

No Safe Drinking Water for the Region Sabirabad Azerbaijan

Case study

Findings on the issues drinking water and sanitation of the project

„Community approaches to a better environment for all and
poverty reduction in out of reach communities of
Rural Azerbaijan “



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Abbreviations

WECF	Women in Europe for a Common Future
EKOT	Ecooloji Tarazlig
CIS	Commonwealth of Independent States
EECCA	Eastern Europe Caucasus Central Asia
GDP	Gross Domestic Product
NGO	Non Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
PWH	Protocol on Water and Health
UNECE	United Nations Economic Commission for Europe
UNICEF	United Nations Children’s Fund
WHO	World Health Organisation
WSP	Water Safety Plan

No safe drinking water for the region Sabirabad, Azerbaijan

1. The project

Poverty levels in rural Azerbaijan are high at around 42% (national average is 20.8%, World Bank, 2008). Azerbaijan has the highest infant mortality in the CIS; 74 per 1,000; half of these deaths are attributable to diarrhoea (UNICEF). Reasons include **unsafe water and sanitation**.

Since 2009 WECF, the local partner NGO EKOT, and the people from 5 villages in the region Sabirabad of Azerbaijan, are carrying out a project that aims at improving living conditions of the rural inhabitants, taking into account the needs of women. The population suffers from unemployment, high-energy poverty and a lack of safe drinking water and sanitation.

Amongst others some of the objectives of the project are capacity building of civil society organisations and local authorities, and organising stakeholders to disseminate water and sanitation initiatives, and improve rural development policies through increased public participation, in particular by involving women, through community outreach programmes and increased co-operation with local authorities and water utilities.

This study will focus mainly on the issue of water and present the findings and experiences of one of the target villages in the region Kura-Aras, near the town Sabirabad, standing for the situation in other target villages.



Map of Azerbaijan

1.1. The target region Kura- Aras

Sabirabad is the capital of the region Sabirabad in the region Kura-Aras. In Sabirabad the rivers Kura and Aras are coming together and continuing their way to the Caspian Sea.

In 2009, the Region Sabirabad included 16 communities with 151,000 inhabitants. The town Sabirabad has about 30,000 inhabitants. Cotton and fruits are mainly cultivated in the region and livestock is kept as a source for food and/or income.

2. General background information

2.1. Economy

Azerbaijan is a country in the Caucasus with 9,1 million inhabitants in July 2011. The country is neighboured by Russia, Georgia, Armenia, Iran and Turkey. The climate is ranging from sub-tropical to deserts or semi-arid.

Azerbaijan is a country with abundant natural resources like oil and several metals. Oil reserves and its trade have been the main strength of Azerbaijan's economy for over a century and this account for more than 10% of the country's GDP. This is to be expected to double in the coming years. The Baku-Tbilisi-Ceyhan pipeline, which started operating in 2006, has generated the expected growth in oil trade with other countries as much as \$160 billion in revenues in the coming 30 years¹. But besides, oil and petroleum, metals found in Azerbaijan such as gold, silver, iron, copper, molybdenum, chromium, manganese, cobalt, molybdenum, complex ore and antimony account for the national economy.

2.2. Conventions and Programmes (International and National)

- Since August 2000, Azerbaijan is party to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes”
- Since 2003, Azerbaijan is Party to the “Protocol on Water and Health to the above-mentioned Convention. The PWH is a binding protocol and described the obligations for the parties. E.g. the parties have to report and have to set targets within 3 years of accession of the PWH, in order to improve the situation.
- Following the Almaty Guiding Principles also in Azerbaijan the responsibility for water supply and sanitation services was in the 1990s decentralised.
- According to the National Programme on Environmentally Sustainable Socio-economic Development (2003), by 2010 every person in the country should have obtained access to good quality water. The National Programme aims at the introduction of the globally adopted concept of sustainable development.

