



The water and environmental sanitation situation in the Central Asian Republics and Kazakhstan

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WATER IS LIFE, also in Central Asia. It is a basic right of all human beings to have access to clean drinking water and sanitation facilities at an affordable price. Water, sanitation and hygiene are crucial to the UNICEF mandate to promote the survival, protection, development and participation of children as vested in the Convention of the Rights of the Child.

Although the main emphasis of the CARK Governments in water and sanitation was to maintain the same level of service to the population, both in terms of quantity and quality as in 1993/1994, the limited and decreasing resources further affected especially the rural population's access to these services. Many central water systems are in urgent need of rehabilitation and due to poor operation and maintenance practices, leakage in some areas is as high as 40%. More recent official figures are not available yet, but it is expected that more people are facing hardships in trying to meet their basic services such as water and sanitation. While the recommended level in rural areas of Kazakhstan is 120 litre per person per day, people in the Kyzyl Orda oblast bordering the Aral Sea have been receiving only about 40 litres. Often piped water is provided only a few hours per day, thus also having an impact on the sanitation and hygiene levels.

Provision of the basic level of water supply and sanitation services has become very difficult in all Central Asian republics due to various factors such as limited and decreasing resources, progressing contamination of water sources, insufficient coordination of water and sanitation activities between the various partners/institutions, and the focus on large scale and advanced technologies. Furthermore, attention needs to be focussed to improving sanitation facilities and hygiene behavior, with a special focus on rural areas. Diarrhoeal diseases and other water borne and water related diseases are still reasons for great concern and many public facilities such as schools and health posts have no longer running water or adequate sanitation systems.

Overall, inadequate maintenance of the supply systems, high levels of leakage, the rapid deterioration of water quality from existing wells and sources and the harsh climatic conditions have all contributed to the severe deterioration of the existing piped water supply systems. At the same time, many communities are still not served and have to rely on occasional water delivery or on using unsafe open water sources such as canals, rivers etc. treatment systems are largely lacking and the pumping stations are damaged or not functioning due to lack of spare parts. This

situation becomes even worst for the rural population in the winter period when the water pipes freezes and at time shortage of gasoline coupled with shortage of cash in the hand of the state farms and affected families further prevents families of getting water distributed by trucks and tractors.

Very little information is available on the user perceptions and preferences on sanitation and personal hygiene practices. Success in any water and sanitation programme depends mainly on the acceptability, and utilization of facilities by the target population. Besides detailed baseline information as to the sources of drinking water and sanitation with seasonal variations, Knowledge, Attitude and Practices study will give insight in the local population's requirements which will allow better planning and implementation of water and sanitation interventions.

Various ministries/departments are presently responsible for water supply and sanitation activities without an efficiently operating coordination mechanism. The number of actors is expected to increase in the future with increasing interest of active local/international NGOs and international agencies in this area. The involvement of the Ministry of Education, for example, becomes imperative in school water, sanitation and hygiene education programmes. Regional and national coordination of programme activities is one of the key elements to success. More intensified and focussed activities are needed to ensure that the basic right of all human beings for having clean drinking water and adequate sanitation facilities is met.

The recent meeting of the CARK MCH Forum Hygiene Promotion Working Group and the Water, Sanitation and Hygiene Roundtable in Tajikistan are encouraging signs for achieving success in the water, sanitation and hygiene areas. In the Hygiene Working Group meeting, deputy ministers of health, Education, water supply, and representatives from various NGOs from all CARK countries participated to discuss the sector related concerns and to identify ways of addressing this in a cost effective and sustainable manner. The inter-sectoral, joint approach initiated by the establishment of the CARK MCH Forum Working Group on Hygiene is expected to play a pivotal role in increasing the public awareness and participation towards improvement of the overall health and hygiene of our children, and for the future to come. The role of the local organizations need to be further strengthened.

The roundtable meeting in Tajikistan also attests similar dedication and commitment of all parties concerned, and

the initial success of these meetings will be nurtured for lasting improvements in the water, sanitation and hygiene areas in CARK.

This document focuses on the water, sanitation, hygiene and environmental situation in the five Central Asian Republics: Kazakhstan, the Kyrgyz republic, Tajikistan, Turkmenistan and Uzbekistan. The content of the document is based on the ongoing review and consultation activities with counterparts, the outcome of the mid-term review process, field visits. This document will form the basis of the Situation Analysis of Children and Women in Central Asia for the preparation of the next country programmes of Co-operation between the respective Governments and UNICEF. It is hoped that this document will generate necessary interest in the water, sanitation, hygiene and environmental issues effecting women and children in the CARK region.

