

Concept Note for the National IWRM and Water Efficiency Plan March 2005

Explanatory Notes:

This is a Concept Note for the National Integrated Water Resources Management and Water Efficiency Plan. It contains mainly headings with some ideas on approaches to the Plan and explanation of what will be included in the Draft National IWRM and WE Plan at the end of May 2005.

It is a very initial, somewhat skeletal draft of the National IWRM and Water Efficiency Plan. It is intended for consideration, comment and discussion to gain feedback from stakeholders and water experts, leading to the preparation of the Draft National IWRM & WE Plan.

The first 8 Sections of the document mainly contain arguments and background on why the National IWRM and Water Efficiency Plan is necessary and what the main barriers to its implementation are likely to be. Starting with Section 9 is an outline of the Plan itself, with first steps identified and an initial estimate of costs of implementation.

It also contains some rough estimates of budget requirements for 2006 for the budget application of the Committee for Water Resources later in the year. Comments on these are also requested.

To be useful, this document needs to be read. There is no executive summary because the importance is in the details. It will require two or three hours of invested time to read and comment; a significant investment by busy people but an investment that will be greatly appreciated by those preparing the National Plan and by those who will be affected by the National Plan for many years to come.

Comments can be made electronically, directly in this document (please change the file name to indicate the source of the comments) and returned through email to the sender, or in a separate document and returned by email, fax or post.

Email: tim.hannan@undp.org

Fax/phone: +7 3272 739 869

Post: UNDP IWRM Project 64 Zhybek Zholy, Romm 712, Almaty

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Concept Note for the National IWRM and Water Efficiency Plan

1 Introduction and Background

1.1 The Johannesburg Directive

Over the last two decades or so concern has been growing around the world about the state of our water resources. As populations continue to rise and industrialisation spreads demands on water are also increasing. Yet the world's freshwater resource is finite and we now see that in most countries the line between supply and demand has narrowed and has been, in many cases, crossed.

At the same time widespread and uncontrolled pollution of our rivers and other water bodies continues and, indeed, increases such that the value of this precious resource declines, making it at best more expensive to use, at worst rendering it unusable or even dangerous.

The only way to improve this situation is to manage the balance between resource and demand better and to manage the quality of the waters. Through shared global experience a method or approach to water resources management has come to be recognised as the only effective one. It has become known as Integrated Water Resources Management (IWRM).

The World Summit on Sustainable Development, in Johannesburg in 2002 brought together world leaders to critically assess the state of the world in the context of economic and social development over the foreseeable future to ensure that development plans are sustainable. A key item on the agenda was water because it has been universally recognised that good access to good quality water underpins all development.

It was agreed that the concept and principles of Integrated Water Resources Management are keys to sustainable development. Hence a main directive of Johannesburg is for each country to prepare a National IWRM and Water Efficiency Plan by 2005. Kazakhstan, indeed the President himself, signed this directive committing Kazakhstan to improving water resources management by adopting the principles and practices of IWRM.

1.2 Johannesburg and Kazakhstan

This Concept Note is the first, rough draft of the National Integrated Water Resources Management and Water Efficiency Plan for Kazakhstan. A full Draft Plan will be completed by the end of May 2005, based on discussions and comments received on this document. Following the Draft will be a period of more wide ranging consultation through various forums. Based on these, the Final National IWRM and WE Plan for Kazakhstan will be completed at the end of October, 2005.

Thus Kazakhstan will have fulfilled the first step in honouring its commitment at Johannesburg. It will also be the first country in the region to have done so, opening a door to be able to assist other countries of the region to prepare their own.

1.3 Ownership and Implementation of the National IWRM and WE Plan

The National IWRM and WE Plan will be a document of the Committee for Water Resources (CWR). However, following completion of the Plan it is necessary that the Government of Kazakhstan approve and adopt it, at which time it will become an official Plan of the Government of Kazakhstan. It will then be the responsibility of the Government of Kazakhstan to implement the Plan, through the Committee for Water Resources as the appropriate implementing agency. Other ministries will also have a close involvement in the development and implementation of the Plan, as water resources management affects all aspects of life. These ministries include, but are not limited to:

- Ministry of Agriculture
- Ministry of Economics and Budget Planning
- Ministry of Energy and Mineral Resources
- Ministry of Emergency Planning
- Ministry of Finance
- Ministry of Environmental Protection
- Ministry of Health

It is important to recall that there is a new Water Code in Kazakhstan, passed in July 2003. The Water Code still needs some amendment and evolution into a stronger piece of legislation, but it does contain many elements reflecting the principles of IWRM. To date, however, very little has been done to implement the Water Code. The preparation of the National IWRM and WE Plan and its implementation can be seen simply as implementing the Water Code.

There is one notable exception to this. River Basin Councils, outlined in Article 43 of the Water Code, are being introduced simultaneously with the preparation of this National Plan.

The National IWRM and Water Efficiency Plan will outline the actions needed at the national level to implement and establish the principles and practice of IWRM in Kazakhstan, which is much the same as implementing the Water Code.

1.4 Support for the Preparation of the National IWRM and WE Plan

The Committee for Water Resources is being assisted in the preparation of the National Integrated Water Resources Management and Water Efficiency Plan by the UNDP through the 'Project for a National IWRM and Water Efficiency Plan for Kazakhstan'. Its main funding is from the Government of Norway, with additional financial assistance from the UK Department for International Development and assisted by the Global Water Partnership (GWP).

Following the completion of the National Plan the Project will continue to support and assist the CWR in other, related project objectives including the preparation of River Basin IWRM and WE Plans for the eight river basins of Kazakhstan. These are a necessary follow-on from the National Plan as they will define a programme of actions required at the river basin level. The first principle of IWRM is that the river basin is the correct unit for water resources management.

The Global Water Partnership, through its affiliated country partnerships (specifically, in this case, the Kazakhstan Water Partnership) are facilitating the process of

ensuring that all countries prepare their IWRM Plans. The GWP prepared two documents as general guides to preparation of the plans^{1,2} which has been followed in the preparation of this document. They will continue to be followed throughout the preparation of the National Plan and the subsequent River Basin Plans.

¹ Guidance in Preparing a National Integrated Water Resources Management and Efficiency Plan: Advancing the WSSD Plan of Implementation, Version 1 April 2004, GWP Technical Committee (available online at www.gwpforum.org)

² Catalyzing Change: A handbook for developing integrated water resources management (IWRM) and water efficiency strategies, November 2004, GWP Technical Committee

2 Why IWRM in Kazakhstan?

2.1 General

Every water resources professional, every water service provider, every environmentalist or ecologist, anyone visiting most rivers or lakes, anyone using water for domestic purposes outside of the two main cities or anyone using water for irrigation is aware that there are significant problems with the way the water resources are managed in Kazakhstan. They also know that the state of the water resources negatively affects the health of the people and retards the economic and social development of Kazakhstan and it squanders Kazakhstan's resources, taking them away from future generations.

Those who do not appear to know this are the decision makers within the Central Government who consistently refuse to acknowledge these facts by refusing to invest in managing the water resources.

As Kazakhstan continues to develop economically and socially the question arises – do we wish to still have poor water in Kazakhstan 10 or 20 years from now? There is an opportunity now to take advantage of the global initiative to implement IWRM because of the support it offers through shared experiences among countries working toward IWRM and through projects such as this one to assist in identifying and planning the way forward.

2.2 Summary of the Current Situation in Water Resources Management

Currently in Kazakhstan water resources management is best described as being fragmented, underfunded and poorly governed, as illustrated by the following examples.

1) Fragmented – as illustrated by:

- the placement of the Committee for Water Resources within the Ministry of Agriculture; with irrigation a sub-sector of the overall water sector and the major user of water, a condition is created of both a conflict of interest (in which the one consumer is also the manager and regulator of all consumers), and a lack of interest (in which the CWR is considered of only secondary interest to a Ministry whose primary concern is developing agriculture).
- the separation of the monitors of water – both quantity and quality (mainly Kazhydromet) – from the managers of water (CWR and RBOs) into separate ministries and creating conditions which effectively block the water managers from access to water information
- the separation of the organisation managing the quantity of the resource (CWR and RBOs) from the organisation that manages (only partly) water quality (Ministry of Environment and its oblast Departments of Environmental Protection) and creating conditions of poor or no coordination or cooperation between them. This separation has contributed to the existing situation in which no organisation

is actually responsible for the management or improvement of water quality in rivers and other bodies.

- the separation of the organisation that manages surface water (CWR, RBOs) from the organisation that manages groundwater (Committee for Geology) and creating conditions that limit coordination between them, resulting in surface water being used for domestic use where groundwater may be more appropriate.
- poor coordination between and among water service and sanitation providers resulting in the situation of dumping untreated or insufficiently treated sewage into rivers requiring a greater level and expense of treatment for reuse downstream.
- annual winter flooding on the Syr Darya, caused by a number of factors including a new release regime for generating hydroelectricity in Kyrgyzstan combined with the hydraulic effect of diversion structures for irrigation. Partly this is an international, transboundary issue but certainly an example of sectorally fragmented management.

The above examples are a result of decisions which affect water and its management being taken at a level above the professional water managers without consultation with those managers. In other words, the decisions are based on an incomplete understanding of how a river basin works and what efficient water use and efficient and effective management are.

2) Underfunded – as illustrated by:

- Deterioration of the capacity of the CWR and RBOs through declining budgets throughout the 1990s and continuing to the present. The water resources management organisations of Kazakhstan now have staffing levels of about one tenth of their former strength with most good specialists having already left. RBOs are now not able to carry out their functions as the only water resources managers in the country.
- Deterioration of the water monitoring network (both quantity and quality) due to the ill considered change of Kazhydromet's status to a State Enterprise, requiring it to make profits with a product (water information) which has no monetary value.
- RBOs formerly had the responsibility to manage water quality but, through underfunding, this very important function has been removed and no other organisation has been given the responsibility. The result is that no one manages water quality and all the rivers and lakes of Kazakhstan are a testament to this.
- Kazakhstan used to be well known for its high quality, water related research and academic institutions that carried out the water research necessary to manage the resource and to produce generations of professional water managers, water quality experts and other professionals. These institutions have also been reduced to barely functional. Little research is now being conducted but, perhaps more importantly, the next generation of water management professionals are not now being trained. This is an education gap which will take many years to rectify.
- Low salaries and status of staff of the water resources management organisations have led to low morale, with better staff leaving for the private sector or other areas and a working environment not conducive to initiative or

innovation. Low government salaries are not unique to the water management sector and extend to most (but not all) government organisations. Low salaries mean an inability to attract competent staff.

These are a few examples of a far-reaching, widespread problem. The main reason for the continuing underfunding is that water resources management is not seen as a revenue earning area. However, this is a simplistic view of a more complex economic truth, which is that effective and integrated water resources management saves significant amounts of money – far more than the expense of supporting it. It does this through:

- eliminating expenditures on poorly considered infrastructure which does not serve the purpose intended
- reducing the escalating costs of infrastructure for increasing the supply by concentrating on far cheaper interventions for reducing demand
- reducing the costs of treating water for domestic and other uses through reducing pollution in the rivers by municipalities and industries
- eliminating guesswork made necessary through removing access to information by water managers
- reducing land degradation and consequent loss of agricultural land and domestic and foreign income from agriculture caused by overuse of irrigation water

3) Poorly Governed – as illustrated by:

- All of the above. Water resources are managed to only the most basic extent in Kazakhstan, mostly due to lack of support of and interest in water resources on the part of the Government. The organisations involved in water resources management, mainly the CWR and RBOs but also including DEPs, Hydromet and many others, suffer from: inadequate staff numbers, inadequately trained staff, low salaries, poor budgets, insufficient equipment, all leading to low morale and a growing difficulty in recruiting new staff.
- There is a new Water Code which required a lot of work by a lot of people to draft, review and pass into law. However, to date nothing has been done to implement it and there appears to be no specific plan to do so and certainly no money to do so. Without implementation the Water Code is without value.
- An additional feature of water resources management in Kazakhstan is that it is 'supply oriented', which means that there is a continual push to increase supplies rather than assessing water demands and questioning whether they cannot be reduced. There needs to be a balance between the supply side and a 'demand management' approach. The supply side approach invariably means emphasising expensive infrastructure which may be unnecessary if the demand side were better managed.

2.3 Example Consequences of the Current Situation

There are many consequences of a fragmented, sectorally driven, poorly funded, poorly governed water resources management system. A few to highlight in Kazakhstan are:

- The environmental disaster that is the Aral Sea, bad enough as an environmental and social disaster, but with the addition of the huge costs associated with attempts to stop or slow the damage and reduce the impact of the problem. Foreign aid support to alleviate the problem amounts to about \$40 million over

the 10 years to 2002, with significant additional funds from the Government of Kazakhstan on such projects as the dam separating the North Aral Sea from the rest.

- The concern over Lake Balkash and the potential for a disaster similar to that of the Aral Sea has not yet led to any concrete action to improve the situation, either in terms of stopping the pollution from the copper mining activities and agriculture or to manage Kapshagai Reservoir in an environmentally safe way.
- Continuing desertification of agricultural lands associated with overuse of water for irrigation, and the consequent drainage problems.
- Poor and deteriorating water quality in every significant water body in Kazakhstan.
- Apparent water shortages where the actual total resource appears sufficient.
- Irrigation demands that are several times higher than in other regions of similar crops and climates.
- Vast amounts of money have been spent on large infrastructure which would be unnecessary if managing water demands were given the right attention.

An integrated approach, in which the river basin is managed holistically, with input from the water user stakeholders and ensuring environmental sustainability, would resolve many of the above problems.

3 What is the National IWRM and Water Efficiency Plan?

3.1 Purpose and Objectives of the National Plan

The National Integrated Water Resources Management and Water Efficiency Plan will be followed by professional water managers and other specialists to implement real, functioning IWRM in Kazakhstan.

