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RIVER BASIN MANAGEMENT PLAN
FOR THE CENTRAL KURA BASIN DISTRICT OF AZERBAIJAN
(DRAFT)
EXECUTIVE SUMMARY

Prepared a consortium led by SADIG LLC

in cooperation with

Azeri branch of REC Caucasus, HSRI and PERIOD LLC

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Introduction

This assignment entails for preparation of a draft River Basin Management Plan consistent with the EU Water Framework Directive and national legislation of Azerbaijan, also to be aligned with the approach used by the Environmental Protection of International River Basins Project (EPIRB).

Water Code of Azerbaijan Republic considers integrated ecosystem approach as part of the water management policy, however no legislative act exists that describes mechanism for application of the basin management principles. Currently Azerbaijan is planning to harmonize the national water legislation with the EU directives. One of the specific objectives of the EPIRB includes development of draft RBMPs for selected pilot river basins according to the EU WFD requirements therefore the WFD planning cycle is used as the basis, keeping in mind that the water legislation of Azerbaijan does not contradict to the logics of the WFD compliant planning cycle. The main objectives of EU Water Framework Directive is to achieve good qualitative and quantitative status of all water bodies (including marine waters up to one km from shore) and to prevent deterioration and ensure the conservation of high water quality where it still exists. The main goal of the Central Kura pilot river basin management plan also is to achieve environmental objectives of the WFD through implementation of necessary measures.

The Central Kura RBMP is aimed at introduction of WFD methodology to increase knowledge of relevant national and regional organizations on water resources management and protection and increasing of their capacities to develop RBMPs according to requirements of the Directive

During the development of River Basin Management Plan for the Central Kura BD the below tasks have been implemented:

- Classification of water bodies based on available biological and chemical data;
- Identification of pressures and impacts and water bodies at risk. Identification of significant pressures and the related possible risks of each water body to fail the WFD environmental objectives, aligned to the EC IMPRESS WFD guidance document (Article 5, Annex II);

- Setting of environmental objectives (WFD Article 4);
- Design of surveillance and operational monitoring programme and network (Article 8, Annex V) included as an Annex to the RBMP;
- Identification of gaps in data availability and design of investigative monitoring programmes and network;
- Assessment of water status (surface water and groundwater) using available biological, chemical and quantitative data;
- Revision of water body status based on outcomes of investigatory monitoring (JFS);
- Initial economic analysis consistent with the WFD guidelines (WFD Article 5, Annex III);
- Development of national and basin-wide confined Programme of Measures (WFD Article 11, Annex VI); and
- Preparation of a River Basin Management Plan in accordance with the WFD and national regulations (WFD Article 13, Annex VII)
- Discussion of Draft RBMP with stakeholders and public and when finalizing of document. taking their comments into account

The overall delineation of surface water bodies, the typology of the newly delineated, water bodies was carried and in the classification of the water bodies was used the results of water quality monitoring conducted by the EPIRB project.

Central Kura Basin District RBMP is aimed at achieving the environmental objectives for waters. According to WFD all water bodies are required to have at least good ecological status. In this regards to achieve good status has been developed PoM for water bodies at risk and other water bodies.

1. The Central Kura BD

The Central Kura pilot river basin is located in the Ganja-Gazakh Economic Region at western part of Azerbaijan and covers Agstafa, Dashkesen, Gadabay, Goranboy, Khanlar, Gazakh, Samukh, Shamkir, Tovuz administrative regions, cities like Ganja and Naftalan. Economic region has suitable economic – geographical location. It is located on the North – eastern slope of Lesser Caucasus mountainous massive, has border with Armenia in South – West and with Georgia in the West and North of the region. Region covers the area of 12 500 km2 (14.4 % of the territory of the Azerbaijan Republic). The territory of the region can be divided into zones considering its landscape characteristics: lowland area with some slope to the direction Kura river, foothill zone, middle highland (1000-2000 m a.s.l.) zone and alpine zone (more than 2000 m a.s.l) /36/.

Rivers of the region are running from Lesser Caucasus to the Kura River Plain. Main rivers of the area are: Agstafachay, Tovuzchay, Asrikchay, Zayamchay, Shamkirchay, Ganjachay, Kurakchay, Tartarchay which flow into the Kura River directly or into the reservoirs over the Kura River/(Sources:Rustamov S.G., Kashkay R.M. Water resources of the rivers Azerbaijan SSR, 1989) .

For the purpose of the RBMP development, the pilot basin was subdivided into several sub basins and taking into account volume of work and time limitations 4 main river basins (Ganjachay, Shamkirchay, Tovuzchay and Agstafachay) located in area between Ganja and Georgian border as it is shown in Figure 1 below .

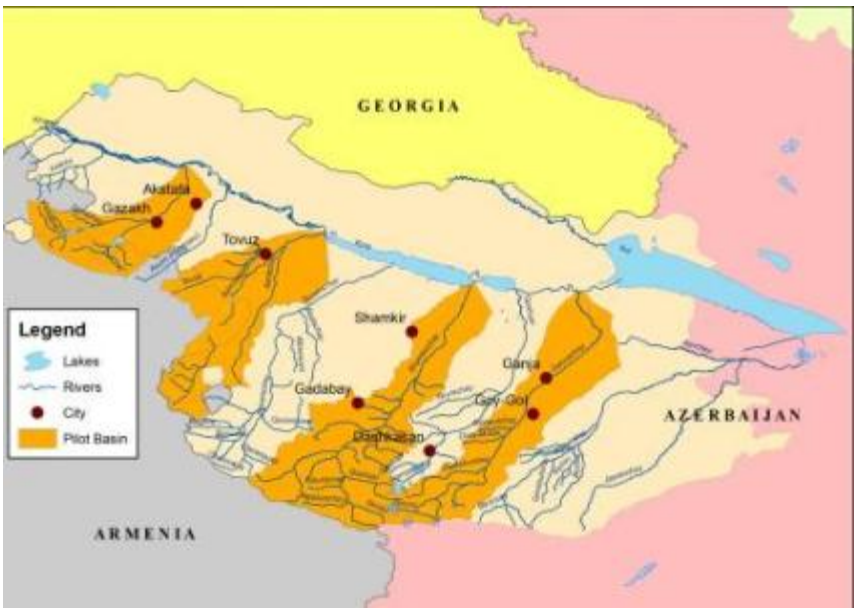

Figure 1. Central Kura RBD map

The overall goal of the RBMP is to protect surface and ground waters of the Central Kura BD from significant antropogenic (pollution and hydromorphological) pressures through attaining a number of environmental quality objectives designed to reduce/eliminate significant water management issues in the pilot river basin.

2. Economic activities in the basin

Population and economic activities

As of January 1 2014, number of population in the Ganja-Gazakh Economic region amounted 1,240,418 (which means by 13,078 or 1,1% percent more comparing with the relevant period of last year). Population of the economic region makes 13,6% of the total country inhabitants. Average density of the population is 100 inhabitants/km^2. 46,5% of the population lives in urban and 53,5% lives in rural areas. 50,5% out of total population are women and 49,5% men respectively/(Source: Azerbaijan State Statistical Committee, 2014)

Most dense settled part of the region is Ganja city and Naftalan city. Except Ganja and Naftalan cities, Dashkesen rayon is leading for the percentage of urban population (43,2%) and Gadabay rayon is the leader for rural population (88,9%).

The main sectors of economy are agriculture, food processing and light industry and handicraft. The region is rich of such natural minerals as iron ore, copper, gold, silver, aluminum, limestone, marble, gypsum, collide, cement, etc. Especially iron ore and gold resources in Dashkesen, aluminum minerals in Zeylik, limestone in Khoshbulag and gold, silver and copper in Gadabay are of economic importance. The part of the Kura River flowing through the region has abundant hydro energy recourses. The economic region also has natural-recreational recourses.