Water supply

Access to Water Services: Overall, according to 1993 official figures, the access to safe (piped) in CARK countries varies between (The Kyrgyz Republic) to 67 %. However, further analysis of urban and rural data shows that on average 40 % of the total population lack access to safe water, and that mostly rural communities are suffering the most – almost 60 % use unprotected sources. However, more recent figures obtained from Turkmenistan shows that the national access has dropped from 63 % in 1993 to around 50 % in 1997; this drop is mainly due to further deterioration of the rural situation, due to the fact that almost 60% of the total population lives in rural areas and that the rural access changed from 53 % [1993] to 28 % [1997], the urban access reduced from 76 % in 1993 to 75 % in 1997. The situation in Uzbekistan shows a slight improvement, an increase in access from 62 % in 1993 to 67% in 1997. However, this is attributed to the progress made with improving water supplies for the rural population. The rural access in decreased from 82 to 74 % between 1993-1997, while the rural figure increased from 49 % in 1993 to 69% in 1997. Needless to say that further attention is needed to at least maintain the current level of services and further improve the services to the rural population.

Water sources and treatment facilities

Rivers in **Kazakhstan** constitute 110.37 cubic kilometre, spring water 95 cubic kilometres. Lakes and fresh water 57 cubic kilometre and underground water is estimated as 53.05 cubic kilometre in the whole country.

On average, 72 % of the urban and 52 % of the rural population have access to safe water supply [1993]. This situation improved slightly for the urban areas in 1994 with the access to safe water increasing to 85%, the rural access remained unchanged. Groundwater and open water sources are mainly used for water supplies. Kazakhstan faces some of the worst environmental problems in the world. The air,

water and soil pollution from industrial, urban and agricultural sources have had an adverse effect on the environment in the country, for example the pollution of the northern portion of the Aral Sea basin on the Kazakhstan side.

The water supply situation differs from region to region, with Kzyl Orda oblast in the Aral Sea area being the most form the main Aral-sk-Serbulak pipeline, 13 % depends on untreated water from the Syr Darya river and 15% rely on saline shallow groundwater, springs and irrigation canals. In Kazalinsk rayon with a population of 74,120 or 14,800 families, only the city of Kazalinsk and the 4 rural settlements are connected to the Aral-sk-Serbulak pipeline. Most of the population (80-85%) has to rely on the Syr Darya River, irrigation canals, shallow groundwater and springs. In reality, however, a much smaller percentage of the population receives water form the pipeline due to its poor construction and related operation and maintenance problems. For example, in the city of Aral-sk, the water distribution system consists of 70 km of pipelines, 3000 house connections and 54 public standpipes, of which only 21 are in working condition.

Groundwater sources are used in about 80 % of water supplies in the **Kyrgyz Republic**. The remaining 20 % are using water from mountains. The groundwater table lies below 50 meters in almost 80 % of the country. The design figure for piped water supply is 125 litre per person per day, however, the Ministry of Communal Services estimates that the actual supply varies between 30-120 litres per person per day. Piped water supply consists of either a tap in the house, a connection into the compound or, a public standpipe. Water treatment plants are located in almost in each city. Generally, 84 % of the urban population and about 30 % of the rural population is reported to have access to piped water supply, with the national average of 53 %.[1993]. More recent 1995 figures presented in the National Programme of the Kyrgyz Republic “ Drinking Water” given national access of 83 %, and a rural access of 76 %. These are considerable changes compared to the 1993 which raises more questions about the quality of the statistical data rather than improved services. This statement is further supported by a recent article in the local newspaper, based on apparently Ministry of Health figures, that 78 % of the population in the republic use unsafe sources.

In **Naryn** oblast with a total population of about 280,000, groundwater and water from the mountains is used for water supplies. 20,000-22,000 people or about 40-45 % of the total population of Naryn City, for example, is supplied with piped water from the mountain. The catchment area is located at about 2 kilometers from the city center. Following sedimentation, the water is pumped directly into a storage reservoir for further distribution. Water used to be chlorinated; however, the chlorinating system has not been operated for the last year(s) due to lack of funds to purchase chlorine. Unfortunately, the whole supply system, originally designed for 3,300 m³/day is in a poor state

of maintenance. The present supply is estimated at 6,600 m³/day, which means that not enough time is allowed for proper sedimentation to take place in the sedimentation basins. From the 126 villages/town in the whole oblast, 85 or 67 % have access to piped water supply.

In **Tajikistan**, many water supply and sanitation systems have been severely affected by civil strife, and poor operation and maintenance practices in the last years due to limited and decreasing resources. As much as 60-65 % of all schools in southern Khatlon province are relying on open unsafe water sources. Interruption in the water supply occurs frequently, which leaves many public facilities such as hospitals, clinics, schools etc. for days without water. Almost all latrines in schools and rural health facilities are in urgent need of rehabilitation: toilets are full, broken down - thus not providing privacy to the user - and in an unhygienic state. This, combined with a relatively low level of public awareness on the importance of safe water and personal hygiene practices and lack of hand washing facilities is seriously threatening the health and lives of especially the most vulnerable members of the society: children and women. The incidence of water-borne diseases such as diarrhoea is increasing and causes a third of the IMR in the country.