The National Integrated Water Resources Management and Water Efficiency Plan is prepared by, and is a document of, the Committee for Water Resources. However, it is a Plan for all of Kazakhstan, for all water users:

- for Kazakhstan's environment and those who look after it and care for it
- for the general public who reasonably and rightly expect to have clean, healthy water available to them
- for industries and agriculture which will continue drive Kazakhstan's economic growth

The main purpose of this Concept Note is to present the basics and purpose of the Plan mainly to non-water professionals who are involved with water through their own disciplines and responsibilities. Especially, this document argues the case for implementing IWRM and improving water use efficiency in Kazakhstan to the decision makers who will back the Plan. Without the financial and organisational backing of the Government of Kazakhstan, through its various ministries as listed in Section 1.3, implementation of the Plan will fail, which means a failure to live up to the commitment to the Johannesburg Directive.

The National Plan defines what steps and actions are needed at the national level to support effective and integrated water resources management at the river basin level, where hands-on management is done. Following approval and adoption of the Plan by the Government, it will be the responsibility of the CWR to implement it, but the responsibility of the Government to finance it.

The National IWRM and WE Plan is a first step in a process of establishing IWRM and improving water use efficiency in Kazakhstan (see Section 5.1 for a description of the overall vision). It outlines other steps, even if it does not detail all of them. The National Plan points to other plans, strategies and programmes that are either underway or need to be initiated. Implementation of the Plan must follow if the people of Kazakhstan are to have clean and sufficient water to use and a healthy environment in which to live.

The National Plan is about water governance. Its focus is on how to get management structures working better. It is about how to achieve integration. As had been stated earlier, the 2003 Water Code contains many elements which adhere to the principles of IWRM. The first and biggest step in improving water governance is to commit to implementing the Water Code. If implementing the Water Code is taken seriously by the Government, the details of putting IWRM into practice will follow.

Implementing IWRM does not mean throwing away all current practices and adopting new. In Kazakhstan, some of the most basic elements are in place. For example:

- the River Basin Organisations are in place, but need strengthening and capacity building;
- the Water Code defines specific elements of IWRM (though they are not described as such) now it needs to be implemented;
- there is a growing understanding in civil society that the water environment can be managed better, but this understanding needs to be better organised and mobilised.

Rather, implementing IWRM means adapting and improving existing practices, making major changes only where and when they are necessary.

3.2 A Note on the River Basin IWRM and WE Plans

Following the preparation, approval, adoption and financing of the National Plan will be the preparation of River Basin IWRM and WE Plans for each of the eight river basins of Kazakhstan. These are specifically basin oriented and focus on issues and concerns in the respective basins (see Section 5.1 for a description of relationship of the National Plan, the River Basin Plans and other, related planning within the overall vision).

Where the National Plan is about water governance at the national level to build capacity in the water resources management organisations, the River Basin Plans are about governance at the river basin level and hence will share aspects of the National Plan. Preparation of the River Basin IWRM and WE Plans will begin in late 2005 during the approval process for the National Plan. By March 2007 they will fully replace the Annual Reports currently prepared by the RBOs. However, that work is for later - this document focuses on the National Plan.

3.3 Importance of the Time Scale of the National IWRM & WE Plan

While the National IWRM and Water Efficiency Plan is being prepared this year, it presents a strategy for establishing or implementing IWRM and improving water use efficiency over several years (the proposed target is 20). Therefore we need to have a vision of the future in which water is managed properly and used rationally. The National IWRM & WE Plan must always keep that in mind. This requires looking at, for example, what irrigated agriculture is likely to be in the future. They are likely to be larger, more industrial and more business oriented, rather than the small subsistence farms which dominate the present agricultural landscape.

There are important questions to consider regarding this, such as:

- Will Kazakhstan continue to subsidise small farmers 20 years from now?
- Will the Ministry of Agriculture continue to allow farmers to damage land resources through overuse of water?

Industries will make greater demands on water resources necessitating the improvement of water use efficiency within them. Choices also present themselves here, such as:

- Will Kazakhstan continue to allow industries to pollute rivers and other water bodies 20 years from now?

- Will there be new industrial legislation and policies which pave the way for improved water use efficiency and methods of disposing of waste?

Simultaneous economic and social development and the establishment of IWRM will mutually drive each other. As prosperity grows, driven mainly by the private sector, people will begin demanding improvements in their environment, including improved water quality, improved environmental conditions, etc. There is little doubt that the public's answer would favour change. It is now only a question of whether the government will respond in the form of action on improving water resources management – action that needs to begin now.

The main point of this discussion is that it is not what we do and are able to do now that is important but rather what we want to do and be able to do in the future.

4 What is Integrated Water Resources Management?

4.1 Definition of IWRM

Integrated Water Resources Management (IWRM) is the term given to what is now considered best practice in water management. Specific definitions have evolved over the 13 years since the Dublin Principles³ were first put forward. At the Rio Conference later in the same year, six basic principles of IWRM⁴ were presented and they provide a good founding in what is meant by IWRM:

1. The river basin is the correct administrative unit for managing water.
2. Water resources and the land which forms the river basin area must be integrated, in other words, planned and managed together.
3. Social, economic and environmental factors must be integrated within water resources planning and management.
4. Surface water and groundwater and the ecosystems through which they flow must be integrated within water resources planning and management.
5. Public participation is necessary for effective water resources decision making. It requires good public awareness and understanding so that participation is informed participation. (Because water is managed for the sole purpose of providing water to the people and the environment in which they live.)
6. Transparency and accountability in water management decision making are necessary features of sound water resources planning and management. (Transparency means the people need to be informed about the options in water management to be able to respond to decisions made about their water. Accountability means the public has the right to question and complain to responsible organisations and those organisations need to answer to their clients – the public.)

However, IWRM is not intended as a dogmatic framework to be strictly adhered to around the world, but rather a flexible approach based on the above principles which can be adapted to the needs of the individual country.

Implementing IWRM primarily means integrating government policies with each other, with the impact on water resources in mind. This means economic and social development policies, agricultural policies, industrial policies, health and social welfare policies, etc. A few examples pertinent to Kazakhstan are:

- integrating agricultural policies with environmental policies – it is essentially impossible to improve water quality in rivers or to restore and maintain wetlands and other water bodies in irrigated agricultural areas where drainage is not

³ The Dublin Principles arose from the International Conference on Water and the Environment in 1992.

⁴ These principles evolved from the Dublin Principles at the Conference on Sustainable Development in Rio, also 1992.

effectively dealt with and water is overused. The situation on the Syr Darya is a prime example of this.

- integrating agricultural policies with international, transboundary policies – demanding more water from upstream countries is difficult to support when so much water is wasted and polluted here in Kazakhstan.
- integrating agricultural policies with water management policies – there are many ways to reduce and rationalise water use in agriculture. All require good coordination between the irrigation service providers, agricultural extension and water resources managers.
- integrating environment with industrial policies to reduce pollution – it makes little economic or environmental sense to allow industries to pollute water bodies, only to have to clean the water up again to use it for other purposes downstream.
- integrating environment and municipal water and waste management policies – as for industry above, it makes little sense to pollute here then clean up there; it is better and cheaper not to pollute in the first place.
- integrating poverty reduction policies with water policies – ensuring clean, safe and sufficient water supplies to all people is a prerequisite to economic and social development at every level.
- integrating the Water Code with the Environment Code – the 2003 Water Code lays the foundations for establishing IWRM in Kazakhstan. Now almost two years later, very little of the articles in the Code have been implemented. There will be a new Environment Code in 2006 which will profoundly affect water management. However, the water management organisations are not involved in the development of the new Environment Code.

Kazakhstan needs to implement the principles and practice of IWRM because of the severe environmental, economic and financial consequences that the current fragmented and underfunded approach to water management has had on the country (see Section 2.3). Such consequences will continue and worsen into the future if no action is taken.

4.2 Definition of Water Efficiency

Water efficiency is simply a term to express the use of water in the least wasteful way; in other words, maximising water's potential. The GWP refers to two different aspects of water efficiency: *technical efficiency* and *allocative efficiency*.

Technical efficiency refers to the use of water in an area or sub-sector while minimising waste. Technically, this requires *demand management* interventions.

Example: In Section 12.1 a table is provided showing the breakdown of water use by sub-sector. Irrigated agriculture in Kazakhstan uses just over 70% of the total water consumption of 11,000 MCM annually (2002). Irrigation has an overall efficiency rating of about 25%. This implies that 75% is not used by the crop and is hence wasted. With the type of irrigation infrastructure in place in much of Kazakhstan's irrigated areas the best efficiency rating that can be reasonably achieved is about 50%. A simple calculation shows the impact on the overall resource, however. With

total consumption at 11,000 MCM and an increase in efficiency of 20% results in a water saving of 5700 MCM per year; 10 times that which could be saved in the domestic sector and more water that is currently used by all non-irrigation users of water combined.

This is not to argue that efforts to improve water use efficiency should not be undertaken in the domestic subsector, but is used only to show context when considering where to concentrate efforts. Contributions in water saving from all sub-sectors are important to the water resources of Kazakhstan.

Allocative efficiency refers mainly to economics, allocating water to the highest value water users. Naturally this assumes that environmental and social needs goals are met prior to restructuring allocations on the basis of economy.

Example: Using irrigated agriculture again as an example, 70% of the total water consumption in Kazakhstan generates less than 10% of the total economy. By comparison, industry generates about 30% and uses 24% of total water use. By saving the 5700 MCM described above through improvements in *technical* efficiency there would be significant improvements in allocative efficiency as well.

4.3 IWRM and Flooding

While flooding is usually considered peripheral to water resources management (because it is not a water user) flooding, especially on the Syr Darya and other parts of south Kazakhstan, is a water resources issue and a transboundary issue. The Draft National IWRM and WE Plan will contain a section on flooding.

4.4 Gender and Water Resources Management

This section will describe and define the gender related issues in water resources management and what should be addressed to improve them. A report on gender issues has been contracted and will be completed in time for the Draft Plan.

4.5 Considerations of Economic and Social Development

As economic and social development continues in Kazakhstan the distribution of water demands will change:

- domestic water in both the urban and rural sub-sectors will increase as more people gain access to clean water in their households
- greater demands will be made on rivers and lakes for recreational purposes and people will demand cleaner water and cleaner environments
- environmental flows in rivers will finally be taken seriously, increasing environmental demands
- greater demands will likely be made in the industrial sub-sector, including the commercial sub-sector
- irrigated agriculture is likely to decline in its overall water use as efforts are put into improving water use efficiency and as farms become larger and less subsidised

Water resources management must improve and develop faster than the economy so as not to be a hindrance to its growth.

This Section will describe in more detail the need for timely water resources improvement and capacity building to effectively manage the changing face of water use.

4.6 Future Water Demands and Resource Protection Needs

This section is closely related to the Water Efficiency part of the National Plan. Future water demands are not likely to be met unless steps are taken to reduce waste of water through improving water efficiency.

Water resources demands will continue to rise in various ways across the sub-sectors of water:

- Industrial expansion is likely to be driving a good portion of economic growth in the foreseeable future and will require increased water resources unless accompanied by improvements in water efficiency and reduction in total consumption. Water resources management should not be allowed to be a barrier to industrial development.
- Over the next 10 years there will be increasing water demands in the domestic sub-sector due to the achievement of the MDGs for water supply and sanitation to 2015. The MDGs cover only half the population of those who currently don't have sufficient access to water and sanitation. Beyond that, for another 10 or 15 years, the initiatives implied in the President's Vision for 2030 will continue the process of getting water to the people. This implies more people connected to a central system as well as an increased level of service. Per capita consumption will rise as well as the number of people. These new demands need to be met.
- If there is to be expansion of irrigated agriculture there will need to be a coincident reduction in water consumption per unit area.

All of the above also have implications with regard to protection of water resources:

- With an increase in industrial activity there will be a consequent increase in industrial pollution unless legislation is passed and enforced to stop it.
- An issue even now in the urban water supply and sanitation sub-sector is that waste water is disposed of into rivers with either insufficient or no treatment. As the number of people connected to central sewage systems increases, it will be increasingly necessary to ensure proper treatment of waste water prior to disposal.
- Overuse of water for irrigation damages soils and reduces the future potential for agricultural expansion. Improving water use efficiency not only save water, it saves soil.
- Watershed protection needs to be addressed to ensure water is environmentally safe and ecologies healthy. Solid waste management, for example, needs to be given serious consideration as populations grow and increasing prosperity directs Kazakhstan toward a more 'disposable' society.

The above issues are examples of what water resources managers will need to deal with in the short and long term.

5 IWRM in Kazakhstan – The Overall Vision

5.1 IWRM at the National Level

Achieving sustainable water resources management in Kazakhstan is seen as a long term goal and there are several steps in the process. The four main, or large scale, steps are outlined below and presented graphically in Figure 5.1. The steps illustrate how the main outputs of our project coordinate with each other and with other water management planning activities in Kazakhstan.

We can describe the long term goal as achieving real sustainable water resources management in Kazakhstan, possibly defined as for the European Union Member States (EU) Water Framework Directive (WFD), which is a 'good status' rating for all water bodies. This will take time to achieve and it is reasonable to aim at a target date of 2025.

It is important to note in Figure 5.1 that the 2003 Water Code is illustrated as underpinning the whole of the process. It has been stated several times previously in this document that implementing the National IWRM and WE Plan is essentially implementing the Water Code.