As of January 1, 2014, the number of population in the age of labor capability was 797 300 or 64.2 % of total population(Source: Azerbaijan State Statistical Committee, 2014). Only 639 249 inhabitants out of this figure are working. Number of men in age of labor capability is 392 800 and this figure is 404 500 for women. Average nominal monthly salary in the region is 261.4 manat/79/.

The overall volume of general production in Ganja-Gazakh economic region was 2765.3 million AZN in 2013. The growth of overall production is primarily due to agriculture, construction and commerce sectors.

Industry and mining

The main mineral resources of the area are sulfuric pyrites, cobalt, barite, iron ore, alunit, stone marble, gypsum, zeolite, bentonite, crude cement, gold, copper, limestone. This is the second industrial region in the Republic. The region is sharing 12 – 13 % of industrial production in Azerbaijan.

One of the significant metal mining industrial regions (Dashkesen rayon) of the country is located near the Qoshgarchay basin. The region is rich in natural resources such as iron ore, cobalt, alunite, marble, limestone and so on. Currently there were confirmed 3 iron ore fields within the country: "Dashkesen", "South Dashkesen", "Demir" fields. Discovered iron ore resources' volume is more than 250 million tons.

The Gedabey area is rich with the underground resources such as gold, uranium, copper, and colored minerals. The gold deposit in Soyutla was open by brothers Siemens. At present in the area the plant on production of gold on which about 2000 thousand people work is open. The enterprises of nonferrous and ferrous metallurgy are active in Ganja and Dashkesan.

Dashkesen marble quarry began operating in 1966 under the Chiragidzor mine (under the "Rizvan" Ltd since 1985) of Goygol rayon. The production capacity of the quarry is 3000 m^3 annually. Marble quarry "Rizvan" Ltd produced 1120 tons of marble blocks, 1237 tons of marble pieces, 131 tons of marble plaques within 6 months of [http://www.mie.gov.az] .

The machinery industry includes device production, communication supply, vehicle repairing and production of agricultural devices.

Power industry: Ganja, Shamkir and Enikend hydroelectric power stations are active. Plants of the chemical industry are operating in Ganja city produces sulfuric acid, potash fertilizers. The light industry of the area is based on processing of local raw materials (cotton combine in Dalimamedli, the enterprises of cotton and wool and carpet production in Ganja, Gazakh, Dashkesan).

Agriculture

Agriculture plays an important role in social-economic development of the region as more than 50% of the residents of Ganja-Gazakh economic rayon live in villages. Therefore more than 40% of the overall productivity of the region is based on the agriculture.

The economic region has been specialized in the field of viticulture and potato production. As well as wheat, cotton, fruit and tobacco production have been developed. Most of agricultural crops(located in lowland areas) need intensive irrigation..

It must be noted that, in 2012 year, 95,035 ha (48,1%) of 197,525 ha crop yields in the agriculture of Ganja-Gazakh economic rayon belonged to grains and grain legumes areas/76/.

Livestock play one of the important roles in this economic rayon. In 2012 year, the quantity of large horned livestock was 366,1 thousand, sheep and goats was 1835,9 thousand, birds was 2,5 million.

It must be added that, in Ganja-Gazakh economic region there is large capacity for development of viticulture, potato production, vegetable production, dry subtropical fruit production, melon and gourd production, horticulture, grain production, cattle-breeding. In order to use this potential there is need to provide necessary irrigation water.

Production of main livestock products (in all categories of production) in Ganja-Gazakh region have been doubled during last 15 years and makes 28,7 thousands ton meat, 272 thousands ton milk and 3978 thousands ton wool.

It must be mentioned that, the Ministry of Agriculture, the Ministry of Economy and Industry, Amelioration JSC and local Executive Powers will carry our significant activities in the field of the development of the agriculture of Ganja- economic region in 2018 according to the StateProgram("State Program on Social-Economic Development of the regions of the Republic of Azerbaijan in 2014-2018 years").

Water uses

By the information of State Statistic Committee of Azerbaijan Republic total water resources of pilot area are 1.2 -1.4 billion m^3. Water abstraction in the pilot region was about 1131 million m^3 in 2013 of which around 150 million m^3 was lost during transportation and 877,4 million m^3 has been used for different sectorsSource: Azerbaijan State Statistical Committee, 2014).

Waters demands are distributed by raions in 2013 according to table 1 (By the information of State Statistic Committee of Azerbaijan Republic).

Table 1 . Water use by rayons of Ganja Gazakh region (Million cub.m)

Ganja-Gazakh economic region-total	Total used water	Water use for irrigation	Drinking water supply	For production
Total	877	**842**	25.8	8.6
Ganja t.d.	22,1	1,6	17,9	2.6
Gazakh region	57,3	54,7	1,3	1.3
Agstafa region	112	73,9	0,4	0.02
Tovuz region	97,7	95,4	1,3	0.01
Shamkir region	173	167	1,2	4.6
Gedabey region	0,2	-	0,2	
Dashkesen region	0,3	-	0,3	
Samukh region	154,9	154,6	0,3	0.01
Goygol region	51,1	49,6	1,5	
Goranboy region	247	245	1,8	
Naftalan t.u.	0,6	0,01	0,6	

(Source:Azerbaijan State Statistics Committee, By information of Azerbaijan Amelioration JSC, 2013)

As one can see from above table share of located in higher elevations Gedabey and Dashkesen regions is very low depending on climatic condition and crop water demand regimes.

Dry climate, non-uniform distribution of limited water resources, population growth and fast development of the economy in recent ten years gradually increase the need for water on the plains of Ganja-Gazakh region. The key aspect of economic activity consists of irrigation farming and water use for domestic needs.

Overall volume of the total water intake from rivers by rayons in the Central Kura BD in 2013 is given in table 2. Looking on the data it is evident that there are huge losses of water (approximately 40 %) (Source: Regional offices of Amelioration JSC. In Ganja –Gazakh region, 2014).

Table 2. Total water intake from rivers in 2013

№	Rivers	Irrigated area, thousand hectare	Administrative region	Volume of water intake, mln. m^3	Volume of water use for irrigation, mln. m^3	Volume of water losses mln. m^3
1	Agstafachay	26.0	Gazakh, Agstafa,	144.6	102.8	41.8

			Tovuz and Shamkir			
2	Hesensu	2.1	Gazakh	9.6	6.9	2.7
3	Akhincachay	8.7	Gedabey, Tovuz	56.4	35.2	21.1
4	Tovuzchay	2.3	Tovuz	35.0	25.1	10.1
5	Asrikchay	0.8	Tovuz	4.1	2.4	1.7
6	Zeyemchay	9.7	Gedabey, Tovuz	57.2	44.4	12.8
7	Ceyirchay	6.5	Gedabey, Shamkir	51.0	38.5	12.5
8	Shamkirchay	21.1	Gedabey, Shamkir	167.1	106.7	60.4
9	Goshqarchay	5.0	Dashkesen, Goygol, Ganja	20.3	9.7	10.6
10	Ganjachay	18.3	Goygol, Ganja Samukh	311	185.3	125.7

(Source: Azerbaijan State Statistical Committee, 2013)

Waste water discharges

Urban waste water

The total volume of waste waters produced in residential settlements of the pilot river basin in 2012 was 51,4 mln m^3 (Table 3).

