Strategic Action Program

for

"*Reducing Transboundary Degradation in the Kura River Basin*"

May 2014

UNDP-GEF International Waters

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Acknowledgments

The Strategic Action Programme (SAP) for the Kura Basin is a guidance document developed to support the countries in the region to sustainably manage water resources and to improve integration of water resource management (IWRM) through measures that have emerged from the region, and that reflect national and transboundary priorities. These measures meet the agreed vision and the ecosystem quality objectives that support that vision.

The UNDP-GEF Project “Reducing Transboundary Degradation in the Kura Aras River Basin” has worked with governments of Azerbaijan and Georgia, and national experts from both countries, and collaborated with other donor organizations to create the SAP.

This document will support the two countries to move towards improved management of the shared water resources in the basin.

On behalf of the project team, we would like to express our deep gratitude and thanks to all the contributors to this document, including the Azerbaijan Republic Ministry of Ecology and Natural Resources, Georgia Ministry of Environmental and Natural Resources Protection, and the invaluable inputs from the Project National Focal Points of Georgia and Azerbaijan.

The Project Steering Committee members, project national experts, IWRM Academy participants, national IWRM plan teams, members of the regional technical task team, and members of the National Water Policy Dialog Steering Committees, as well as additional advisory experts in the both countries have provided key contributions to this document, and review of earlier drafts.

Moreover, we also want to thank the many volunteers who have committed themselves to discuss and comment on the proposed SAP activities during the NGO fora, in order to ensure that the SAP is reflecting the actual needs of the countries in order to improve the shared water resources management in the basin.

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SAP Acronym List

BAT	Best Available Technologies
BEP	Best Environmental Practices
CCA	Causal Chain Analysis
EIA	Environmental Impact Assessment
EQO	Ecosystem Quality Objective
EU	European Union
ENV SEC	Environmental Security Initiative
GEF	Global Environment Facility
IRBM	Integrated River Basin Management
OECD	Organization or Economic Cooperation and Development
OSCE	Organization for Security and Cooperation in Europe
IW	International Waters
IWRM	Integrated Water Resources Management
SAP	Strategic Action Program
SEA	Strategic Environmental Assessment
SNC	Second National Communications
TDA	Transboundary Diagnostic Analysis
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WFD	Water Framework Directive
WHO	World Health Organization

1 Introduction

Balancing overuse of the available water resources, whether surface or groundwater, to meet the growing demands for water in different sectors, while mitigating the negative impacts humans have on the river environment and protecting the Basin's rich and diverse ecosystems are critical issues in the Kura River Basin.

At the request of the countries the UNDP-GEF Project "*Reducing Transboundary Degradation in the Kura-Aras River Basin"* (UNDP-GEF Kura-Aras Project) was formally established with the goals of supporting the riparian states to 1) identify the principal threats to the shared transboundary water resources of the Kura River Basin and to determine the root causes, and 2) to develop and help implement sustainable plans for water policy, legal and institutional reforms, and investments to address these threats at the national and transboundary level.

The President of Azerbaijan issued a national decree to prioritize water resource management in January 2013. While water resources management had been important, this decree has accelerated the development of the National IWRM Plan, supported by the UNDP-GEF foundational project. In addition, because of the income generated by the export of petroleum resources, Azerbaijan is able to invest revenues into the water sector, including the development of municipal water resources management, melioration and irrigation for increased food security. The Ministry of Emergency Situations was established in part to address and reduce flooding impacts. The Focal Point Ministry of Ecology and Natural Resources continues to serve a key role, and new legal structures are rapidly being drafted to support implementation of IWRM.

Georgia is blessed with abundant water resources, and has been pursuing a development plan that will enable the country to become a net exporter of hydro-power generated energy. Protection and preservation of river ecosystems is being actively pursued by the government in order to sustain the natural resources of the country. The UNDP-GEF foundational project has supported the development of a National IWRM Plan for Georgia that includes addressing the need to create robust institutional structures, harmonize the national water code with national and international commitments, and support harmonization with the EU WFD. There is awareness that developing this plan based on existing and needed capacities will require additional support and coordination with neighboring states and donor support.

This Strategic Action Program (SAP) presents the collaborative effort of the basin countries through their input into the UNDP-GEF Kura-Aras Project, and is meant to serve as a guidance document with direct linkages between national priorities and shared transboundary concerns. The national priorities and detailed plans to address them are in the supporting documents of the National Integrated Water Resources Management (IWRM) Plan for Azerbaijan, and the National IWRM Plan for Georgia. These National Plans provide the detailed steps each country may take, based on its national capacity, availability of resources and priorities. This SAP provides the overview of the agreed shared concerns and the general means to address them.

The foundation of the SAP is the Basin Vision, and the four Ecosystem Quality Objectives (EQOs) that were agreed by the Steering Committee of the UNDP-GEF project led by the National Focal Points in 2007 and reaffirmed in 2013. The agreed Long-term Basin Vision is:

"*To achieve sustainable development and maintain ecosystem functions in the Kura River Basin through reducing transboundary degradation and improving environmental management in order to ensure ecosystem services, economic well-being, and health and security in all riparian countries.*"

The four agreed Ecosystem Quality Objectives are:

- To achieve sustainable utilization of water resources to ensure access to water and preserve ecosystem services;
- To achieve water quality such that it would ensure access to clean water for present and future generations and sustain ecosystem functions in the Kura river basin;
- To achieve and maintain ecosystem status whereby they provide essential environmental and socio-economic services in a sustainable manner in the Kura River Basin; and,
- To achieve mitigation of adverse impacts of flooding and climate change on infrastructures, riparian ecosystems and communities.

The SAP provides the guidance toward accomplishing these objectives and was developed through extensive cooperation with Azerbaijan and Georgia through strong support of the National Focal Points who have facilitated this process on behalf of their respective ministries and governments. In addition to the direct guidance from the National Focal Points, a wide array of national experts from these countries have provided their inputs into the development of the National Plans as well as the SAP.

The SAP is developed and approved by the Azerbaijan and Georgia to be implemented at the highest level of executive power. It defines the priority areas for action to resolve the most urgent issues identified in the Updated Transboundary Diagnostic Analysis (TDA), and within each country through the coordinated implementation of the National Plans. SAP implementation will also provide support to the facilitation of national level efforts by helping the governments to coordinate donor initiatives to optimize benefits and reduce redundant efforts at the national and transboundary level. This coordinated implementation will enable the countries to harmonize experiences, lessons learned and resources where appropriate. The implementation of the SAP will support the execution of the National Plans which in turn will have cumulative positive impacts on the overall Basin.

Section 2 of the SAP outlines the highly participatory methodology for the TDA and SAP development, and summarizes the main findings of the TDA based on national data. The full text of the Steering Committee Approved TDA is available online for review at www.kura-aras.org.

Section 3 of the SAP provides a description of the outcomes developed to meet the agreed Ecosystem Quality Objectives. For each outcome there is a set of activities with summary descriptions, the ranked priority for each activity, the estimated timeframe, and the type of benefit. Though these are general, they are drawn from detailed work of over two hundred stakeholders who have contributed to this effort. This work will be expanded within each of the National Plans as they pertain to national priorities and stages of water resources management development.

Section 4 of the SAP outlines the legal precedents for the outcomes, and suggests the institutional mechanisms for SAP implementation. The legal precedents are based on common international commitments made by the countries that are related to improved water resource management. The more detailed country specific precedents are based on national legal and regulatory frameworks within the national plans.

Following the endorsement of the SAP, the UNDP-GEF Kura Aras project will continue to work with national teams on the National Plans. As these plans are more detailed this will involve continued interagency and inter-ministerial coordination to fully complete this step within 4 months of SAP endorsement. The adoption mechanism for these plans will be determined at the national level. At the same time the project will also work to seek and secure funding for SAP implementation at the national and international levels, including intensive donor coordination efforts. Implementation of the SAP will be conducted jointly among multiple donors within and across the countries, with linkages fostered through the Steering Committee, as explained in Section 4.

It is envisioned that the SAP implementation will be phased to accommodate donor cycles and needs of the countries. The first phase of implementation will focus on intensive capacity building and institutional support, as well as specifically identifying where additional efforts for larger scale investment will be most effective. The second phase will include larger scale and infrastructure investments to benefit the countries through changes for overall stress reduction... In some cases there will be overlap between these phases, dependent on the country level commitments contained within the National Plans. These two phases will be approximately 10 years combined. Upon the request of the countries a follow-on TDA may be conducted towards the end of the second phase to gauge impacts and substantial improvements in the national and basin wide conditions towards accomplishing the agreed Ecosystem Quality Objectives and reaching the agreed Basin Vision.

2 Steps Taken in Preparing the Strategic Action Program

This SAP has been prepared through a collaborative and iterated effort between the UNDP-GEF Kura-Aras Project and Azerbaijan, and Georgia, with the support and guidance of the National Focal Points. The document outlines the agreed-to vision for basin-wide IWRM in the South Caucasus, based on national and transboundary priorities and the findings of the Updated TDA, and the strategic actions needed to achieve it. This process has been based on the GEF International Waters (IW) TDA/SAP Best Practices Methodology, adapted to fit the needs of the Kura Basin.

2.1 The Updated TDA and SAP Methodology

The GEF IW TDA/SAP "best practice" approach underpins the methodology used in the development of any TDA and subsequent SAP, including those for the Kura River Basin. The TDA methodology consists of the following steps:

1. Identification and prioritization of transboundary problems with technical experts from the participating countries;
2. Conducting a causal chain analysis (CCA) of the identified problems, including their root causes which are those causes that are at the heart of the problem;
3. Gathering and interpreting information on environmental impacts and socio-economic consequences of each problem;
4. Completion of an analysis of institutions, laws, regulations and projected investment; and
5. Development of recommendations to address the root causes and improve conditions.

The Preliminary TDA, prepared in 2007 during the PDF-B phase of the UNDP-GEF Kura-Aras Project, assembled information to describe the perceived transboundary problems, but remained incomplete. The 2013 Updated TDA relies on information that is empirically validated and addresses widely-held perceptions throughout the basin pertaining to the prioritized transboundary issues.

In the 6 years between the PDF-B phase and the current implementation phase, significant developments in the basin have shaped the water management priorities of the Kura riparian countries, including the application of the EU Water Framework Directive. As part of the Updated TDA, six Desk Studies were conducted in the areas of: Water Quality Hotspots, Hydrological Flow, Climate Change Impacts, Socio-Economic Trend Analysis, Gender Mainstreaming in Water Management, and Floodplain Forests for Azerbaijan. The 2013 Updated TDA examines the root causes of perceptions on transboundary issues associated with the issues discussed, using available empirical evidence and identifying gaps in factual information, to update the Causal Chain Analyses and offer guidance on how to most effectively support reduction of overall transboundary degradation in the Kura basin. The 2013 Updated TDA serves the important function of detailing the baseline conditions, to the extent possible, for identifying national and transboundary development plans.

In line with GEF International Waters Best Practices the SAP is based on the framework of four Ecosystem Quality Objectives (EQOs) to accomplish the Basin Vision. The EQOs and Basin Vision were agreed by all members of the Project Steering Committee in 2007, and reconfirmed in May 2013. There are a total of 10 outcomes to move towards realizing these objectives. Each outcome includes a set of activities that will enable the countries to take steps to accomplish these outcomes. These activities are summarized in the next chapter and presented in the attached table. These outcomes and activities have been widely discussed and ranked by the countries' National Focal Points, and are presented here to serve as guidance for the countries of the basin to move towards improved management of the shared water resources iof the Kura.

While it will take up to 20 years to fully realize the objectives, the presented recommendations are those of highest priority, required to make that transition from current practices towards reaching the goals of improved IWRM for the Kura. Upon the recommendation of the National Focal Points, the SAP is more general to encompass the needed flexibility while the National Plans will be more detailed and specific, in terms of timing and committed funding. Activities outlined in the SAP are approximately 3-5 years in the short term, 6-10 years in the medium term and more than 10 for long term. The general flexibility of the SAP is supported by the more specific details in each of the national plans that are developed in tandem with the SAP and encourage harmonized between Azerbaijan and Georgia.