Following the break up of the former Soviet Union, and the subsequent dismantling of the state and the collective farm system, the water and sanitation infrastructure was neglected. Often no arrangements were made to transfer responsibility for the operation and maintenance of the infra-structure from the state and collective farms to other institutions. As a consequence, much of the infrastructure is now out of operation and many rural inhabitants are forced to put in place private solutions where water quality is usually not monitored (OECD 2007)

2.3. Access to Water and Sanitation

Only 58% of people in Azerbaijan have access to safe drinking water (UNICEF), which is seen as one reason for the high infant mortality rate. The rural areas targeted by this project are semi-arid, with

¹ <http://www.azerbaijan.com/v/economy/>

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The content of the case study does not reflect necessarily the opinion of the donor

scarce groundwater resources, contributing to poverty and poor health. The mortality rate of children under 5 years is with 75 per 1000 live birth (OECD 2007) one of the highest in the EECCA region.

The Kura transboundary river basin, which provides 70% of Azerbaijan's drinking water, has poor water quality due to serious industrial and agricultural pollution, as well as a lack of effective wastewater treatment systems. The Kura river starts in Turkey and crosses Georgia before reaching Azerbaijan where it ends up in the Caspian Sea.

PROTOCOL ON WATER AND HEALTH TO THE 1992 CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES

Article 4.

2. The Parties shall, in particular, take all appropriate measures for the purpose of ensuring:

(a) Adequate supplies of wholesome drinking water which is free from any micro-organisms, parasites and substances which, owing to their numbers or concentration, constitute a potential danger to human health.

Article 5.

(e) Preventive action should be taken to avoid outbreaks and incidents of water-related disease and to protect water resources used as sources of drinking water because such action addresses the harm more efficiently and can be more cost-effective than remedial action;

(f) Action to manage water resources should be taken at the lowest appropriate administrative level;

(i) Access to information and public participation in decision-making concerning water and health are needed, inter alia, in order to enhance the quality and the implementation of the decisions, to build public awareness of issues, to give the public the opportunity to express its concerns and to enable public authorities to take due account of such concerns.

According to the WHO/UNICEF report on the Progress on Sanitation and Drinking Water, 2010, Azerbaijan made a respectable progress on the rate of access to improved drinking water in the rural areas. According to the data provided by the national responsible institutions the percentage of citizens with access to improved drinking water increased from 49% in 1990 to a rate of 71% in 2008. Access to improved sanitation in the rural areas increased from 24% in 2000 up to 39% in the year 2008. However the WHO/UNECE definition on improved access to water supply does not focus on the quality of the drinking water provided to the consumer neither on the accessibility of water.

The situation in rural areas is regarding having access to water and sanitation significantly more serious for the people in urban areas (table 1). Although, after the collapse of the Soviet Union the quality of water has also suffered in urban areas, in rural areas such services are often no longer provided at all. In rural areas, state and collective farms have traditionally been responsible for operating and maintaining water systems. According to the statistics, since some years a slight improvement on access to improved piped water was observed in rural and urban areas (table 1).

Year	Total Population x 1000	% of People	Improved Sanitation	Improved Sanitation	Improved Water		Improved Piped Water	
		Urban	Rural	Urban	Rural	Urban	Rural	Urban
2000	8.121	51	24	63	59	88	18	72
2008	8.731	52	39	51	71	88	20	78

Table 1. Percentage of people with access to improved water and sanitation

Source: Progress on Sanitation and Drinking-water: 2010 Update.

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation.

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation
JMP definition of unimproved sources of drinking water: <ul style="list-style-type: none">• Unprotected spring• Unprotected dug well• Car with small tank / drum• Tanker –truck• Surface water• Bottled water

3. Target village Suqovsan, Sabirabad

While in the different target villages the situation on having access to safe water and sanitation is rather similar, this case study will focus as an example for the rural areas in the region Sabirabad on one village.

The model village Suqovsan has around 3000 inhabitants and includes some 4000 hectares of field. The village is located in one of the driest and warmest regions of Azerbaijan. In former Soviet time the region was wealthy due to its fruit production and fruit processing. Most people were employed in the several kolkhozes.

Nowadays about 80% of the productive people are subsistence farmers or unemployed and 20% of the villagers work for the government in service sector. The average family size in this village is around 3-5 children per family.

The village has no central water supply system neither public wells or taps. Water is provided via irrigation canals; a truck brings water for consumption and personal hygiene to some of the households. Most households use pit latrines in their backyard. The village has no sewage system.