Dashowuz velayet in **Turkmenistan**, located at the lower end of the Amu Darya River, is one of the hardest hit by the deterioration of the river water quality. This area gets most of its drinking water from underground sources recharged by water infiltrating from the Shavat canal, the main source, and lesser quantities from the Amu Darya river and the Karakum canal. At present, the Shavat canal takes water from the Tujamuyum reservoirs to Dashowuz City and further south. This canal passes through Uzbekistan and is said to be subject to quality degradation. As a result, many of the pollutants in the canals are also present in the groundwater. Drinking water is not treated prior to consumption - except for the natural filtration through 30-50 meters of soil between the irrigation canals and the well sources. About 30 % of the population of Dashowuz have access to piped water supply. The rest of the population relies on other sources such as driven wells, hand dug wells or water from irrigation canals. Most driven wells are equipped with locally made handpumps.

The Tujamuyun reservoirs are located about 190 km southeast of Dashowuz City. The Kaparas reservoirs (750 million m³) were constructed next to the Tujamuyun reservoirs to collect water from the Amu Darya during the spring months when the river water quality is at its best. A scheme to pump water from the better quality Kaparas reservoirs to a treatment plant about 10 km away was designed in USSR time and has been under construction for about eight years. The treated water will then be transported about 185 km to Dashowuz. At present, 162 km of the transmission pipeline and an estimated 60 % of the civil works for a 109,000 m³/day treatment plant has been completed. Once completed, this scheme is expected to substantially increase the piped water supply coverage to

the population of Dashowuz.

There are eight (8) piped water systems in the vilayet, all providing water on a schedule of two to three times per day at a maximum of two hours per service period, thus resulting in a service period of maximum six hours daily. Treatment of water prior to distribution is rarely practised due to lack of facilities, lack of chlorine, or chlorinating facilities being in an inoperable state.

Based on a Presidential Decree in **Uzbekistan**, water supply is a central part of the Uzbek Government's policy. One of the priorities of this policy is the expansion of piped-water supply to areas with severe water problems, like Karakalpakstan and Khorezem. Activities were undertaken to maintain piped-water systems and water treatment plants, partly with foreign assistance (USAID, GTZ). Between 1990 and 1994, for example, 414 km of pipelines were laid in this region, which constitutes 33% of the total length of pipes installed, partly with foreign assistance from GTZ, USAID. This is remarkable considering that only 11.5 % of the total population of Uzbekistan live in Karakalpakstan. This has resulted in an increase of the total volume of drinking water to this area but still considerable work remains to improve the internal distribution network. Comparison of the water supply situation between 1993 and 1997, as shown in the graph, indicates that the water supply situation has improved slightly, and that much of this improvement was focussed to rural areas - increase from 49 to 69 % while the urban coverage shows a slight decrease (82 to 74 %). This confirms the Governments intention for further implementing their policy for providing water to the population currently un-served.

Water quality

The decline of drinking water quality has not changed much. The main concern regarding water quality is still high salinity, bacteriological contamination of water sources due to uncontrolled/ untreated discharge of wastewater, presence of phenols, pesticides and heavy metals in excess of the drinking water quality standard. The water quality monitoring capacity has also been declining over the recent years due to lack of reagents, replacement parts and glassware. For example, from all water samples analyses by the SES in 1995, 10.2 % did not meet the bacteriological drinking water quality standard and this percentage for the first quarter of 1996 was around 12.5 %.

According to the head of the oblast Sanitary and Epidemiological Section (SES) of the Ministry of Health in KyzylOrda, **Kazakhstan**, only 8-10 tests out of 1000 fail to meet the standard requirements. However, data from the rayon SES in Aralsk, for example, shows that 38 % of all samples tested in 1994 from central piped water supply points did not meet the standard requirement. In Kazalinsk, 682 out of 3056 samples tested in 1994 or 22 % did not meet the standard bacteriological and chemical requirements.

Data from the 1997 "National Programme of the **Kyrgyz Republic** - Drinking Water" regarding water quality men

tions that waters in rivers, canals and lakes near large human settlement areas and industrial areas shows levels of contamination and pollution that threatens human health. Then underground water source for Chuy oblast has been polluted by uncontrolled discharge of waste water from the Kara-Balta sugar mills, the local carpet plant and the "Yujpolymetall" association. The Ala-Archa underground water source that provides 60 % of the water for Bishkek city seems to be polluted by nitrates up to depths of 100-10 meters. Drinking water quality has been declining over recent years, the main concerns being increased salinity, bacteriological contamination and presence of phenols, pesticides and heavy metals often exceeding the drinking water quality standards.