The outcomes and activities recommended in the SAP are combined from multiple sources, and were discussed with many stakeholder across numerous disciplines and sectors in a highly participatory process via series of multiple meetings in each country and collectively. The main sources are:

- The 2013 Updated Transboundary Diagnostic Analysis (TDA), which defined four major transboundary issues – variation and reduction in hydrological flow; deterioration of water quality; ecosystem degradation; and, flooding. Climate change is a cross cutting issue for each of these.
- The National IWRM Plans for Azerbaijan and Georgia are developed with the SAP. These national level plans are much more detailed and are completed in line with the countries agreement to the SAP. The SAP draws from national activities with high levels of transboundary relevance, and which the countries share.
- The members of the Project Steering Committee, with additional guidance from National Focal Points who provided the averaged rankings for each outcome and activity.[1] The rankings provided here only reflect the average of the Azerbaijan and Georgian participants.
- Twelve high-level National Experts from the project countries, nominated as members of the Regional Technical Task Team, reviewed the ranked SAP to provide feedback for detailed implementation.

Other sources that served to guide the recommendations include the 2012 NGO Forum on Water and Biodiversity and the 2013 NGO Forum on Gender, Public Health and Education; the Azerbaijan and Georgia participants of the UNDP-GEF EU IWRM Academy; the IWRM Capacity Needs Assessment; TDA Update Meetings with 36 National Experts; and the 2007 Preliminary SAP, for the agreed Vision and agreed EQOs. Overall there have been approximately 260 experts contributing to the

[1] The rankings are averages and based on a scale of 0-5 with 5 being the highest priority.

development of the SAP – with less than 20 international experts involved in the process to increase basin ownership of the document.

2.2 TDA Findings

The following sections summarize the information from the Updated TDA. The full text, Annexes and Desk Studies for the Updated TDA are available online at www.kura-aras.org in both English and Russian languages.

2.2.1 Variation and reduction in hydrological flow

The TDA presents evidence of a notable overall decline in hydrological flows, especially in the downstream basin. The decline in flow metering stations and observed inconsistencies in the data create challenges in current and future development, and will need to be addressed by the countries. Further, the TDA shows that the impacts of declining water availability, ecosystem degradation and the super impact of potential competition over water resources use emerged in the causal chain analyses focusing on climate change, irrational water use, competing demands on water resources from multiple sectors, need for reliable information on available resources, and need for integrated planning for water resources management.

The TDA's analysis of river flows, especially the temporal changes that have been observed over the last decades, is based on available records of river flows of over more than half a century. The current hydrological regime of the Kura river basin is the result of a range of both natural and anthropogenic factors. Seasonal and annual flow volumes typically reflect variable climate conditions, specifically temperature and precipitation, determining surface-groundwater flow components as well as evapotranspiration. Water abstraction for human needs has been a feature of the Kura river basin since ancient times. While it is difficult to separate the impacts of climate change on the river from those of increasing abstractions, analytical evidence of recent changes in climate indicates the scale of impact on river flows.

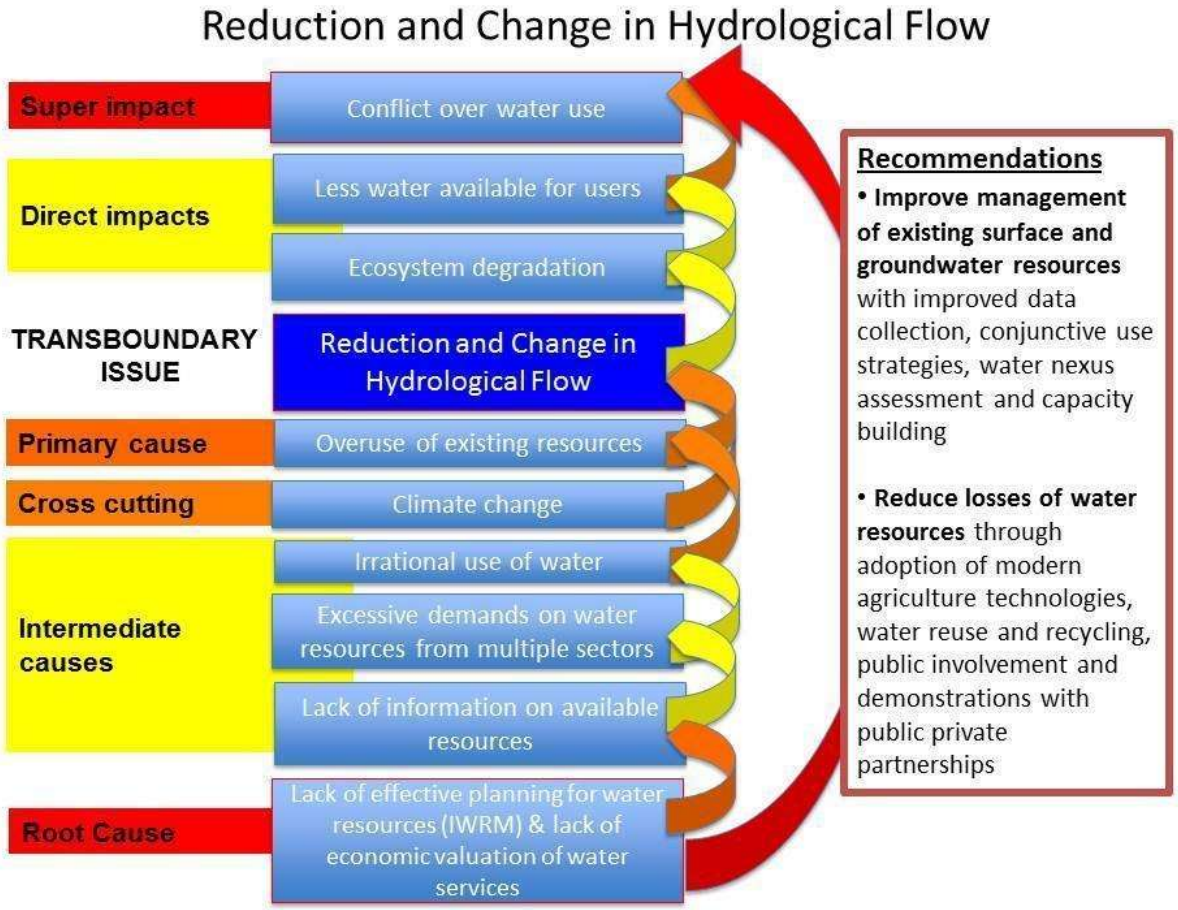
The second National Communications (SNCs) to the UNFCCC, produced by the riparian countries, reported significant changes in average annual precipitation since 1960. These changes are expected to continue, and the Trend Analysis of the TDA showed that there are likely to be serious implications for water availability as economic and social development plans are realized by the countries.

Root Causes

The root causes of variation and reduction in hydrological flow include the need to increase funding for water management and need to improve water use efficiency at all levels. However, the most important root cause is the limited capacity for water resources management throughout the basin. This limited capacity encompasses a number of different general needs in water management: more effective governance (regulation, law, enforcement, and institutional capacity), improved intersectoral coordination, national-level and transboundary cooperation on information exchange, increased staffing, proper education in modern approaches to IWRM, improved supply of equipment and monitoring.

All related sectors are striving to achieve effective, coordinated management. Monitoring systems throughout the basin need improvement, and information management systems need to be modernized. A clear picture of existing surface- and groundwater volumes is necessary, to integrate the needs of ecosystems and other uses such as hydropower, agriculture, municipal water use, fisheries, etc. While information on current and projected water needs in the basin is available, it is often insufficient for effective resource management and requires improvement. Throughout the basin, there is also a need to improve overall awareness about the importance of water, managing it properly, and the need to conserve it.

Chapter 6 of the TDA contains a trend analysis showing that sectoral development plans do not yet fully consider other sectoral water needs at the national or transboundary level. The costs of services provided by a specific volume of water in the system are not well understood, and assessments to calculate this value are currently underdeveloped throughout the basin. This limits the potential for more sustainable development across the basin. As the effects of climate change become more apparent, the likelihood of irrational water use, water scarcity, and stresses between sectors and countries also increases. This threatens the water security, food security, energy security and environmental security of both littoral states. The figure below shows the chain of causes and potential negative impacts of variation and it.



Impacts

The main impacts on the environment due to the variation and reduction in hydrological flow include:

- Degradation of riverine ecosystems and natural landscapes;
- Worsening of biological processes such as fish spawning;
- Reduction of the natural self-cleaning ability of rivers for organic pollutants, and increasing of the concentration of all pollutants, including their extended transportation downstream; and
- Changes to groundwater recharge and outflow regimes and the direct interrelationships between aquifers and rivers, impacting the water quality and quantity of both systems.

The main socio-economic impacts of the variation and reduction in hydrological flow are reduced access to water in sufficient quantity and quality for drinking and other domestic purposes, and to meet the needs of other sectors of the economy, including:

- Reduced productivity of agricultural land in some areas due to lack of irrigation water, and related reduction of income in the agricultural sector;
- Negative impact on the quality of agricultural products, and related health effects among the population due to irrigation with contaminated water;
- Poor state of sanitation systems, with increased cases of infectious waterborne diseases, and related increase in water treatment and health costs;
- Reduced efficiency and rate-of-return on investments in the hydropower sector;
- Irrational use of groundwater resources in attempt to replace the lost river flows; and
- Loss of some commercial fish populations in reservoirs by blocking spawning routes.

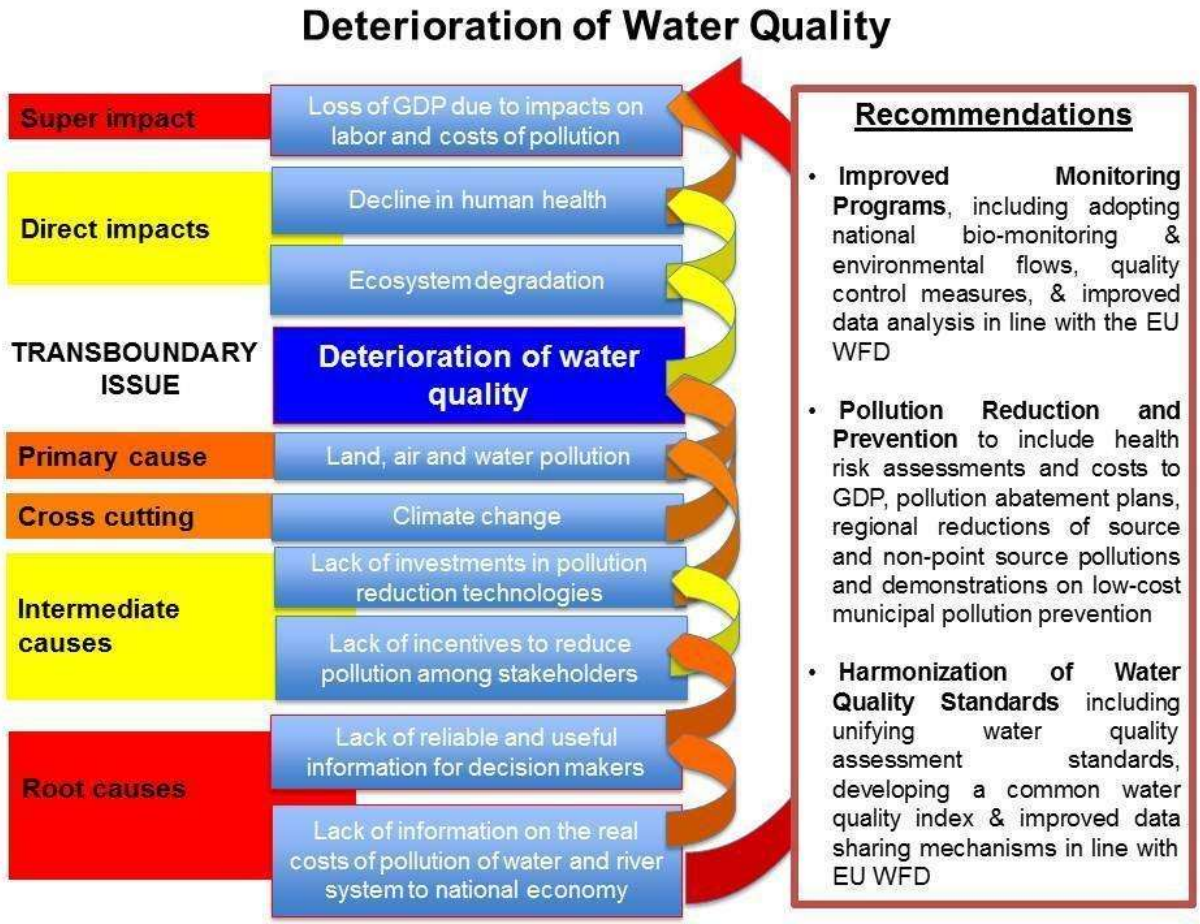
2.2.2 Deterioration of water quality

Deterioration of water quality is a national and transboundary issue that is addressed on the national level and will benefit from standardization at the transboundary level. Currently, as Georgia and Azerbaijan assess water quality through different standards, the EU WFD methodology provides a strong basis towards obtaining improved, comparable empirical evidence throughout the basin. The countries are moving in this direction at this time. The impacts of deteriorated water quality include, among other things, ecosystem degradation, decline in human health, and loss of GDP due to impacts on the labor force and costs of pollution. The causes of water quality deterioration are land, air and water discharge of pollution, while a reduction in available water increases the concentration of pollutants. These causes are due to a low level of regulation enforcement, a need for improved information for decision-making, and a need for clear incentives to reduce pollution. The root cause is the current lack of information on the real costs of water pollution in the Basin's river systems.