Table 3. Annual waste water in the residential settlements[1] (in million cubic meters)

Regions / Years	**2000**	**2005**	**2010**	**2011**	**2012**
Pilot area- total	**6.6**	**28.7**	**35.5**	**31.1**	**51.4**
Ganja city	0.01	19.0	12.3	9.5	9,2
Gazakh Rayon	0.5	0.4	0.8	0.6	0,6
Agstafa rayon	0.3	0.5	0.1	0.1	0,2
Tovuz rayon	-	0.2	0.95	0.8	0,8
Shamkir rayon	4.9	8.0	8.6	7.4	28,0
Gadabay rayon	0.1	-	0.4	0.1	0,0
Dashkasan rayon	0.7	0.3	0.1	0.2	0,2
Samukh rayon	-	0.2	0.11	0.1	0,1
Goygol rayon	0.1	0.1	12.0	11.9	11,3
Goranboy rayon	-	-	0.1	0.5	0,7

(Azerbaijan State Statistics Committee, 2013)

[1] According to information obtained from Melioration and Water Industry OJSC

The sewerage system of **Gazakh city** was built in 1970 and for the moment is not sufficient to serve all residents. Most of the waste water collection system is outdated and needs to be replaced. There are lots of defects and damages in pipes. WWTP with the capacity of 2 800 m^3/day was built in 1970-1973. The plant is in extremely poor condition and existing structures are completely unusable. Wastewaters are discharged into the Agstafachay River without treatment.

Waste water collection and treatment systems almost in all other rayons are in bad conditions

Under the National Water Supply and Sanitation program the work is ongoing to construct new WWTPs for Gazakh and Tovuz rayons.

After WSS of above rayons are operational there will be need to continue monitoring of relevant water bodies affected by them to observe if improvement of water bodies status is occurring.

Industrial and mining waste waters

Official information on the amount of water discharged into water sources is not accessible.

Meanwhile as it is noted in the text above, there are industrial enterprises and ore mines in the pilot area.

Little pieces of marble dissolve in the river water and change its color.

In addition to industry impact to the Ganjachay River it should be noted that industries located in Tovuz and Gazakh cities (mainly small food industries) are discharged into sewerage waste water systems and through them impact to water quality of the Tovuzchay and the Agstafachay rivers. Almost the same level of pollution comes from small industries located in the Shamkirchay river basin.

Flood protection

In recent years several floods were recorded in the pilot river basin. Their economic, social and ecological consequences are significant and have caused huge damages on the properties and even with a number of losses of human lives. Expected climate changes will lead to that high runoff become more frequent and large-scale [Akhmedov B. M., et al. 2008, Todua Z., 1995].

It is impossible to prevent such floods completely due to the unexpected occurrence mainly the short-term floods in rivers. However, certain reduction of damage occurred as a result of floods is possible through application of effective methods and measures.

Hydropower generation

In 30-40 years of the last century small hydroelectric power stations were constructed on the rivers in the pilot river basin. The hydropower station of capacity of 50 KW is constructed on the river Qoshkarchay. It is constructed below Zagala villaqe (63 km from the mouth). Below a dam from the river the channel for hydroelectric power station work branches off. The used water arrives back in the river Qoshkarchay.

The hydropower station was constructed in the village Zurnabad in 1927. The length of dam is 25 m, width - 3 m and a pressure - 1 m. Volume of a reservoir is 900 m^3. The used water arrives back in the Ganjachay River. In 1953 after construction of Mingechevir hydroelectric power station on the Kura River, small hydroelectric power stations have lost the value and their operation was stopped. Now construction of the new small hydropower stations to explore the capacity of the small rivers hydraulic power is planned (see Annex 16).

Shamkirchay water reservoir is designed for irrigation without consumption of power. However, at the same time it is planned to construct 3 hydro power stations to generate additional electric power by using hydraulic potential of the river water with following parameters:

- HPS capacity: 24438 KWt
- Annual energy production: 56 million KWt/ hour

Solid waste disposal

The situation in the waste disposal of the pilot river basin causes serious dangers. Based on the available information, the Integrated Waste Management Project in Ganja city is conducted jointly with the executive bodies of the city, Ministry of Economic Development of Azerbaijan and German Bank KFW.

In other cities of pilot river basin no such activities have started on implementation of the Solid Waste Management System. Wastes are disposed illegally to different locations. Existing landfills do not meet requirements defined by the EU Directives and international standards.

Automobile transport

More than 200 km of the Eurasian transport corridor passes through this region. The most significant railway line is Baku-Tbilisi. The railway line was given to exploitation in 1883.

The most significant road is Baku-Ganja-Tbilisi. The road is lying in parallel with Baku-Tbilisi railway line. The highway line is Shamkir-Gadabay, Ganja-Dashkesen and Goranboy-Agcakend motorways connecting the area with the mountainous areas.

Oil products transported via above mentioned railway lines and motor roads spill in the result of problems in vehicle and accidents and eventually it may lead to the pollution of river waters.

In summer most of residents of the villages located along the river wash their cars in the river. It leads to the pollution of the river with the oil products.

As there is only one observation station on each of pilot rivers, therefore it is difficult to assess direct impact of car washing in the river, but existing monitoring data shows that amount of oil products often is high in rivers.

Tourism

Favorable climate conditions, clean air, mountain and forest landscape, therapeutic mineral water resources allows to create health resorts for treatment and recreation. During the last year there is also visible trend to spend summer time in this region for the people from large cities in the natural camps, where no regulation measures are taken (mainly water supply and sanitation). Such trend may contribute to the water resources deterioration mainly in the mountain parts of the pilot river basin. There are not available any data on this situation. Therefore, it can be only expected certain pressure from such human activity.

3. Identification and Delineation of Surface and Ground Water Bodies

For each Water Body, discrete sections, which differ from each other in specific natural characteristics, the nature of the human pressures and/or impacts, or any other specific parameters identification of the types was based mainly on geographical and morphological character.

On the basis of the ecoregion and Geology all rivers in the Central Kura BD belong to one single type, meanwhile by the Altitude factor and the Catchment size rivers fall within 7 groups. Surface water bodies are classified into water bodies in natural conditions, heavily modified and artificial water bodies. Determination of surface water bodies and heavily modified water bodies is based on several guidelines and an agreed methodology, is described below.

In total 53 surface water bodies have been identified on the rivers of the Central Kura BD. Also 5 water bodies (irrigation canals) have been identified as the artificial water body. On the territory of the pilot basin there are 4 lake water bodies are located on the territory of the pilot basin. Two of them (reservoirs) have been identified as the heavily modified water body.

Totally 7 groundwater bodies (G-100 - G-700) have been preliminary identified and delineated in Central Kura BD. Four groundwater bodies have been identified in the Quaternary aquifers, of them one is

unconfined and three confined (artesian) and three groundwater bodies delineated in Pre-Quaternary aquifers All groundwater bodies are of good chemical and quantitative status and all of them are used for water supply to a various extent.

4. Water Management Issues. Significant Pressures and Impacts

Based on the IMPRESS methodology as well as findings of the updated river basin analysis study in total 15 water management issues were identified for the Central Kura RBD. They are related to pollution from point and diffuse sources and hydromorphological alterations. Then identified water management issues were analyzed and prioritized and as result 9 significant water management issues were selected.

Significant water management issues for the Central Kura Basin District

	Water management issue
1	Untreated wastewater discharges from urban sewer systems (or combine sewer systems that means both urban and industrial)
2	Untreated wastewater discharges from industries
3	Loads of agricultural fertilizers
4	Disposal/dumping of solid household wastes
5	Sand and gravel extraction
6	Water abstractions for irrigation
7	Water abstractions by water supply systems
8	Water abstractions by HPPs
9	River regulation: damming, channelling, flow regulation

For all water categories, addressed all pressures, including:

- Point source pollution
- Diffuse source pollution
- Pollution by hazardous/priority substances
- Hydromorphological alterations including all pressure types as listed in the EPIRB Guidance Document

Pressures and impacts were been identified in more details at the water body level following guidance provided by the EPIRB project. EPIRB report on classification of groundwater bodies was used for identification of groundwater bodies.

