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**MISSION REPORT**

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**RAPID ASSESSMENT OF WATER, SANITATION  
AND THE ENVIRONMENT IN KYRGYZSTAN**

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# 1. PRESENT SITUATION

## 1.1 EXECUTIVE SUMMARY

Although 90 per cent of Kyrgyzstan is mountainous, only 10-12 per cent of the population of 4.3 million live in the mountains. The urban population is estimated to be 38 per cent. The rural population is estimated to be 2.55 million people, consisting of 1760 villages. The water and sanitation conditions vary considerably in different Oblasts. In the south the coverage levels are lower, in some cases being as low as 30 per cent for rural water supply. Environmental sanitation conditions are poor throughout the country.

The water supply and sanitation sector is very fragmented with the involvement of more than ten different government ministries and companies. There is little coordination and sharing of information. The coverage rates for urban and rural areas are the following<sup>1</sup>:

Urban Water Supply	84
Rural Water Supply	50* (officially 73%)
Urban Sanitation	60
Rural Sanitation	10*

(\* Estimates obtained from Ministry of Health and Ministry of Agriculture)

The major problems in the urban sector are mainly due to the increased difficulties in procuring construction materials as a result of foreign exchange problems. This has led to a reduction in implementation rates, especially for urban sewerage systems. There is a need for capacity building in terms of production of supplies and equipment in country, if economically feasible.

The rural areas are in need of more systematic and improved planning to accelerate service coverage levels. However major investments will be necessary if Kyrgyzstan is to achieve universal access to water supply and sanitation by the year 2000. Some mechanisms need to be devised for more effective costing for water supply and sanitation services. Previously the per capita rates were extremely low but are now increasing as a result of rapid inflation. Credit schemes could perhaps be considered for rural sanitation programmes since the cost of provision of services for most of the rural population will otherwise be too large to consider without a household contribution.

Although integration of water and environmental sanitation services are recommended at the service level, it is suggested that these not be integrated at the delivery level. These have been traditionally handled by separate departments. However assistance for sanitation could be directed through the Ministry of Health since it could be combined with environmental education through the health education department.

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<sup>1</sup> Statistics obtained from Ministry of Health, Communal Services and Agriculture

It is proposed that UNICEF support three projects. The first would be an improved technical communication network to update technical methods, develop international linkages with major donors and research institutions and development of manpower resources.

The second project is for capacity building for improved sector management including improving present planning methods, developing a decentralised monitoring system and human resource development. It would also involve assistance in development of suitable project proposals for major donor funding.

The third project proposed is a pilot water supply and sanitation project to demonstrate cost effective technologies that can be used in rural and peri-urban areas. This would include construction of demonstration facilities and their promotion for introduction elsewhere.

## **1.2 URBAN WATER SUPPLY**

The Ministry of Communal Services is responsible for management and coordination of urban water supplies. There are water supply corporations in each city that are responsible for the construction, operation and maintenance of water supply and sanitation services. According to the Ministry, 80 per cent of urban areas have piped water and according to the Bishkek Water Supply Corporation, the present major constraint is the lack of financial resources.

Steel, PVC and asbestos pipes are used for water supplies, apparently of which 40 per cent of the pipes are asbestos cement which are manufactured locally. Only ten per cent of PVC pipes are used and these are purchased from Uzbekistan. There were problems with the use of PVC pipes since staff were unfamiliar with the laying and jointing of these. Corrosion of iron pipes is a problem in sixteen per cent of the water pipes, due to their age rather than aggressive groundwater since the pH of most groundwater in the country is 7-7.5. The department are interested in using more PVC pipe but procurement is difficult. In the past steel and polyethylene pipes were purchased from Germany at similar costs. No steel pipes are produced in the country and most pipes were procured from Russia.

The whole of the country is a seismic zone, therefore the selection of type of pipes is crucial. The selection of asbestos cement pipe was only supposed to be a temporary measure. However due to the financial constraints, these have been extensively used. These pipes are not suitable for earthquake zones since they are fragile and crack easily. Polyethylene pipes would be the most suitable for both rural and urban areas since these are more flexible than PVC thus making these suitable for the mountain regions. In addition, these expand more readily than PVC and thus can be slotted into the iron pipes for rehabilitation of existing systems where the pipes have excessively corroded.

The procurement of centrifugal pumps in the country is a major problem. There is a factory at Osh which produces the pumps. However the capacity is insufficient for most cities' needs. Larger capacity pumps are procured from Moldavia. The Bishkek water authority estimates that an investment of more than 10 million roubles is necessary to upgrade the present factory to produce larger capacity pumps. Apparently the factory has the capacity to manufacture sufficient pumps to meet the needs for the country. However a thorough assessment would need to be made since the investment necessary may be much greater as a result of very rapid inflation and the need to procure of up to date equipment.