The observed deterioration of water quality in the river basin is a progressively serious problem for the countries of the basin, especially in relation to the increasing demand on water resources in each country as it strives to meet the needs of future development plans. These threats are intensified by anticipated impacts of climate change on water quantity and quality in the basin. The quality of surface waters is also influenced by factors such as the hydro-morphological, hydro-geological and hydro-chemical features of the river basin.

Harmful pollutants enter the waters of the Kura river from numerous land-based sources such as industrial and mining enterprises, agricultural runoff, subsistence farming practices in rural areas, and, in particular, from aging municipal sewer systems in large urban areas. Many cities and large industrial enterprises in the Kura basin today do not have water treatment plants. The existing wastewater treatment plants are not sufficient to process waste acceptably. These causes issues of downstream pollution in both countries, first nationally and then across borders.

The updated TDA examines water quality trends in Azerbaijan and Georgia, based on the Desk Study on Water Quality Hot-spots in the Kura river basin, produced in 2013 by the UNDP-GEF Kura-Aras Project with detailed information and data provided by the national governments. The Causal Chain Analysis from the TDA relating to deterioration of water quality can be seen in the figure below.



Root causes

The root causes of water quality deterioration are the need for reliable information for decision makers, as well as of information on the real costs of pollution in water and river systems to the national economies and public health. The information collected by monitoring agencies is valuable, but the analysis and presentation do not fully reach its potential to help decision makers develop and enforce stronger pollution-reduction regulations. The analysis must be reliable, have strong quality control and quality assurance, and undergo regular calibration of equipment based on reference laboratories and international best practices. Further, the data presented to decision makers must be meaningful and based on best practices for information sharing and decision support for improved water resources management. In addition, experience has shown that technically trained decision makers must also be able to justify costs

of increased monitoring, increased enforcement and improved water management to other decision makers. This information should also include the costs of the water pollution to the state. Without this better-informed decision making, water quality improvements may be viewed as simply a drain on state budgets. The links between water quality degradation and socio-economic costs, environmental cost and losses to overall GDP, including lost labor costs, lost land productivity costs, and the eventual costs of cleanup of damaged areas, must be calculated and shared with decision makers.

Impacts

The main environmental impacts caused by deterioration of water quality include:

- Ecosystems degradation, characterized by altered productivity of ecosystems due to changes in nutrient balances and eutrophication;
- Changes in ecosystem species composition, including the loss of endemic and rare species of aquatic flora and fauna, increase of invasive species, and increased susceptibility to pests;
- Increased soil contamination in flooding zones, and downstream spreading of contaminants;
- Damage and contamination to groundwater resources.

The socio-economic impacts of water quality deterioration include:

- A significant loss of labor productivity due to more frequent occurrences of waterborne diseases, which not only negatively affect overall economic productivity, but also strain healthcare budgets and facilities, and impact family members needed to care for the afflicted;
- Losses to economic development as water requires costly pre-treatment before basic industrial and domestic uses;
- Loss of agricultural productivity as contaminated soils are less fertile and may increase the need for more agro-chemicals to meet needed production levels;
- The deterioration of water quality also results in loss of potential income in aquaculture and ecotourism, as well as general tourism; and
- Overall costs of contaminated water resources of the river to socio-economic development of the basin increasing significantly over time.

Deterioration of water quality restricts the water availability for certain uses and increases the cost of its treatment. Despite availability of water in adequate *quantities* in certain rivers, they may not be suitable for use because of their poor quality, leading to water scarcity.

2.2.3 Ecosystem Degradation

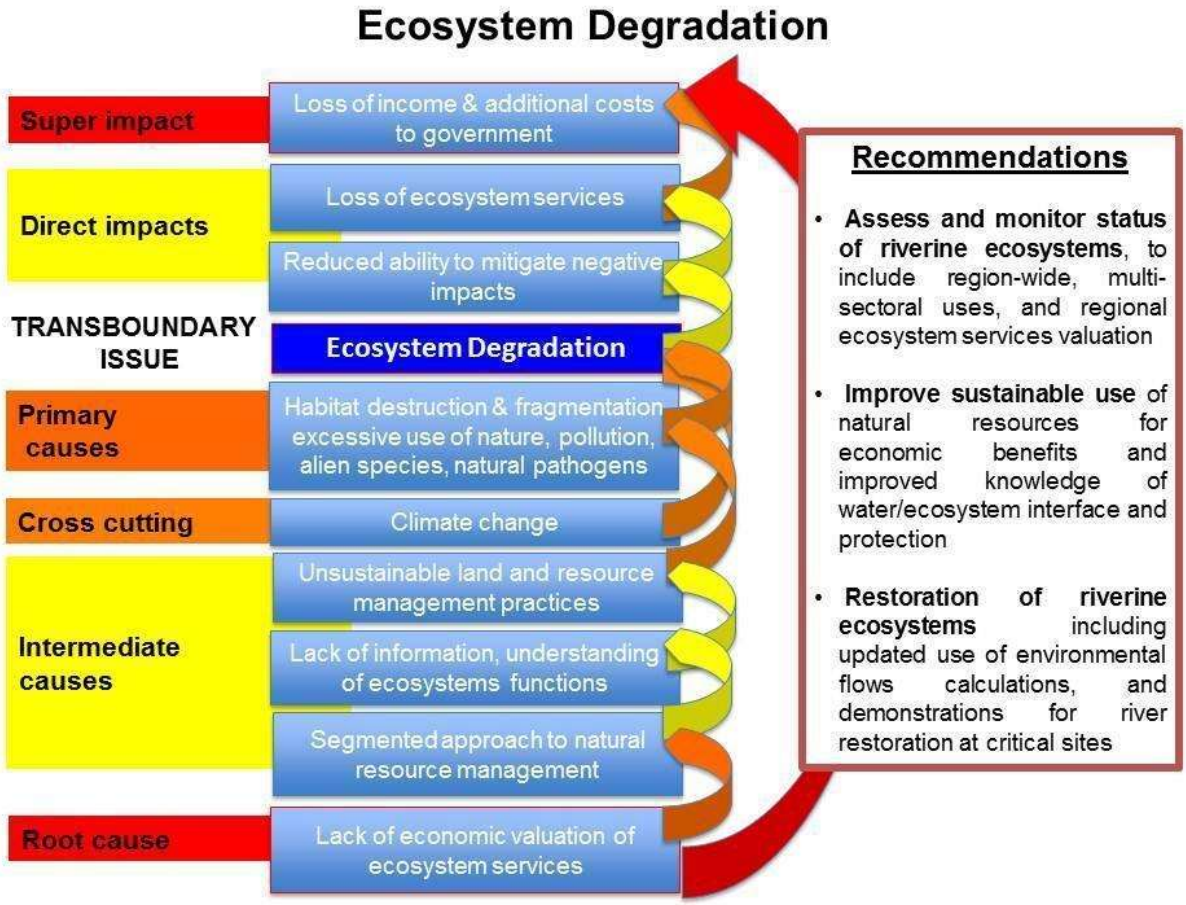
The issue of ecosystem degradation is pervasive throughout the basin and is related to a decline in hydrological flows and deterioration of water quality, conditioned by direct and indirect impacts of human activities. The information currently available on ecosystem health has many gaps, making it difficult to adequately gauge the decline clearly. Loss of species richness and decline in biodiversity are marked throughout the basin, although more information to systematically account for these losses is needed. The decline of ecosystem functions negatively affects the ability of ecosystems to buffer the impacts of human activities. This leads to a decline in ecosystem services and subsequently causes loss in income, as well as increased costs for the national governments and local communities. In addition to the general causes of ecosystem degradation listed above, others include: unsustainable natural

resource use, unsustainable land management practices, fragmentation and loss of natural spaces, a lack of information on ecosystems and an uneven approach to natural resources management.

Today, large patches of natural ecosystems in the Kura basin have been transformed by human activities. About a quarter of the basin remains in reasonable natural condition, while less than 12 percent of the basin, mainly forest, is considered pristine vegetation. Only about 5% of natural riparian forests in the South Caucasus remain intact today. Natural steppes, traditionally used as winter pastures have become overgrazed and have taken on the character of semi-deserts as their soil quality and species composition have been extensively modified. Further, the natural steppes and semi-deserts of the Kura lowland have mostly been destroyed by the development of irrigated agriculture.

Loss of biodiversity in the Kura basin is an indicator of degradation of ecosystems. Several mammal species are now critically endangered, including the Striped Hyena in lowland ecosystems and floodplains. Overall, the numbers of large carnivores as well as large herbivores have fallen dramatically in the past century. There is a decline of valuable plant and tree species in recent years such as the Chestnut and Oriental Beach. A remarkable decline has been recorded for several bird species such as the Lesser Kestrel and Imperial Eagle.

Over the last 50 years, a significant decline in the number of sturgeons entering the Kura river from the Caspian has been observed . A significant part of the sturgeon spawning grounds in the upstream river sections have become inaccessible after the construction of in-stream reservoirs and dams. The construction of reservoirs has also caused a change in the freshwater fish species composition in the middle and upstream stretches of the Kura since the late 1950s. It caused the disappearance of some fish species, including the Caspian Salmon and the Caspian Lamprey from the Kura, Alazani, and Iori rivers upstream of the Mingechevir reservoir. The figure below shows the TDA’s Causal Chain Analysis dealing with ecosystem degradation.



Root causes

The main cause of ecosystem degradation - the disruption of ecological processes, the destruction, fragmentation and degradation of habitats (aquatic and terrestrial) and their natural flora & fauna diversity - in the Kura Basin is the ongoing development of economic activities throughout the basin, mainly since the 1950s (Yessekin 2006). This trend shows the root cause for ecosystem degradation as being the general lack of appreciation of ecosystem values, functions, and services provided to mankind.

Population growth, urbanization, and the struggle to increase wealth appear to be overarching drivers of these issues. At the rural subsistence level, present-day rural poverty in some areas and the related lack of access to alternative sources of food, fiber and energy remain additional underlying causes driving the processes of unsustainable land, water and natural resources management. A lack of effective economic valuation of ecosystem services in the Kura river basin allows these outdated practices to continue, further degrading ecosystems through the basin.

Impacts

Environmental impacts include:

- Loss of the protection and natural filtering in key catchment areas needed to purify ground water and cleanse surface waters;
- Change of the hydrological flow of the rivers;

- The loss of floodplain wetlands, due to diking and land conversion for agriculture also causes a reduction in the intrinsic purification capacity of the river's aquatic ecosystems;
- Lost buffering of natural processes like flooding, erosion, sedimentation, pest infestations;
- Decrease of the natural regulatory service of the aquatic environment to handle pollution, as changes in aquatic micro- and macro-flora and fauna affect the decomposition of organic waste and other pollutants; and
- Degradation of the vegetation cover causes erosion processes that result in irreversible losses of soil fertility, which will hamper any future vegetation restoration initiatives.

Social impacts include:

- Loss of ecosystem services that provide important constituents of human well-being, including the basic necessities of life: food, shelter, clear air and water, personal safety, protection from natural disasters;
- Loss of natural biological, chemical and physical ecosystem processes that provide valuable services to humans including meat, fish, fuel wood, medicines and water;
- Increased risk of damage to human life due to flooding is increased as a result of the decreasing of natural floodplains;
- Loss of opportunities to benefit from a clean and healthy environment, including eco-tourism opportunities throughout the basin; and
- Loss of the river ecosystem as a social good and as social infrastructure used for recreation and educational purposes.