Water usage/leakage

Piped water supply consists of house connections, which can be a tap in the house, a connection in the compound or public standpipes along the main roads. About 50 to 60 % of the piped water supplies in cities are through street standpipes, each serving five to ten households. High consumption figures of for example 360 litres per person per day in Aralsk, points towards high leakage in the distribution system. In **Turkmenistan**, the level of losses in the urban distribution system is very high. Officials report providing 100-200 litres of water per person per day while observations and reports show a water consumption of 15-20 litre per person per day. The estimation is that only 15-25 % of the water pumped in the distribution system reaches the end users. Needless to say that whole water system, the standpipes, treatment facilities and distribution network are in a poor state of maintenance. No repair work is possible due to lack of spare parts and funds.

Sanitation

Overall access

Low level of hygiene awareness combined with poor sanitation facilities still constitutes a major health and environmental contamination problem in all CARK countries. Access to sanitation remains unchanged compared to the previous years, i.e. around 50-70 % in the urban and 10 % in the rural areas in 1993. Many schools use unprotected water sources and there are no connections to piped water system even when they exist in the community. The quality of sanitation facilities for excreta disposal varies, however there is no school system with toilets connected to public sewerage systems except in the city centres.

In **Kazakhstan**, nationally, about 70 % of the urban population and 10 % of the rural population have access to sewerage systems. A sewerage system exists in each city, often serving about 50 % of the city population. The rest of the urban and almost all of the rural population, including schools, health posts, uses simple pit latrines with a wooden structure. Most of these facilities are in a very poor state of maintenance and unhygienic.

In **Turkmenistan** about 45 % of the urban population

and only 2 % of the rural population have access to sewerage systems. A sewerage system only exists in the city of Dashowuz, serving 13-15 % [75 % in WB report] of the city population. The rest of the urban and almost all of the rural population, including schools, health posts, uses simple pit latrines with a wooden structure, constructed at an elevated foundation. Most of these facilities are in a very poor state of maintenance: dirty, smelly, not cleaned.

Ninety-five (95%) of the population uses primitive pit latrines in **Uzbekistan**. It is not clear from the governmental statistics which percentage of the pit latrines is pumped. Only 11% of the schools are connected to sewerage systems. The rest use pit latrines of which 56% are pumped latrines. A municipal sewerage system exists in the city of Nukus where it covers 69.7 thousand people or 30.6% of the city population. Thus only about 5% of the Karakalpakstan population have access to sewerage.

The Vodokanal handles municipal sewerage systems. Industrial sewage is treated by the industries themselves. SES is responsible for monitoring and enforcing the compliance of industrial and domestic effluents with sanitary standards. SES is also responsible for enforcing acceptable conditions at individual sanitary facilities. A municipal sewerage system exists in the city of Nukus where it covers 69.7 thousand people or 30.6% of the city population. Thus only about 5% of the Karakalpakstan population have access to sewerage. The major constraint to extending sewerage is the flatness of the land, which dictates the need to construct many pumping stations to pump sewage. Many of the existing pumping stations is in emergency conditions because of the lack of funds and spare parts.

Institutional set-up

Generally, the responsibility of rural sanitation is not clear. The Sanitary and Epidemiological Section SES of the Ministry of Health is responsible for monitoring sanitary conditions at schools, health posts etc., however, they don't have a budget and human resources to implement any improvement work. The Ministry of Communal Services is responsible for the construction, operation and maintenance of urban sewerage systems.

Hygiene education

Hygiene education is that part of health education, which deals with the prevention of diseases, related to water and sanitation. It is widely accepted that hygiene education and hygiene behaviour change are essential elements if water supply and sanitation programmes are to achieve maximum health benefits.

Various types of diarrhoea are one of the main water and sanitation related diseases. Many studies carried out over the years to give insight into the prevention of the transmission of this diseases show that generally there are six major preventive measures: (1) safe human excreta disposal, (2) personal hygiene, (3) domestic hygiene, (4) food hygiene, (5) water hygiene/consumption of safe water, (6) safe waste

water disposal and drainage. This list makes clear that improved water supply and sanitation are important issues in which not only water **quality** but also the availability of the right **quantity** of water is even more important.

Health and hygiene education is mainly the work of health professionals which includes curative and preventive services as well as preparation and dissemination of health / hygiene messages. Most of the materials used are dated and most of the hygiene education booklets and materials are no longer available. A consultation meeting in Kzyl Orda oblast in Kazakhstan about school sanitation and hygiene, for example, once again stressed the urgently required support for hygiene education in schools due to lack of personnel and materials.