In Bishkek, 100 per cent of the water is from underground sources. In other cities and towns 80 per cent is from groundwater and 20 per cent from the mountains. In all the cities there are water treatment plants. The design amount for per capita use of water is 125 litres/person/day. However in practice, according to the Ministry of Communal Affairs, people receive between 30 -120 litres/person/day. Urban water supply has consisted of either a tap in the house, a connection into the compound or public standposts in some towns.

Previously there was a budget of 12 million roubles per annum for water supply which was 1.5 per cent of the city budget. However this has now been reduced due to serious financial problems. The cost for water is 10-20 kopeks per cu.m. of water. Tariffs are presently very low. However there are plans to increase this in November, although the amount is not yet known. The Ministry of Communal Services has offices in each Oblast. There are 200 people employed by the department for the maintenance of facilities. Water quality control is monitored through the Water Supply Corporations and the standards are those used for all of Russia. Chemical tests are also made, however there are few problems in the country.

There is no well established monitoring system for water supply coverage rates. The department has few computers and limited training has been given in their use. The Ministry of Communal Services recruits civil engineers who are trained for five years at Bishkek University. There are few specialised training courses for technical staff in-country.

There are problems with water stoppages in some cities and towns due to breakdowns and water shortages in summer. This sometimes leads to negative pressures which can lead to pollution from sewerage and other contamination. There is a serious problem of Hepatitis A in the country which may be contributed to by this problem. In summer, the water deficit in some cities and towns results in some upper stories of buildings not receiving water.

### 1.3 URBAN SANITATION

Apparently only 20 per cent of the major towns and cities have a sewer system which amounts to approximately 60 per cent of the population. Seventeen cities have sewage treatment plants which in many cases are overloaded since these are usually small. The cost of sewer pipe is approximately 3,500 roubles per metre. In Bishkek, sewerage is a problem since many of the pipes are in need of repair but their is limited budget for this purpose.

In Kyrgyzstan there are many small towns and cities that would benefit from the introduction of small bore sewer systems which are far less costly and easier to maintain. These have been successfully constructed in Asia and elsewhere and have significantly reduced the per capita cost of sewerage. Since there is also a interceptor tank constructed for one or more households, this reduces the load on the sewage treatment plant. These tanks are periodically (usually once every 12 years) emptied by vacuum trucks.

For sewerage, asbestos cement, concrete and steel pipes are used. Again, there is a problem of cracks developing in the asbestos cement pipes.

### 1.4 RURAL WATER SUPPLY

The rural population is estimated to be 2.55 million people and consists of 1760 villages with most villages less than 1000 persons<sup>2</sup>.

The hydrogeological conditions in the rural areas vary greatly since 90 per cent of the land mass is mountainous. In approximately 80 per cent of the country, the ground water level is greater than 50 metres depth. In the plains there is very little rock, the upper layers consist of quaternary sediments which contain the largest deposits of fresh groundwater. However most of the country is seismic thus there are zones of open jointing and tectonic disturbances. In the rural areas 85 per cent of the water is taken from groundwater sources and 15 per cent from surface water sources.

Although the official figures for rural water supply coverage is 73 per cent, the Ministry of Agriculture quotes a figure of 30-50 per cent as the actual coverage with piped water supply. According to the Ministry of Health<sup>3</sup>, in many villages only 30 per cent of the people have piped water. However the official statistics will include the whole village as being served. In 1992, the budget for the Ministry of Agriculture for rural water

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<sup>2</sup>. Interview with Chief, Construction, Ministry of Agriculture, 28 October, 1992.

<sup>3</sup> Interview with Deputy Minister, Health and Chief, Epidemiology and Sanitation Section, Ministry of Health, 29 October 1992.

supply was 130 million roubles. In 1991 the budget was 98 million roubles and in 1990, 72 million<sup>4</sup>. However it should be noted that the cost of construction materials has increased sixfold since 1990. The definition of access for rural areas is a public standpost. However a connection can be made into the household compound if a set fee is paid. In Chui Oblast this was quoted as approximately 3000 roubles. However this was not verified and seems somewhat high.

In areas with no water supply, people are using local handpumps, open wells or water is being brought in by tankers which are usually paid for by the collective farms. The lowest water supply coverage rates are in Osh and Jalalabad Oblasts where the rates are estimated to be less than 30 per cent. These areas are also mountainous with a high rural population.