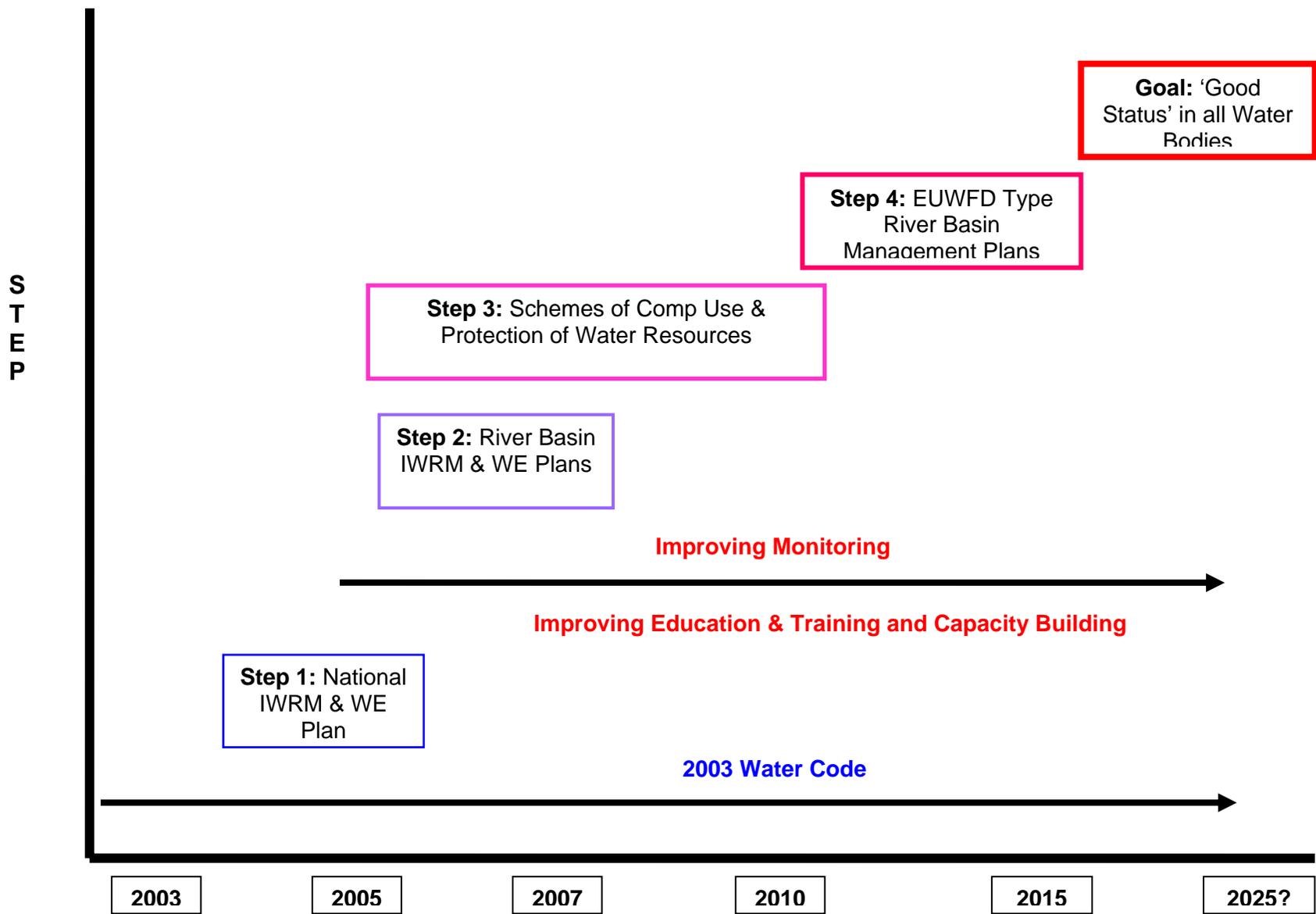
These are the main steps to achieving the long term goal of good water status which is achieved by implementing IWRM in Kazakhstan. IWRM can only be implemented through the actions outlined in Sections 9 through 14 of this document.

Step 1. National IWRM and Water Efficiency Plan (2005)

The National IWRM and Water Efficiency Plan is a CWR document approved by the Government which describes first steps action how to establish and implement IWRM in Kazakhstan. It is primarily institutional, organisational and financial in focus, as opposed to infrastructural or operational. It defines what is required in terms of law, policy, intervention from Central Government, financing and budgets, capacity building in the water resources management and other organisations as well as other administrative and organisational aspects. It lays out these aspects as a plan or strategy with a defined time scale, specified milestones and indicators of progress. The National Plan focuses on what is need at the *national level*, to support actions both at the national level and at the river basin level.

The National IWRM and Water Efficiency Plan is being prepared within the Project. The first draft is scheduled for the end of May 2005, with the final in October 2005 following a period of stakeholder consultation. The Plan will then need to go through a process of approval and adoption by government. This may take a further six months, so an anticipated adoption by spring of 2006.

Figure 5.1: Proposed Stepped Progression from the National IWRM and WE Plan to 'Good Status' in all Water Bodies



Step 2. River Basin IWRM and Water Efficiency Plans (2005 to 2007)

The River Basin IWRM and Water Efficiency Plans are similar to and follow the National Plan. They must follow (rather than precede) the National Plan because there are many interventions and changes in policy or law which need to be at least agreed and approved by Central Government (if not actually implemented) before certain actions can be taken at the river basin level.

Similar to the National Plan, the River Basin IWRM and Water Efficiency Plans are oriented to institutional and organisational aspects, including capacity building and budgeting, rather than infrastructure or operational needs. They lay the foundation on which more detailed plans will be based.

Preparation of the eight River Basin IWRM and Water Efficiency Plans will begin in November 2005, immediately following the completion of the Final National Plan. They will be completed by March of 2007, replacing at that time the Annual Reports which are currently prepared by each RBO.

Step 3. Schemes for Comprehensive Use & Protection of Water Resources (2005 to 2010)

The Schemes for Comprehensive Use and Protection of Water Resources are detailed basin plans covering essentially every aspect needed to ensure that the resources are available to meet the needs of the water users into the future. In that respect they are much like what are often called Master Plans. The Schemes look at how rational use and protection of water bodies will be achieved as well as how to prevent the deleterious effects of water (for example flooding). They are mainly oriented to technical solutions for: ensuring availability of water and ensuring water is of good quality, the water balance of the basin, infrastructure requirements, etc.

They have aspects of the institutional, organizational and legal, but these are mainly restricted to recommendations rather than a defined series of steps to improve them. The River Basin IWRM and WE Plans reinforce the Schemes in that they directly address the institutional, organizational and legal. In many cases the Basin IWRM & WE Plans will be completed before the Schemes, in which case the Schemes can easily absorb and add to the IWRM Plans. The CWR plans to prepare a General Scheme in 2006 to support and guide Schemes being prepared in the river basins.

The Schemes were an anticipated part of the work of RBOs from their inception, but only one was actually completed, and that was in 1989. In 2004 the Scheme for the Irtysh River Basin was begun and will be completed during 2005. Work to prepare Schemes in two other river basins will begin in 2005 and will be followed in other basins 2006 and beyond until Schemes for all river basins are complete, likely by 2010.

Step 4. Adapting the EU Water Framework Directive to Kazakhstan (2010 to 2015)

The European Union (EU) Water Framework Directive (WFD) is perhaps the most important development in water resources management legislation anywhere. While legally it is confined to the EU states, the WFD approach is already becoming the World standard. It is likely that Russia, for example, will adopt it sooner rather than later.

Adapting the WFD and applying it to Kazakhstan will require some time because it will be necessary to first build capacity within the water resources management organisations and establish at least the basic IWRM principles. This will be done through the first three steps outlined above.

The WFD is also relatively new, coming into force in December 2000, with a plan for action developed in 2001. It aims to prepare first draft River Basin Management Plans (RBMPs) in all EU member countries by 2006, and full scale RBMPs by 2009. These dates coincide well with those planned for the National and River Basin IWRM and WE Plans and the completion of Schemes in all basins. Taking the Schemes to something more in line with a RBMP as defined by the WFD, is a good progression for water resources management in Kazakhstan.

The fundamental point of the WFD is that water and the environment or ecology are seen as one and the same in terms of their management. The overriding objective of the WFD is to achieve "good surface water status" and "good groundwater status", and also to prevent deterioration in the quality of those waters, which are already "good". A major improvement in the WFD over earlier legislation and approaches is that ecological quality becomes the key means by which water bodies will be assessed, moving away from the more traditional assessment of chemical quality.

River Basin Management Plans

In Europe, the River Basin Authority (essentially the same in principle as a RBO in Kazakhstan) is responsible for producing a River Basin Management Plan (RBMP) for the basin. This is the main mechanism to outline how the authority will achieve the European Union Water Framework Directive water management and environmental objectives. The main elements (but not the only elements) of the RBMP are to define:

- Characteristics of the river basin
- Environmental monitoring data
- Details of the impacts of human activity (e.g. abstractions, pollution, etc.)
- Analysis of the economic usage of water
- Strategic plan for achievement of sustainable water use
- Strategic plan for the achievement of "good water quality status."

It is important to note that in all RBMP components, improving institutional and organisational aspects are a key part. That said, it can be seen that the RBMP is not greatly different from the combined Schemes and River Basin IWRM and WE Plans proposed for Kazakhstan – simply more technically detailed and with a differing approach to water quality and good ecology that Kazakhstan has at present. It is more a matter of expanding the technical approach to river basin management planning once the technical, financial and organisational aspects of water management have been improved.

This last of the four steps leads to the overall goal of the achievement of 'Good Status' in all rivers and other water bodies by 2025.

It is important to take note, in Figure 5.1, of the time line for Improving Monitoring and Improving Education and Training and Capacity Building. Without these in place establishing IWRM in Kazakhstan will be impossible. Good management requires good information and qualified, well trained and educated people.

5.2 IWRM at the Regional (International) Level

Management of water on transboundary rivers is of great importance to Kazakhstan because almost half of its total water resource arrives across its borders from neighbouring countries with a significant proportion flowing out to neighbouring countries. The quality of water entering Kazakhstan is of generally poor quality having already been polluted by industries, agriculture and municipalities before hand. Similarly Kazakhstan further pollutes these rivers before they cross to other countries. Kazakhstan needs to be concerned about both its somewhat vulnerable position as a downstream riparian and its responsibilities as an upstream riparian.

Over the last decade or so, several attempts have been made at creating multilateral agreements on transboundary water sharing of the major rivers, mostly led by the international donor agencies. The key initiatives are:

- The 1998 Framework Agreement on the use of the water and energy resources of the Syr Darya. Now seven years old, it has never been implemented because of conflicting interests among the countries and interests appear to be diverging. There are now studies going on to try to improve the Agreement but implementation is unlikely in the near future.
- The Central Asian Cooperation Organisation (CACO) was subsequently formed between Tajikistan, Uzbekistan, The Kyrgyz Republic and Kazakhstan. The aim of CACO is broader, focusing on regional cooperation in water and energy, transport and food security.
- A Water Energy Consortium (WEC) is now being considered under CACO in an attempt to drive progress on agreements in water and energy cooperation. Initiatives continue under the WEC: Water / Energy Nexus studies to try to secure renewed interest in the 1998 Framework Agreement and the Regional Electricity Export Potential Study.

While continuing these initiatives is important there are varying levels of interest from the governments of the countries involved and we are now in a period of what may be described as stagnation. Recent CACO meetings have been poorly attended and no progress has been made recently on sharing of water resources.

The limited progress on multilateral water sharing agreements highlights several important points with regard to water resources management in the region and, especially, in Kazakhstan. These are:

1. Multilateral transboundary agreements are likely to be many years away

It appears that some of the governments of the Central Asian Region are not ready to enter into resource sharing agreements at this time. Kazakhstan is not in a strong bargaining position on the water sharing issue and must move forward on its own to improve water management at home.

2. Each country in the region needs to improve its own management first

Before international agreements can be implemented and effective the water management organisations within the respective countries must be competent and capable. National water management improvement programmes are necessary prior to workable international agreements because they result in the need for technical interventions at the river basin level.

At present the River Basin Organisations of Kazakhstan need substantial capacity building to support whatever outcomes international agreements may have.

3. Transboundary agreements are unlikely to result in Kazakhstan receiving more water

No assessment of the water resource issues on a regional level could conclude that Kazakhstan is likely to or is entitled to a greater share of the resources than they are receiving now. Kazakhstan must accept that future water resources will not be greater than they are today. It follows that any increases in water demands must be met without a larger resource base; they must be met with savings made through increases in water use efficiency. Fortunately, the potential for such savings is vast given the currently very poor efficiency of water use, especially in the irrigated agriculture sector.

4. Water quality may be the biggest issue in transboundary waters

Virtually all water entering Kazakhstan is of poor quality. This has significant cost and technical implications as well as environmental and ecological ones.

5. Simpler, bi-lateral water sharing agreements may be a good first step

There are already several water sharing agreements in place between Kazakhstan and Russia, but they are generally weak and of short term. Longer term agreements are desirable so that Kazakhstan can have confidence in its water resources and be able to plan economic development accordingly. The existing agreements do not cover water quality and efforts should be placed on improving this aspect.

Developing bilateral agreements and learning from them, perhaps initially on smaller rivers and growing from there, may pave the way for future multilateral agreements. Also, bi-lateral agreements should initially focus on a small number of specific problems where agreements may be made fairly easily, rather than attempting an all-encompassing agreement. It is valuable to create an atmosphere of cooperation before embarking on major agreements, which is easier to achieve over smaller issues.

6. Kazakhstan will be in a better position to discuss water sharing relations with its neighbours if and when water is better managed in Kazakhstan

While Kazakhstan complains at the quantity and quality of the water coming across its borders from neighbouring countries, it subsequently wastes and further pollutes that water before it flows into other countries. This puts Kazakhstan into a poor bargaining position which will improve what water is not so badly wasted and polluted here.

7. Kazakhstan cannot afford to wait on international water sharing agreements

Kazakhstan manages its water resource very poorly. Water use efficiency is extremely low across the water sector. Virtually all water is badly polluted and pollution is completely unregulated or, to put it another way, out of control. Kazakhstan cannot continue to rely on getting more or cleaner water from the transboundary rivers.