In **Turkmenistan** soap and detergent are not only in shortage but also too expensive for the households to afford. Thus personal hygiene practices are virtually impossible to maintain. This in turn contributes to the high incidence of diarrhoeal diseases. Improvement in personal hygiene and change in hygiene practices, it appears, will necessitate intensive education and training efforts, in addition to provision of support in building low cost sanitary facilities. This aspect is also within the pilot project activities of UNICEF and World Bank. The Zenanlar Birleshigi (Women's Council, an NGO) aims to establish small soap factories at central and district levels to support the initiative in hygiene education.

In a situation that is often unsanitary and thus dangerous for the health of children, it becomes essential that children in primary schools be taught to recognize water and sanitation problems. They need to know what they can do to avoid falling ill due to poor quality drinking water and environmental sanitation conditions that often exist in schools and at home. Issues as personal hygiene, knowledge about the quality of water sources for drinking and bathing etc., cleanliness in food preparation and human waste disposal need to be addressed in the school teaching programme.

The SES of the Ministry of Health has been trying to promote hygiene education through mass media, house/school visits etc., however, these practice is presently constrained due to limited resources. The hygiene education component will form an integral part of water supply and sanitation programme interventions and will also be linked with other sector programme activities such as Education, health, nutrition etc.

Human behavior is an important factor in the transmission of water and sanitation related diseases. Hygiene behavior such as the use of latrines and frequent hand washing are key elements in the reduction of diarrhoeal diseases. Thus, having access to water and sanitation facilities is one side, making proper use of these facilities is another important aspect. Hand washing facilities at many schools were absent. The availability of water facilities near latrines only is not a guarantee for improved hygiene practices.

Water supply and sanitation at schools

During visits to some schools it was noticed that the water supply systems were not operating due to pump breakdown, interrupted piped water supply etc.- so that these schools were relying on other water sources with questionable water quality such as dug wells, driven wells with locally made handpump.

Hardly any water storage facilities were seen inside the school building, thus perhaps limiting the promotion of personal hygiene. Joint assessment of the situation at schools shows the following picture:

Only one third of the schools have access to piped water, and especially in the high diarrhoea summer season, on average 70 % of schools are relying on untreated canal water. There is hardly any hand washing facility at the schools and many latrines are in a state of dis-functioning.

A simple pit latrine is the most common sanitation facility, both at schools/health posts and households. Most of the facilities are in poor state and unhygienic. There are no hand washing facilities near the toilets. Efforts to improve the existing facilities and construct new latrines, combined with facilities for hand washing and hygiene education will definitely have impact on the incidence of diarrhoeal diseases.

Schools had designated persons to clean latrines. Chlorine and lime are used for this purpose which is often not available and water is rarely available near the toilets to allow hand washing after use of the facilities. In the **Kyrgyz Republic**, for example, 50% of the total of 134 schools in Naryn oblast do not have water supply in the school yard and all 134 schools in this oblast only use pit latrines for excreta disposal.

Dashowuz vilayet in **Turkmenistan** has a total of 563 schools, with an average number of students varying from 300 to 500. Presently, 80 % or 450 schools are reported to have piped water supply. The water supply system at many schools consists of a pumping station for pumping water from the main distribution network into an elevated storage tank.

Unfortunately, many of the pumps are not operating anymore due to lack of maintenance and spare parts so that water is taken from other nearby sources: driven wells, canals or hands dug wells.

Environment

Environmental issues remains of great concern in CARK countries, especially in the Aral Sea area, Semipalatinsk in Kazakhstan, Fergana valley in Uzbekistan. Further degradation of the environment due to unsustainable use of the water and land resources in areas far from the Aral Sea has continued. In some areas as much as 50% of the forest has disappeared, soil erosion has intensified not only reducing agricultural production but also silting water resources. Over-irrigation of farmland has continued, resulting in massive amounts of drainage water from irrigation land

being discharged into rivers, and thus further increasing the salinity levels.

Uncontrolled discharges by industrial plants are another factor that effects the quality of the available environmental resources available. Wastewater treatment plants are not functioning properly, often resulting in discharge of “untreated” sewerage water into open water sources. All these factors are linked to the decline in human health and agricultural productivity.

Environmental issues are reported to have direct or indirect impact on peoples health and well being in the **Aral Sea area**. Mainly the extensive agriculture practices - rice and intensively irrigated cotton production have resulted, over the years, in soil erosion, and salinization and contamination of surface and groundwater sources with agrochemicals.

The main effects of the agricultural practices are noticeable in:

- deterioration of the soil fertility, resulting in further reduction of amount and quality of agricultural production;
- deteriorating water quality for agricultural and domestic purposes; and
- rising groundwater tables

The concern about the ongoing environmental degradation and its effect on the health of the population is now widely shared and supported. The UN, by its special UN General Assembly Resolution of December 1997 call for a proper assessment of the situation in Semipalatinsk in Kazakhstan to map the consequences of the nuclear development and nuclear testing of more than 500 explosions for developing a sustainable and feasible priority actions. This assessment is not only called by the UN but also supported by relevant stakeholders and national authorities.