According to EU WFD CIS Guidance Document No.3 pressures and impacts have been analyzed within the characterization of water bodies according to article 5(Source: EU Water Framework Directive, (2000/60/EC), European Communities, 2000)..

Abstractions of water for irrigation and other use, water pollution and morphological alterations have been identified as main sources of significant pressure in the Central Kura Basin District, which was based on information and data on range human pressures and impact as well as their significance. Point and non-point pollution sources and their impacts were reviewed, based on the information on total loads measured or licensed, hydromorphological alterations for water bodies /areas at risk were identified and compared both with the existing national legislation and WFD.

In the RBMP have been described accordingly non-point pollution sources and climate change impact to water resources

5. Pressures and Impacts on surface waters

In the he Central Kura RBD pilot study has been conducted in basins of 6 main rivers that are Ganjachay, Shamkirchay, Zayamchay, Goshkarchay, Tovuzchay and Agstafachay (see Fig. 13). For the purpose of the Pressure and Impact Analysis it was decided to make assessment separately for each sub-basin. Such assessment would give a clue on the impact of different pressures on the individual water bodies and also on the whole sub-basin. Based on the river basin analysis (both natural conditions and human activities) and the data from the JFSs (2013 and 2014) and national monitoring programme the pressures and impact were assigned to the significant water management issues that were divided into two groups (pollution from point and diffuse sources and hydromorphological alterations).

Surface Water Pollution Pressures and Impacts

Regarding the pollution of surface water in the Central Kura BD the main sources are the untreated waste waters from large cities and also small settlements may have impact on the water quality via direct discharge of the waste waters from the households to the river. As it was found during the JFS field work and investigations uncontrolled disposal of solid wastes can significantly contribute to the deterioration of surface water quality as well (many of the dump sites are located on the river banks).

Based on the data available from the national monitoring programme and from the two JFSs rounds analysis of the sub-basins was conducted. The results are presented in the table 4.

Table 4. Surface water pollution pressures and impacts in the Central Kura RBD

River	Type of pressure	Specific pressure	Impact	Comment
The Ganjachay river sub-basin				
Ganjachay from Topahasanli settlement up to Goygol city	Diffuse source of pollution	Untreated waste waters from the small settlements (without canalization) and agricultural activities	Increased amount of degradable organic matter and nutrients; Changed habitat and composition of aquatic biota	*Houses are constructed directly on the bank and some of discharge waste water to the river. Furthermore, during the rain period wastes are washed out from the surface area to the river as well.*
Ganjachay from Goygol city up to the mouth	Point sources of pollution	Untreated waste waters from Goygol and Ganja cities	Increased amount of degradable organic matter, nutrients and specific compounds; Degraded habitat where aquatic biota can not survive	*From Ganja to mouth of the river only small volume of waste waters (both treated and untreated) is in the river*
Qoshakarchay river sub-basin				
Qoshkarchay below Bayan (from Met factory) up mouth	Point and diffuse sources of pollution	Untreated waste waters from the settlements and from the factory	Increased amount of degradable organic matter, nutrients, heavy metals and suspended solids; Degraded habitat	*Muddy water with brown colour and substrate (stones) is covered by the thick layer of silt.*

Shamkirchay river sub-basin				
Gadabaychay from Gadabay city up to confluence with Shamkirchay river	Point sources of pollution and diffuse source of pollution	Untreated waste waters from the settlement and solid wastes	Increased amount of degradable organic matter, nutrients and other specific substances, solid wastes; Degraded habitat	*During the JFS (2014) no macroinvertebrates were found and substrate was covered by the filamentpous algae and thick layer of biofilm.*
Shamkirchay below Shamkir up to mouth	Point sources of pollution and diffuse source of pollution	Untreated waste waters from the settlement and solid wastes	Increased amount of degradable organic matter, nutrients and other specific substances, solid wastes; Degraded habitat	*During the JFS (2014) only tollerant macroinvertebrates taxa were found in the sampling location Shamkirchay – highway bridge.*
Zayamchay river sub-basin				
Zayamchay below Khonogalo up to mouth	Point sources of pollution and diffuse source of pollution	Untreated waste waters from the settlement and solid wastes	Increased amount of degradable organic matter, nutrients and other specific substances, solid wastes; Degraded habitat	*During the JFS (2014) only tollerant macroinvertebrates taxa were found.*
Tovuzchay river sub-basin				
Tovuzchay below Tovuz city up to mouth	Point sources of pollution and diffuse source of pollution	Untreated waste waters from the settlement and solid wastes	Increased amount of degradable organic matter, nutrients and other specific substances, solid wastes; Degraded habitat	*During the JFS (2014) only tollerant macroinvertebrates taxa were found.*
Agstafachay river sub-basin				
Agstafachay below Agstafa city up mouth	*Point sources of pollution and diffuse source of pollution*	*Untreated waste waters from the settlement and solid wastes*	*Increased amount of degradable organic matter, nutrients and other specific substances, solid wastes; Degraded habitat*	*During the JFS (2014) only tollerant macroinvertebrates taxa were found.*

Based on the analysis of the pollution impact on the surface water bodies (Water Body Delineation Study) they have been aggregated into groups (same type and identified pressures). However, in the Risk Assessment analysis will be conducted for each surface water body.

Hydromporphological Pressures and Impacts

The main pressures were identified as being water abstraction (for irrigation and households), dredging sand and gravel from the river bed and also river regulation. The results of the analysis are summarized in the table 5. The analysis was conducted on the available data from the JFSs, hydrological monitoring and historical data sets (also official statistics published each year were used).

Table 5. Hydromorphological pressures and impacts in the Central Kura BD

River	***Type of pressure***	***Specific pressure***	***Impact***	***Comment***
The Ganjachay river sub-basin				
Ganjachay	Reduction	Water abstraction	Changes in water flow regime,	*From Ganja city to*

from Topahasanli settlement up to mouth	of the river flow, river regulation	for the irrigation purposes and settlements; dredging material and HPP	water temperature, dissolved oxygen and increased algae growth. Degraded habitat where aquatic biota can not survive	*mouth of the river only small volume of waste waters (both treated and untreated) is in the river.*
Qoshakarchay river sub-basin				
Qoshkarchay below Bayan (from Met factory) up mouth	Reduction of the river flow, river regulation	Water abstraction for the industrial purposes and also for irrigation in the downstream parts of the sub-basin area.	Changes in water flow regime, water temperature, dissolved oxygen and increased algae growth. Degraded habitat where aquatic biota can not survive	*Only small amount of water was measured in the downstream part of the river.*
Shamkirchay river sub-basin				
Shamkirchay below Shamkir up to mouth	Reduction of the river flow, river regulation and dredging material	Water abstraction for the irrigation purposes and settlements (two irrigation cannals); dredging material	Changes in water flow regime, water temperature, dissolved oxygen and increased algae growth. Degraded habitat where aquatic biota can not survive	*Only small amount of water was measured in the downstream part of the river.*
Zayamchay river sub-basin				
Zayamchay below Yaniqli to Khonogalo	Reduction of the river flow	Water abstraction for the irrigation purposes and settlements; dredging material	Changes in water flow regime, water temperature, dissolved oxygen and increased algae growth.	*Significant reduction in the river flow was observed during the field work*
Zayamchay below Khonogalo up to mouth	Reduction of the river flow	Water abstraction for the irrigation purposes and settlements; dredging material	Changes in water flow regime, water temperature, dissolved oxygen and increased algae growth. Degraded habitat where aquatic biota can not survive.	*Only small amount of water was measured in the downstream part of the river.*
Tovuzchay river sub-basin				
Tovuzchay below Tovuz city up to mouth	Reduction of the river flow and rive regulation	Water abstraction for the irrigation purposes and settlements; dredging material	Changes in water flow regime, water temperature, dissolved oxygen and increased algae growth. Degraded habitat where aquatic biota can not survive.	*Only small amount of water was measured in the downstream part of the river.*
Agstafachay river sub-basin				
Agstafachay below	*Reduction of the river*	*Water abstraction for the irrigation*	*Changes in water flow regime, water temperature, dissolved*	*Only small amount of water was*