One example of the difficulty in forming water sharing agreements is the length of time it has taken to make a bi-lateral agreement with Kyrgyzstan on sharing water in

the Chu-Talas Basin. The authority to set up the Chu-Talas Commission was given in 2000. Over several iterations the statutes of the Commission developed but in fact weakened and took a retrograde step in the latest version in 2004. Now, 5 years from its inception, ratification of even this reduced version of the statutes has been ratified by the Kyrgyz Prime Minister but, as yet, not by the Kazakhstan side.

If it takes five years for an agreement to share water with one country on simple and small rivers like the Chu and Talas, how long is a multilateral agreement on a river like the Syr Darya going to take?

8. Kazakhstan must also live up to its own obligations as an upstream water user

This is mainly for the rivers flowing into Russia. Using the Irtysh as an example, it comes into Kazakhstan from China already very polluted. It is then further polluted by activities in Kazakhstan, especially by the main cities and industrial complexes on the Irtysh (not to mention the radioactive pollution from the Polygon at Semipalatinsk) before the waters enter Russia. This raises the important question – can Kazakhstan reasonably point a finger at China on pollution related transboundary issues while doing the same thing China is?

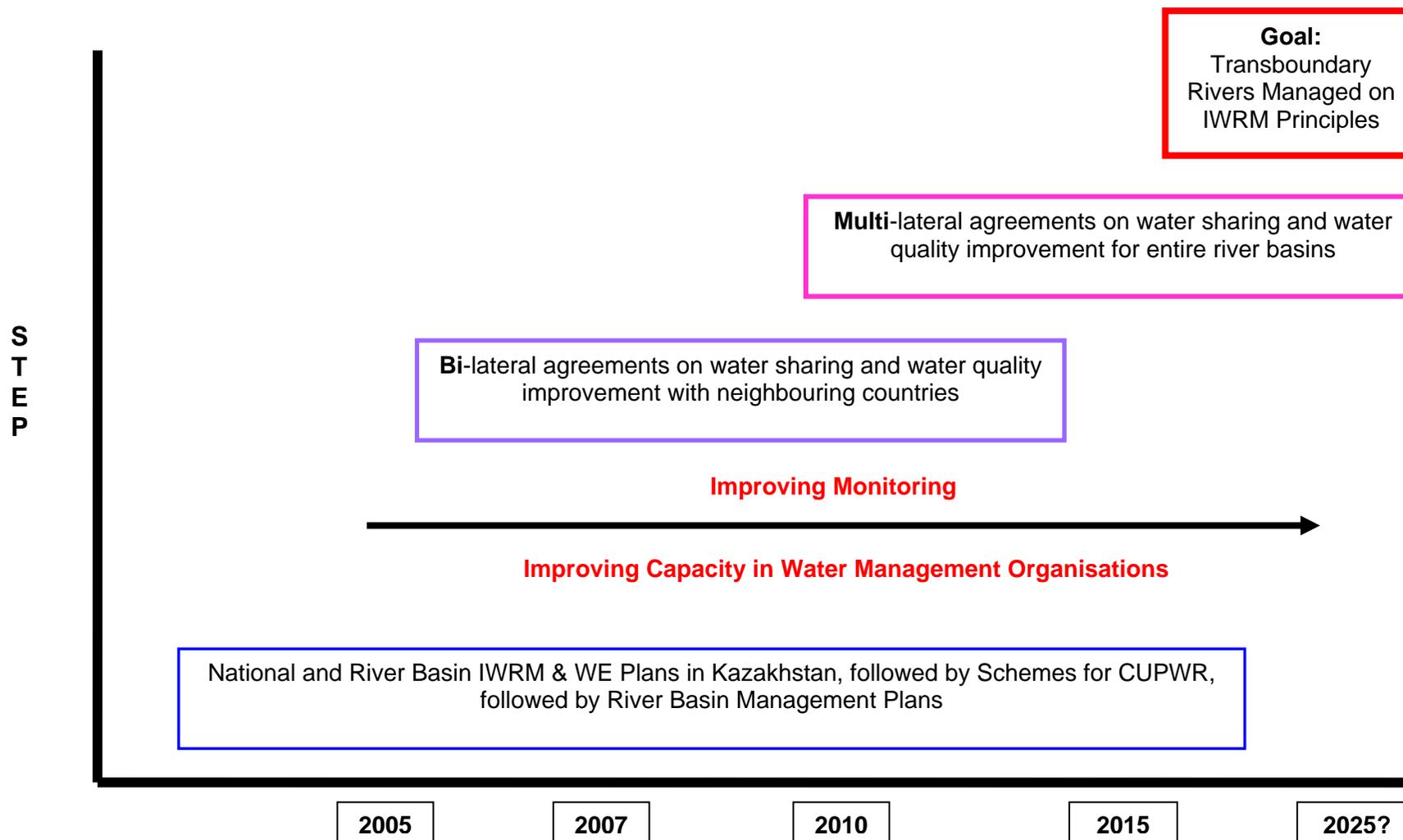
Given the above important points it is necessary to coordinate the improvements in water resources management in Kazakhstan (outlined in the National IWRM Plan) with Kazakhstan's initiatives on improving regional cooperation on transboundary rivers. However, priority should be placed on improving water resources management in Kazakhstan. Figure 5.2 below presents graphically the proposed coordination of national and regional approaches to integrating water resources management. In this proposal, the National Plan acts as a catalyst through which Kazakhstan reduces its current reliance on international agreements and at the same time make water management organisations ready to act on and implement international agreements once they are in place.

Figure 5.2 also indicates the need for improving capacity in the water management organisations. The needs of capacity building are outlined in Sections 9 through 14 of this document. This includes education in international water and environmental law to give Kazakhstan a strong position in negotiating with its neighbours. It will take several years to educate water and legal experts so beginning a programme of education now is necessary.

Consideration also needs to be given to important transboundary related documents such as the 1999 Protocol on Water and Health, the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and others.

The Final National IWRM and Water Efficiency Plan will include a data base of references and internet hyperlinks specific to information on transboundary issues.

Figure 5.2: Proposed Progression from the National IWRM and WE Plan to Transboundary Management of Rivers



6 Key Areas of Initial Focus

International experience has shown that the process of developing and implementing a National Plan can be made more efficient by focusing first on key areas. Although these may not cover all aspects that need to be improved, they provide a focus for the initial steps, getting the Plan implementation started and allowing other important areas for improvement to follow. The following are four key areas proposed for the Kazakhstan National IWRM and WE Plan.

6.1 Instituting Management of Water Quality and Ecology

The one issue in water management in Kazakhstan that is always referred to is the poor water quality. All rivers and lakes of any significance are badly polluted. Over the last decade and more all organisations that were involved in protecting water resources have been reduced to mere skeletons of their former stature. In fact, there is now no organisation in Kazakhstan which has the specific and clearly defined mandate to be responsible for managing and improving water quality in the rivers and other water bodies of Kazakhstan.

At the same time the monitoring of water quality and the health of rivers has been reduced to almost nothing in the main organisations, Kazhydromet and the Department for Environmental Protection. River Basin Organisations, who also had their own water quality laboratories prior to independence, now have none and no staff with water quality training.

In summary the situation on water quality is this:

- no one is looking after water quality because no one has the responsibility to do so
- there is no information on which to base decisions on improving and managing water quality

Focusing on this key area will force the decision on which organisation has the ultimate responsibility to improve water quality across the country. According to the 2003 Water Code the River Basin Organisations (RBOs) have the responsibility for the “use and protection of water resources”. This implies many elements of IWRM, including protecting the water quality (and its improvement and management) as well as watershed protection which contributes to water quality management. However, this decision needs to be made, and probably developed as an amendment to the Water Code, before the RBOs can act.

Focusing on this key area also works to improve water quality and also brings together and catalyses cooperation and coordination between several of the most important organisations in water resources management – Kazhydromet the monitors, the Committee for Environmental Protection (CEP) and its Oblast Departments of Environmental Protection (DEPs) and the Committee for Water Resources and its eight River Basin Organisations. Additionally it opens the door for working with other water stakeholders such as environmental NGOs, research institutes and many more.

It will require a well coordinated and concerted effort on the part of all these organisations to succeed at improving water quality in a reasonable time. Forging

such links and building cooperation is one of the main principles of IWRM and the purpose of the National Plan.

6.2 Achieving the Millennium Development Goals for WSS

Achieving the MDGs for WSS will increase water consumption across the country. Water consumption will increase further beyond the MDG target date of 2015, as the MDGs only cover half the population. It is assumed that access to good quality water will be assured for the other half of the population under the President's Vision 2030. Water resources managers will need to be prepared.

Additionally, there is a water quality issue here. Providing good quality water to people is accomplished through effective and complete water treatment but the product is safer and treatment is cheaper if the raw water is of reasonable quality. Water treatment is therefore directly linked with policy for controlling industrial pollution and with disposal of municipal wastewater.

Groundwater and its quality also come in to this equation, as some areas will be supplied by groundwater. As with surface water, proper treatment and disposal of industrial and municipal waste water is important in protecting groundwater resources. Watershed protection also comes into play through forestry issues, urban expansion and disposal of solid waste.

Achieving the MDGs for WSS will also require capacity building within several organisations. It will require good coordination between RBOs and Akimat Vodkhoz, Vodokanals, DEPs, Departments of Sanitary and Epidemiological Services, and others. Focusing on this key area will help to build links and coordination among these important organisations.

6.3 Addressing Water Use Efficiency

The extremely poor water use efficiency in Kazakhstan is one of the biggest overall water related problems. It has consequences for wasting water, for a start, but also:

- Damage to the Syr Darya delta wetlands because of overuse of water
- Reduced yields from irrigated agriculture
- Significant problems of drainage water disposal
- Damage to water quality in the rivers and groundwater
- Increasing losses of cultivable land from salinity
- An important relationship with transboundary issues

Solving the water efficiency problem must bring together many organisations. The obvious one is Ministry of Agriculture, both in its agricultural role and as the ministry presently responsible for CWR. Ministry of Environment, wetlands protection programmes, farmer organisations, etc.

Water use efficiency must be considered carefully. There are two areas in which water use and the rate of water use will rise significantly – the urban and rural domestic water subsectors and environmental flows in rivers.

Water efficiency is, of course, a specific component of the National IWRM and Water Efficiency Plan. Water Efficiency is discussed in Section 12 below but it is also highlighted here as a key focus area because of its major importance to the water resources of Kazakhstan.

6.4 Preparing for International Transboundary IWRM

While future transboundary agreements on water sharing may not increase Kazakhstan's share of the resource, they will increase the confidence water users in Kazakhstan will have on their seasonal and annual activities.

As discussed in Section 5.2, the water management organisations in Kazakhstan require significant capacity building before they will be able to carry out the management that will be required to implement these agreements.

We may assume that long-term, multilateral, transboundary agreements are several years away – as many as 15 or 20 years. But it will also take a similar amount of time for the RBOs who will manage the implementation to reach that level of capacity. Capacity building needs to start now and be focused on full water resources management to be ready for transboundary agreements when they are realised, as well as focusing on the other key areas of initial focus described above.

In the meantime, efforts should be placed on forming smaller, very focused bi-lateral agreements on single or few issues, from which an atmosphere of cooperation can be built.

7 Approach to Preparation of the National IWRM & WE Plan

7.1 The Johannesburg Directive and the Global Water Partnership

As has been described in Section 1.2, the National IWRM and WE Plans are a component of the Johannesburg Directive (from the World Summit on Sustainable Development in 2002). Each country which signed the Directive (including Kazakhstan) is obliged to prepare a National IWRM and Water Efficiency Plan by 2005. Subsequently, the Plans will be implemented.

The Global Water Partnership plays a leading role in facilitating the process of preparing the Plans. They have prepared guidelines and technical papers on IWRM and an internet based Toolbox on establishing IWRM and preparing and implementing the National Plans. In addition they provide financial assistance in preparing the National Plans, which includes this current project.

The Global Water Partnership also supports affiliated country partnerships. The Kazakhstan Water Partnership, especially its Technical Committee, is fully involved in the preparation of the National Plan for Kazakhstan. The Regional partnership, based in Tashkent, is also supporting IWRM work through their IWRM Training Centre. Staff from the Kazakhstan CWR and RBOs have attended a week long IWRM course in Tashkent supported by this project.

7.2 Other International Protocols and Agreements

As is described in Section 5.1 the long term aim for water resources management in Kazakhstan is to adapt and adopt the approach outlined in the European Union Water Framework Directive (EUWFD). In developing the long term strategy the approach of the EUWFD will be referenced.

Another important document is the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, and its various Protocols. This details the European legal approach to protecting transboundary waters and is valuable to Kazakhstan as a guide for transboundary waters here. However, many of the protocols are applicable to any water body, not just transboundary ones, and therefore can be used to guide the overall approach to protection of water bodies in Kazakhstan.

Other such protocols will be assessed and recommended during the course of the preparation of the National Plan.

7.3 Stakeholder Participation

The Preparation of the National IWRM and WE Plan should be as much about the process as it is the Plan itself. This is because in many cases the most important aspect of the Plan is making functional connections among the various organisations involved in water management and with the range of stakeholders who are mainly water users. Making those connections during the preparation of the Plan helps to secure coordination and cooperation during the implementation phase.

At the time of writing, several of the most important organisations have not yet become involved, notably: the Ministry of Finance, the Ministry of Economics and Budget Planning, the Ministry of Environment and, indeed, the Ministry of Agriculture outside of the Committee for Water Resources. This is problematic and it is hoped that they will get on board before the next Draft at the end of May 2005.

An inter-ministerial committee is planned and initial steps have been taken by the Committee for Water Resources to form it. However, this has not yet been successful, partly because of the CWR's relatively low status among ministries and partly because of the limited support for the CWR from its own Ministry of Agriculture.

This Concept Note will be disseminated widely in order to obtain as much feedback as possible from as wide a range of stakeholders as possible. The Draft National IWRM and WE Plan at the end of May will take the feedback into account. Following the Draft a series of forums with professionals and with the general public are planned during June, July and August, prior to preparing the Final Plan at the end of October 2005.