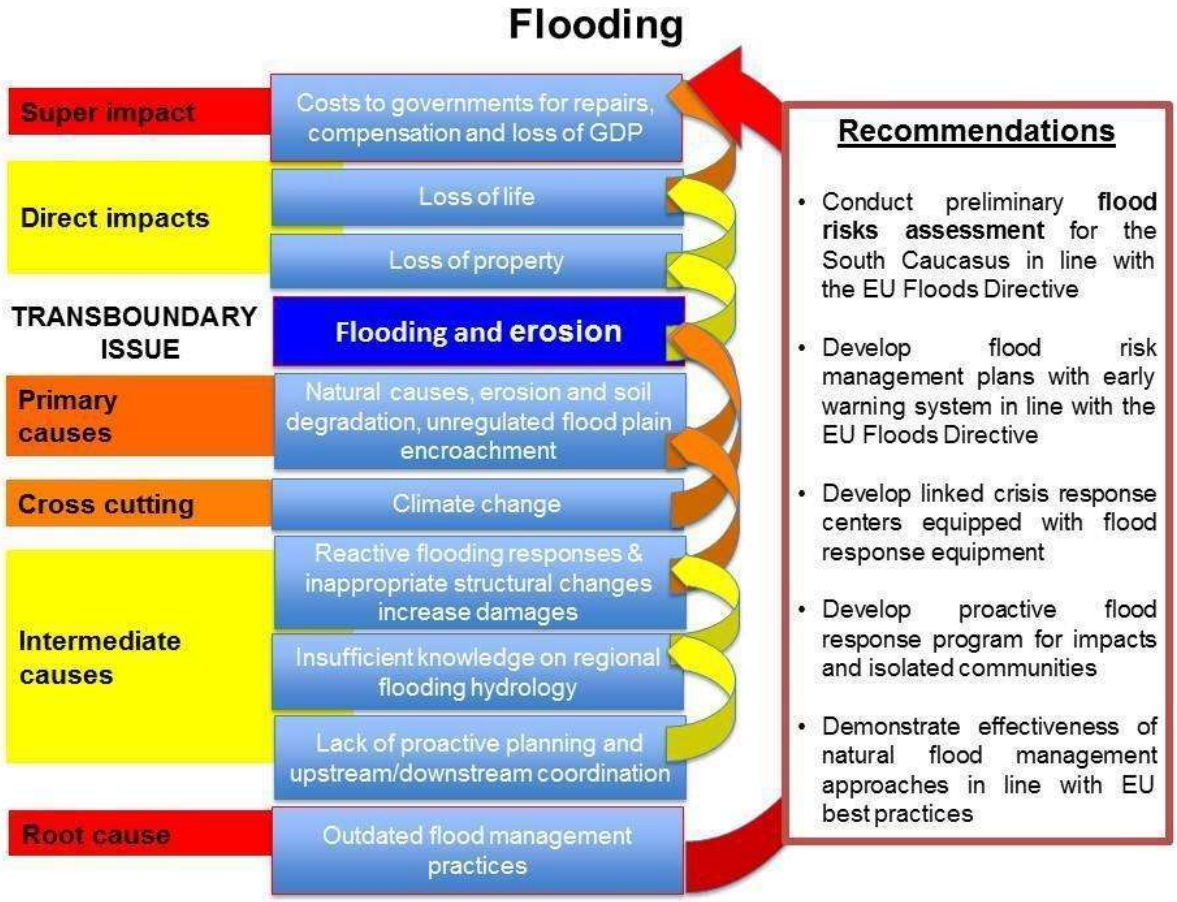
2.2.4 Flooding

The issues of flooding are sporadic but pervasive throughout the Kura river basin. Flooding is first of all a natural process, and contributes to the natural and healthy functioning of ecosystems. However, with climate change and increased human populations there has also been an increase in the frequency and severity of these events. The impacts of flooding events include the loss of property, loss of life, with the super impact being the added costs to governments for repairs to infrastructure, compensation for damaged or destroyed property, and loss of GDP. The causes beyond climate change are partially due to ecosystem degradation from overgrazing and deforestation in some areas within the basin, as well as building in flood prone areas. Additional causes include: flooding response structures that lead to increased damages, outdated understanding of natural flood cycles within the ecological processes, and lack of coordination between upstream and downstream communities in impacted areas. The key root cause in this area is outdated flood management practices.

Flooding is a natural, climate induced event, though it is often exacerbated by human interference with the hydraulic characteristics of river channels, flow regimes, or the runoff characteristics in the terrestrial watershed. Though there are significant, long term benefits from flooding, including the enrichment of the soils on the floodplain, enhancement of conditions for fish spawning, and the renewal of wetlands, flooding is usually considered a hazard resulting in loss of human life and property, as well as damage to natural surroundings. High river flows become floods when the flow of water exceeds the capacity that can be contained within a river's natural banks. Flooding becomes a hazard to humans when people move into the floodplain and begin to carry out economic activities, such as agriculture, and build their homes and

other buildings in areas of high flood risk. Additional changing climate conditions also can alter flood risks.

In a transboundary situation like the Kura river basin, floods are an inherently transboundary issue. Changes to watershed and hydraulic conditions of the channels upstream affect the actual flood characteristics as well as the flood risk and flood hazard downstream. Given that many significant alterations have been made in all parts of the basin, part of the solution is addressing flood risk management as a transboundary concern.



Root Causes

The root cause of high flood risk and extensive flood damages in Azerbaijan and Georgia is the continued reliance on outdated flood protection measures, based on localized structural solutions rather than developing and implementing integrated national flood management plans, in which due attention is paid to interlinking measures at the transboundary river basin level. An effective flood management plan uses a combination of structural and nonstructural measures to reduce the flood magnitude and frequency, where possible, and to mitigate flood damages. Flooding is a complex process and a flood management plan needs to be multi-sectoral. Institutions need to be coordinated to bring together information on hydrology and hydraulics, watershed land use and floodplain activities, property values, socio-economic factors, ecological conditions, and many more, both at the national as well as at the transboundary level. While the information on climate change as a cross-cutting issue impacting on flooding frequency, magnitude, and damage is limited, a variety of country analyses hint at ongoing intensification of climate-related extremes

– temperature and precipitation, including flooding and heavy rain. Increases in frequencies and in magnitudes of flooding have been recorded across Europe and in many other countries. The widespread nature of this phenomenon is a serious indication that global climate change is at the root of it.

Impacts

The environmental impacts of flooding are both positive and negative when they occur within moderation.

The positive environmental impacts include:

- Refreshing water flows in wetlands and peripheral water bodies, including nutrients, genetic diversity, and fresh sediments;
- Spreading nutrients onto lands, including floodplain forests and recharging soils; and
- Clearing blockages to river flow as part of the natural cycle.

The negative environmental impacts include:

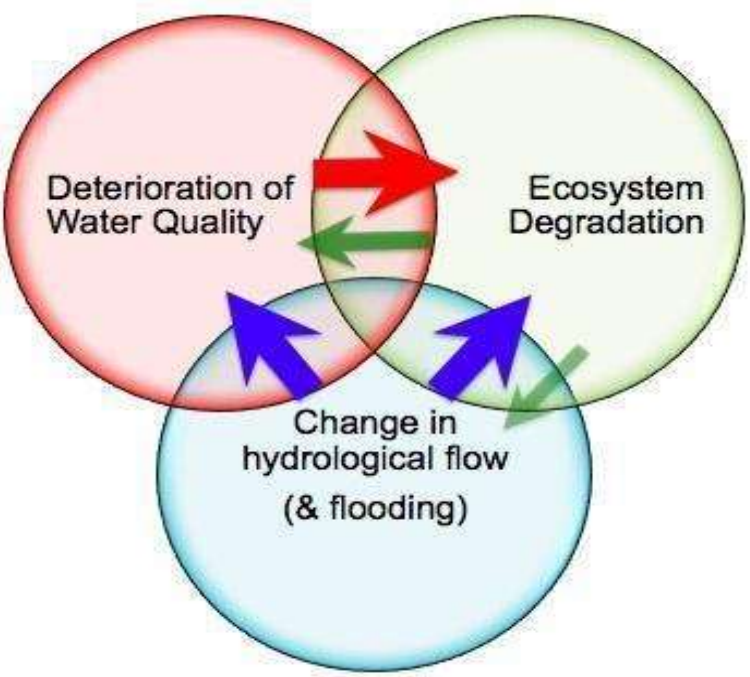
- Increased inundation and waterlogging in areas where water is stagnant due to poor drainage;
- Severe loss of species including plants in extreme flooding; and
- Increased mudflows, erosion, and loss of soil fertility in extreme flooding.

The socio-economic impacts of flooding include:

- Loss of human life and property, destruction of crops, permanent damage to agricultural and other land, loss of livestock, destruction of important civic infrastructure, disruption to water and electricity supply, transport & communication networks, education and health care;
- Deterioration of health due to the spreading of waterborne diseases caused by the floods directly and through loss of water supply systems, and the disruption of access to medical care, which may cause short term and long term impacts on the health of the affected people;
- Loss of livelihoods as economic activities come to a standstill due to disruption of communication links and other infrastructure, which may take a long time to restore, leading to production losses in agriculture, industry, etc.;
- High costs of relief and recovery, including initial emergency relief, the cost of relocation of people, rehabilitation of property, etc.; and
- Loss of resources can lead to high costs of goods and services, also delaying development.

2.3 Linkages between issues

The cross cutting issue of climate change is addressed through a review of climate change predictions for the basin and the impacts this will have on the four transboundary issues. Climate change is expected to cause an increase in temperatures, decrease in precipitation, increased glacial melting, and increase in evapotranspiration.



As noted throughout the causal chain analyses for each of the transboundary issues discussed previously, there are often overlaps between issues and mutual impacts of each issue on the others. The complexity of these issues is common in ecological systems where dynamic interactions lead to shifts in natural conditions. In the causal chain analyses the relationships within the issue are analyzed, however there are the relationships between the issues that must be considered as well.

The diagram above provides a graphic representation of the impacts that the transboundary issues have on one another. The arrows between the circles indicate the impact relationship. The color of the arrow corresponds to the impacting issue, it points to the issue receiving the impact. The size and the transparency of the arrows reflect the strength of the impact.

The relationship between change in hydrological flow (and flooding) and deterioration of water quality is a strong, unidirectional relationship. The decline in water resources — less water in the river — results in a concentration of pollutants in the water. In the event of flooding, water quality is negatively impacted because of the overflow of systems such as tailing ponds for mines, sewage systems, and agricultural fields, from where land based source and non-point source pollutants are washed into the river system. In contrast, the deterioration of water quality has neither an impact on changes in hydrological flow, nor on flooding. Large debris in the river may impact flooding, however that is beyond the project scope for “deterioration of water quality.”

The relationship between deterioration of water quality and ecosystem degradation is more complex and interdependent. This was defined in the causal chain analyses but deserves additional attention here, as these linkages are quite important when considering remediation efforts. As indicated in the figure above, the stronger of the two impacts is the negative impact of water quality deterioration on the ecosystems, which results in ecosystem degradation. This includes poor quality water reducing the capacity of the river system to function optimally. Various flora and fauna within the river system that are beneficial and widely diverse are not able to thrive in poor water quality. Additionally, the poor water quality leads to an increase in species that are more tolerant, which creates balance shifts within the ecosystem. Poor water quality also negatively impacts the ecosystem conditions on land, especially when irrigation of fields uses this water. The ecosystem balance as a whole is seriously jeopardized by the deterioration of water quality and decline in hydrological flows.

2.4 Common needs to address transboundary issues

As noted previously, there are correlations between transboundary issues as well as some degree of causality. Within the causal chain analyses there are several common causes that arise which, if properly addressed, will resolve some aspects of these issues, and similarly improve conditions of linked issues. The common causes reflecting common needs are those which could widely benefit the Kura basin and reduce the degradation of the Kura river basin. These common needs are:

- **Improve information quality for decision makers;**
- **Define the economic value of water resources and improved water quality;**
- **Estimate realistic valuation of ecosystem services;**
- **Improve coordination in planning for water resource use among sectors;**
- **Improve monitoring programs for water quality and water quantity including modernizing, equipment, capacity and use of best practices; and**
- **Support capacity development and transboundary coordination as appropriate.**

Most of these issues are both national and transboundary in nature, because the increase in water abstraction in the upper reaches of the river negatively impacts access to water for economic and social needs in the downstream reaches of the river both within and between countries. As water scarcity becomes worse, overall human security is threatened in terms of cumulative threats to food security, water security, energy security and environmental security. Steps are urgently needed to address this in order to optimize the rational use of existing resources and to take steps to improve the security of water resources for future generations and their economies across the basin.