The Ministry of Agriculture is responsible for coordination of rural water supply and funding the major proportion of projects. Five years ago, the Ministry was responsible for the construction of the water supply systems. However the installation of pipes is now done through six construction companies, one for each Oblast, who are responsible for construction of buildings, irrigation canals and other services, in addition to water supply. Although each is responsible for one Oblast, in practice, some of the construction companies are also working in other Oblasts. For example, due to the capacity of Chui construction company and the service coverage levels in the Oblast (official figure 91%), they are now also working in a further two Oblasts. Although the Ministry of Agriculture finance the projects, the construction companies also answer to the Ministry of Water Supply and Land Corporation who do not have a budget for rural water supply but historically have supervised the work. Now they are mainly responsible for irrigation. Approximately 95 per cent of rural water supply systems are funded by the Ministry of Agriculture and five per cent by the collective farms.

The Ministry of Agriculture has offices in each Oblast and constantly receive requests from villages to construct a water supply system. The per capita cost of rural water supply systems is estimated to be 2500 roubles/capita according to the Ministry of Agriculture. However it is estimated in 1993 that this will increase threefold. The government states that no payment is requested for water in the rural areas.

One of the major complaints made by the Ministry of Health, responsible for sanitary conditions throughout the country, was the number of government agencies involved in water supply and the lack of coordination. The Ministry of Health wrote a letter to parliament requesting that a legislation be passed making one government department responsible for water supply and sanitation. This was only recently submitted and no response has been received as yet.

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<sup>4</sup> Interview with Deputy chief, Construction, Ministry of Agriculture, 2 November, 1992.

The construction company interviewed<sup>5</sup> stated that problems were increasing in the past year due to limited financial resources. Consequently good engineers were leaving the company to find work elsewhere. The Chui construction company lays fifty per cent of the country's total pipeline each year, approximately 100 kms. All project designs are made through a special department, the Project Institute which then provides these to both the Ministry of Agriculture and the construction companies. The Chui company has a project budget of 50 million roubles for 1992.

The size of water supply schemes is dependant on the population to be served. However it was stated that the construction companies would prefer to construct smaller systems each with their own pumping station rather than some of the more complex systems presently constructed due to budget and time limitations. The construction of larger systems may be false economy since smaller systems serving one or more small towns would be more reliable and require less maintenance than the larger systems presently built. The design criteria is one standpost for usually 10-15 families. However in practice it is much more. Priority is given to larger villages and thereafter smaller villages are served, unless the collective farm decides to pay for a water supply system. The Ministry of Agriculture selects the villages to be served and informs the construction companies where they are to work.

The Chui construction company visited has its own drilling machines. However usually drilling is handled by the department of hydrogeology. The drilling machines of Chui construction company are capable of drilling small diameter boreholes (six inch dia.) and larger.

The types of pipes used are steel, asbestos cement and iron pipes. Very little plastic pipes are used. Seventy per cent of the pipes used are asbestos cement since these can be procured in country and therefore the government does not face the problems of foreign exchange in purchasing pipes from Russia and elsewhere. The prices from overseas are not stable and have escalated rapidly in the past two years. In 1992 the Ministry financed the installation of 100 kms of pipeline. However the department estimated that in order to provide water to everyone in the next five years it is necessary to lay 600-700 kms each year at a cost of two billion roubles. However one of the major constraints at present is the lack of financial resources. In the mountainous regions there are some gravity flow systems and infiltration galleries taking water from rivers and streams.

Apparently maintenance of water supply systems is major problem since there is not sufficient funds for this purpose. All or part of many systems are no longer functioning and there is no systematic checks performed. There are usually problems with the systems installed by the collective farms since the pipelines are often not well designed

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<sup>5</sup> Interview with Chui construction Company, 29 October 1992

thus resulting in some of the standpipes receiving no water due to low pressure. Many systems which are no longer functioning are included in the official government figures for water supply coverage. According to the Ministry of Health, sixty per cent of the present systems are in need of repair.

## **1.5 RURAL SANITATION**

Environmental sanitation conditions are very poor with no villages having a sewerage connection and no other improved excreta disposal facilities. Rural sanitation is stated by all ministries as a major problem, especially the Ministry of Health.

Most rural families have a simple pit latrine made from a wooden slab and superstructure, even if they are relatively well off. The field visit to Chiu Oblast demonstrated that environmental sanitation is not a high priority. However one household stated a desire to have a sewer connection mainly for reasons of social status rather than health.

Facilities at public institutions are very poor with schools, felter centres and other government buildings only having simple unimproved pit latrines. These are usually constructed from wood over a pit and due to the high number of users are badly smelling and dirty. This is particularly a problem in schools since there are too few toilets for the number of children which causes a serious problem and there is no one to clean the latrine. There is no government budget for rural sanitation either for institutions or households.

Soap is difficult to obtain and the cost is high for most families at 30 roubles a bar or 100 roubles per kg.

Although integration of water and environmental sanitation services are recommended at the service level, it is suggested that these not be integrated at the delivery level. These have been traditionally handled by separate departments. However assistance for sanitation could be directed through the Ministry of Health since it could be combined with environmental education through the health education department.