Addressing environmental issues has been difficult in the past because of the secrecy that goes with it when it comes to nuclear testing, chemical industrial activities and disposal of waste in an environmentally sound manner. However, the curtain of secrecy is disappearing gradually as the history and the scientific facts are becoming better known to the general public and policy makers. The new Governments of **Kazakhstan** and **Kyrgyzstan** have been proactive and have adopted some immediate humanitarian and technical support measures to remedy the situation and to attract international interest and support. Several international and non government organizations have provided support to the population affected, however, in Semipalatinsk only, the needs of about 2 million people need to be addressed, and as research progresses, the number of target population affected by the past legacy will most likely increase.

The World Bank assisted the Government of Kyrgyzstan in the preparation of their first National Environmental Action Plan (NEAP) in 1994. A high level of Steering Committee was created to guide the preparation of this

plan under the leadership of the State Committee for Environmental Protection (Goskompriroda). This committee included representatives from government agencies, scientists, environmental NGOs etc. Critical issues were identified that threaten the public health, economic and ecological stability and the biodiversity and on the options available to resolve these issues. A summary of the key environmental problems and the priority actions are:

- *unsustainable use of the natural resources* such as :
 - insufficient water resource management,
 - land degradation mainly due to overgrazing, overexploitation of forest resources,
 - treat of irreversible loss of flora and fauna, inefficient mining and refining practices.

The impact of pollution of human health

Considering the available resources, attention could be focussed towards addressing the following areas: 1) the protection and decontamination of drinking water, 2) reducing dust emissions from district heating and power plants, 3) properly assessing the soil and water contamination with uranium, mercury and other heavy metals and agrochemicals.

These issues are not relevant to Kyrgyzstan but to all CARK countries. For example, the actual water use by sector between 1992-1993 in Kyrgyzstan shows that 88 % of the total water consumed was used for irrigation, 8 % was used by industries and only 4 % by municipalities for domestic consumption. Basic improvements in the water distribution infrastructure and waster-use practices could result in major water conservation benefits.

CARK interventions in water, hygiene and sanitation

Following the completion of the assessment of the water and sanitation situation in the first part of 1995, and the initiation of programme activities in the later part of the year, the emphasis is put on consolidation and expansion of key programme activities. This was and is necessary due to the changing socio-economical situation in the CARK countries, but also due to UNICEF budget limitations. The main area-wide activities in the water, sanitation and environment programme were:

- Development and introduction of a “water supply, sanitation and hygiene package” and
- Improvement of water quality monitoring systems.

Local capacity building was an integral part of these activities.

Water, Sanitation and Hygiene Package

Many schools in rural area lack access to safe water sources and adequate sanitation facilities. Piped water sources are not available out too far, so that many of these schools and also health facilities are relying on unprotected water sources. Simple pit latrines are widely used, however, the

state of maintenance of these facilities is very poor, resulting in un-hygienic conditions and thus a threat to the health of the users - mainly children.

Given the limited financial resources, and considering the identified immediate needs a water, sanitation and hygiene package was developed jointly with other programmes as Health, Education and Planning and Advocacy and introduced to improve this situation at schools and health facilities in selected rayons. The main criteria used in the development of the “package” are:

- answering to the immediate needs,
- replicability: potential for repetition in other regions with minor adaptation, and,
- affordability: using mainly simple, low-cost technology options based on locally available materials and knowledge.

The improvements included:

- **Water:** provision of water filters, water storage tanks, installation of locally made hand pumps, extension of piped system and construction of piped water points closer to the target institutions, improvements of existing piped water points, installation of desalinization equipment
- **Sanitation:** support to improve existing latrines or construct new ones, provision of hand washing basins and soap for installation near latrines.
- **Hygiene:** provision of Teachers Resource book, posters and operation and maintenance instructions to facilitate and encourage hygiene teaching in schools, and to facilitate proper operation and maintenance of the systems.

Implementation of these improvements is done through:

- establishing close working relationships with the government : ministry of Health, Ministry of Education, Ministry of Agriculture - Rural Water Supply Department;
- encouraging schools to participate in the construction / installation phase, thus providing training to schools staff in operation and maintenance aspects;
- using local manufactures of hand pumps, hand washing basins, water storage tanks etc.

The improvements as described “water, sanitation and hygiene package” was introduced at schools in selected rayons in all CARC countries. In **Kazakhstan**, 40 schools in Aralsk and Kazalinsk rayons in the Kzyl Orda oblast were provided with water filters, hand washing basins, soap, the first draft of a Teacher’s Guide Book on Personal Hygiene and Operation and Maintenance instructions, all translated in the Kazakh language. A local NGO Kok Jhiiek manufactured the hand washing basins locally in Aralsk. Plans are underway for an evaluation of the utilization, and also to get comments from the schools teachers in order to finalize the Teachers Guidebook. Future activities will also include strengthening of the local NGO and also to seek partnerships with other local organizations.