These common needs fill gaps in institutional structure and capacity, also reflected in the Capacity Needs Assessment conducted for the IWRM/SAP component of the UNDP-GEF Kura-Aras project. The UNDP-GEF project is currently supporting the development of National IWRM Plans, as well as the capacity development for their implementation. However, in order to do this in a way that will be sustainable in the future, commitment from the governments to address these common needs must be made by both countries. The benefit is that when both of the countries fills these gaps, successful river basin management will be much easier, and with the economic costs recognized and benefits realized.

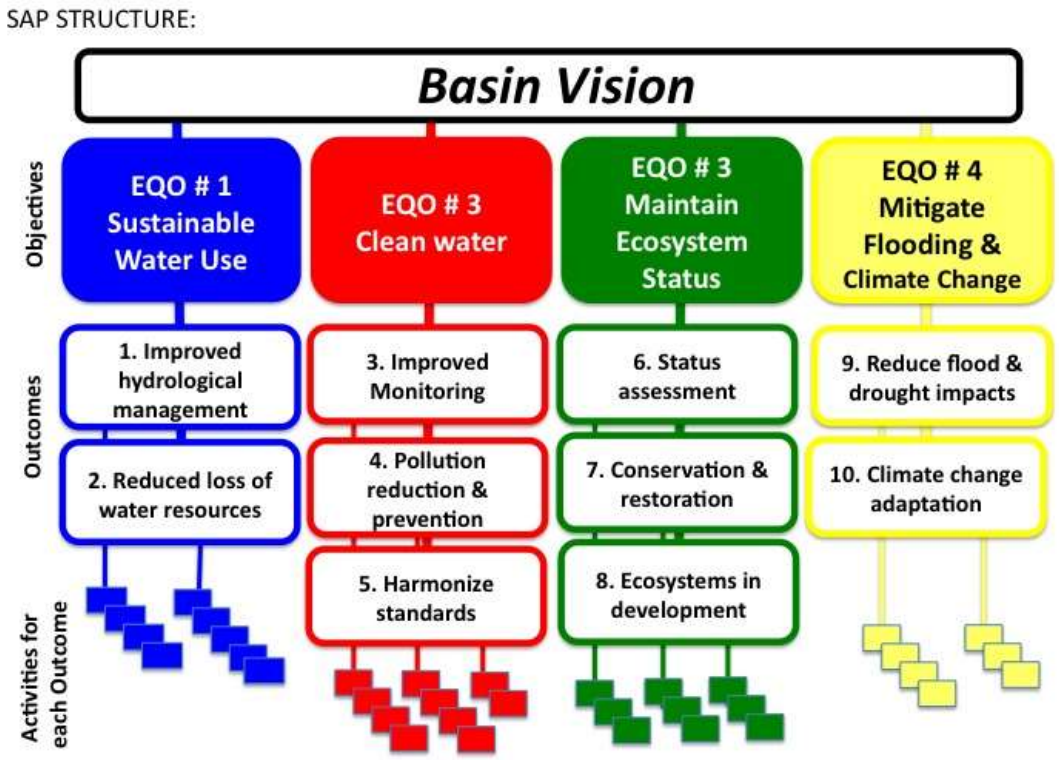
3 Basin Vision Objectives, Outcomes & Activities for SAP Implementation

In 2007, during an earlier phase of the project the UNDP-GEF Project Steering Committee agreed to the Long-term Basin Vision and to four Ecosystem Quality Objectives (EQOs) to reach the long-term Basin Vision. These were the foundation for the SAP developed between 2011-2013, and reaffirmed by the Steering Committee members in May 2013.

The Basin Vision is:

"*To achieve sustainable development and maintain ecosystem functions in the Kura River Basin through reducing transboundary degradation and improving environmental management in order to ensure ecosystem services, economic well-being, and health and security in all riparian countries.*"

The Vision is supported by the four agreed Ecosystem Quality Objectives, which in term are met by reaching a set of ten outcomes. The outcomes are detailed in the following table with more detailed activities presented in the table at the end of this section. The structure of the SAP with summarized Objectives and Outcomes is shown below:



The 2007 EQOs and the 2013 Outcomes needed to achieve the EQOs are explained below based on the work of the stakeholders and guidance of the countries through the National Focal Points.

EQO # 1: To achieve sustainable utilization of water resources to ensure access to water and preserve ecosystem services

1. **Improved Hydrological Management:** Water resources in any river basin are subjected to short- and long-term variation, and predicted climate change adds an uncertain potential impact on the human population and ecosystems. Meanwhile poor understanding exists on actual spatial-temporal availability of water, and its seasonal, annual and long-term variability, as monitoring systems have deteriorated. There is a low understanding of the economic contribution of water resources to development, and the interaction between surface water and groundwater, leading to an over-exploitation on groundwater aquifers in times of water stress. Overall there is a need to enhance technical and knowledge capacity, and strengthen institutions to support sustainable IWRM and EU Water Framework Directive (WFD) implementation. Proposed activities in this outcome include improvement of monitoring networks; assessment of net economic return per unit of water use per sector to help balance demands for the Water Nexus; development of a conjunctive use strategy for surface- and groundwater; and targeted capacity building in IWRM. These steps will enable the countries to lay the foundation to ensure sustainable access to water for future generations facing the threats of climate change.

2. **Reduced loss of water resources:** Improved water resource management also includes taking steps to avoid losses of water where possible and delivering water where it is needed most, at the right moment. It also means that the water is used as efficiently as possible, especially as water resources are threatened by climate change. It is critical to identify how to conserve water in all sectors, demonstrate how wastewater can be safely reused, and to educate the public about what each person can do to conserve water. This will gradually shift water management from a culture of abundance to a culture of scarcity. Proposed activities for this outcome focus on assessment of water losses, and the elaboration of supply- and demand-side strategies to improve water use efficiency; design a wastewater recycling strategy and regulatory framework; targeted awareness campaigns towards conserving water; and pilot projects to demonstrate water use efficiency in different sectors. As climate change impacts become more felt, it is critical that all steps are taken to empower those most impacted and most able to make a difference for sustainable development.

EQO # 2: To achieve water quality such that it would ensure access to clean water for present and future generations and sustain ecosystem functions in the Kura river basin

3. **Improved water quality monitoring programs:** The countries have made initial steps towards approximating the EU WFD and there is strong appreciation of the value of this approach. Still several significant gaps prevent the countries from being able to successfully implement the EU WFD. Among these are: the need for adjustments in national water quality monitoring agencies to institutionalize updated practices and analytical approaches; the need to adopt national biomonitoring programs to improve monitoring and reduce costs; the need to establish an information management strategy between agencies within the countries; and the need to properly train and support staff within the monitoring agencies. Addressing these priority concerns will be the focus of this outcome, to enable the countries to move more quickly towards harmonization of water quality management with EU practices and properly address threats to water quality.

4. **Pollution reduction and prevention:** Water quality monitoring is only useful if subsequent steps are taken to improve conditions. To understand the need to reduce and prevent pollution it is necessary to assess the complete costs and risks associated with water pollution, towards supporting decision makers in dedicating budgets to these efforts. Accordingly, targeted integrated pollution abatement plans need to be designed and implemented, demonstrating best available technologies and best environmental practices to be tested and replicated in the basin. Also important is the elaboration of early warning systems that can improve response to pollution accidents more effectively. And it is critical that legal mechanisms are in force that empowers appropriate agencies with enforcement capabilities. These agencies will also need to have the capacity and authority to ensure compliance in order to effectively contribute to protection of the water resources.

5. **Harmonization of water quality standards:** Currently there are different parameters and standards applied by the countries in water quality monitoring and assessment, which makes data comparability and compatibility difficult. As Azerbaijan and Georgia move towards approximating the EU WFD, water quality monitoring practices will become further harmonized. Establishing institutions through a bilateral commission and associated tasks force this will enable the countries to formalize unified analytical standards, norms and indices for chemical and hydromorphological water quality as well as river ecological status. These institutions can then support defining agreed mechanisms for storing and exchanging data in line with the international best practices for transboundary rivers.

EQO # 3: To achieve and maintain ecosystem status whereby they provide essential environmental and socio-economic services in a sustainable manner in the Kura River Basin

6. **Assessment of the status of river ecosystems:** Significant gaps exist in information on river ecosystems, gaps that need to be filled in order to most effectively plan for sustainable water resources use in the region. There is a lack of descriptive information on ecosystems and interactions between their biotic components and environmental factors, as well as about their actual condition and status in relation to human activities. Accordingly, there is lack of knowledge of the valuable economic contribution that the river ecosystems and the services they provide to the overall economy. And while there is strong discipline-specific knowledge on water management within the basin, the integrated understanding of ecological processes in river systems and cause-effect relationships to human activities needs further strengthening. The activities in this outcome will assess the status of river ecosystems by establishing ecological assessment programs; develop a methodology for economic valuation of river ecosystems to support decision makers to balance competing demands, and apply the Water Nexus approach to support true sustainable development; and strengthen stakeholder educational and capacity building efforts on river ecosystem values, so that current and future generations can continue to benefit from the ecological riches of the South Caucasus.

7. **Conservation & restoration of river ecosystems:** The human impact on river systems has been especially serious over the past century of development in the basin. Developments in irrigation, hydropower, industry and human populations have significantly altered the natural flow of rivers and related ecosystems throughout the Kura basin. Much of this development has occurred without regard to maintain the health of the ecosystems, or without awareness of the long-term impacts development would have on the sustainability of ecosystems.

In order to mitigate those negative impacts it is necessary to incorporate natural river processes in development planning, to conserve, protect and restore river ecosystems. Related activities under this outcome focus on strengthening the protected areas networks in paying specific attention to protecting river corridors and river basin conservation approaches in line with EU approaches; developing and institutionalizing the principles of environmental flows in line with international best practices, to minimize negative impacts of reduced flows; and implementing river restoration plans with demonstration projects to showcase the ecological and socio-economic benefits of improving the river system health.

8. **Mainstreaming river ecosystem protection in development planning:** Existing sectoral development planning and the current legal and permitting systems for environmental protection are not sufficiently robust to shield the river ecosystems from negative impacts. The international donor practices encourage the mainstreaming of ecosystems' considerations in sectoral development planning, both through EU Directives, and application of international best practices. The activities for this outcome will focus on supporting stronger legal, economic and policy mechanisms to protect the environment in planning for development, for use in river basin management plans; strengthening the environmental impact assessment (EIA) and strategic environmental assessment (SEA) processes and capacity, to emphasize protection of river ecosystems; and demonstrating the benefits of strategic environmental assessments on selected sectors dependent on water use for future development.

EQO # 4: To achieve mitigation of adverse impacts of flooding and climate change on infrastructures, riparian ecosystems and communities

9. **Reduction of hazards due to floods and drought**: Natural disasters do not observe country boundaries, and the increasing occurrence and severity of extreme weather events due to climate change will further stress this. Transboundary flooding and droughts are predicted to occur with increasing frequency, and steps to reduce the negative impacts of these must be taken before the crisis. This involves developing flood hazard and flood risk maps and management plans in line with the EU Floods Directive as an international best practice. To be able to mitigate drought impact in advance, it is necessary to develop harmonized drought indices. There is a need to develop methodologies for estimating the losses and damages due to these severe events, to support economic valuation approaches that subsequently will support mitigation as well as restoration efforts. And as these severe events may be transboundary, support from neighboring countries through enhanced national crisis management and response networks, as well as capacity building for at-risk communities, will enable to save lives and reduce losses.

10. **Harmonized Climate Change Adaptation:** Climate change is a cross cutting issue that will impact on all aspects of water resource management. It is critical that these impacts are well understood, and can be predicted based on strengthened modeling capabilities to determine the expected impacts on water resources in the basin. It will be important to share lessons learned from demonstration projects that test adaptation measures on their appropriateness for use in the basin. It is also vital that local stakeholders and communities understand the impacts of climate change on water resources and are empowered through networked trainings to take responsibility for adaptation measures at the household and community level, in which also innovative ideas should be shared across the network and internationally.

