benefits that could be gained from improving water supply and sanitation.

WHO will assess:

- (a) the burden of disease in Disability Adjusted Life Years (DALYs) averted attributed to unsafe water, inadequate sanitation and the lack of hygiene, and
- (b) the costs and benefits of the following scenarios in both urban and rural areas

The interventions taken into account include:

- In urban areas:
 - providing access to improved water supply sources and improved sanitation services to the unserved population;
 - providing home chlorination to disinfect water at home to the unserved population living in urban areas;
 - provision of in-house piped water and sewerage connections, with water quality monitoring and partial treatment of waste waters, to the urban poor by connecting those segments of the population that are at present not connected to centralized piped water and sewage network systems; and
 - substantial rehabilitation to the urban piped water supply network by repairing 50% of the network so that delivered water meets the water quality standards (with detectable residual chlorine at tap).
- In rural areas:
 - providing access to improved water supply sources and improved sanitation services to the unserved population living in rural areas; and
 - providing home chlorination to disinfect water at home to the unserved population living in rural areas.

The types of benefits taken into account will include:

- annual health sector treatment cost saved;
- annual patient treatment cost saved;
- productive days gained due to less diarrhoeal illness;
- school attendance days gained due to less diarrhoeal illness;
- healthy baby/infant days gained due to less diarrhoeal illness;
- value of adult productive days gained due to less diarrhoeal illness;
- annual time gain due to more convenient water supply and sanitation;
- annual value of time savings; and
- value of avoided deaths per capita based on predicted future earnings.

REFERENCES

- [1] Danish Ministry of Environment, DANCEE ref. no. M 128/000-0051. Financial needs of achieving the Millennium Development Goals for water and sanitation in the EECCA region, Draft Main Report. May 2004.

- [2] Meeting the MDG Drinking Water and Sanitation Target: A Mid-Term Assessment of Progress, World Health Organization and United Nations Children's Fund, 2004.