Photo: River water, trucked into the community of the Sabirabad region and sold from the water truck

4. Methodology on collecting information and mobilising the villagers

4.1. Socio-economic survey

For the collection of information about the living conditions of the villagers, master students from the University of Tampere, Finland, carried out a socio-economic survey. The respondents were randomly selected and a questionnaire for guiding the interviews was used. The interviews were carried out face to face, at the families home and at the office of the respondents. Only water related results are highlighted in this case study.

4.2. Water safety plans with involvement of schools

One other tool used for gathering information and mobilising the villagers is the implementation of Water Safety Plans (WSP) for the local water supply system. This method was used within the project. Target groups were the people of the rural areas, including schoolchildren. Local teachers with the involvement of the pupils and with the support of other stakeholders developed WSP for their local drinking water sources. Some of the activities included monitoring of the local water quality, interviewing the citizens and carrying out risk assessments of their water sources.

For this activity WECF provided a WSP manual for teachers and tools for simple water tests. The pupils, with support of the teachers analysed their drinking water system, investigating risks through water analyses, monitoring and interviews with citizens and stakeholders.

i. WSP Manual for teachers

WECF's WSP toolkit provides schools and other stakeholders with a WSP manual with background information about the aims of the WSP, about properties of drinking water and sources of pollution and related health risks². The manual also includes questionnaires for collecting information from citizens, local health authorities and local authorities responsible for water sources. Further, the manual includes sanitary inspection forms on the current state and potential risks of (individual) wells. The manual also contains instructions for carrying out simple water tests.

ii. Water tests

To raise awareness and to gather information about existing drinking water pollution, school staffs was provided with materials and information for carrying out nitrate quick tests and organo-leptic observations (colour, particles). Strips for measuring the acidity (pH) of the water samples were added as well. The nitrate quick test strips with a nitrate measure range of 0-10-50-100-250-500 mg/l are considered to be a semi-quantitative test. Nitrate concentration in water gives an indication of the level of water pollution. The schools were asked to analyse many local water sources and to carry out a longitudinal (seasonal) nitrate monitoring of some selected drinking water sources spread over the village.

iii. Questionnaires

Three different questionnaires were prepared for the schools: one for citizens, one for the local medical staff and one for the authority responsible for the local water supply. Together with the pupils, teachers conducted interviews with the local doctors, the authority responsible for water and with 10 local people about their perception of water, about types of water sources, about quality and quantity, water related diseases and about their wishes for the future regarding water issues.

iv. Sanitary inspection forms (checklists)

Based on the sanitary inspection forms published by the World Health Organisation WHO³, checklists for the risk assessment of water sources were adapted to the local circumstances.

²

<http://www.wecf.de/english/publications/2008/wspmanuals-revised.phd>

³

http://www.who.int/water_sanitation_health/dwq/wsp0506/en/index.html

v. *Training of teachers*

Two teachers per participating schools and employees of the local NGO were trained by WECF in two half-day sessions about the development of WSP for their local community with the involvement of pupils and about possible additional activities. The training provided information on water systems, water analyses, and the teachers were instructed on how to do conduct water quick tests and how to interview local stakeholders, how to carry out risk assessments for their local water systems, how to process and report the results. The teachers were asked to develop a programme for the WSP activities to be implemented during one school year (8 month) with the involvement of pupils and local stakeholders.

Findings and Experiences

5. Results of the survey conducted by the students from Tampere University, Finland

In Suqovsan there is a school, a college with a library, a few shops, a gas station and a post office. There is a small totally neglected building, where the mayor and the medical point have each one working room.

Most of the Suqovsan residents cultivate fruits like peaches, pomegranates, apricots, cherries and grapes in their yards. They selves mainly use those fruits. Three of the 9 residents interviewed use pesticides or herbicides for melons, wheat or other vegetables. Most of the farmers in this village used both organic and mineral fertilisers. The monthly income including pensions of the interviewed families varies from 100 – 450 Azeri Manat (100 - 450 Euro).