## **1.6 ENVIRONMENTAL HEALTH ASPECTS**

### **1.6.1 Monitoring of Water Related Diseases**

Data on water related diseases is collected by the Sanitation and Epidemiology stations throughout the country. There are 56 stations at Rayon and at Oblast level. All information is sent from the Rayon level to the Oblast station where it is then collated and sent to the Central laboratory. There is no computerised

system of data collection at any level. However the central station has recently received computers for this purpose and are awaiting training.

Apparently diarrhoea is considered a major problem throughout the country. There are usually five to six serious outbreaks each year. In the past month there was 106 cases in one village which was directly traced to contaminated water since the villagers have been taking water from open sources.

Hepatitis is a serious problem with a total of 27,866 cases in 1990 and 22,9637 cases in 1991<sup>6</sup>. If there is a serious outbreak of a disease, an emergency committee is set up and the deputy of the President will supervisor interventions. Every three months every Oblast is visited to inspect the stations at the Rayon level.

### **1.6.2 Water Quality Control**

As in Kazakhstan, this is monitored by the Sanitation and Epidemiology Department of the Ministry of Health. According to the Ministry, bacteriological pollution is a problem with approximately 13.4 per cent of total samples being contaminated<sup>7</sup>. Apparently the problem is getting worse due to breakdowns of systems. Chemical contamination is not a problem in the country. However there is some nitrate pollution in the Bishkek region.

Russian standards are followed for water quality Testing. The methods are somewhat dated and no portable water testing equipment is available at either the central laboratory of at the Oblast and Rayon level. As in all of Russia, there are two standards for water, one for drinking water and the other for surface sources.

The Ministry checks the chlorination of town and city water. However limited chlorination is carried out in the rural areas due to lack of financial resources.

Supplies and equipment for water quality testing are provided from Bishkek. However some water quality testing equipment is provided by the Ministry of Agriculture. Once every two years training course are held were 30 people are trained from the Rayon and Oblast level. The training includes water quality standards, testing of samples, soil and air sampling, and food sampling. No refresher training is held by the department since these are organised through the Ministry of Health for all staff.

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<sup>6</sup> Information provided from official Government Statistics, Ministry of Health, Bishkek.

<sup>7</sup> Official Statistics, Ministry of Health, 1992.

### **1.6.3 Environmental Pollution**

There is a state committee on environmental protection that has the following departments; water resources; air pollution; energy and wildlife protection.

There is little heavy industry in Kyrgyzstan which has allowed it to escape somewhat from the major environmental problems in some of the other countries since it functions mainly as an agricultural producer.

The major air pollution quoted was the problem of Bishkek due to the concentration of factories and the heavy volume of traffic. Heating in winter due to natural gas, mazot and coal also add to the problem. The north suffers more from air pollution since the south of the country is mainly agricultural. Sixty five per cent of all industries are located in the north of the country.

The committee has water testing laboratories and is responsible for the testing of all surface water sources. Water logging and salinity is a problem in some regions mainly due to excessive irrigation. There has also been an overuse of pesticides and fertilisers. The committee were instrumental in establishing new directives and guidelines to reduce the use of pesticides and fertilisers indicating the types and levels allowed. However the committee felt that more force was necessary in enforcing this legislation.

The committee has a section of environmental education and would welcome support in strengthening this component. The education is mainly directed for children and target population groups, for example farmers. Adult education means used are through mass media, TV and radio. The committee has also worked with the education department in developing an environmental education curricula for schools.

Soil erosion and deforestation are significant problems in the south of the country. This is mainly due to the large amount of sheep grazing on the land.

The committee felt that in five years the problems of the Aral sea region would affect Kyrgyzstan through climatic changes. Regular meetings are held with the other Central Asian Republics at least four times a year to discuss environmental problems and how these affect each other. There are some joint programmes but mainly between the other countries.

There are major financial problems in continuing some of the research and control projects presently being undertaken. The committee would definitely benefit from sharing their research activities with outside institutions, especially for the excessive use of agro-chemicals. Immediate measures that can be assisted now are the development and enforcement of new legislation to address all the

environmental problems and strengthening of the environmental education component.

## **2. IDENTIFICATION OF MAJOR PROBLEMS AND POTENTIAL SOLUTIONS**

### **2.1 NEED FOR CAPACITY BUILDING AND IMPROVED SECTOR COORDINATION TO ACCELERATE COVERAGE RATES TO ACHIEVE THE GLOBAL GOALS OF UNIVERSAL ACCESS TO WATER SUPPLY AND SANITATION BY THE YEAR 2000.**

#### **2.1.1 Basic Causes**

There has been limited systematic planning and coordination of sector activities due to involvement of several government departments and sometimes unclearly defined roles especially in the rural sector. The number of construction companies in rural areas has led to lack of standardised procedures and sufficient planning to improve service coverage.