During the preparation of the Plan to date, several seminars, workshops, roundtable meetings and other forums have been held to introduce the principles and concepts of IWRM. These forums have highlighted the need for information on IWRM because, with the possible exception of water management professionals, there is little understanding of what IWRM is or how it may be valuable or applicable to Kazakhstan.

A beginning has been made for training in IWRM for RBO and CWR staff and this will continue throughout the period of the preparation of the National Plan and the subsequent River Basin IWRM and WE Plans (to be completed in March 2007).

Several research and educational institutions in Kazakhstan are involved in the preparation of the Plan, developing specific components for the Plan itself or for related aspects such as the achievement of the Millennium Development Goals for Water Supply and Sanitation.

A very important stakeholder component is the River Basin Councils. Initiated under the 2003 Water Code, RBCs will be the front line representatives of all water users as an advisory body to the River Basin Organisations. RBCs are being established at the same time as the National Plan is being prepared. Therefore, they will not be fully established and functional during the period of preparation of the Plan, but will be instrumental in its implementation.

8 Main Barriers to Implementing IWRM

As has been noted in several places in this document, the simplest way to express the state of water resources management in Kazakhstan today is that it is that the water resources are hardly managed at all. This has had consequences that are extremely costly, very damaging to the environment and the health of the people and retards economic and social development (see Section 2.3 for examples).

There are a number of reasons for the poor water management performance and they are worth highlighting here, prior to presenting elements of the Plan, because they are also key barriers to implementing the Plan. If effective, efficient, integrated water resources management is to be established in Kazakhstan, these barriers will need to be removed.

8.1 Limited Government Understanding and Support

This is by far the biggest barrier and the most difficult to overcome. The areas of government which make decisions on inter-ministerial coordination and support, financing, budgets, etc. do not understand that effective water resources management is necessary for economic and social development. Nor do they understand its converse, which is that poor water resources management means poor economic and social development. In addition, there is not currently a venue in which to improve their understanding because the low status of the Committee for Water Resources limits the ability for direct communication.

8.2 Low Status of the Committee for Water Resources

The low status of the Committee for Water Resources limits the ability for direct communication with decision makers in other ministries who decide the all-important issues of financing and budget planning and other aspects which are needed to improve water resources management. However, perhaps the most difficult situation is that the CWR receives only limited support from the Ministry of Agriculture, in which the CWR is situated. As has been previously stated, this location of the CWR results in the apparently strange position of a conflict of interest on the part of the Ministry of Agriculture combined with a lack of interest toward the CWR.

The low status of the CWR is also affecting the establishment of River Basin Councils (RBCs). By law, the chairman of the RBC is to be the director of the River Basin Organisation (RBO) but an RBO director has a lower government position than many of the representatives of local administration which need also to be on the RBC. This conflict is slowing the process of their establishment.

If water resources management is to be improved in Kazakhstan, the status of the CWR and the RBOs must be raised.

8.3 Poor Public Understanding and Involvement

There is very little understanding on the part of the public and its various forms of representation (NGOs, Water User Associations, etc.) which makes attracting

stakeholders to the discussion process difficult. However, efforts are being made through stakeholder surveys and a planned Public Awareness campaign to educate the public and promote their greater involvement and participation in implementing IWRM in Kazakhstan.

8.4 Lack of and Poor Access to Water Information

Good management depends on good information and good information depends on good information management. Among the worst problems to overcome in improving water resources management in Kazakhstan is the almost total absence of water data.

As described below, good hydrological information is rare and the RBOs (the water resources managers) have no access to it anyway. Information on water use is generated by the RBOs themselves but it is essentially fabricated – not based on any actual measurements. These two situations combined means the RBOs know very little about how much water is available in their basin and how much water is used.

The first problem here is that Kazhydromet, the state organisation responsible for monitoring the flow in rivers, water levels in other water bodies, water quality in all water bodies, plus meteorology. However, Kazhydromet has been made a 'State Enterprise', meaning that it is partially privatised. It is forced to be self financing and to do this through selling a commodity (hydrological and meteorological data) which has no commercial value. The occasional requests it does get are then charged at such a high rate that no local institutes, River Basin Organisations or others can afford it and even foreign consultants refuse to pay the exorbitant prices.

The inevitable result is that the supposedly profit making State Enterprise makes so little money from sales that it cannot finance itself, cannot afford to maintain its own systems and therefore can produce no new data. A downward spiral has been created in which there is very little new hydrological data available from the last decade and essentially no water quality data.

A first step toward establishing IWRM in Kazakhstan is to revert Kazhydromet to a government body and stop being a State Enterprise and for the government to fund it properly.

The second problem, that of lack of information on water use, must be remedied by the CWR and RBOs themselves. A culture of data fabrication has been created because all of the real water management functions have been removed from the RBOs through underfunding and lack of interest on the part of government and the ministry that they are located within. Part of the overall capacity building for the CWR and RBOs must be to restart real monitoring of water users.

8.5 Poor Information Management

The RBOs and CWR have little experience in information management, partly because they have had little information to manage. This is a situation that will be changing with the implementation of IWRM and the RBOs and CWR need to begin to learn about information management.

There are several initiatives already underway to support improving information management:

- In 2003 a plan was developed for a National Water Information Centre. Application was made for a budget to finance it in 2004 but it was refused, and again for 2005. Not surprisingly, interest in it has now faded and the computers that were donated for it have been reallocated to other uses. The National Water Information Centre now needs to be revived. Under this project support will be given to re-establishing the required electronic networks between the CWR and all RBOs. The government, on its part, must official approve the National Water Information Centre, provide space and budget for it and ensure that it is supported into the future.
- Several training sessions are planned under this project on data and information management for IWRM, aimed at the CWR and RBOs. The RBOs will then become the 'front line' of data collection and management. They now require the approval from CWR, additional budget to support it, additional staff to prepare the data bases, etc., in the budget for 2006.
- The project is preparing data bases on the data generated by the Social Survey and the Technical Survey being carried out under the project. The data bases will be made available to all RBOs and CWR once they are complete.

8.6 Low Transparency and Accountability

Water resources management is carried out in an almost invisible way with no public transparency and no accountability for poor water management practices. This is something that needs to change to improve management. The establishment of River Basin Councils will help in improving this situation but other initiatives are necessary.

8.7 Low Financial Commitment

Lack of money is the number one problem. The government needs to be made to understand that managing water resources properly is not a cost – it is an investment that results in saving money. Where water is managed effectively, governments have learned this lesson and finance water management properly.

8.8 The Education Gap

There has been a massive (90%) reduction in staffing of RBOs and CWR in the last 15 years. Those that remain are often of lower levels of skill. This leaves the management of Kazakhstan's water resources in the hands of too few, poorly trained people. A first step will be to recruit well trained, competent people to rebuild the RBOs and CWR.

However, simultaneously, the educational institutes of Kazakhstan have had massive budget cuts so that many of the research and educational institutes have lost many of their best teachers and researchers. This is now an education gap of about half a generation, which is highly visible in water management organisations and educational institutes alike. The consequence of this is that there are not enough trained people that can train the people needed to do the work.

It will take many years – a decade at least – to rebuild the education system. In the meantime, carefully selected people must be sent abroad to train, preferably to Europe to learn the EU Water Framework Directive approach.

9 Creating an Enabling Environment for IWRM

9.1 Introduction

International experience in implementing programmes for IWRM suggests that major initial reforms are not essential to catalyzing change. Major reforms are difficult, time consuming and are often resisted by the more conservative elements in government and the management institutions. It is often better to make some initial steps that can more easily be implemented. It has been shown that these can be enough to begin the process of moving towards more sustainable water development and management. Once the process is begun, a momentum may be developed which drives the process forward.

Those initial steps must be aimed at creating an 'enabling environment' for establishing an IWRM approach in Kazakhstan. This National IWRM and WE Plan is mainly about those initial steps. While simpler initial steps are favoured, Kazakhstan also needs to make some rather larger steps, which are also raised in this section.

Both a top-to-bottom and a bottom-to-top approach are needed. By 'top-to-bottom' we refer to, for example: instruction to and support to CWR in implementing the Water Code. In turn this means government intervention to ensure cooperation and coordination among the various ministries with interest in water. It means changing the status of Kazhydromet so that it can escape the downward spiral of ill-considered privatisation.

By 'bottom-to-top' we refer to involving more of the water stakeholders. Specifically, this includes the establishment and genuine support of River Basin Councils. Once the RBCs come into being, find their feet and begin to work seriously, the RBCs may also drive changes at the top. It also includes making the public more aware that the management of their water resources is being improved so that they may take a greater interest in conservation and reducing pollution. Public involvement also often helps to drive change and improvement.

9.2 First Small Steps Made

There are several international as well as national obligations which Kazakhstan has already made which indicate a promise to improve the management of water resources and which contribute to the enabling environment. These are described briefly in this section.

The Johannesburg Directive calls for each country to prepare a National IWRM and Water Efficiency Plan by 2005. Kazakhstan, indeed the President himself, signed this directive committing Kazakhstan to improving water resources management by adopting the principles and practices of IWRM.

The Millennium Declaration of the United Nations (2000) expresses the common vision and agreement within the international community on plans of action to free the world of poverty and the misery associated with poverty. As with most countries, Kazakhstan signed the Declaration and is committed to achieving the Millennium Development Goals (MDGs). It is widely accepted that to achieve the MDGs for

water supply and sanitation that effective water resources management is also necessary, leading to the conclusion that establishing IWRM is part of achieving the MDGs.

The statement the President of the Republic of Kazakhstan to Kazakhstan people on “prosperity, security and continued progress of all Kazakhstan people”, known as Vision 2030, states that all people will have access to high quality water and protection of public health, and assures clean conditions and means of subsistence. These also aim at improving the management of the water resource.

In 2003 the Kazakhstan Water Partnership was formed. Affiliated with the Global Water Partnership it aims to encourage and support cooperative efforts in water management and to develop a new ethical responsibility for water consumption in the society through education, dissemination of information and technical support.

The National Committee for Sustainable Development has been formed and will likely have its first full meeting in 2005. This committee has the potential to establish a more holistic view of all aspects of development in Kazakhstan which may spill over into water resources management. However, the CWR is not represented on the committee, a serious oversight which should be corrected.

The new Water Code (passed in 2003) forms the legal base for IWRM. Indeed, establishing IWRM is essentially the same as implementing the Water Code. Sadly, to date there has been very little action to implement the code and, what is more worrying is the fact that there have been moves by government to remove some of the key functions of water resources management from the CWR and RBOs to other bodies, regardless of the Code.

The problem here is that the decision makers in government are not consulting CWR on water management issues, probably because they are essentially unaware of the role of CWR, especially as defined under the new Water Code. The National IWRM and WE Plan creates another opportunity to push for the implementation of the Water Code.

The one element of the Water Code that is being implemented now is the establishment of River Basin Councils and the stakeholder representatives in water resources management. Establishment of the RBCs is being done under this project rather than as a direct government initiative but at least a beginning is being made.

The Law on Environmental Protection (1997) contains components concerning water and covers issues of environmental protection including the water environment. It includes important components on the sharing of information, which sets a precedent for such sharing of water information.

The Law on Environmental Protection is to be upgraded to an Environment Code in 2006. It is expected that the new Environment Code will include articles on the ‘polluter pays principle’ and other protection aspects. However, there is no person in the CWR who is coordinating with the Environment Code to ensure that it is in line with the Water Code or that it contains appropriate water environment aspects.

9.3 Further Steps to Create the Enabling Environment

With a reasonable legal foundation established it is now necessary to take some further steps toward IWRM. These are discussed very briefly below and will be expanded upon in the next draft of the National IWRM and WE Plan.

Develop a National Water Policy

Countries that have taken on the commitment to improve water resources management generally develop a National Water Policy. In Kazakhstan this should be based on the new Water Code and take the form of a commitment to implement the Water Code. A National Water Policy is a policy of the Government, not of a specific ministry or department, but the day-to-day task of implementing it would fall to the Committee for Water Resources. The National Water Policy defines how implementing the National Water Policy links with other national policies and goals. In the Final National IWRM and WE Plan a draft National Water Policy will be prepared.

Gain Active Government Support

The CWR cannot implement the Water Code on its own. It needs the active participation and support of the government, which requires a real commitment from government. Otherwise the development and passing of the new Water Code will all have been a waste of time and resources.

Government support is always necessary because the implementing agency (the CWR) does not have the administrative power to order many of the administrative changes necessary. For example, there needs to be strong coordination between the various ministries involved or affected by water resources. Strengthening or otherwise changing the relationships among ministries requires an order that comes from above ministry level. Also, there will need to be changes in some of the approaches and laws governing budgets and taxes in order to facilitate some of the financial penalties and incentives needed for water management and water quality management.

Gaining government support should not be a difficult task if it is reminded of its international and national obligations and once the value of improved water resources management is made clear.

Involve Stakeholders in the Process

Water is managed for the people and industries of the country and to improve and protect the environment and involving representatives of those people, industries, protectors of the environment, etc, makes the job of managing water resources easier.

Stakeholder involvement will be achieved done through several components of the Plan. One is the establishment of River Basin Councils (RBCs). RBCs have been instituted in Article 43 of the Water Code and represents stakeholders as an active advisory body. At the time of writing this document the first pilot meetings have been held and the pilot RBC in the Balkash-Alakol Basin will be formed by the time of the Draft IWRM Plan in May. Establishment of the other seven RBCs in their respective basins will follow and all be formed by the middle of 2006.

Some questions still remain on the RBCs, such as how their expenses will be covered and what the membership will be. Financing the RBCs should be the responsibility of the government, at least for the first several years, either directly or through the RBO or through Oblast Akimats. Direct financing is preferable so as to reduce the potential for conflict of interest. Membership should consist of all water users, representing both government interests (such as environment, health, etc.) local administration (especially those responsible for water supply and sanitation and those knowledgeable of development plans) as well as NGOs with a variety of interests, farmer groups and representatives of civil society.