Soap, hand washing basins and Hygiene education Teacher’s Resource book were also provided to 20 schools in Naryn and 20 schools in Talas oblasts in the **Kyrgyz Republic**. An agreement was reached with The Kyrgyz Children’s Fund for supporting the distribution of the supplies and subsequent monitoring of the utilization. The idea of hand washing basin was adapted and introduced in the maternity section of hospitals to facilitate rooming-in as part of BFHI. Again, manufacturing of the hand washing basins was done locally.

In **Tajikistan**, implementation was done through NGO’s : IRC-Tajikistan and ECOLOGIA, whereby the hardware facilities were manufactured in “small” local workshops, thus promoting local enterprise, but o establishing the base for expansion through community mobilization. Water and sanitation facilities were improved at 300 schools and health facilities, which included the installation if hand pumps, extension of existing piped water points, installation of Slow Sand Filters, rehabilitation of existing latrines or construction of new latrines, installation of hand washing basins. Prior to any construction activities, the key officials form the local administration, officials from Ministries of Education, Health etc. were informed/mobilized. Teachers responsible for hygiene instruction from all these schools were provided with a copy of the Teacher’s Resource Book and training. The Teachers Resource Book was reviewed and finally approved by the Ministries of Health and Education for nationwide use. It is worth mentioning that in the process of implementing the community mobilization and hygiene education part of this programme, a new NGO ECOLOGIA-Tajikistan was established in Tajikistan. ECOLOGIA Tajikistan is entirely run by local staff, with professional support from ECOLOGIA CIS, based in Moscow, and UNICEF. In the short time of its existence, very good quality work has been performed by this NGO, and during a December workshop series, actual positive changes in behavior have been observed.

High salinity of water sources is one of the main problems in the Aral Sea area of **Turkmenistan**. The package in Turkmenistan thus included a “small scale desalinization unit” for improving water supplies. 6 Project schools were provided with such equipment, together with soap, hand washing basins and Teachers GuideBook and Operating Instructions. Designated staff at each school was trained in the Operation and Maintenance aspects and also in issues as safe water, handling of safe water etc. Receiving desalinization units for their school motivated school staff to take their own initiatives for improving latrine conditions and for keeping the school environment clean. Evaluation of the utilization of the desalinization unit showed an “under-utilization” - the system can produce more water than necessary for the school’s needs - thus providing an optional improved water source for school and its surrounding community. The water output from this simple system has a high level of acceptability due to considerable quality improvement. The installation of the desalinization

units and the training of school staff were done by AQUATEK, a local enterprise in Ashgabad.

Schools in Muynak, Bozatau, Chimbai and Takhtakupur rayons in the autonomous Republic of Karakalpakstan in **Uzbekistan** were identified for urgent assistance. These schools were provided with water storage tanks, hand washing basins, soap, Hygiene Education Teachers Guidebook and Operating Instruction - the last two in Karakalpak language. Training was provided to designated teachers from each school in the use, operation and maintenance. One official from the Education Department from each target rayon and one official from the central Education Department were sponsored to attend a Teachers Training on Child-to-Child approach in hygiene education organized by the Swiss Consortium implementing the World Bank Water, Sanitation and Health project in Uzbekistan.

Improvement of water quality monitoring system

Water quality monitoring was identified as one of the areas of concern during numerous assessment missions to the CARK countries. Water testing is done by various agencies, using aged equipment and chemicals. The number of tests per year within the countries routine monitoring programme has been declining. Water quality data generated by the various agencies is not shared, and this information is hardly used for informing the general public about the water quality and what they can undertake themselves to improve their situation.

In 1995, UNICEF supported 23 institutions in CARK countries with sets of HACH DREL 2000 portable water testing laboratories with the necessary reagents. These institutions included Sanitary Epidemiological Stations in the Ministry of Health, Ministry of Environmental Protection, Vodokanal (Water Supply Department) of the Ministry of Communal Services. Selected laboratory staff for each recipient institution was trained in the use, operation and maintenance of this equipment, and Russian language instruction materials was also provided.

- The aim of this assistance is two folds:
 - to meet the immediate need of up-to date equipment and chemicals for continuing water quality monitoring since many institutions could not perform their functions due to lack of equipment and chemicals.
- to encourage the various parties for data collection and analysis at district, regional and national levels and to encourage establishing a two-way water quality information system, thus also providing necessary information to the general public. The second part of the training workshop was devoted to these matters, including encouraging the recipient agencies to undertake special water testing projects, i.e. testing water from households, school kitchens, etc.