There is no effective decentralised methods for data collection at the Rayon and Oblast levels by any government departments. The Ministry of Health has been collecting data for water supply coverage rates through the Sanitation and Epidemiology stations at the Rayon level. The Ministry of Communal Affairs has been collecting information on water supply and sanitation coverage through the town and city water supply corporations. However for rural areas, data collection has been difficult since in many areas only sections of villages have been served and frequently systems are no longer functioning.

#### **2.1.2 Underlying Causes**

Many government organisations have been involved in provision of water supply and sanitation services for both rural and urban areas. Consequently there has been little systematic planning and monitoring of coverage levels for both water supply and sanitation. Definitions of coverage are not well defined and different government departments are using different standards. For example, in some cases water supply access has been defined as a standpost in the compound. However the Ministry of Health has used the definition of piped water supply provided at a minimum through public standposts.

There has also been the problem of service delivery for the rural areas focussing on the provision of water for irrigation purposes which has consequently led to a lack of quality in construction of water supply systems in the villages.

### **2.1.3 Immediate Causes**

No modern or more efficient equipment is available for monitoring water supply, sanitation and drinking water quality at the Rayon and Oblast level. There is a computerised monitoring system at the Central Sanitation and Epidemiology Station. However there is no computerised system at any other level.

Training is also lacking in effective data collection methods and how to use this information efficiently for improving service delivery and coverage rates.

### **2.1.4 Long term solutions**

The Ministry of Health has proposed for one government agency to be made responsible for water supply to enhance coordination and accelerate coverage. If this is approved, there will clearly be a need to develop a sector national plan of action outlining targets for each Oblast, necessary financial resources, and the amount to be generated from additional sources including a household contribution.

The different government departments should meet regularly to define access for both rural and urban areas and share relevant information in terms of service coverage.

For water supplies, the existing definition of coverage can be reviewed to see if it is realistic in terms of access and quantity of water to be made available at the household level. For peri-urban and rural sanitation new definitions of service coverage may need to be developed based on improved cost effective methods and replace the definition of a connection to sewer system which is extremely expensive.

### **2.1.5 Intermediate and Short Term solutions**

The Ministry of Health could be made responsible for improved sector monitoring since data collection is already conducted at the Rayon and Oblast level for water supply coverage and water quality. There are many staff available at the Sanitation and Epidemiology laboratories that can be trained in improved data collection through courses conducted at the central level.

### **2.1.6 Strategies**

- a) Capacity building of government departments in more effective data collection methods by selection and training of suitable staff.
- b) Provision of suitable equipment at the Oblast level to improve efficiency

of data collection methods. Provision of portable water quality testing equipment for the Oblast and Rayon stations.

- c) Establishment of clear national plans of action with yearly objectives and targets to measure sector performance.

## **2.2 NEED FOR RESEARCH, TRAINING AND DEVELOPMENT ACTIVITIES FOR WATER SUPPLY AND SANITATION AND ENVIRONMENT IN RURAL AREAS.**

### **2.2.1 Basic Causes**

The government has received limited financial support for research activities and there are few opportunities for training both in and outside of the country.

### **2.2.2 Underlying Causes**

Due to the dependance on Russia for technical information, there was never an expressed need for improved research and training methods. However, due to the changing needs of the country, research and development activities become more important especially for the development of improved technologies.

### **2.2.3 Immediate Causes**

The government has little information of which research institutions and bodies it can call on for support. It also has not clearly identified which are the major research and training needs.

### **2.2.4 Long Term Solutions**

The government will need to develop suitable national research institutions, that can identify and monitor necessary interventions that need to be taken.

### **2.2.5 Short Term Solutions**

Suitable research institutions can be identified in Europe, the USA and Asia that can assist in the development of suitable research activities for water, sanitation and the environment and develop suitable training courses for sector staff.

### **2.2.6 Strategies**

- a) Identify one to key institutions in Europe or Asia and arrange exchange visits between countries.

- b) Develop suitable research proposals that can be funded through donor support.
- c) Identify suitable training courses where government staff can be trained.
- d) Develop training courses in-country through strengthening of existing institutions.

## **2.3 LACK OF QUALITY IN CONSTRUCTION AND POOR MAINTENANCE OF RURAL WATER SUPPLIES**

### **2.3.1 Basic Causes**

The government has had difficulties in monitoring the breakdown of water supply systems, especially in the rural areas. In some areas all or part of the systems are no longer functioning and there is no systematic reporting of breakdowns.

### **2.3.2 Underlying Causes**

Quality of construction has been difficult to supervise due to the number of involved government departments and the difference in standard of performance of the various Oblast construction companies.

There has been no budget specifically allocated to the maintenance and rehabilitation of water supply systems. The government have insufficient manpower and financial resources to address this problem.