To be effective participants, people need to understand the issues in and principles of IWRM. A Public Awareness (PA) campaign should be undertaken covering the first few years of the implementation of IWRM. The design of a PA programme will be developed within this project in conjunction with CWR and the RBO and initiated. The CWR will then keep it running as long as necessary.

Finance Water Resources and Provide Incentive Structures

The difficult task is to educate central government in the direct relationship between water resources management and the economic and social development of the country. Once that is understood, investing in water management will follow. Currently it is difficult to access the government to present the case of improving water management, but part of the purpose of preparing the IWRM Plan is as a means of getting their attention and explaining the need for establishing IWRM in Kazakhstan to support continuing economic and social development. This means financial commitments to properly fund the water management organisations as well as proactive work in ensuring cooperation and coordination among the various ministries.

Managing water resources requires money. A means of developing financial support needs to be considered through a mechanism that involves water users paying for the management of the resource, as they do for service delivery in the domestic water supply and sanitation, irrigated agriculture and industrial sub-sectors. This does not have to require direct payments to the RBOs – in fact it is better to keep a distance between them. But bulk water charges to Vodkhoz, Vodokanals, etc. may be a possibility.

Looking forward to a time when RBOs also manage the quality of water, adopting the polluter pays principle is also recommended. Industries who pollute pay the full environmental costs, plus fines where they break the law. Money collected through this needs to stay with those monitoring and managing the water.

Payments for water by the water users has two purposes – it supports the water management and service delivery structure and it is a disincentive for overuse of water; it is a demand management tool. However, for it to be effective the money collected must stay with and be associated with the water management – not used as a means of central government generating revenues. This will require a change in current practice and likely in law. This may mean a change in the practice of subsidising water for irrigated agriculture.

Rebuild the Education System and Develop Skills

Research and educational institutions in Kazakhstan have been all but destroyed by underfunding and a general lack of attention to the needs of the future. This situation exists in all areas of education and research, so is not unique to the water sector.

Because water affects all areas of life and because its management requires a very wide range of skills, increasing all areas of education will help to improve the water situation. However, the IWRM Plan will limit itself to specific water education.

It will first take significant reforms in the government as a whole as well as in the way education is managed before a start can be made to rebuild the education system. Mainly this means:

- improving the salary levels of educators
- increasing the funding of research
- creating an environment that can attract researchers and educators back to the institutions

Even if these reforms were to begin today it will still take several years to restore confidence, to attract educators and researchers and to attract students to the water management disciplines. Therefore a parallel step must be to send students abroad for education.

The students who are sent abroad will become both water managers and other related professionals as well as the next generation of educators. It is necessary to train new educators and researchers in modern approaches to water and environmental management as practically an entire generation has now been lost.

An initial estimate of a foreign student programme is to select 10 students each year for 10 years. This would provide a minimum number of professionally trained people to work within the water management sector and begin to rebuild the research and education system for water and environmental management. As stated, this is a minimum. Once the foreign student programme begins it can be re-evaluated annually to identify specific areas where increases are needed.

The foreign student programme should be aimed mainly at European universities because of the European Union Water Framework Directive. As described in Section 5.1, Kazakhstan should be directing its water management efforts at adopting the approach of the EUWFD. It follows that today's students should be learning the EUWFD at its source.

Rebuild and Develop Water Information

Good information is the key to good management. At present primary monitoring of all forms of water data is extremely limited and not available to the water managers. Water quality is hardly monitored at all. Other environmental information related to water is practically non-existent. The water managers have lost their skills and equipment for collecting and managing information. Research for generating water information and knowledge is very limited.

The highest priority is to return Kazhydromet, the main primary monitor of water resources, to a functional water monitoring organisation. Currently it is a State Enterprise attempting to be a commercial organisation but its product, water information, has no commercial value. It is on a downward spiral in which the river flow monitoring network has deteriorated to 1/10th of its former coverage, its water quality monitoring and laboratory network is no longer really operating and no state organisation with water management responsibilities has access to what limited data do exist.

This change can be made very quickly and Kazhydromet can go back to being a government organisation, it could return to be funded properly so that data can be collected and water managers can have access to data again.

Rebuilding the hydrometric and water quality network will take somewhat longer, probably 10 years, but if an effective programme is established for reconstruction, each year will yield more data.

A plan was developed for a National Water Information Centre in 2003 but to date it has been shelved as the budget for it has not been approved. RBOs and CWR have been receiving training on data management and on sources of data for good water resources management. The National Water Information Centre provides a central source for all water data, though the data will be collected housed and managed at the river basin level. Under this project support will be given to re-establishing the required electronic networks between the CWR and all RBOs. The government, on its part, must now approve the budget for the National Water Information Centre, provide space and budget for it and ensure that it is supported into the future.

Each RBO now officially has an Information Department, recommended under a previous capacity building project⁵. However, the Information Departments exist really in name only as their data management function has been curtailed partly by the lack of progress on the National Water Information Centre. Further training on water information will be provided to RBO and CWR staff within this project to help strengthen the management of information at RBO and national level.

Public education needs to be provided on water issues, especially on water conservation and environmental aspects of water. This should be done through Public Awareness programmes and by including water education within the school curriculum. With emphasis now being placed on improving water use efficiency and reducing pollution, educating school children creates a new attitude as they grow into adults and has a positive immediate impact on the parents of those school children as they tell their parents what they are doing in school.

Public Awareness programmes will be developed under this project in conjunction with CWR's PR department, which should be continued for some years into the future.

⁵ Nura-Ishim River Basin Management Project, Final Report, Volume 2, Strategy for the Improvement of the CWR and RBOs, January 2004

10 Institutional Functions and Functionality

10.1 Short Summary of Water Resources Management in Kazakhstan

It is a common misunderstanding that Kazakhstan is a water scarce country. While there are areas that have limited water resources, the country overall is not water scarce. Kazakhstan does experience water shortage problems but they are *not* a resource problem; they are a management problem.

The current situation in water resources management in Kazakhstan is that water is practically not managed at all. This poor situation has two causes:

- many of the institutions that had been part of the water resources management structure prior to independence have since been either disbanded or have reduced the scope of works that the institution undertakes
- remaining organisations have been decimated through massive budget cuts such that they can no longer carry out their work

The Committee for Water Resources (CWR) and the River Basin Organisations (RBOs) are, by law, responsible for all aspects of water resources management – specifically the use and protection of water resources. The staff of the CWR and the RBOs are dedicated people who work hard to carry out their roles as water managers. But morale is low and deteriorating due to low wages, low working budgets and low status. It is increasingly hard to recruit new staff.

The work of the RBOs is now limited to issuing water permits and inspecting the permit holders for compliance. Even this task is generally given only the most cursory attention such that there is little knowledge as to how much water is actually used in the river basin and which organisations are in compliance with permit regulations.

This has led to:

- limited understanding of the water resource and water use within the basin and hence limited ability to manage the resource
- limited ability to plan for the future to determine what the best options are for enhancing water resources in the future
- inefficient use of water and water shortages in many subsectors
- the above leading to inappropriate investment in unnecessary or poorly planned projects
- poor and deteriorating water quality in all river basins
- no ability to improve water quality

In summary, the main water management organisations do not have the budgets, staff, government support or skills to effectively carry out their work.

10.2 Weaknesses in the Current Structure

The overall framework for managing water resources in Kazakhstan can be made to work with only relatively small, but institutionally significant changes. Indeed, studies into varying methods and structures of water resources management in different

countries showed that almost any structure can work as long as there is a shared interest and a political will in making water resources management work.

In Section 2.2 the current approach to water resources management in Kazakhstan was described as fragmented, which is indeed the case. However, this can be made to work if the various organisations involved can be made to work together to achieve the common goal of good water management. The main ministries involved include:

- Ministry of Agriculture
- Ministry of Economics and Budget Planning
- Ministry of Energy and Mineral Resources
- Ministry of Emergency Planning
- Ministry of Finance
- Ministry of Environmental Protection
- Ministry of Health

What is needed to make the organisations cooperate and coordinate is a Government directive from above ordering them to do so. This can be made under the auspices of implementing the 2003 Water Code. It provides all that is required around which to develop a directive on improving water resources management. This National IWRM and Water Efficiency Plan for Kazakhstan is largely similar to implementing the new Water Code and the proposed directive should be directed at supporting the IWRM Plan.

10.3 Improving the Organisational Framework to Support IWRM

This section describes a very few changes to the organisational framework of government and its organisations that are necessary to implement IWRM in Kazakhstan.

A National Water Resources Council

A National Water Resources Council (NWRC) is similar in concept to the River Basin Councils (RBCs) established under the 2003 Water Code. The main role of the RBCs is to advise River Basin Organisations (RBOs) on the needs and interests of the water users in the basin and how to equitably allocate the water according to the Council's consensus and agreement. The main difference is that the NWRC is a ministerial level, decision making body to decide on water policy. It should consist of the main ministries (as listed above) and be located directly under, and reporting to, the Office of the Prime Minister.

The Committee for Water Resources would be the technical office of the National Council, providing information to the Council and being the vehicle for implementing policy. The CWR would therefore also be out of the jurisdiction of any one ministry and also be under the Office of the Prime Minister.

The River Basin Organisations (RBOs) would maintain their current status as river basin departments of the CWR. The River Basin Councils (once they are established) will also maintain their place as described in the Water Code as advisors to the RBOs.

While a National Water Resources Council can be seen as yet another level of bureaucracy, it appears to be the most efficient way to break the impasse that exists in the fragmented water management structure.

CWR on the National Committee for Sustainable Development

There is an already existing National Committee for Sustainable Development which is inter-ministerial in organisation and chaired by the vice Prime Minister. This Committee has been many years in formation and there is a plan to have its first meeting in 2005. A major problem of this Committee is that water management – the key to successful sustainable development – is not represented. The CWR must have a seat on this Committee.

CWR and RBOs Given Effective Water Management Authority

The CWR and the eight River Basin Organisations need to be given a higher status within the government structure to manage water effectively. In discussions on how to implement IWRM, the problem was frequently raised that it is practically impossible for the CWR and the RBOs to even approach other organisations to discuss coordination and integration. This situation needs to change.

In the 2003 Water Code the CWR and the RBOs are given full responsibility and authority for the '*use and protection of water resources*'. Their current low government status hinders their work.

Improving their status also means that the government must coordinate with CWR on water management issues. A good recent example is the government move to take water quality concerns away from CWR jurisdiction and into Ministry of Environment jurisdiction. This was done without any discussion with the CWR who are the only water resources management professionals in the country. The move is contrary to current direction in water resources management - at the very time the CWR is working to *integrate* water resources management, the government works to *disintegrate* it. This happened because it does not even occur to the government decision makers that they should seek advice from the CWR on such matters, illustrating the low status of the CWR.

CWR out of the Ministry of Agriculture

Over the last decade the CWR has been moved in and out of the Ministry of Agriculture, the Ministry of Environment and out of the ministry structure altogether. It is doubtful if any other government organisation has been shifted around more than the CWR.

Frequent restructuring is usually an indicator of a lack of direction. It tends to lead to instability and a lack of confidence in the organisation involved, features certainly true of water resources management in Kazakhstan.

The CWR needs to be removed from the Ministry of Agriculture where it is neglected and underfunded, preferably to a position outside the ministry sphere. A National Water Resources Council is recommended above, with the CWR under it and both under the Office of the Prime Minister. This is the proposed option but if the NWRC idea is rejected, the CWR should still be moved into the Office of the Prime Minister.

Delegation of Authority from CWR to RBOs

Water management is most effectively done at the river basin level. This is the first principle of IWRM. Currently the RBOs have no decision making authority for managing water in their respective basins. All decisions must be referred to the CWR. This unnecessarily overloads the CWR with decision making that is best done at the RBO.

It is the case that some of the RBOs are weak in their planning and decision making abilities but capacity building efforts will be aimed at improving these areas particularly so that in a few years time such devolution can be accomplished.

River Basin Councils Established and Supported

River Basin Councils (RBCs) were initiated in the 2003 Water Code. Under this project they will be established in each of the eight river basins of Kazakhstan by the end of 2006. The purpose of the RBCs is to represent water user stakeholders as an advisory body to the River Basin Organisations. In other words, the water users will advise the water managers of their needs and interests in water management. Previously, in some river basins, there have been very effective means of discussing the needs of water users, but they did not bring together all water users to discuss needs as a whole. RBCs formalise the discussion between water users and water managers.

The RBCs also have the function of conflict resolution. There are always conflicts between water users when water is scarce or when one user is polluting the waters that others must then use. Until now there has been no forum for conflict resolution and the RBC brings together all users to help users understand each others' needs and provides a forum for discussion and decision making.

There remains some reluctance among RBOs to form the RBCs mainly because they fear that it will mean more work and more expenditure. However, in countries where an RBC or its equivalent is in place, water managers find that their work is easier and more effective when they begin to understand what the water users need. Also, if conflicts are solved within the RBC, the RBO is free of the pressure to solve these conflicts themselves.

In early discussions on forming RBCs talk has turned very quickly to how the RBCs will be financed. This appears to be a barrier to RBC establishment as there are expenses associated with meeting and with assessing information, etc. The actual costs are very low as the members of the RBC will not be paid as such but rather carrying out the tasks of the RBC membership as part of their regular jobs. The low cost of running an RBC should not be a barrier to their effective functioning.

RBCs were instituted in law and hence it is the responsibility of the government to ensure that they are formed and financed. Government must now decide on and announce a method for their financing. The simplest method is to finance them through the RBOs, at least for the first few years. Support to the RBCs is included as a budget item in the 2006 budget recommendations provided in Section 14.