The following table provides the activities to reach the outcomes. This includes the description of the activities and the ranked priorities among the National Focal Points. These rankings are for high and medium priority for both countries. The medium priorities were listed as important, but less urgent than the high priority activities. In all cases these are the culmination of shared priorities that will support both national and transboundary water management and improve the conditions of the river basin. The estimated timeframe ranges from approximately five to fifteen years. The National IWRM Plans will more accurately present the timeframes based on national priorities. In some cases these will be addressed in shorter timeframes and in others slightly longer. This is specified within the National Plans. The types of activities are also included, to clarify the needs and types of involvement needed to reach the outcomes, objective and vision. At the national level additional activities, including infrastructure development may be included. In every case the SAP is intended to support the implementation of the National Plans, based on country priorities and existing legal and institutional structures.

Summary Table including activities

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
	EQO 1	**To achieve sustainable utilization of water resources to ensure access to water and preserve ecosystem services**			
1. Improved Hydrological Management	1.1 Improve hydrological and meteorological monitoring by modernizing the monitoring network	The hydrological and meteorological monitoring network are currently outdated. This activity will assess the status of the network – distribution of stations, monitoring parameters and methods, equipment, etc. – based on identified priority needs on information provision in support of decision making. Steps will be taken to modernize the observation network through refurbishing existing stations, and establishing new stations as needed. This will contribute to improving the understanding on actual spatial-temporal availability of water resources, and their seasonal, annual and long-term variability.	High	Medium term	Monitoring support
	1.2 Assess the economic return on unit of water used in different sectors, including agriculture, hydropower, municipal and industrial water use, to balance demands for the Water Nexus	There are increasing demands on water resources across the basin from different sectors. The Water Nexus provides an integrated approach to examine the social and economic benefits of each sector in the context of water being a finite resource in multiple demand, towards maximizing the benefits from water resources. The application of the Water Nexus methodology allows countries to balance these competing demands for water to achieve food security, energy security, water security and environmental security.	High	Short term	Capacity building
	1.3 Develop a conjunctive groundwater and surface water use strategy to ensure sufficient water availability for development and the environment.	There is a threat of non-sustainable overuse of both groundwater and surface water resources. Ongoing development and climate change put increasing stress on available surface water resources, leading to groundwater increasingly being used as replacement. A conjunctive use strategy will examine the available water resources in unison, to determine safe use levels based on sustainable yields.	Medium	Long term	Institutional ; capacity building
	1.4 Institutional and capacity building to support IWRM implementation with legal mechanisms, and training program for IWRM professionals	There are currently not sufficient institutional and professional capacities in the Kura Basin Countries to fill the needs for IWRM implementation. This activity will provide support through strengthening legal-institutional mechanisms and national capacities needed for successful IWRM implementation. Professional capacities will be enhanced through targeted training programs and collaboration with academic organizations.	High	Short term	Institutional ; capacity building
2. R ed	2.1 Develop methodologies to assess sectoral water	Water losses within sectoral distribution networks are difficult to account for and they are costly. Especially where water resources are limited, avoiding and	High	Short term	Capacity building;

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
	losses in distribution systems.	minimizing losses is crucial, as is there accurate assessment. There are modern internationally used methodologies that can provide more accurate assessments. This activity will demonstrate how to apply these methodologies in each country, in order for targeted efforts to be defined to actually minimize losses.			monitoring
	2.2 Develop strategies to encourage efficient use of water resources.	The countries are not currently able to fully benefit from the available water resources in the region. Significant volumes are lost in the supply infrastructure and water is not used efficiently once it reaches its final location of use. This activity will support the development of economic and financial incentives for more efficient use based on best available technologies and best environmental practices gathered from around the world.	High	Short term	Capacity building
	2.3 Implement demonstration projects to reduce losses and improve water use efficiency in different sectors.	The outdated approaches to water use in many sectors is largely based on the assumption of unlimited supply. New understanding on the limits of water resources, combined with the threat of their reduction due to climate change, means that water supply and demand is now more scrutinized and efficiency must be stressed. Activities under this outcome will assess water supply systems for selected sectors, and prepare proposals for improved efficiency. Demonstration of innovative technologies and/or approaches will enable distributors and water users to benefit from improved efficiency in difference sectors.	High to medium	Medium to long term	Monitoring; Capacity building; Demonstration; stress reduction
	2.4 Develop a strategy for safe wastewater recycling, for agricultural use based on innovative technologies.	Agricultural uses the largest volumes of water of any sector. Wastewater from agriculture and municipal sources, can be treated and reused safely, if proper technologies are applied with strict regulations. This activity will assess the current practices and legal frame works, will recommend innovative technical and legislative improvements towards in the health and safety of the basin population.	Medium	Short term	Capacity building; stress reduction
	2.5 Apply public awareness and education campaigns to improve understanding on the importance of conserving water.	While water losses are cumulative, each person can contribute to water conservation. Currently managers, decision makers and the public do not place a high value on water or the need for its conservation. Through a public awareness and education campaign, the benefits of conservation and protection of water resources can become more widely understood, leading to improved water conservation practices.	High	Short term	Capacity building; stress reduction

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
	EQO 2	**To achieve water quality such that it would ensure access to clean water for present and future generations and sustain ecosystem functions in the Kura river Basin**			
3. Improved Water Quality Monitoring Programs	3.1 Improve water quality monitoring practices to be in line with the EU WFD approach and international best practices	Initial efforts in the countries have demonstrated the water quality monitoring approach of the EU WFD, however there are additional needs in improving and expanding water quality monitoring efforts. This outcome will pay special attention to improving the institutional-regulatory framework, update the water quality monitoring network, modify parameters and improve analytical approaches, all to ensure that the monitoring practices meet internationally accepted standards.	High	Short to medium term	Monitoring: Capacity Building
	3.2 Adopt national biomonitoring programs using macro-invertebrates to gauge water quality and river system status in line with the EU WFD and international best practices	The most effective water quality monitoring requires constant observation over time. While chemical levels in the water can change in an instant, aquatic living organisms (macro-invertebrates) can indicate water quality status over time because some species will thrive in clean water, while others thrive in more polluted conditions. Biomonitoring has proven to be a low-cost and effective tool to obtain an integrated assessment of water quality, and is used effectively throughout the EU. It has been demonstrated in the Kura basin countries and equipment is available to expand this to national biomonitoring programs. To bring these programs into line with the EU WFD and international best practices, this outcome will target a review of the existing lessons learned, an increase the coverage of the programs, building capacity for trained analysts, ensuring quality control and quality assurance, defining suitable biological indicator species and indices, and subsequently expand biomonitoring in both countries.	High	Short to medium term	Monitoring; Capacity building
	3.3 Strengthen mechanisms for sharing water quality information collected by different agencies within each country.	In both Kura basin countries water quality is monitored by different agencies for different reasons, including public health, environmental monitoring, and agricultural use. It is important to develop water quality information exchange strategies that will enable each country to reduce costs and to harmonize water quality monitoring. For IWRM to be successfully implemented, national water quality information should be shared openly between agencies in a common database, with shared analyses, specific for the intended purposes to ensure consistency and coordination.	Medium	Short term	Capacity building; institutional
	3.4 Improve the technical capacity of water quality monitoring agencies and	Approximating the EU practices, in line with the desire to reach international best practices of the countries, will require professional capacity development for expanded water quality monitoring, including biomonitoring. The current	High	Short term	Capacity building

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
	support professional capacity development for staff on best practices to more closely align with the EU WFD, and the international standards.	staffing levels and their capacities are not sufficient to meet the expected needs of the countries, and there is a high level of turnover in monitoring agencies. It is necessary to strengthen the professional development of staff, and design retention plans for trained staff, in order to successfully implement the EU Water Framework Directives and international best practices.			
4. Pollution Reduction and Prevention	4.1 Assess the social and economic costs, sources and risks associated with water pollution.	Water quality has been impacted by human activity in the basin, which in turn negatively impacts on economic development. In order to justify spending money to improve water quality, it is necessary to better understand the sources and the actual costs of pollution. Activities under this outcome will focus on developing a methodology to assess risks and actual costs related to water quality degradation, based on improved health impact studies and update knowledge on locations and types of point and non-point pollution sources. Overall costs of pollution should include costs to human health, economic productivity, soil fertility and the additional risks of increased concentrations of pollution from development and climate change.	High	Short term	Capacity building; institutional
	4.2 Implement integrated pollution abatement plans to improve water quality.	Addressing water quality deterioration requires that countries develop pollution abatement plans. These plans will target the most significant polluters, and promote the use of best available technology (BAT) and best environmental practices (BEP) in reducing pollution. Targeted financing mechanisms to support implementation of the plans will be elaborated. Demonstration projects will be designed and implemented to showcase BAT and BEP for testing and replication.	High	mediu m	Capacity building; institutional; demonstrati on; stress reduction
	4.3 Develop or improve early warning systems for accidents that would impact on water quality.	There is always potential for accidents that would lead to significant pollution of rivers and waterways, despite pollution preparedness or abatement plans. To reduce the negative impacts of these potential accidents, it is critical to assess the potential risks as well as the status of the early warning systems. Based on these assessments the early warning systems will be improved, to more effectively respond to accident, to minimize the negative and hazardous impacts based on best practices.	Medium	Short term	Capacity building; institutional; stress reduction
	4.4 Strengthen the laws and regulations to protect water quality, including stronger enforcement capacity, towards better compliance.	Legal mechanisms to protect water quality are only as effective as their enforcement. To ensure compliance, the legal-regulatory mechanisms must be strengthened, enforcement bodies properly mandated and authorized, and their staff well-trained and adequately equipped. This will enable the monitoring and enforcement agencies to effectively carry out their mandate, contributing to	High	Short to mediu m term	Capacity building; institutional

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
		the protection of water quality.			
5.Harmonization of Water Quality Standards	5.1 Harmonize national water quality monitoring standards bilaterally, including indices and limits for agreed substances in line with the EU WFD and international best practices.	Currently water quality monitoring information cannot be compared between countries because each country is using different water quality approaches, parameters, and standards, while measuring for different limits for various substances. With the support of international organizations, the countries can bilaterally develop institutions (commissions or task forces) for shared water quality monitoring, to oversee agreed standards and indices of water quality and river system health. This will enable the countries to harmonize water quality monitoring and to define comparable approaches to assess the ecological status of rivers in line with the EU WFD and international best practices for transboundary rivers.	High	Short term	Institutional
	5.2 Develop data exchange programs that enable countries to share water quality information through bilateral commissions or task forces.	Once the countries have bilaterally agreed on water quality standards and indices, information exchange will enable them to improve their own water resources management. The bilateral commissions or task forces can establish a web portal and develop mechanisms to exchange data and analytical approaches on water quality assessment, including for emergency events and accidental spills.	High	Short to medium term	Institutional
	EQO 3	**To achieve and maintain ecosystem status whereby they provide essential environmental and socio-economic services in a sustainable manner in the Kura- River Basin**			
6. Assessment of the status of river ecosystems	6.1 Establish river system ecological monitoring programs to assess ecosystem health as well as impacts from development and climate change.	Currently there is no established program to monitor the ecological health of the river systems. There are significant data gaps - lack of descriptive information on ecosystems, the interactions between their biotic components and environmental factors, as well as about their actual condition and status in relation to human activities - that result in decisions on development planning being based on incomplete information. An integrated monitoring program for aquatic and riverine zones can detect impacts and disturbances to these systems from development and climate change. Long-term monitoring of integrated riparian ecosystems will complement aquatic macro-invertebrate monitoring in EQO2, thus providing a more complete evaluation of overall river system health. This monitoring will focus on hydromorphology, flora, fauna, and microbiological aspects. Aspects of hydrological flow monitoring are addressed in EQO1. Together these will serve to provide a sound baseline to gauge impact from sectoral development planning.	High	Short to medium term	Monitoring