### **2.3.4 Immediate Causes**

No system has been developed for the reporting of breakdowns as and when they occur. The Ministry of Health has been reporting some of the breakdowns to the Ministry of Agriculture.

### **2.3.5 Long Term Solutions**

Existing methods for the design, construction and maintenance of systems need to be seriously reviewed. It would be useful to have the same department responsible for the design and construction rather than handled by separate departments since this can lead to misinterpretation and errors.

### **2.3.6 Short Term solutions**

Standardised procedures are necessary for the construction of water supply

systems. This would be facilitated by introducing more cost effective technologies which are easier to maintain.

## **2.4 IMPROVEMENT OF POOR ENVIRONMENTAL SANITATION CONDITIONS ESPECIALLY IN RURAL AREAS**

### **2.4.1 Basic Causes**

Little attention has been given to poor environmental conditions, especially in the rural areas. There is no government programme for rural sanitation and the definition of improved sanitation, for both rural and urban areas, is a sewer connection. People are not very interested in constructing an improved toilet unless a sewer connection is given.

### **2.4.2 Underlying Causes**

There are limited financial resources available for either rural or urban sanitation. The government is unaware of more cost-effective technologies and, apart from the Ministry of Health, are unaware how to approach the problem. Due to the increasing financial constraints which will worsen in the next two years, the government have been unable to improve service coverage and are likely to continue thus unless a large scale investment is made.

### **2.4.3 Immediate Causes**

No technical information is available of alternative low cost sanitation technologies. Government staff have only been trained in conventional methods. No relevant information or material has been shared with households of the benefits of improved hygiene behaviour.

### **2.4.5 Long Term Solutions**

A detailed plan of action is need for environmental sanitation to include yearly targets, technology selection, financial resources necessary to achieve established objectives. Increased financial resources are needed for both rural and urban sanitation. This may need to be generated from external resources due to the deteriorating financial situation in the country.

A department needs to be identified to be made responsible for rural sanitation. The most suitable department may be Agriculture since they are responsible for rural water supply. However the Ministry of Health would need to work closely with the selected department for development of an effective health education campaign, especially for schools.

#### **2.4.6 Short Term Solutions**

Small pilot projects should be developed in both peri-urban and rural areas to demonstrate low cost methods for sanitation. Government staff should be exposed to experiences in other countries. Likewise suitable personnel from other countries could be invited to visit to examine the situation.

#### **2.4.7 Potential Actors**

For long term solutions for peri-urban and urban areas ,funding should be sought from the World Bank, EEC and other major donors. For rural sanitation, support can be sought from UNICEF, international research Institutions, bi-lateral and multi-lateral donors.

#### **2.4.8 Strategies**

- a) Development of suitable cost effective technical alternatives for rural and peri-urban areas.
- b) Development of training programmes for government staff in cost effective technologies
- c) Research into present practices and customs regarding environmental sanitation and hygiene practices.
- d) Construction of demonstration latrines models at selected institutions e.g. schools, fletcher centres etc. and at household level.
- e) Introduction of credit system through suitable government departments for the construction of excreta disposal facilities for rural areas.

### **3. RECOMMENDATION FOR KYRGYZSTAN: SUGGESTED UNICEF INTERVENTIONS FOR WATER SUPPLY, SANITATION AND ENVIRONMENT**

#### **3.1 SUGGESTED INTERVENTIONS**

##### **3.2.1 Capacity Building for Improved Sector Management**

###### **Objectives:**

- (i) Capacity building of government to accelerate service coverage in achievement of the Global Goals.
- (ii) Development of decentralised monitoring system to establish clear baseline information and establish yearly targets.

###### **Activities**

Assistance in development of National Plans of Action especially for rural water supply and sanitation; training of sector staff in improved sector monitoring; provision of suitable computer equipment for the Oblast level; provision of portable water quality testing kits for both bacteriological and chemical analysis.

**Proposed budget: US\$ 100,000**

##### **3.2.2 DEMONSTRATION PROJECT FOR LOW COST TECHNOLOGIES FOR WATER SUPPLY AND SANITATION IN RURAL AREAS**

###### **Objectives:**

- (i) Increase service coverage rates by introducing new cost effective technologies for rural areas.
- (i) Raise awareness of the need to improve overall environmental health conditions
- (iii) Generate increased financial resources to improve service coverage levels.

###### **Activities:**

Select Oblasts with lowest water supply coverage rates and start small demonstration

projects; introduce suitable cost-effective technical options on a small scale in problem regions; conduct research into present practices and traditions; develop suitable environmental health campaign using most suitable media; develop suitable project proposals for increased sector funding from both government and donors to accelerate service coverage; encourage private sector production of supplies and equipment.