10.4 Capacity Building in CWR

The capacity building needs of CWR are mainly significant increases in staffing. In the discussion provided here, departments are added to facilitate the specific areas that need strengthening first. The department names themselves are not important and the structure can be altered according to needs. What is important is the number and type of staff that need to be recruited. Table 10.1 identifies the immediate new staffing requirements to strengthen certain areas as well as implanting the IWRM Plan. Each of the departments is also discussed briefly following the table.

Table 10.1: Immediate New Staff Requirements for CWR

Department / Area	Education / Expertise	No. of Staff
Department for Implementation of National IWRM Plan	Department Head	1
	Legal Specialist	1
	Public Administration Specialist	1
	Environmental Specialist	1
	Water Quality Specialist	1
	Agricultural Specialist	1
	Industrial and Domestic Water Specialist	1
	Technical Support Staff	4
	Total IWRM Plan Dept.	11
Planning Department	Water Resources Planner	2
	Economist / Financial Planner	1
	Technical Staff	2
	Total Planning Department	5
Water Information Centre	Department Head	1
	IT Specialist	1
	Technicians / Data Entry	6
	Total Information Centre	8
Public Awareness Department	Department Head	1
	Programme Developers	2
	Technical Staff	2
	Total PA Dept.	5
Dam Safety Department	Dam Safety Engineer	1
	Technical Staff	2
	Total Dam Safety Dept.	3
Legal / Environmental Dept.	Legal Specialist	1
	Environmental / Ecologist	2
	Total Legal / Enviro. Dept	3
Total Minimum New Staff Committee for Water Resources (2006)		35

Department for Implementation of the IWRM Plan

The most immediate concern is the preparation and implementation of the National IWRM and WE Plan. A specific department is recommended to oversee this task but several of the staff assigned to other departments will also be contributing to this most important task. The individual staff are described briefly below.

- department head - to oversee and take responsibility for implementing the National Plan, this person should be an overall water resources expert with training and experience in economics
- legal specialist – of relatively high status so that he/she can meet with people at Deputy Minister level and other high ranking civil servants. He/she is to take a legal role in implementing the 2003 Water Code, in ensuring the Environment Code to be completed in 2006 is in line with, does not contradict and coordinates with the Water Code.
- public administration specialist – to drive the coordination and linkage between local administration and water resources management
- environmental specialist – with knowledge of environmental and ecological water needs to coordinate with Ministry of Environment and drive the environmental component of the IWRM Plan.
- water quality specialist – with experience and training in water quality monitoring and assessment to drive the improvement of water quality
- agricultural specialist – with knowledge in agricultural water needs and water efficiency
- industry and domestic water use specialist – with knowledge of industrial water use and municipal / rural domestic water use.
- technical support staff - with varying experience from economics to environment to water users to monitoring to information technology.

Planning Department

Water resources planning is a very specialised skill and necessary to avoid costly and wasteful mistakes in building unnecessary or inappropriate infrastructure. The department requires:

- water resources planners – should be well trained in planning and in water resources modelling to lead the overall planning of the CWR
- economist / financial planner – needs to be knowledgeable of government spending plans across all sectors in order to coordinate water resources management spending with the national budget
- technical staff – with water resources or environment or economics backgrounds to assist in gathering and processing information

Water Information Centre

The Water Information Centre has been planned for two years already but has yet to receive any funding. Information is always the key to good management and the Information Centre must now be a priority. The Water Information Centre is a national body which will collect and process data for specifically national concerns. It should also manage summarised data generated in the river basins which supports national analyses. Primary data collection and processing of river basin oriented information

should be done at the river basin level within the RBO Information Departments (see Section 10.5).

The Water Information Centre requires, as a first step:

- department head – this person must have water resources management knowledge and some data management experience
- information technology (IT) specialist – who will be responsible for the technical aspects of data base creation and management.
- technicians / data entry – several technicians are required to gather primary data and carry out the basic analyses to turn the data into useable information. They should have water management training.

Public Awareness Department

There is already a public relations department within CWR and the public awareness department here should be amalgamated with it in some way. It is discussed separately to make the point that public awareness must become a more important part of CWR's work. It is well understood that an informed public helps to drive improvements to water and environmental management which supports the work of the CWR and other organisations in implementing IWRM in Kazakhstan.

As an initial step in creating a Public Awareness department the following staff are needed:

department head – this should be a person trained in public awareness or journalism and have connections with public information organisations and experience in public information including web site management

programme developers – should also have specific PA experience and writing skills and a good understanding of the issues in water and environmental management

technical staff – with skills in graphics, web design and other forms of information management and presentation

Dam Safety Department

The safety of dams and other hydraulic structures is a growing concern as the age of many structures approaches their design lives. Structures need to be assessed and monitored with recommendations on actions made annually. This requires at a minimum:

dam safety engineer – who takes responsibility for inspection, assessment and recommendations on interventions to ensure the safety of dams and other structures

technical staff – to support the engineer in inspection, data collection and data management, which should include asset management software

Legal / Environmental Department

The purpose of this department is initially to ensure that the Environment Code, to be completed in 2006, is linked with the Water Code and to determine areas where gaps need to be filled in the Environment Code and the Water Code to cover all the necessary aspects of water and environmental management as a part of IWRM. This requires:

legal specialist – who has experience both in the water sector and the environment sector and with contacts in the Ministry of Environment to work with those preparing the Environment Code

environmental / ecologists – to provide information on environmental and ecological matters and how they pertain to water resources and IWRM

The new staffing needs described here total to some 35 people. This is considered only a first step – the new staffing needed immediately and by the beginning of 2006 at the very latest. Given the currently extremely low staffing levels in CWR, this may seem a large jump. However, comparing these staffing levels with those in countries in which water resources management actually works, this is still a tiny proportion. To make even a start at proper water resources management in Kazakhstan, staffing levels will have to increase by a factor of about 10. Raising staffing levels by this amount merely brings staffing back to those of 15 years ago.

10.5 Capacity Building in the RBOs

Capacity building in the RBOs is directed at strengthening them to make them real and capable water resources authorities in their basins. River basins should be the basic unit of public administration for water resources and the RBOs need development in order to carry out those functions. Under the Water Code they are responsible for the ‘use and protection of water resources’. At present they do not have the staff, skills or budgets to carry out those functions.

RBOs need to take responsibility for all aspects of the water resources, including protection of the watershed, protection of water bodies, improvement of water quality and the ecological health of water bodies and efficient use of water resources.

To do so they need more staff. Table 10.2 indicates the staffing needs for RBOs (for 2006) specific to the expanded functions of RBOs to enable them to carry out their roles as full water resources management organisations. Each RBOs needs the additional 27 staff recommended here for a total among all RBOs of 216 new technical staff.

RBOs also need to continue to carry out their functions as water user inspectors. Table 10.3 indicates the number of new inspectors required to properly carry out this role. The number varies with each river basin and is calculated depending on needs, which are mostly based on the number and type of water user in the basin. Total new inspection staff is 30 people, for a total immediate RBO staffing increase of 246 people.

There is anticipated growth in the number of water users over the next several years as economic conditions change, with additional needs of 1 new inspector per year in the Nura, Ishim and Tobol-Torgai basins and 6 new inspectors per year in the Ural-Caspian Basin. No additional inspectors are needed in the immediate future for Chu-Talas and Aral-Syr Darya, bearing in mind the immediate need for 3 additional inspectors in Aral-Syr Darya.

Tables 10.4 through 10.6 indicate the new staffing for each of the proposed and existing departments of the RBOs and the skills required.

Table 10.2: Staff to Support Expanding Functions of the River Basin Organisations (all RBOs) 2006

Department	Staff Type			
	Professional	Technical	Administrative	Total
Department of Planning	2	2	2	6
Department of Conservation of Water Resources	7	4	0	11
Department of Comprehensive Water Use	N/A	N/A	N/A	N/A
Department of Monitoring, Information and Liaison	5	4	0	9
Other Departments	1	N/A	0	1
Total New Staff Required for Expanded Functions				27
Total New Staff Required for Expanded Functions				27

Table 10.3: Staff to Support Water Use Permit Inspections (all RBOs)

Details of Inspection Process	Nura Sarysu	Ishim	Tobol-Torgai	Ural-Caspian	Aral-Syr Darya	Chu-Talas	Irtysch	Balkash Alakol
Inspections:								
Current number of inspections per year	196	450	477	600	1799	230	408	300
Days required per inspection (average)	4	4	3	3	2	4	4	8
Number of inspectors required for inspection only	4	8	7	8	16	4	7	11
Issuing New Permits:								
Number of new permits issued per year	180	200	126	505	505	50	162	460
Days per required for issue of a new permit	4	4	10	4	1	5	2	15
Number of inspectors required for issuing new permits	3	4	6	9	2	1	1	31
Required Number of Inspectors for inspection and issuing new permits	7	12	12	17	19	5	9	42
Current Number of Inspectors	11	17	12	5	16	7	17	27
Total New Staff Required (Sum Table 10.2 and 10.3)	27	27	27	39	30	27	27	42

Table 10.4: Department of Planning: Staff Requirements for Expanded RBO Functions

Function	Staff Required	
Development and Operation of Decision Support System	2	modellers, university educated and with GIS and Water Resources Experience
Development of Schemes of Comprehensive Water Use	2	additional administrative for production of Schemes and other duties
Support to both of the above	2	technicians with at least secondary school and good computer skills
Total for Department of Planning	6	

Table 10.5: Department of Monitoring, Information, Cadastre and Liaison: Staff Requirements for Expanded RBO Functions

Function	Staff Required	
Water Quality Laboratory:		
Laboratory Head	1	experienced water quality laboratory manager
Lab-based Water Quality Analysts	2	analysts with university level technical training in water quality analysis
Field-based Water Quality Technicians	2	technicians with technical college education to receive training in water quality
Water Information System:		
MIS Specialist	1	university educated MIS specialist with knowledge of water resources issues
Technicians	2	technical or university education in water resources with good computer skills
Liaison & Public Awareness		
Group Head	1	person with PA experience with knowledge of media industries
Total for Department of M, I, C, L	9	

Table 10.6: Department of Conservation of Water Resources: Staff Requirements for Expanded RBO Functions

Function	Staff Required	
Supervision of Use of Water Resources	1	department head, university educated in water resources/ecology
Enforcement of Permit Conditions	2	technical legal specialists
River Basin Management Planning	1	university educated specialist in watershed management
River Basin Protection	2	technicians with technical education in data collection and analysis
Improvement of Water Quality & Areas of Special Interest and Protection	1	water quality specialist
	1	1 university educated ecologist / biologist
	2	technical or university education - mainly for field offices
Review of designs and control of operations	1	civil engineer in water resources with operational experience
Total for Department of Conservation	11	
Plus Additional IT person for WIS, network, etc.	1	IT specialist with data base knowledge
Total Staff per River Basin Organisation	27	

The proposed new staffing required for the RBOs is significant and may appear to be a large jump in staffing. However, if effective water management is to become a reality in Kazakhstan, this is a necessary first step.

To prepare the River Basin IWRM and Water Efficiency Plans, which will follow the National IWRM and WE Plan and are one of the early steps in its implementation beginning at the end of 2005, the new staff shown above are necessary.

Note that this will also require additional budgets for office space, furniture, computers, transportation, consumables, etc. as any organisation needs.

10.6 Capacity Building in Other Organisations

There will be needs for capacity building in other organizations, such as Environment, Health, etc. and these will be identified and recommended once connections with those organizations are established through the proposed Inter-ministerial Working Group.

11 Instituting and Applying Management Instruments

Several management instruments will need to be applied to implement IWRM. Some have been mentioned in other sections of this Concept Note. Further work is required to identify and detail them, which will be completed for the Draft National IWRM Plan at the end of May 2005. An list of areas for which management instruments are needed is given below to drive discussion.

- Water Resources Assessment
- Information, Information Management and Access to Information
- Knowledge Management
- Water Demand Management (Regulatory and Economic Instruments)
- Social Change Instruments
- Conflict Resolution

12 The Water Efficiency Plan

12.1 Introduction

The water efficiency component of the National Plan is presented separately to highlight its importance. There is considerable overlap in the actions that need to be taken to improve water efficiency in terms of the institutional coordination, financing, tariff structures, etc.. The overall water sector is described first, followed by discussions specific to the main sub-sectors of water.

The term 'water efficiency' refers not just to reducing water use and the waste of water, but also to the efficient use of money spent in the water sector. The following discussion does focus mainly on water rather than finances, but finances will receive greater coverage in the later draft and final version of the Plan.

12.2 The Overall Water Sector

Water efficiency improvements can be made in most subsectors of water (industry, domestic, irrigated agriculture, etc.). However, from a water resources point of view the greatest saving are to be had through irrigated agriculture because of its overwhelmingly large share of water consumption.

Table 12.1 shows the water consumed in Kazakhstan by subsector which illustrates the relative impact of placing the emphasis of water saving efforts in the irrigation subsector. It is considered reasonable to increase water use efficiency in either irrigation or in domestic water use by 20%. Doing so would result in an annual water saving of some 5700 MCM from irrigation, but only 500 MCM from the domestic subsector. This is not to argue that efforts to improve water use efficiency should not be undertaken in the domestic subsector, but is used only to show context when considering where to concentrate efforts. Contributions in water saving from all sub-sectors are important to the water resources of Kazakhstan.

Table 12.1: Distribution of Water Use by Subsector (2002)

Water Subsector	Annual Consumption	
	(MCM)	(% of Total)
Domestic Water Supply	612.43	4.0
Industry	3685.50	24.4
Agriculture	10717.24	71.0
(component of which is 'regular' irrigation*)	(7100.96)	(61.0)
Fisheries	89.70	0.6
Other Uses and Losses	0.10	0.0
Total	15104.97	100.0

* not included in total as it is covered under the agriculture heading

However, it must be remembered that environmental flows are not included in the above table because they have never been given much consideration as a water user. This will change under IWRM because ensuring that the water needs of the water environment are met is a key element of integration (see Section 12.3 below). Additionally, both per capita and overall consumption in the domestic water supply sub-sector will also increase as Kazakhstan achieves the Millennium Development Goals for water supply and sanitation. While we strive to improve water use efficiency across the country and in every sub-sector, there will be increases in water use certain areas.