The unemployment rate is high and is perceived as one of the main problems.

i. *Water supply*

The main source of water in Suqovsan is the river Kura. Kura water runs in the village through one main channel, which is further divided into smaller channels for irrigation purposes. Water for the households is delivered untreated from the river Kura by motorised vehicles with water tanks. It was mentioned that the water delivery per cubic meter costs 0,025 Azn (0,25 Euro). The water is stored in big reservoirs of approximately 4 cubic meters. The delivered water is obviously turbid since the residents have to let the water settle down for some time. The settled water is used for cooking and other washing purposes and the drinking water is boiled. In practice the people drink mostly tee.



Photo: Basin for the storages of river water



Photo: Marmora filter for the treatment of river water

In some houses sculptured stone (marmora) filters, imported from Armenia, are used for filtering the water. They are able to purify about 20-30 liters of water overnight. The stone filter, which can cost about 200 Azeri Manats/200 Euro, is basically a sink shaped stone with tiny pores. The water is let through the holes and collected from the bottom in a bucket. From time to time the stone is cleaned with a brush. The lifetime of such stones is more than 60 years.

Partly, the people take water for their daily use directly from the irrigation channels. The irrigation channels are also used to water livestock, whereas cows enter the channel. Also illegal waste and flow-offs from rainwater or melting snow have an impact on the quality of the water in the channels.

ii. Sanitation and wastewater

Most residents in Suqovsan have squatting pit-latrines, all of them outdoors. Some households have a pit foreseen with concrete or rock walls at the sides. In these cases the tanks are emptied once or twice a year. In some other houses there is just a pit dug in the ground on top of which the toilet is built. In such a case, the ground absorbs the wastewater from the toilet and when it is totally filled another spot in the yard is chosen and a new pit is dug.

The sanitary condition for the pupils and teachers of the schools are in general in a very bad state. Pit latrines are common and due to the odour, located far a way from the school.



Photo: Typical condition of school sanitation: exterior and interior

In cases where the reservoirs are emptied, the same type of motorised vehicles as for water are used. The vehicles transport the wastewater into open canalisation channels, called collectors, having partly reed vegetation. These wastewater collectors are leading into a bigger collector downhill. This big collector with a width of at least 6 meter and 400 km length is fed with only wastewater from the region. The collected wastewater is flowed of into the Caspian Sea without any additional treatment.



Photo: View on the wastewater channel (collector) nearby Sabirabad

iii. The medical point and diseases

The medical point – one room- is in an extremely bad condition and extremely poorly equipped with medical instruments and medicines. There are hardly any instrument, bandages or adequate furniture. The medical point in Suqovsan serves 4400 residents within the region.

There is no water supply or a toilet in the medical point building, neither equipment nor tools for an adequate checking-up of the patients. The water quality in the village is very bad. The main illness related to drinking water, are according the citizens stomach aches/diseases and diarrhoea. Common diseases in the village are rheumatism, hyperthyroid, nervousness, diabetes, tiredness and psychological problems. Normally diarrhoea is treated at home and in severe cases, patients are taken to the hospital in the nearby city Sabirabad.

The medical point has no budget for improving the required medical equipment and materials. The nurses at the medical point have no information about the quality of the water in numbers; they have not been informed about the water results from any water tests.

The staff of the medical point advice the inhabitants to boil the water before drinking.

iv. Needs and priorities

The main environmental problems mentioned by the respondents in Suqovsan are the salty ground water and the salty soil. This provides difficulties for the farmers to grow crops. Sometimes hot weather was referred to environmental problems. At the same time the high unemployment and lacking investments in the village are barriers to local developments. The inhabitants suffer from energy poverty, with frequent energy cuts, badly insulated houses and high fuel costs. When ranking priorities, the lack of access to drinking water is rated as the most urgent problem.

According to the results of the survey the main problems in this village are:

- Severe lack of services such as water purification plant
- Adequately equipped medical point
- Defect roads
- Lack of kindergartens, social clubs

6. Results of the Water Safety Plans

6.1. WSP Activities

After the training, the teachers developed a working plan for 9 month and a WSP-working group of 37 pupils within the age of 12-15 year of the secondary school of the village Suqovsan was established. The WSP-group spent 1-2 hours weekly on the WSP activities, and sometimes the local mayor, vice mayor and citizens were involved for interviews.