**Budget: US\$ 500,000 to include demonstration models, training, environmental education materials. (This project is recommended for Supplementary Funding).**

**FIELD VISIT TO CHUI OBLAST  
28 AND 31 OCTOBER 1992**

**1. MAROVODNOYE RAYON, 28 OCTOBER 1992**

**1.1 Water Supply**

Both the town and village water supplies were visited. The town supply consisted of a pumping station, two reservoir tanks and household connections providing 100 litres/person/day, according to design estimates. Some village systems were visited including one no longer functioning. In the first village visited, the house had water piped into the compounds. There was usually no platform and the surrounding area was dirty and poorly drained. In one area visited the standpost was one per 25 households which was only working for five hours in the morning thus resulting in queues and a per capita use of less than 15 litres/person/day.

In one village the standpipe had not been working for eleven years and people were collecting water from an overflow pipe at a local hot water plant.

**1.2 Sanitation**

Excreta disposal facilities were very poor at institutions in the town including schools and restaurants. In villages visited people had simple pit latrines made from wood. In some of the houses visited people would have a television, car and other luxuries. However their latrine would consist of a simple pit, usually near where the animals were kept. There was no garbage disposal in the rural areas visited. A new housing settlement was visited on the outskirts of Bishkek where people had no sanitary facilities and had constructed makeshift toilets.

**2. PANFILOV RAYON, 31 OCTOBER 1992.**

The field visit was made with a senior official of the Sanitation and Epidemiology Section, Ministry of Health, Bishkek, to inspect rural water supply and sanitation facilities and meet Ministry of Health officials at the Oblast level.

**2.1 Water Supply**

In Chui the water supply is managed by the City Water Supply Corporation. There are 23 villages in the Rayon of which 21 have a piped water supply. The

official water supply average rate for the Oblast is 91 per cent and for the rayon 98 per cent i.e. those that have access to either a household connection or a public standpipe. Information on the status of water supply is sent by the Sanitation and Epidemiology station to the central station in Bishkek.

Two villages were visited to inspect present water supply and sanitary facilities. In the first village there was a piped water supply under construction. Therefore presently the people were getting their water from local handpumps. These were installed at a depth of 15 metres since the groundwater was at 12 metres depth. However the pump frequently breaks down and is repaired by mechanics from the collective farms.

In one of the villages visited the standpost was not working and the household had installed their own handpump with the assistance of the department of hydrogeology at a cost of 300 roubles. Some of the standpost were not working since there was insufficient water pressure, especially in the summer months.

## **2.2 Sanitary Conditions**

Sanitary conditions were relatively poor. The families visited in both villages with and without piped water had no improved latrine and were using simple pit latrines in bad condition and unhygienic. These consisted of a simple pit with a wooden slab and superstructure. The pits were usually 1 - 2 metres deep and no water was available in the latrines. However one could observe in some latrines, a water container had been placed on top of the superstructure. Most people interviewed stated that they had no problems with their present system. However they would prefer a sewered toilet, if available, due mainly to reasons of status and improved standard of living, rather than health or hygiene reasons.

**TERMS OF REFERENCE  
FOR RAPID ASSESSMENT OF WATER SUPPLY,  
SANITATION AND ENVIRONMENT  
IN THE CARIC COUNTRIES**

**1. OVERALL OBJECTIVE**

To make a rapid assessment of the present situation in water supply, sanitation and environment, especially in peri-urban and rural areas, in order to make suitable recommendations for suitable interventions over a two year period (1993-94).

**2. SPECIFIC OBJECTIVES**

- 2.1 Estimate population still to be served by water supply and sanitation facilities and total cost for provision of services if present methods are continued.
- 2.2 Examine technologies used, their suitability, cost and ease of maintenance.
- 2.3 Investigate user needs in unserved and served areas and ability to pay for services for both initial construction, operation and maintenance costs.
- 2.4 Assess present capacity of government, non-government and private sector agencies to provide services and consider how this can be strengthened.
- 2.5 Examine present hygiene behavioural patterns, especially of women and children, and barriers to changing these.
- 2.6 Ascertain what are the major water related diseases, their prevalence, modes of transmission and present methods of control.
- 2.7 Assess functioning and utilisation of services.
- 2.8 Assess major environmental problems, capacity of government to respond and remedial measures to address these.
- 2.9 Review technical information available and present research being undertaken.