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
	6.2 Conduct studies to assign economic values of the services provided by river ecosystems, for use in planning towards balancing competing demands of agriculture, municipal, energy, industrial and ecological sectors in the Water Nexus.	River ecosystems provide many important services that make it possible for humans to thrive in this region. These services include filtering and cleansing of water, reducing flooding severity, fertilizing land for agricultural development, while also providing waste disposal, sources of food, fiber, construction and energy, and habitats for flora and fauna including commercially valuable species. To date there is little knowledge regarding the economic value of the river ecosystem services and they are often taken for granted. True sustainable development requires that the values of these environmental services are included in sectoral planning and in balancing competing demands for water resources. Therefore it is vital to develop a methodology to gauge the values of ecosystem services, and to include this into development planning processes. This will support the use of the Water Nexus that seeks to balance securities for food, energy, water while maintaining also environmental security into sustainable development planning.	High	Short term	Capacity building
	6.3 Improve understanding of the need to integrate river ecology in development planning, through building stakeholder capacity and implementing educational programs..	While there is a high level of very discipline-specific knowledge within the basin on issues related to water management, the understanding of interdisciplinary integrated ecological processes and cause-effect relationships linked to human activities needs further strengthening at many levels. Increased understanding of river system ecology will improve the adoption and use of the EU WFD principles and support the use of ecological processes in development planning. A concerted multi-stakeholder ecological capacity building and education campaign will enable the countries to improve and prioritize ecosystems in managing development planning, to the benefit of current and future generations.	Medium	Short to mediu m term	Capacity building
7.C.onservation & restoration of river ecosystems	7.1 Improve protected areas networks along river corridors and in catchment areas/	Rivers are the critical lifelines for many species, and the protection of rivers and key river catchment areas will protect the flow which is critical in maintaining the health of rivers. The current protected area networks need to be strengthened to include the protection of river dynamics, catchments and corridors. Activities under this outcome include developing a strategic vision on landscape-scale conservation integrating riverine protected areas into existing networks. For this, ecosystem studies to justify priorities will be completed, while alternative protection regimes based on sharing the economic benefits from environmental services between man and nature will be elaborated. Attention will be paid to improving the technical and knowledge capacity of PAs towards strengthening their management,	Medium	Short to mediu m term	Institutional ; Capacity building; stress reduction

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
	7.2 Implement environmental flows principles and calculation methodologies in line with international best practices.	It is agreed that the Soviet-era approach of installing environmental flows for rivers is outdated and needs to be re-evaluated. Flow alterations and abstractions must be linked to maintaining the specific dynamic hydrological conditions within the river on which natural ecosystems depend. New methodologies to assess appropriate environmental flows need to be developed and suitable approaches need to be institutionalized, in line with international best practices. Decision making on hydrological alterations should be based on minimizing negative impacts of reduced or altered river flows on ecosystems, while maximizing benefits for economic development. Special attention will be paid to training and awareness raising on approaches and benefits, as well as to implementing practical demonstration projects on installing environmental flows in select sub-basins.	High	Short to medium term	Capacity building; institutional; demonstration; stress reduction
	7.3 Develop and implement river restoration plans with demonstration projects to improve river system health.	Human development in the past century has significantly impacted the river system. Developments in irrigation, hydropower, industry and human populations have significantly altered the natural flow of rivers and have negatively impacted on related riverine ecosystems throughout the Kura basin and sub-basins. Efforts towards restoring natural riverine conditions will significantly contribute to improving river ecosystem health, to the provision of ecosystem services, as well as to reducing the costs of maintenance for technical infrastructure that is not effective. This output will support steps towards river system restoration through examining international best practices, providing training on principles and practices for river restoration, supporting the countries to develop harmonized strategies on river restoration in line with river basin management plans, and conducting targeted demonstration projects on approaches to river restoration, to showcase the ecological and socio-economic benefits of improving the river system health, for expansion based on lessons learned.	High	Short to medium term	Capacity building; demonstration; stress reduction
8. Improved attention to river ecosystems in	8.1 Strengthen legal, economic and policy mechanisms to protect the environment in planning for socio-economic development,	Currently socio-economic development plans do not emphasize environmental protection to ensure that water resources and ecosystems are properly protected. As part of approximating international best practices there is a need to encourage the use of legal, economic and policy mechanisms towards mainstreaming considerations on ecosystem conservation into sectoral development planning. This activity will analyze international experiences in environmental mainstreaming to guide recommendations on suitable legislative changes, institutional arrangements, enforcement control functions, and	Medium	Short to medium term	Institutional; Capacity building

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
		economic incentives for conservation of ecosystems for each country. This will enhance the implementation of river basin management plans at all levels by empowering river basin management organizations and their supporting structures.			
	8.2 Strengthen the EIA and SEA capacities and the approval processes to include emphasis on water resources.	Existing legal mechanisms for permitting, designed to protect the environment, are not sufficiently robust to shield the river ecosystems in the Kura basin countries from negative impacts. The information on the status of, and impacts of development on, water and ecosystems is often out of date, if available at all. As a result, consultants providing information in environmental impact assessments (EIAs) and strategic environmental assessments (SEAs) do not adequately account for the impacts in their assessments. Besides providing for updated information on ecosystem health, addressed in outcome 6, there is a strong need to improve the EIA and SEA regulations to include international best practices related to water resource impacts. There is also a strong need to create a roster of independent consultants who are capable and approved to assess environmental impacts on water and ecosystems in each country. To further strengthen the permitting process, capacity building measures need to be implemented for agency staff responsible for approving and auditing EIAs and SEAs, in which special attention will be paid to international standards and cause-effect impacts on water resources and river ecosystems.	Medium	Short term	Capacity building; Institutional
	8.3 Conduct demonstration projects on the benefits of including environmental concerns into development planning,	In order to successfully include concerns for the environment into development planning on water resources use, the benefits need to be demonstrated, how addressing aquatic ecosystem concerns can also be advantageous for development. For this, improved EIA and SEAs approaches, including the application of economic valuation developed under outcome 6, will be applied on key sectoral plans, such as hydropower or agriculture. Subsequently recommendations will be developed for including the lessons learned from these approaches into the regulatory frameworks for these sectors.	High	Short term	Demonstration; capacity building
	EQO 4	**To achieve mitigation of adverse impacts of flooding and climate change on infrastructures, riparian ecosystems and communities**			

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
9. Reduction of hazards due to floods and drought	9.1 Develop flood risk management plans in line with the EU Floods Directive, to reduce negative impacts of severe flood events.	The increased occurrence of extreme climatic events, including flooding, is linked, among others, to climate change. Adaptation to climate change will therefore include preparations to minimize flooding damages in each country and across the Kura basin, as environmental crises do not observe country boundaries. The EU Floods Directive, in line with the EU WFD, provides guidance on appropriate measures that include assessing the hazards, risks and hotspots for flooding, identifying risk-prevention measures, and developing risk management plans. These plans can then be harmonized to reduce impacts across the basin.	High	Short to medium term	Capacity; Institutional; stress reduction
	9.2 Develop a drought risk index using international best practices to reduce the negative impacts of severe droughts.	As with flooding, the threat of severe droughts occurring across the basin increases with climate change. Droughts however do not occur quickly and it is often difficult to move to action until it is too late. Establishing guidance for indicators of pending droughts can enable those impacted to take steps to reduce the harm done by droughts. This output provides support to creating a drought index based on international practices, establishing region-specific values for indicators, updating the monitoring systems and establishing a network of centers to share information and to coordinate responses.	Medium	Short to medium term	Monitoring; Capacity building
	9.3 Develop and test methodologies for evaluating the economic costs of floods and droughts, including loss of ecosystem services.	Increasingly severe floods and droughts are expected with increased frequency due to climate change. In order to understand the scope and scale of these impacts it is necessary to accurately assign economic costs to damages. This will require the adoption of an appropriate methodology for evaluating damages and assigning costs to the damages, including for the loss of ecosystem services. Better costs assessment of envisioned damages will guide mitigation as well as restoration efforts.	High	Short term	Capacity building
	9.4 Enhance national crisis response for severe events, including transboundary response networks and capacity building for at-risk communities.	It is necessary to develop national crisis management responses for floods and droughts, including enhancement of crisis response protocols during extreme events. As environmental crises do not observe national borders, as possible protocols should be harmonized in line with prevention, mitigation, and early warning approaches, to allow optimal responses in the event of an emergency. Additionally, capacity building in crisis management for at-risk communities will enable local communities to be first responders when extreme events do occur, to save lives and reduce losses.	Medium	Short to medium term	Capacity; Institutional
10. Har mon	10.1 Improve modeling capacity to help predict climate change and its	The threats of climate change are especially dire for water resources. It is critical to understand not only the type of threats but also their severity and extent, in order to plan adaptation effectively. This output will strengthen the	Medium	Short term	Monitoring; Capacity building

Out come	Activity	Summary Description	Priority	Time frame	Type of Benefit
	impacts on water resources within and across the Kura basin.	understanding and predictive capacity of climate change and related impacts on water quantity, quality and related ecosystems, based on improved modeling capacities. Knowledge and information will then be shared among the technical agencies in the countries and the basin			
	10.2 Develop water specific climate change adaptation plans with demonstrations of adaptation measures to be shared across the Kura basin.	Climate change adaptation will require creativity and problem solving that can be shared. As understanding of the expected impacts and risks of climate change increases, improved national Climate Change adaptation plans will be prepared, specific to how water resources will be managed. These climate change adaptation plans will then be shared and harmonized within a larger basin plan. Demonstration project will be designed to test adaptation measures on their appropriateness for use in the basin, for potential up-scaling and sharing of lessons learned.	Medium	Short to mediu m term	Demonstrat ion; Capacity building; stress reduction
	10.3 Empower local stakeholders to take climate change adaptation measures through public awareness campaigns, trainings and sharing of innovative ideas.	No one is immune to the impacts of climate change, and adaptation measures will be required at all levels. This activity will support empowering local stakeholders through public awareness campaigns to educate the public about the impacts of climate change on water resources, and suitable measures that can be taken at the household and community level. Modules will be developed to train community members in the practical application of suitable low cost local adaptation measures, to disseminate the knowledge through the communities. Support will be provided to implement local innovative local adaptation measures, and to showcase them to the basin and internationally.	High	Short term	Capacity building; stress reduction

4 SAP IMPLEMENTATION ARRANGEMENTS

This SAP has been developed with existing legal and institutional frameworks of each country in mind, as well as those that can support implementation of the transboundary strategy. The SAP's development and gradual implementation will support the various international agreements to which the countries are parties, and their efforts to fulfill the obligations under these agreements at the national level. This includes enhancing the existing national laws and regulations relating to water use and management within both of the riparian countries, supporting the existing transboundary arrangements within the basin relating to water management, environmental stewardship and development of mutual commitments throughout the Kura River Basin.

The objectives and outcomes contained in this SAP are based on the riparian states' shared will, to strengthen their commitments to improve water management at the national and international level. The objectives and outcomes emerge from domestic legal precedents and actions needed to more fully reach the international commitments already agreed-to by each of the countries. It is these legal and institutional arrangements that may be improved and strengthened towards more effective, beneficial water management practices throughout the basin. The following sections discuss the legal and institutional frameworks pertinent to the implementation of the SAP in more detail.

It is acknowledged that these priorities of the countries are ambitious and in some cases the countries will benefit from external support and donor funded initiatives at both the national and transboundary levels to accomplish this.

4.1 Legal Frameworks

There are a number of national and international mechanisms already in place for the use and management of water and the environment throughout the Kura Basin. This SAP is intended to assist the riparian states in improving their national legal frameworks in order to fulfill their existing international obligations, while concurrently strengthening their national commitments. Such conventions and protocols already signed by both riparian states include:

- The UNECE Helsinki Convention Protocol on Water and Health;
- The Ramsar Convention on Wetlands of International Importance;
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora;
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- The Rio Convention on Biological Diversity;
- The Paris Convention on Combating Desertification;
- The United Nations Framework Convention on Climate Change and its Kyoto Protocol;
- The Aarhus Convention on Access to Public Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters; and

- The Stockholm Convention on Persistent Organic Pollutants.

The countries are also committed to working to meet the UN Millennium Development Goals. These commitments are directly tied to improved water resource management, and achievement of these targets will help to ensure a sustainable and secure future for the basin, including the commitments to:

- Eradicate extreme poverty and hunger
- Reduce child mortality
- Ensure environmental sustainability

These commitments directly link to improved water resource management and are dependent upon application of best practices in environmental and water management which the SAP strives to support.

Additionally, there are many bilateral and development commitments made by the countries that will strongly benefit from improved water resource management. These have been taken into consideration in the development of the SAP, and the SAP serves to support these efforts wherever possible. The National Plans describe these international commitments in more specific details as they vary by country and are at varying levels of implementation at the national levels. In no case would the SAP override or negate any agreement made by the countries, or national law. The intention is to be strongly supportive of realizing these commitments and improving the sustainable development of the countries.