Agstafa reservoir up to mouth	*flow, river regulation*	*purposes and settlements; dredging material*	*oxygen and increased algae growth. Degraded habitat where aquatic biota cannot survive.*	*measured in the downstream part of the river.*

For illustration, total water resources of the pilot river basin are 1.2 -14 billion m^3. Water abstraction in the pilot river basin was about 1072 million m^3 in 2012 of which 222 million m^3 was lost during transportation and 850,5 million m^3 has been used for different sectors.

Climate change and its impact to water resources

In order to evaluate change of climatic conditions of the territory and its impact to status or water resources of the territory the comparison of annual and seasonal air temperature and precipitation for the periods of 1961-1990 and 1991-2012 has been estimated by us.

Below is given change of air temperature and precipitations in some meteorological stations and Ganjachay river run-off(where highest flow reduction is observed for above periods (Tables 6)

Table 6. Difference of air temperature (^{0}C) and precipitations(mm) in Ganja meteorological station and run- off of the Ganjachay River at Zurnabad (%) station between the periods of 1961-1990 and 1991-2012

Meteoelements	Winter XII-II	Spring III-V	Summer VI-VIII	Autumn IX-XI	Annual XII-XI
Ganja station					
Temperature	1,1	0,7	1,2	0,8	1.0
Precipitation	-19,8	-4,3	-23,9	8,5	-10,7
Ganjachay- Zurnabad water discharges					
Run-off	-5	-14	-25	-8	-19

As one can see from the above table even in spite of increase of precipitations the increase of air temperature for 0.7 ^{0}C annually leads to reduction of run- off of the Ganjachay River. In other meteostations precticipations are reducing.

Reduction of run- off is observed almost in all months of the year except February and March when increased air temperature leads to increase of run-off in result of snow melting in the basin (see Figure 2)

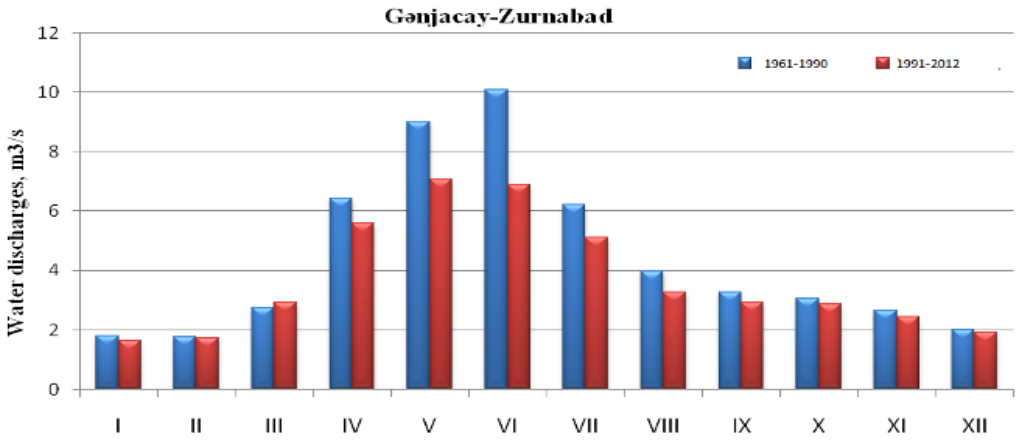

Figure 2.Change of water discharges of the Ganjachay river during the periods 1960-1990 and 1991-2012

In other rivers of Central kura BD almost the same situation is observed, but butflow reduction was lesser than one in Gabjachay.

Increase of air temperature leads reducing the level and reserves of ground waters(as result of flow reduction and also increase of evoparation from earth surface).

Current water balance of surface and ground waters in the region and also prediction of their reduction by use of different climate scenarios used by National Climate Change of Azerbaijan (GISS, GFDL, HadCM3) is given in below table 7 (Source: Second National Communication on UNFCCC by Azerbaijan Climate Change Center of MENR ,2010).

Table 7. Surface and Ground water use balance

Water balance	Water balance	
	Existing mln.m^3	Expected by scenario(2050)
Surface water balance		
Surface water resources	+ 1400	+1200
Surface water abstraction	-850	-950
Required environmental flow	-550	-550
Balance	0	-300
Water conservation measures		
Surface water use balance	0	-300
Reduction of water losses during extraction , transportation and use	350	350
Treatment and use of waste waters	50	50
Balance	+400	+100
Ground water balance		
Ground water exploitation reserves	+1400	+1300
Ground water abstraction	-350	-650
Balance	+1050	+650
Total balance of Surface and Ground waters		
Total balance	+1450	+750

Through implementation of above measures on water conservation and treatment and reuse of waste waters (in irrigation of for technical purposes) should be reduced water deficit in the Ganja- Gazakh region

Pressure and impact on ground waters

There is sufficient amount of groundwater monitoring points in Central Kura BD but digital monitoring data exists only for the 3year period: 2005, 2006 and 2011 Hydrogeological Expedition declares that

there exists 52 monitoring wells in Ganja area, of them 27 wells installed into shallow aquifers, and 25 in artesian aquifers/(National Geological Exploration Service ,MENR, eco.gov.az) /.

These numbers have to be checked as it was discovered during the JFS organised by EPIRB project that some of monitoring wells are destroyed and cannot be used for groundwater monitoring anymore. However, theoretically, the number of monitoring points is sufficient and classification information confidence should be high.

As it has been reported by EPIRB project mentioned above, that where there are insufficient data to conduct a particular test, then in the absence of contrary information, the groundwater body should be assigned good status for that test, but with low confidence in this assessment.

Additional monitoring and/or investigation should be put in place so that the test can be properly conducted at the next round of classification.

Five control groundwater samples were collected in Central KuraRBD in October 2013. They were analyzed in the laboratory of Ministry of Ecology and Natural Resources.

In the monitoring well near Ganja aluminium factory groundwater conductivity and concentration of sulphat es are rather high, indicating local groundwater pollution from the waste site. In the monitoring well of Ayibly village ammonium concentrations are 7 times higher than drinking water norms and this indicates agricultural pollution.

In addition, this is not a surprise because monitoring well is located in the garden of the local farmer.

For the management purposes, WFD requires to delineate, characterize and classify groundwater bodies (further GWB). GWB delineation and characterization has been conducted in March-August, 2013 and described in the separate reports [EPIRB project 2013]. In this report groundwater body classification is presented.

The aim of groundwater body classification is to establish the quantitative and chemical status of each groun dwater body. Groundwater classification is based on analysis by EPIRB project of all available environmental data - geological, hydrological, and chemical, etc. In addition to that, an impact of human activity has to be also examined. Main human pressures, which may influence groundwater body status, are:

- diffuse sources of pollution;
- point sources of pollution;
- abstractions, and
- artificial recharges.

Comprehensive classification of groundwater body status was hindered by the lack of data, in particular quantitative and chemical monitoring time series data showing past and current trends.