### **3. INFORMATION TO BE COLLECTED**

#### **3.1 Water Supply and Sanitation**

- 3.1.1 Present coverage levels for urban/rural water supply and sanitation and levels for 1980 and 85. This should include figures of total population served and those still to be served.
- 3.1.2 National plans, if available, with regional breakdown of services still to be provided.
- 3.1.3 Annual budget available for capital and recurrent costs for both water supply and sanitation and a breakdown of how much is external assistance.
- 3.1.4 Details of services already provided with respect to technical options selected and design factors i.e. amount of water provided on a per capita basis and per capita costs of services provided.
- 3.1.5 Relevant hydrogeological information of groundwater resources and present methods of exploitation
- 3.1.6 Inspection of services provided to investigate actual functioning and effective utilisation in both rural and urban areas.
- 3.1.7 Present monitoring systems, how these are maintained and data base presently available.
- 3.1.8 Visit to villages with and without improved water supply and sanitation facilities.
- 3.1.9 Details of all government, non-government and private sector organisations involved in the provision of services and level of coordination.
- 3.1.10 Annual implementation rates for water supply and sanitation services and how these have been affected in the past two years.
- 3.1.11 Maintenance programme in rural and urban areas, annual costs and how much is contributed at the household level.
- 3.1.12 Water quality testing facilities for both chemical and bacteriological tests. Types of equipment available and how this is monitored at the field level.
- 3.1.13 Present research and training institutions available and their capacity.

### **3.2 Environment**

- 3.2.1 Major environmental problems, especially with respect to the Aral sea region and present plans to address these.
- 3.2.2 Ground water pollution, major underlying causes and how this is being monitored. Indication of levels of chemical and bacteriological pollution in different regions.
- 3.2.3 Garbage disposal facilities and how these are managed.
- 3.2.4 Information shared with households concerning environmental factors, especially with respect to water logging and salinity problems.
- 3.2.5 Present legislation with respect to environmental factors or plans to introduce these.

### **3.3 Health Aspects**

- 3.3.1 Major water related diseases, their incidence rates, methods of control and treatment e.g. diarrhoeal diseases, hepatitis A, typhoid, cholera, intestinal worm infections, fluorosis.
- 3.3.2 Major transmission routes for excreta-based diseases (through observation methods)
- 3.3.3 Hygiene behaviour especially of mothers and children and reasons why these are practiced including existing beliefs.
- 3.3.4 Nitrate pollution and its effect on infant mortality rates (methoemoglobinaemia).

## **4. METHODS TO COLLECT INFORMATION**

### **4.1 Interviews with government/other organisations responsible for the following**

- a) Urban/peri-urban water supplies
- b) Rural water supplies
- c) Urban/peri-urban sanitation (excreta disposal)
- d) Rural sanitation

- e) Communicable diseases
- f) Water quality control
- g) Environmental pollution (monitoring)
- h) Environmental education
- i) Training of engineers/overseers for WATSAN

#### **4.2 Visits to the following**

- a) Peri-urban water supply and sanitation systems
- b) Rural villages with water supply and sanitation systems
- c) Villages with no existing services for both
- d) Villages with environmental problems e.g. excessive salinity

## APPENDIX IV.

## KYRGYZSTAN

NO.	NAME AND DATE OF MEETING	POSITION	ADDRESS AND TEL. NUMBER
1.	ZALYAHOV YULDUS PARMANOVICH	DEPUTY CHIEF, WATER SUPPLY, MINISTRY OF COMMUNAL SERVICES	KIROV STREET, 276 BISHKEK  TEL: 22 86 95
2.	ZAKHAROV ANATOLY PHYDOROVICH	CHIEF ENGINEER, WATER SUPPLY, MINISTRY OF COMMUNAL SERVICES	KIROV STREET, 276, BISHKEK  TEL: 22 86 95
3.	ISAEV ASYLBEK MUKBAMBETEVICH	CHIEF, BISHKEK WATER SUPPLY CORPORATION	TEL: 42 16 55
4.	BASTANOV NAZAR IBRAGIMOVICH	CHIEF, CONSTRUCTION MINISTRY OF AGRICULTURE	TEL: 22 17 46 22 03 30
5.	FIRSOVA SVETLANA NIKOLAEVNA	CHIEF, SANITATION AND EPIDEMIOLOGY DEPARTMENT	TEL: 22 78 32

NO.	NAME AND DATE OF MEETING	POSITION	ADDRESS AND TEL. NUMBER
6.	KULUMBAEV TEMIR ABLIEVICH	STATE COMMITTEE OF THE REP. OF KIRGHIZSTAN ON ENVIRONMENT PROTECTION GENERAL VICE- CHAIRMAN	BISHKEK, 720033 OCTOBER 40 STR. 131 TEL: 26 40 29 21 35 12
7.	ABDIKARIMOV SABIRGAN TOKTOSUNOVICH	DEPUTY CHIEF OF THE SANTARY EPIDEMIOLOGY DEPT.	TEL: 26 89 93 26 55 52
8.	BORIS M. SHAPIRO	FIRST DEPUTY MINISTER OF PUBLIC HEALTH	BISHKEK, MOSKOVSKAYA, 148 TEL: 26 56 50