Follow-up evaluation to each of the recipient institutions was undertaken in 1996. The main findings are:

- Each institution is using the equipment extensively in their routine water testing programme. In the **Kyrgyz Republic**, HACH DREL 2000 portable laboratory has been used on-site, and in other regions. In **Tajikistan**, HACH DREL 2000 is the only functioning equipment in the republican laboratory in Kurgan Tube.
- All users are very happy using this new technology since it is easy to use, is time saving, the results are known almost immediately.
- The training and operating instructions provided were sufficient. In **Kazakhstan**, the **Kyrgyz Republic** and **Uzbekistan** the staff trained initially have trained other colleagues. In **Turkmenistan**, the Institute of Chemistry in Ashgabad provided additional back-up technical support to the velayet SES in Dashowuz, resulting in exchange of some water quality information between these agencies.
- As part of the country regulations, the equipment has to be certified - formally approved - by the State Committee of Standardization. This has been achieved in the **Kyrgyz Republic**.
- Data collected by the recipient institutions is presently entered in their normal logbook, and sent from district to regional and from regional to national level SES. Data collected between the various agencies is not shared yet at the local levels, mainly due to strong tendency to comply with the old system and regulations.
- The republican SES in **Bishkek**, the **Kyrgyz Republic** and a local NGO in Nukus - Center PERZENT - have started some special projects. Testing chromium was not possible with their own equipment. As a result, the source of the contamination was identified, and the chemical factory responsible for discharging untreated wastewater was made to improve the wastewater quality to acceptable standard levels.

In Nukus, **Uzbekistan**, PERZENT undertook sampling and testing of water from piped water points, a canal - used by the community as a "drinking" water source, and the household kitchen storage. The water quality data, together with WHO and national GHOST standard values was used to prepare a leaflet for the general public, informing them about the meaning/ significance of the various values in terms of personal health, and what simple remedies can be undertaken by the household themselves to improve the water quality. The additional activities undertaken in the Kyrgyz Republic and Uzbekistan can be used to motivate the other partners for establishing a community education component in their programme activities.

Experience and lessons learned

UNICEF's input in the Water and Sanitation was very much focussed to improving the situation at schools and health facilities at sub-national levels. A integrated 'package' approach - which includes support for improving

water supplies, better/clean latrines and hygiene education was developed and introduced to schools in all CARK countries.

The key lessons learned are summarized as follows:

- there is need for support for improvement of rural water supplies, using alternative technology options. The strong urban orientation and the interest for large scale technology options, using foreign loans, need to be counter-balanced.
- an integrated approach of water supply, sanitation and hygiene is well understood and considered necessary. The open discussion in the recent MCH Forum Working Group meeting on the sanitation and hygiene situation is testimony to this and also affirms the willingness to address these issues in an integrated and coordinated manner
- Introduction of health and hygiene education in schools is well received and need to be continued, with possible expansion with other life skills development issues such as basic nutrition, environmental safety, child rights.

Hygiene promotion in schools can better be achieved through inclusion if related issues in existing classes rather than advocating for a new subject. Teachers are already over-stretched in terms of using the limited available facilities and means to cover all the subject areas of the national curriculum. Besides, introduction through existing classes is also expected to enrich the subject matter and thus to have a positive impact on the teaching methods as such.

There is potential for increased community participation in school based hygiene programmes, further mobilizing parents and community contributions.

Despite economic constraints, people participation and acceptance is high. This approach has worked successfully in southern Tajikistan. This success, however, should also be attributed to other factors such as:

Involvement of local organizations – ECOLOGIA-

Tajikistan: they provided 'permanent field presence which helped establishing conducive relationships with the local government authorities.

Involvement of the local authorities at all stages of the project: assessment, prioritizing activities, including monitoring and evaluation.

There is willingness for continued UNICEF co-operation in water, sanitation and hygiene promotion activities, with special attention to be given to expansion to other sub-national areas

Schools a good entry point for integrated interventions – opportunity for inter-sectoral approach – the joint work with health/CDD, education and water and sanitation programmes to be intensified, with options to include basic Child Rights, nutrition education, FFL etc.

UNICEF limited resources has been focussed to address selected issues: 1) water quality – provision of kits/reagents and 2) provision of clean drinking water and hygiene to 'masses' – schools, health centres etc. – there is time to come up with a statement about water in Central Asia.

Despite limited resources, UNICEF has established a good basis for continued work in water and sanitation areas – and to resume "leadership role" for improves services for children – schools, and rural areas.

CARK MCH Forum Working Group on Hygiene Promotion: the working group brings together the various sectors and the various actors in the area of water sanitation and hygiene from all five CARK countries. Efforts will be continued to further strengthen to operational capacity of this working group by encouraging expansion of the membership, with more sectoral and local community organization's involvement etc. With some guidance to the group to ensure that the focus remains on key issues affecting the health of children. The Working Group can play a very important role in advocacy, coordination and inter-sectoral approach