In all cases, the countries are currently demonstrating their commitments to sustainable development through improved ecosystem and water resources management. This process is inherently complicated and requires a significant amount of effort in terms of capacity building, institutional realignment, regulatory revisions and political will. The commitment to do this is clearly evidenced by the countries at the national level and through their strong efforts to meet international commitments. The comprehensive and integrated framework for the management and use of water resources contained in this SAP will be realized through the individual National IWRM Plans for Azerbaijan and Georgia.

The overall benefit gained from implementing the proposed legal, institutional, and development actions contained in this SAP will significantly improve the national as well as transboundary situation relating to water resources management. This will ensure the continued progress of the riparian states towards meeting international standards relating to water and environmental management. In the Kura Basin, there has already been substantial progress within these areas which can be shared as models between neighbors as well as serve as a strong example of coordination within a shared basin as appropriate. This SAP will build on these efforts and strengthen harmonization for water and environmental management in the basin.

4.2 Institutional Arrangements

This SAP takes into account the various national and transboundary institutional arrangements that exist when making recommendations and proposing actions for harmonizing transboundary water use and management strategies. The foundational Kura-Aras Project succeeded to establish a close, collaborative working relationship with the various riparian states' governments throughout its work on the TDA and SAP, and is thus well aware of the existing institutional settings through which this plan will be implemented. A brief survey of the governmental entities the Project has worked with in each country that will, in turn, take on the recommendations made include:

- **The Republic of Azerbaijan's** Ministry of Ecology and Natural Resources, Ministry of Emergency Situations, Ministry of Health, Tariff Board, Ministry of Economic Development, Ministry of Agriculture, and the AzerSu and Amelioration & Water Management joint stock companies.

- **The Republic of Georgia's** Ministry of Environment and Natural Resources Protection, Ministry of Energy, Ministry of Labor, Health, and Social Protection, Ministry of Agriculture, Ministry of Regional Development and Infrastructure, Ministry of Economy and Sustainable Development, Ministry of Finance, Ministry of the Interior, National Energy and Water Supply Regulatory Commission, and Local Self-Governance Organizations.

As mentioned previously, there are also various transboundary institutional arrangements between the Basin countries aimed at improving inter-governmental coordination and collaboration. Some of these arrangements include:

- The Memorandum of Understanding between the Ministry of Environment of Georgia and the State Committee of Ecology and Control of Nature Use of the Republic of Azerbaijan (currently the Ministry of Ecology and Natural Resources) on cooperation in the development and implementation of pilot projects for monitoring and assessment of the status of the Kura River basin (1997).

- The agreement between the Governments of Georgia and Azerbaijan on cooperation in Environmental Protection (1997).

If additional bilateral agreements are finalized between the countries in the basin, the SAP will serve to support those upon the request of the participating countries. In such cases the SAP implementation should also serve to strengthen those through applied measures outlined in the SAP and in accordance with the National level priorities.

By and large, the challenges to more effective, equitable, and mutually-beneficial water management practices throughout the basin have to do with coordination, gathering and sharing of data, and the capacity to take on necessary reforms or initiatives. Many of the recommendations contained in the TDA, this SAP, and the National IWRM Plans center around these core issues, and are intended to act as cross-cutting solutions to such cross-cutting challenges.

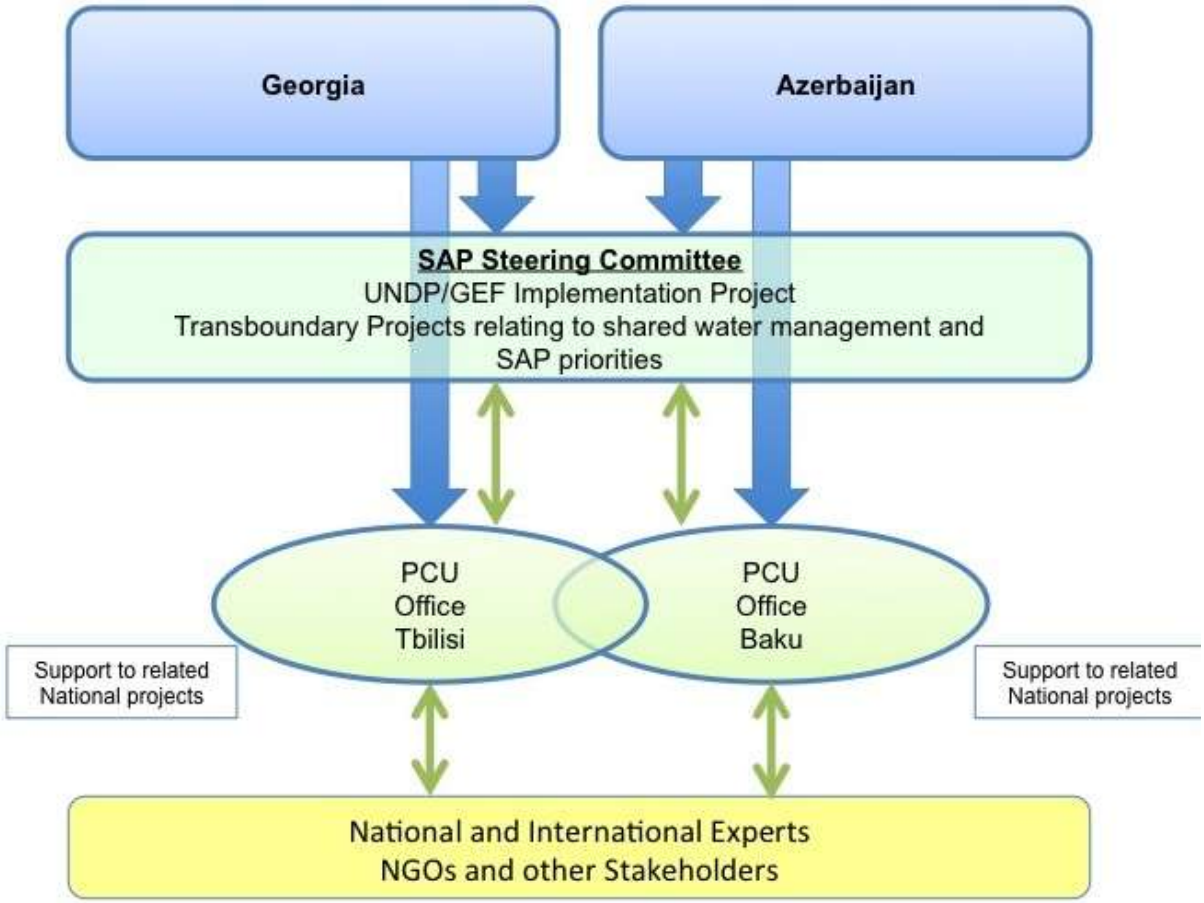
Proposed Actions for Implementation of the Institutional Framework.

The riparian states' continued commitment to harmonizing transboundary water use and management practices through the UNDP-GEF Kura-Aras Project and the other donor funded projects throughout the basin is encouraging. The SAP supports maintaining the strong, effective working relationship that has been built within each of the riparian governments towards the government-agreed Basin Vision and recommendations in the TDA, the Objectives and Outcomes of the SAP, and national level implementation plan details expanded in each of the National Plans.

The SAP is envisioned to be implemented through a multi-project coordinating body. To date, the related projects implemented by the UN, EU, OSCE, ENV SEC, OECD, WHO, UNECE and World Bank, as well as many bilateral donors coordinate sporadically with each other. In most cases the National Focal Points are the same for these projects, and while they work together informally, the SAP framework can serve to support and facilitate this coordination and develop a regulatory framework for cooperation at the national and transboundary level. The benefit would be higher levels of coordination among international donors, reduced demands on the time of National Focal Points, and improved effectiveness of efforts within each of the countries, as well as greater opportunities for coordination and information sharing within and between countries. It will also avoid any potential overlap between projects and ensure that they are complementary to each other and work in harmonized way towards achieving the national and shared transboundary objectives.

At the same time the national-level projects implemented by the donor community and the governments will continue with linkages to the implementation of the National Plans as appropriate within the specific National Plan. This will enable national-level priorities to also be realized as the countries move ahead towards strong water resources management. Autonomy of the donors as well as the independence of each of the countries and projects is clearly maintained, but where beneficial to the countries and the transboundary aspects of the basin those can be supported and facilitated upon agreement of the countries. While this arrangement exists to some degree informally now, the SAP implementation will support both coordination of the basin wide efforts as well as the national level efforts and will improve effectiveness at all levels.

The figure below demonstrates this working relationship and the central organizing role the SAP Steering Committee takes in organizing and directing the work of the Project.



4.3 Stakeholder Involvement and Public Participation

The development of this SAP has one of the highest rates of stakeholder involvement of any GEF International Waters Project. This has been done through extensive consultations with stakeholders at all levels over an extended period of time and via extended meetings between November 2011 and October 2013. These stakeholders include representatives of many government ministries, government agencies, universities, the private sector, international bodies, NGOs, and other stakeholders and national experts. In total approximately 260 stakeholders have been involved, with fewer than 20 of those from international experts, and more than 240 from within the region. It is intended that this trend in extensive stakeholder consultation and involvement will continue to be fostered and encouraged in the future implementation of the SAP.

Continued consultation between the national governments, the SAP Implementation organizations and civil society, and the wide dissemination of information to the wider public are expected as well. It encourages active public involvement in decision-making processes related to water use and management through, *inter alia,* increased participation of citizen representatives and civil society members in forums such as the National Water Policy Dialogues or the annual NGO Forums.

Public and non-governmental organizations will be an important part of the process of addressing both the national and the transboundary needs, harmonizing water management practices in the Kura Basin, and meeting existing international obligations related to water and the environment. The public's participation is needed at the international, national, and local levels:

- ***International level*** involvement focuses on coordination of actions across the entire Kura Basin, addressing Basin-wide issues such as gender mainstreaming in water management or more effective ecological data gathering and management.

- ***National level*** involvement deals with the process of enhancing each riparian states' legislative framework and institutional capacity in order to address national priorities and needs in water management. It also works to achieve wider public stakeholder involvement in the monitoring and public input into the SAP/National Plan implementation, as well as concentrated efforts to build national awareness of water conservation and climate change adaptation among stakeholders.

- ***Local level*** involvement promotes active involvement of the public in positive environmental actions and empowers those most directly affected by water use and management issues on a local level to initiate efforts for improved water management, including building on the ingenuity of communities to address challenges of climate change adaptation and improve the assessment process to include public consultations for the major water related projects.

The active participation of stakeholders at all levels will continue to be encouraged through various SAP-recommended activities including:

- Enhancement of national legal systems in order to support public initiatives and ensure the active and effective participation of non-governmental organizations in the implementation of this SAP and the associated National Plans;

- Continued governmental and non-governmental participation in National Water Policy Dialogues throughout the Kura Basin;

- Continued NGO Forums to be hosted by the Kura Project to discuss various national and transboundary priorities in water use and management;

- Dissemination of information and public awareness campaigns on proposed water use and management strategies;

- Continued support for the development, implementation, and enhancement of coordinated Master's programs in Integrated Water Resources Management in both riparian states; and

- Mainstreaming environmental considerations into educational programmes throughout both riparian countries.

All of these approaches and recommendations will ensure that the implementation of this SAP and its accompanying National Plans will be inclusive, mutually beneficial, and

cooperative at every level of water use and management. This is in line with international best practices, the riparian states' existing international obligations, and the agreed goals of harmonizing water management practices throughout the Kura Basin.

4.4 Monitoring and Evaluation for Implementation of the SAP

At the time the SAP has been drafted, there are no overarching international bodies appropriate to be charged with the monitoring and evaluation responsibilities for SAP Implementation. Also, the countries are each responsible for the implementation of national measures through the National IWRM Plans for Azerbaijan and Georgia within each of their focal point Ministries. Therefore the development of the Monitoring and Evaluation of the Implementation of the SAP will be outlined in detail within these national level plans. Future donor projects which will provide support to the countries at the national and transboundary level to the SAP implementation will hold the responsibility for monitoring and evaluation of those and will also hold the responsibility to maintain clear and open lines of communication and coordination with other donors working in the basin. This will enable the countries to benefit from coordination of donors and shared lessons learned.

In the event that bilateral organizations are formed which have close linkages to the SAP, including the possible bilateral commission between Georgia and Azerbaijan, these bodies would also be able to provide oversight for components of the SAP which are closely linked to their shared priorities. However, at this time, the national level monitoring and evaluation will be the primary mechanisms for oversight of SAP implementation.