3 water points in the village were selected for long-term monitoring on nitrate contamination and pH: 2 household wells and the water channel located near to Suqovsan school, which is used for irrigation and drinking water purposes.

The sanitary inspection forms from the WHO were used for assessing the risks of the water sources, and the questionnaires were used for making interviews

Excursions to other villages and to the Saru Su lake nature protected area and meetings with the staff working there were organised.

6.2. Analyses results

The Kura and Araz rivers are heavily polluted by the discharge of untreated communal and industrial wastewater at the territory of Turkey, Georgia, Armenia and Azerbaijan. According to official information, regularly produced by relevant governmental agencies, the rivers are polluted by heavy metals, coli bacteria and thus contain bad organo-leptic content.

The sanitary conditions of water sources are in a very poor condition the area alongside of the water channel is very polluted by domestic waste and manure. Cattle and other domestic animals have

access to all investigated water sources. The area around the investigated water sources are polluted by manure.

A small part of the people are using water of a well for washing purposes. All water wells are shallow and the depth of the wells vary from 2 to 4 m. The water has a saline taste, nitrate concentration was still below the WHO limit of 50 mg/l. The depth of a water channel is 1,5 m, and the nitrate concentration of the water reached the limit of 50 mg/l.

The results of the micro-biological test on total coliform bacteria and escherichia coli exceeded both the **EU and WHO norm of 0/100 ml**, adopted in many countries.

The found concentration the total coliform in water samples from the village were **24,000 up to 1,500/100 ml and of escherichia coli from 1,200 to 199/100 ml**.

Water from the channel provided to the villagers for drinking purposed was analysed by a certified laboratory on bacteria, salts and some metal elements.

Besides the e-coli and the total coliforms, also the analysed general hydrotrofic bacteria (GHB) exceeded with 738/ml severely the WHO norm of less than 10 GHB/ml drinking water.

i. Water quality and associated water diseases

On the question which water related diseases occurred in the village the local medical authority mentioned dysentery. Over the last three years 7 children and 5 elderly persons were registered effected by dysentery.

According to the medical officer, most people, who had diseases, did not visit the medical point. So she thinks, the **cases of dysentery are much higher than registered officially**.

All interviewed citizens were **very dissatisfied** with the improper water quality and the sanitary state of the surrounding water source areas

6.3. Suggestions for improvements

The schools suggested amongst others following measures in order to improve their living conditions:

- Substitute open water ditches with closed water pipes
- Construction of small water treatment plant in the village or provide the villagers with small water purification filters
- Decreasing of access of domestic animals to water channels and number of cattle and other domestic animals in the village in spring season.
- Providing the households waste boxes
- Construction of small modern medical centres or hospitals in the villages

7. Short-term improvements

As a possible short-term solution, Tulip water filters for household use were tested. These ceramic filters coated with silver, remove particles and bacteria, and are developed for an easy handling on household level- The capacity of the filters proved to be adequate, however the households have to be educated how to collect and store the filter safely.

The process of importing and distributing of the filters is on going. However the filters are produced in and exported from India and since Azerbaijan has a trade barrier with India the import of the Tulip filters still has to overcome many barriers.



Photo: Testing the tulip filter in a common household, using a common water source

II Conclusions and recommendations

The situation on access to safe water and sanitation in the target villages is severe

- The citizens do not have access to improved water and safe sanitation
- The citizens are affected by the use of unsafe water
- The sanitary condition in schools are often unacceptable
- No structures or efforts from the regional or national authorities were recognised, which could improve the situation on a short or long-term
- The medical point has to be renovated as soon as possible and equipped with adequate instruments

The regional and national authorities

- Should increase their efforts to provide the rural citizen access to safe water and sanitation for all;
- Should provide financial and technical support for a centralised water treatment system and supply;
- Should enable the communities to manage a centralised water supply system:
- Attention should be paid to safe sanitation and adequate wastewater treatment systems
- Should fulfil their obligation towards the Protocol on Water and Health

The communities

- Should organise themselves e.g. establish gender-sensitive water and sanitation committees
- Should formulate their concerns and needs towards the responsible authorities and their communities
- Should be supported on all levels in order to improve their living conditions