6. Risk Assessment and Identification of Water Bodies at Risk

Methodology Used for Identification of Water Bodies at Risk

Water Body at Risk (WBR) is a water body that is identified as being at risk of failing the environmental quality objectives based upon the characterization as specified in article 5 of the WFD and results of operational monitoring as specified in article 8 of the WFD

During the Risk Assessment was conducted the identification of the water bodies "at risk" and/or "possibly at risk" that as one of the last steps in development of the River Basin Management Plan for the Central Kura BD

For the Risk Assessment, the first of all results from the Pressure and Impact Analysis were used. In the first step of the risk assessment for the river surface water bodies was using data from the national monitoring programme and mainly data from two JFS carried out under the EPIRB project. In case, when there was a lack of data *"Guidance Document addressing hydromorphology and physic-chemistry for a Pressure-Impact Analysis/Risk Assessment according to the EU WFD"* developed by the EPIRB project was used to estimate the risks for the water bodies. This approach was combined with the findings from direct field investigations and expert judgments. It is also to be mentioned that authors of this report are aware of the different quality of data used for the assessment. This fact give certain uncertainties, but would not effect the overall results of the risk assessment .

For the purpose of the Risk Assessment Report the so called One-Out-All-Out principle, to assign the final risk categories to the SWBs. It means that if given SWB was "at risk" for any of risk criteria used, it was ranked as SWB "at risk" even if other criteria were indicating SWB to be "not at risk".

The category of rivers, water bodies "at risk" are those which are significantly affected by hydromorphological alterations and water pollution problems caused by the anthropogenic activities. The SWBs "possibly at risk" are those where not sufficient data are available to apply the risk criteria

Identification of the surface water bodies into risk categories in the Central Kura BD

Risk Assessment of SWBs against Hydromporphological pressure Indicators

For identification of WBR against hydromorpholocial elements, 5 hydromporphological pressure type indicators have been used in accordance of the EPIRB project "Guidance Document on Pressure/Impact Analysis (Risk Assessment) (http://www.blacksea-riverbasins.net/)/

They include interruption of river continuity, hydrological alterations(water abstraction, impoundments, hydropeaking) and morphological alterations.

The risk assessment results which determine the assignment of river water bodies in the Central Kura BD within the risk group due to hydromorphological pressures are given in Annex 8 and Annex 9

Results of assessment show that 15 river water bodies can be characterized as WBR and 6 WBPR according to hydromorphological pressure.

As one can see from Figures 15 and 16 hydromorphological pressures lead to significant change of river bed and bottom. Ganjachay river section (11 km) within Ganja city because of construction of concrete walls in river banks should be characterized as HMWB.

Risk Assessment of SWBs against Point and Diffuse Sources of Pollution

In the following part of the Risk Assessment report four indicators to analyze pressures from the pollution sources were applied. These sources of pollution are as follows:

- Two pressure indicators for pollution from municipal waste water sources (including industrial waste water sources as far as possible) and
- Two pressure indicators for diffuse agricultural pollution sources.

Where data from the national monitoring programme or from the JFS are available, they were used for the assessment. On the other hand, if data are not available the method described in the *"Guidance Document addressing hydromorphology and physic-chemistry for a Pressure-Impact Analysis/Risk Assessment according to the EU WFD"* were used to calculate these indicators.

As it was mentioned in the Pressure and Impact Analysis section in the Central Kura BD regarding the pollution of surface water, the main sources are the untreated waste waters from large cities and also small settlements may have certain impact on the water quality via direct discharge of the waste waters from the households to the rivers (upstream parts of the river basins). Due to fact that only aggregated data on the volume of untreated waste water are available it was necessary to make calculations in accordance with *Guidance Document* where, the ratio of untreated wastewater to annual minimum flow, showing river dilution capacity and, the ratio of total wastewater to annual average flow, showing total wastewater impact on the overall river basin. However, if data from the JFS and national monitoring programme on the water quality are available, they have been predominantly used (e.g. BOD, COD, nutrients, heavy metals).

As mentioned in previous chapters agricultural activities can have significant impacts on the surface water bodies in the pilot river basin. Due to lack of data on the used fertilizers and pesticides for the given water bodies it was decided to use two pressure indicators in accordance with *Guidance Document*: the ratio of agriculture area in a given water body catchment to the catchment area of the respective water body and, the ratio of animal livestock unit to the catchment area of the respective water body. In this context, it is necessary to add that only aggregated data on the cattle (or livestock growing) are available for the economic region. Therefore, it was necessary to spread this data on the SWB area. It was decided that based on ratio of number of animals per ha will be assessed status of WBs according to risk criteria established in EPIRB project (if ratio is .1 then WBis considered to be at risk).

Results from the risk assessment related to both point and diffuse sources of pollution for the Central Kura BD are presented in RBMP .

Results of assessment show that 14 river water bodies can be characterized to be at risk and 10 possibly at risk according to point and diffuse sources of pollution.

Summary of Risk Assessment Results for Surface Water Bodies

In this section is given summarized risk for surface water bodies according to:

- Risk Assessment of SWBs against Hydromporphological pressure Indicators by use of EPIRB project Guidance
- Risk Assessment of SWBs against Point and Diffuse Sources of Pollution by use of EPIRB project Guidance by use of EPIRB project Guidance
- Checking status of water bodies identified as to be at risk or possibly at risk by above 2 risk factors based on materials of JFS conducted by EPIRB project

Result of JFS confirmed existence of risk factors for majority of identified at risk and possibly at risk water bodies. But for some water bodies , which have been identified as possibly at risk (for example water bodies 1011-1-WB003 and 101-1-WB004 at Jogazchay river) according to point and diffuse source of pollution criteria used in the Guidance in opposite to this status of waters of these water bodies assessed (observed) during JFS was good. Therefore they have been addressed to water bodies not at risk.

By using ***One-Out-All-Out principle***, to river SWB was assigned one of three risk categories “not at risk”, “possibly at risk” and “at risk”. The results are summarized in Table 8. All together 15 SWBs were identified as “at risk” and 5 as “possibly at risk”.

Table 8. Water bodies at risk in the category of rivers in the Central Kura RBD ("1" indicates a risk)

River Basin	HMWB	Risk factors			Number of WB	Length, Km
		Water flow regulations	Water abstraction for irrigation	Water quality problems: point pollution		
Aghstafachay	0	1	1	1	5	61.6
Tovuzchay	0	1	1	1	3	45.8
Qoshqarchay	0	0	1	1	1	89.9
Ganjachay	1	0	1	1	2	48.9
Zayamchay	0	0	1	1	1	29.2
Shamkirchay	0	0	1	1	3	43.8

During the assessment of 48 delineated river SWBs, 2 SWBs at risk located in the same river segment have been merged in one water body at risk (13-5-WB44R and 13-6-WB45R on Ganjachay river). Therefore the total number of natural water bodies have been reduced from 48 to 44.

11 km long of the Ganjachay River reach near Ganja city, , identified as HMWB is also categorized as WBR because of significant hydromorphological alterations and also pollution pressure.

In addition to this heavily modified WB, Agstafachay water reservoir (10-1-HMWB01) has been categorized as WBR and Tovuzchay water reservoir(11-1-HMWB02) has been categorized as WB possibly at risk because of problems with water quality

The final list of all identified river and lake water bodies, including WBR and WBPR, as well as HMWBs and Artificial Water Bodies is given in Annex 6 (See also Figure below).

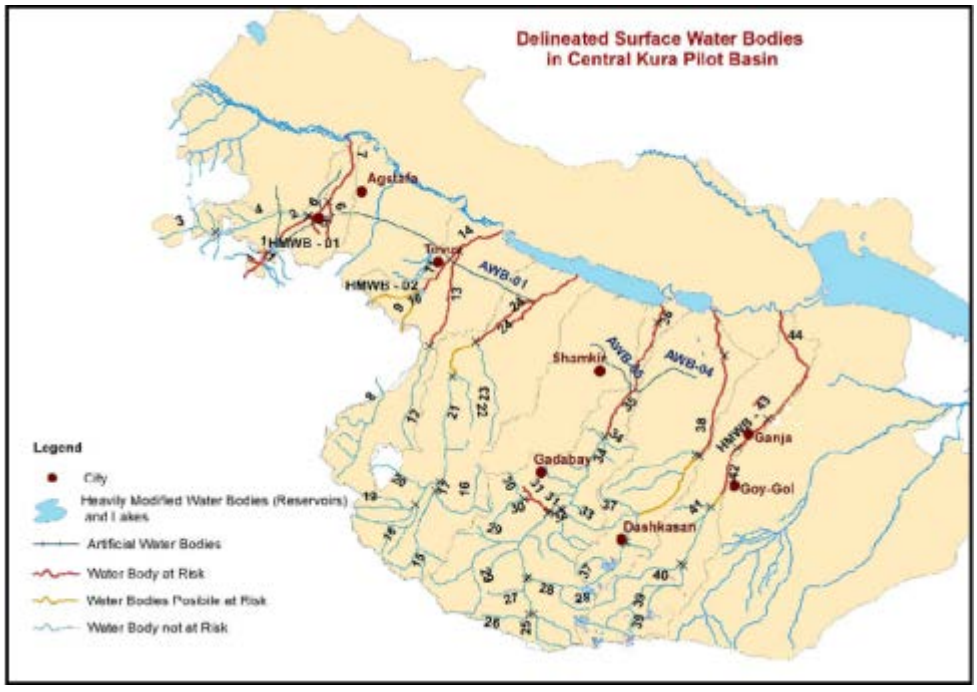

Figure 4. Water bodies in Central Kura basin district

Status of the Groundwater Bodies in the Central Kura Basin District

The WFD requires an initial characterization of groundwater bodies to assess their use and the degree to which they are at risk of failing to meet environmental objectives. Existing geological, hydrological, chemical, land-use, abstraction, discharge, and other data was used for the initial characterization. Groundwater body characterization helps to identify areas of similar hydrogeological conditions, and indicate whether the groundwater unit requires improvement measures in order to meet established management objectives.

Groundwater classification is based on the analysis of all above mentioned data which is available for wells and boreholes and also information on the anthropogenic influences, to establish the status of each groundwater body. Groundwater status includes both quantitative (the amount of groundwater) and chemical (quality of groundwater body) components. According to the WFD groundwater bodies are classified into 2 classes: good and poor.

Seven groundwater bodies have been identified and preliminary characterized and classified in the Central Kura pilot river basin district of the Republic of Azerbaijan. For identification and delineation of groundwater bodies WFD guidance documents were used as a methodological basis. Geological boundaries of the aquifers have been defined, their hydrodynamic differences and hydrochemical varieties evaluated. Fragmentation of aquifers into unmanageable numbers of water bodies has been considered and small groundwater bodies with similar characteristics were grouped. Groundwater bodies were given temporary codes and names.

All groundwater bodies, except of local aquifers in intrusive rocks, are used for drinking, agricultural and/or industrial water supply with the amount of more than 10 m^3/day. All groundwater bodies are of good chemical and quantitative status.

Conclusion

Based on the available data and information (JFS 1 and 2 and national monitoring programme) and using the methodology described in the “Guidance Document addressing hydromorphology and physico-chemistry for a Pressure-Impact Analysis/Risk Assessment according to the EU WFD” developed by the EPIRB project following can be concluded:

- 15 Surface water bodies were identified as “at risk”;
- 5 surface water bodies identified as «possibly at risk”;
- 3 water bodies (2 lakes WBs and 1 river WB) have been identified as heavily modified surface water bodies;
- 5 water bodies identified as AWBs;

Regarding the groundwater bodies all of them were identified as “not at risk”.

7. Environmental Objectives and Exemptions

Setting environmental objectives and planning their achievement are the basis to design appropriate measures as part of the Programme of Measures.

In the RBMP are determined environmental objectives and exemptions for water bodies for:

- Achieving good status for all water bodies;
- Prevent deterioration of water status;
- Ensure sustainable water management;
- Meet specific requirements for protected areas.

Setting environmental objectives for surface and groundwater bodies has an important role within the river basin management planning process.

For 14 WBs of 15 WBR and for 3 WBs of 5 WBPR have been established environmental objectives.

In RBMP the Programme of Measures to achieve the selected environmental objectives are developed. For WBs at risk and possibly at risk basic and supplementary Programmes of Measures have been identified to achieve environmental objectives:

Base approach is defined in article 11 of WFD in relation to development of PoM in the basin and at national level to prevent deterioration of the status of all bodies of surface water, achieving good ecological status and good ecological potential of artificial or heavily modified water bodies and protect, enhance and restore all groundwater bodies .

Programme of Measures includes basic, supplementary and support measures, economic analysis of these measures and, their prioritization based on cost, environmental and technical criteria in line with WFD Article 5, Annex III(EU Water Framework Directive, (2000/60/EC), European Communities, 2000;).
For protected areas 2 PoMs have been identified. Both are about conducting of study for checking of compliance of management of already existing protected areas to the international standards. The second one is about to conduct study to check if measures to be taken in protected areas (newly identified as drinking water sources) will also meet international requirements.

For all 15 WBR and 5 WBPR programme of measures or exemptions have been identified in the RBMP.

In total 16 basic and 15 supplementary measures have been identified in Central Kura BD. After prioritization of identified possible measures 8 high priority basic measure and 9 high priority supplementary measure have been selected in the RBMP.

Below are given selected supplementary measures in the Central Kura BD

Administrative measure: Creation of BMO and RBC

Main activities:

- To develop proposal on possible options and cost of creation and maintenance of basin entity in the Central Kura River Basin District.
- To develop proposal on needed legislative adjustments for implementation of RBMP
- To develop actions on stepwise approach required for implementation of RBMP according to EU WFD
- to cooperate with other relevant regional divisions of MENR and also Water Resources State Agency, Azersy, Amelioration JSC and other relevant organization to provide basin wide integrated water use and management.

In cooperation with other relevant regional divisions of MENR and also Water Resources State Agency Azersy, Amelioration JSC and other relevant organization to provide proposals on needed steps for basin wide integrated water use and management.

This PoM is planned to be implemented in the Central Kura BD during 2016-2021

Efficiency Water Supply and Sewage system management in large settlements at district level

Main activities:

- To identify sources of drinking water for secondary settlements and construct centralized water supply systems where it is economically feasible.

- To prepare proposal on the sewage systems(connection to existing or creation of new)

The sewerage works have high construction, and operating costs, in cases of communities with low population density or in isolated communities where connection seems unfeasible. Therefore, the construction and operation of the projects presents many difficulties when it is undertaken by the small settlement level branch on sewage management given the lack of technical and organizational infrastructure.

Project is planned to be implemented for large settlements in the Central Kura Basin District during 2016-2021

MENR can involve to the project Azersu JSC, Local authorities and other organizations in the basin district.

Economic and fiscal measures

Main activities will be to develop needed supplementary measures aimed in strengthening of cooperation among MENR and with relevant regional divisions of Amelioration JSC to promote the rational management of the irrigation water based on criteria of economic efficiency, environmental sustainability and equality, including :

- Establishment of the "Water Fund"
- Subsidies for reduced use of irrigation water
- Awareness campaigns for the rural population
- Provision of penalties / fines for over abstraction
- Establishment of system of water abstraction management to control of fulfillment of environmental flow requirements
- Apart from the above the system of tradable permits can also be examined,

Project is planned to be implemented in the Central Kura Basin District during 2019-2020

MENR can involve to the project implementation Water Resources State Agency, Amelioration JSC, Azersu JSC, Local authorities and basin organizations in basin districts and others

Emissions control measure

Main activities to develop emission control measures in the Central Kura River Basin District are:

- Develop provisions on possible emission control measures to strengthen the pollution control in the basin.
- Develop system of a combined approach on the reduction of pollution at source by setting emission limit values and set targets for water quality in different water bodies.

Project is planned to be implemented in the Central Kura River Basin District during 2016-2021

MENR can involve to the project Water Resources State Agency, MoH, Azersu JSC, Local authorities and basin organizations in basin districts and others

Demand management measures

Main activities:

Develop demand management system based on which include measures related financial, communicational, legislative and administrative, and technological aspects of sustainable use of water.

Develop recommendations will be to raise public awareness on issues of water resources management**.** Particularly for domestic use, public awareness activities will concern:

- Organizing awareness weeks with presentations and related workshops of updating
- The distribution of a free calendar and timetable for schools with a cover that indicates the seriousness of the situation
- Distribution of brochures and leaflets with useful advice and suggestions for the potential saving of water at the domestic level , including
- Development of brochures and leaflets for raising awareness among farmers in terms of saving irrigation water , incentives to reduce intensive farming, the rational use of fertilizers, protection of farmland and overall rational management of water resources (adequate irrigation practices, reduction of pumping, construction of drainage works).
- Develop recommendation on giving focuses not only on the use of all surface water sources that are available, but also on the use of alternative water sources such as recycled for crop irrigation in agriculture, and the recharge of groundwater aquifers.
- Prepare system of informing water users and the public about the current conditions of water balance and the necessity of the various measures that are enforced each time

Project is proposed to be implemented in the Central Kura Basin District during 2016-2021

MENR can involve to the project. Water Resources State Agency, Amelioration JSC, MoH, Azersu JSC, Local authorities and basin organizations in the basin districts and others

Restoration of the continuity of the water flow

The main measures will be:

- Measures of provision of normal functioning and construction of new fish breeders
- Measures to improve the ecological condition of the river beds
- Measures for greening and planting trees near rivers and lake
- Measures on river bank protection
- Environmental flow requirements

The project is planned to be implemented in the Central Kura Basin District during 2017-2018

MENR can involve to the project Water Resources State Agency, Amelioration JSC, MoH, Azersu JSC, Local authorities and others

Use of treated waste water

Main activities are:

- Develop proposal on state of treatment of waste waters currently in newly rehabilitated (under rehabilitation) waste water treatment plants of rayon centers in the basin
- If necessary propose different new treatment options, such as use of reverse osmosis units and other methods. The process of reverse osmosis produces water without limitations on usage, allowing integrated management of every source of irrigation water.
- Conduct soil study to determine the required limits for the application of recycled water for irrigation,
- Develop recommendations on use of recycled water as a resource r for irrigation or other purposes

- To identify ways needed to work towards increasing the acceptance of using recycled water.

Project is planned to be implemented in the Central Kura River Basin District during 2019-2020

MENR can involve to the project Water Resources State Agency, Amelioration JSC, MoH, Azersu JSC, Local authorities and basin organizations in basin districts and others

Educational measures

Main activities are:

To develop recommendations on possible educational measures aimed at creating water awareness in schools and the wider public and among users,, including:

- Further strengthening of the measures on water awareness in Primary Education
- Creation of a Web site promoting water consciousness
- Educational programs for farmers
- Regular meetings of basin organizations with mayors and community councils in small groups
- Information and awareness guide in relation to pollution issues derived from activities in the primary sector 6. Educational programs for the public
- Training and specialization of the personnel responsible for monitoring of ground water and data management
- Campaign raising awareness on the management of rainwater

Project is proposed to be implemented in the Central Kura Basin District during 2016-2021

MENR can involve to the project Water Resources State Agency, Amelioration JSC, MoH, Azersu JSC, Local authorities and others

8. EPIRB pilot projects

By support of EPIRB already two pilot projects are implemented in Central Kura Basin District on support of adoption of EU f WFD, UWWTD at national and pilot basin level and application of IWRM in pilot area and four more planned to be finalized in 2016 pilot projects on support of development of National Water Strategy, application of EU Flood Directive, refurbishment of laboratory and ground water monitoring network in Central Kura BD will also help beneficiaries to adopt their legal and institutional basis to international legislation and develop capacity of their regional divisions according to international practices.

9. Public Participation

During the development of the RBMP the following public information and consultation measures were taken:

- Information was circulated on the draft and final Communication Strategy and Plan on the website of the project;
- Stakeholder consultation meeting was held on the significant water management issues document ("Pressures and Impact Analysis"), document published for comments in May 2014 at: (www.blacksea-riverbasins.net) ;

- Project newsletter “In the Flow” (6) and brochure on Significant Water Management Issues in Central Kura Basin District have been published and distributed among stakeholders as well as placed on the EPIRB project website www.blacksea-riverbasins.net/;
- The draft Central Kura Basin District RBMP entered the public consultation phase from April 24 2015 until August 31 2015, including a public consultation meeting and possibilities for submitting comments.

The opportunity to participate in the consultations was promoted by: direct notification mass-emails; relevant NGO networks; news items on the EPIRB project website -www.blacksea-riverbasins.net ; the regularly published project newsletter “In the Flow”, and targeted media announcements (e.g. www.ganjanews.az, local newspaper etc.).

The stakeholder consultation meeting on the significant water management issues was held in Baku on 2 September 2014. It targeted water practitioners, different key stakeholders from different sectors etc. It had the main aim to present the necessary background information and the preliminary overview of the important water management issues for the river basin, as well as to collect stakeholders’ feedbacks concerning the identification of the most important water management issues.

The public consultation meeting “Shaping the future of the Central Kura Basin District” was held in Ganja city on 23 April 2015. It had the main objectives to present the draft RBMP and the planned Programme of Measures, and to discuss and receive feedback, comments and proposals on the draft RBMP, including the planned measures. The meeting gathered 35 participants, representing a broad range of stakeholders such as: relevant state water management organizations, joint stock companies, representatives of water users, municipalities and NGOs. The one day event gave short introduction to the draft RBMP, as well as provided opportunity for feedback and comments through interactive discussion organized within two working groups. The group discussions were guided by independent facilitators, and the outcomes of the discussions were shared in the plenary session by selected rapporteur. The minutes of the meeting can be accessed on the EPIRB project website at: www.blacksea-riverbasins.net.

After the public consultation meeting article was published in local Newspaper in Ganja and summary of discussions of the meeting has been broadcasted by Kapaz TV of Ganja city. Short film was produced about the meeting and distributed in DVD format among stakeholders as well as among students in Baku State University.

Besides the public consultation meeting, opportunity to submit written comments to the draft RBMP was open until 31 August 2015. A total of 5 written comments were received.

All the comments requesting changes to the draft RBMP received during the consultation meeting(s), as well as in written form have been collected and processed by the consultants developing the RBMP in close cooperation with the Ministry of Ecology and Natural Resources of Azerbaijan Republic. In order to ensure transparency a summary report has been prepared which gives an overview on the original comments received and the responses and actions taken, whether it resulted in changes in the draft RBMP etc. The summary report can be found at: www.blacksea-riverbasins.net.