12.3 The Domestic Sub-Sector

In the domestic sub-sector there is much scope for improving water use efficiency but the drivers are less related to water resources management and more related to cost effectiveness. Losses in an urban water delivery system are a significant cost burden to the service provider. Reducing these losses also sends the right message to all water users that conservation is necessary. It also may have a very important impact on local water resources in specific basins or sub-basins. But on a national scale its impact is relatively limited.

Additionally, in the context of the parallel initiatives on achieving the Millennium Development Goals for Water Supply and Sanitation, total water consumption in the domestic sub-sector will rise. As more people have access to household service, per capita rates rise. Again, on a national scale, this impact is limited but may be important on a local scale and additional water use may be offset by reductions in water losses.

Improvements in efficiency in the domestic sector are achieved through a combination of public awareness for water conservation and proper maintenance of the delivery systems to reduce systemic losses. At present 'unaccounted for' losses are high across Kazakhstan but finances are insufficient to effectively maintain the systems to improve the situation.

There is now a significant backlog in deferred maintenance in both urban and rural water supply systems. This needs to be dealt with on a priority basis because Vodokanals and Vodkhoz are concerned that a total collapse of many of their systems is imminent. The main question is how to finance it.

Certainly it must fall to the government to finance the initial rehabilitation. It is the government policy of underfunding and underfinancing water supply and sanitation systems that is at fault, combined with the government policy of not allowing sufficient revenues to be generated either at the local administration level or through water tariffs that has led to the current deteriorated state.

Following initial rehabilitation, costs for continued efficiency improvements in the domestic sector should be borne by the water service delivery organisations (Vodokanals and Vodkhoz) but there will need to be changes in tax laws and in government policy on collecting water charges etc. for that to be supportable.

12.4 Environment and Ecology

The important thing here with respect to water use efficiency is that water use for the environment and ecology will rise as policies reflect the need to have more water available for the environment as a whole and to support important ecosystems in the water environment. Water still needs to be allocated to the environment sub-sector in an efficient way.

The correct approach to the environment and ecology sub-sector is that of environmental flows. A certain minimum flow is needed in any river and the natural fluctuations between high and low flows throughout the year and, possibly across years, must also be provided. Calculating environmental flows is a complex task requiring many different specialists in ecology, biology, hydrology, etc. However, especially as Kazakhstan is starting from essentially zero – i.e. that even the old Soviet normatives for environmental releases from reservoirs are not met, an empirical approach could be adopted.

12.5 Water Quality and Water Efficiency

Water Use Efficiency can also be related to water quality. Poor quality water is not a viable resource. Reducing water pollution increases the water resource, adding to overall water efficiency. Interventions are needed here in the domestic subsector (municipal waste water disposal) and the industrial subsector, with some potential for the irrigation subsector as well.

12.6 Industrial Sub-Sector

In the industrial subsector water savings are generated through treating and recycling of water. In some cases this could be taken as far as an almost closed system. Secondly, as described in Section 12.5 above, industries can improve water use efficiency through decreasing pollution of the water resource.

Reducing water consumption must be done through water charges and a significant increase in the quality of monitoring by the River Basin Organisations. At present there is little real monitoring going on, with planned and actual consumption being suspiciously similar virtually all the time.

International experience has shown that the most effective approach to reducing water pollution is through a combination of assistance in installing water treatment facilities (usually through tax breaks) and instituting and enforcing the 'polluter pays' principle, which consists of instituting charges to the industry for discharging pollutants into water bodies at a level which is both discouraging and related to the actual cost of the damage it does.

Implementing polluter pays principle may require a change in both the Water Code and ensuring it is included in the 2006 Environment Code, and may need changes to laws governing industry.

There will be a need to increase capacity for water use inspections in the RBOs in terms of additional training so that inspectors actually monitor water use and to increase numbers of staff to accommodate the increased workload.

12.7 Irrigated Agriculture Sub-Sector

As shown in Section 12.2, irrigated agriculture uses a large proportion of the water resources of Kazakhstan – over 70% - and water for irrigation is used very inefficiently. It follows that irrigated agriculture is an appropriate sub-sector on which to place emphasis in improving water use efficiency.

There is a further, perhaps more important reason. The inefficient use of water results in an equally inefficient use of money, furthers the poverty of farmers, damages the environment and causes, loss of soil fertility, land degradation and the reduction of available land for agriculture.

Agriculture, mainly irrigated agriculture, is undergoing significant changes since the independence of Kazakhstan. Various changes have been made to the institutional structure with the emphasis on devolution of responsibility for the management of irrigation systems to lower levels; from the state or national level to oblast and rayon level. However, the devolution of responsibility has not been linked with the devolution of revenue generation. Most revenues are still collected at the national level, state budget allocations to irrigation management have been severely reduced and the local administrations cannot generate sufficient revenues through irrigation tariffs to support the maintenance and operation of the irrigation systems.

The result is the obvious one: steady deterioration of the irrigation systems. Secondary systems are in the worst condition with more than half (in some areas 80 to 90%) of the systems in a deteriorated condition. Maintenance is continually deferred which means that each year there is a greater and greater deficit of maintenance work that must be done to bring back the systems to a working condition. Table 12.2 below, an example from Zhambul Rayon illustrates the problem:

Table 12.2: Comparison of Planned and Actual Expenditures on Irrigation Maintenance, Zhambul Rayon, 1998 – 2002

Year	Planned Maintenance Budget (M KZT)	Actual Maintenance Expenditures (M KZT)	Shortfall (M KZT)	Cumulative Shortfall (M KZT)
1998	30.9	16.8	14.1	14.1
1999	25.4	10.0	15.4	29.6
2000	23.8	7.6	16.2	45.8
2001	27.5	12.4	15.1	60.9
2002	35.5	31.7	3.8	64.7

Table 12.2 shows that the deficit caused by deferred irrigation maintenance over the five year period for which figures are available is almost 65 million tenge. This is equal to 45% of the planned budget and a staggering 82% of the total actual expenditures over the period! The deferred maintenance does not go away. The need to carry out the work remains and, in fact, worsens, as what was maintenance today is rehabilitation and replacement tomorrow.

Total reform of the system of irrigation management is always difficult. Often there are individuals within the decision making structure who support holding on to the

existing systems, which makes reform even more difficult. However, the following brief synopsis of the current situation shows that the existing system simply does not work:

- Irrigation systems continue to deteriorate physically
- The amount of money needed to return the irrigation systems to being functional grows each year due to continually deferred maintenance
- Land continues to be damaged and fertility lost due to badly maintained systems
- Environmental degradation continues
- Farmers remain poor, and are poorer than 15 or 20 years ago, with the lesson that the irrigation system is not helping them climb out of poverty
- Farmers pay a water tariff (albeit too low) but receive very poor service
- Oblast budgets are in arrears and financing irrigation rehabilitation is impossible from their current budgets
- Responsibility for irrigation management has been devolved to the oblast level and only a small amount of money is available from the state
- Money needed to maintain the systems is not available from either oblast or national budgets or from farmer tariffs

It is evident that the current system is not sustainable and changes are needed to improve it. The way forward is complex as it involves both agriculture and irrigation reform. It will require a re-evaluation of how farmers are paying for the irrigation service and how that service is serving farmers.

Specific to water use, mechanisms for increasing efficiency of water use are essentially limited to:

- Water pricing and tariffs
- Policy changes on subsidies and financing
- Improved irrigation technology
- Farmer education and agricultural extension

The most appropriate approach is to combine the above.

It is incorrect policy to apply new tariffs for water, which have a negative impact on farmers' incomes, without other forms of incentives and support. Improved water delivery service is the single most important incentive. Government support of other improvements such as improved agricultural practice (including markets and transportation) and irrigation practice is also necessary.

Water Pricing and Tariffs

There remains the view that farmers are too poor to pay for the water that they use for irrigation. Such a view is common in many countries with government supported irrigation even though analyses show that it is rarely the case. If the irrigation service is good, meaning that it delivers the right amount of water at the right time in a way that is both hydraulically and financially efficient, the cost to farmers is low compared with earnings from agriculture.

Prior to the 1950s irrigation water users in virtually all countries of the world paid full costs for water. The change occurred during the 1950s as many countries invested heavily in massive expansion of irrigation systems. Costs were so high that farmers could not be expected to support such expansion and their potential for contribution

was low enough in relation to the overall investment cost that governments subsidised them through this period. Such subsidy became embedded in the culture and so such policies remain to this day.

It is very difficult on farmers to simply increase water tariffs to a level equal to the O&M requirements. Increasing water tariffs must be gradual and directly linked to improved service (meaning the right amount of water, when and where it is needed). Improved service must also lead to better crop yields and financial returns which rely not just on irrigation improvement but improvement across the agricultural sector. This will require increased agricultural extension, training of farmers and other agricultural inputs on the part of the government.

Water tariffs, whether in agriculture, industry or the domestic sector should not be seen as, or applied as, a means of generating revenue. They must be approached as:

1. a means of supporting water services to ensure services are properly, meaning sustainably, funded, able to do their jobs effectively and plan for the future
2. a means of promoting efficiency in water allocation and water use

Therefore the first step in improving water use efficiency is to analyse how to reform the tariff. A full economic and financial assessment needs to be done on farmer incomes and the impact of irrigation, leading to determining what farmers can reasonably afford for water charges.

Policy Changes on Subsidies and Financing

There will likely be need for some agricultural subsidies and these will need to be given careful consideration. There are few, if any, countries in the world which do not subsidise agriculture, and subsidies are usually fairly substantial. There is no reason why Kazakhstan should be any different. However, the subsidies must be strategically placed – ‘smart’ subsidies aimed at very specific goals and targets. It is generally considered unwise to subsidise water use because it promotes the idea that water is free or cheap and that overusing it is acceptable.

Given the current deteriorated state of the irrigation systems it must be up to government to finance its rehabilitation. This would certainly be classified as a subsidy but it has very specific purposes:

- bringing irrigation systems back to a workable state
- reducing the environmental degradation
- stopping the degradation of soils in agricultural areas and loss of arable land

There must be policy reform in the overall financing of irrigation systems, which will include the reform of water tariff structures as mentioned above. Mainly this means that where the responsibility for irrigation management and maintenance has been devolved to local administrations an equal ability to raise revenues to finance irrigation management and maintenance must also be devolved. This will likely require a change in tax and other financial laws but may only require a change in practice which is already supported by law.

Improved Irrigation Technology

Advanced technology such as drip and sprinkler can improve water use efficiency but are expensive, difficult to use effectively and are not suitable to conditions of high salinity and high sediment loads, both of which are features of much of Kazakhstan's irrigation areas.

Studies have shown that sprinkler and drip irrigation technologies, when improperly used, can waste as much water as furrow and flood irrigation, emphasising the need for farmer training⁶. In the study cited, which was carried out in Jordan, high technology irrigation methods improved only when farmer training was included in the process. While it is valuable to assess their potential through pilot trials, it is unlikely that they will prove to be a major contributor to improved water use efficiency.

Land levelling is seen by many as a good way to reduce water use per hectare and, at least theoretically, it should have an impact. As a government programme it could be expensive but costs may be offset by reducing the costs of drainage and disposal of saline water. This, of course, would also serve to improve water use efficiency and to reduce environmental degradation in the rivers and other water bodies and land degradation.

However, studies have shown that interventions such as land levelling can not work on their own. A study in the Fergana Valley in Uzbekistan⁷ showed that the volume and rate of irrigation applied to fields was unchanged after land levelling. To spell it out, this means that the land levelling had no impact on its own.

The two studies cited above show that technical interventions in irrigations can only have a positive impact if they coincide with farmer training. While it is often considered politically incorrect to state it, the reality that comes to light time and again in irrigation studies is that farmers don't know how to efficiently irrigate. With training, they will know how to efficiently irrigate. Combining irrigation knowledge with appropriate tariffs related to water volume may be the most effective way to improve irrigation water use efficiency.

A simplified look at some numbers in Table 12.3 illustrates the cost and value of farmer training. The illustration below assumes a total irrigated area of 2.0 million ha, with 1.3 million currently in service. It assumes a cost per ha for total rehabilitation of 260,000 KZT and a cost of land levelling at 65,000 per ha (under the further assumption of government contracts to carry out the levelling). It is also assumed that land levelling would only be carried out on the 1.3 million ha currently in service. The cost of a trainer is assumed at 6500 KZT per day, requiring a total of 507 million KZT.

This is admittedly a rough estimate provided only as an illustration. However, it indicated the orders of magnitude difference between structural and mechanical interventions and farmer training.

⁶ GRID (IPTRID) Issue 16 August, 2000

⁷ O'hara, S. and Hudson, B. The Agricultural Decline in Uzbekistan: A Case Study of Yazyavan Rayon, 2001

Table 12.3: Costs of Water Saving Interventions with Farmer Training

Intervention	Irrigated Area Covered	Unit Cost (KZT)	Total Cost (Million KZT)
Rehabilitation of irrigation areas	2,000,000 ha	260,000 / ha	520,000
Land Levelling	1,300,000 ha	65,000 / ha	84,500
Farmer training	1,300,000 ha		
	1 farmer owns 5 ha	260,000 farms	
	1 trainer can train 10 farmers	26,000 trainings	
	1 training requires 3 days	78,000 training days	
	1 trainer costs 6,500 KZT per day		507

13 Immediate Plan (2005 and 2006)

With consideration to the overall Plan as presented in Section 5, this Section briefly points out the immediate steps for 2005 and 2006.

- Complete the National IWRM and WE Plan – involving other Ministries and other organisations which are important to managing water, the environment and, most importantly, finance and economics and budget planning.
- Begin the River Basin IWRM and WE Plans – in late 2005 following the completion of the National Plan
- Create a National Water Resources Council – as an overall policy making body and which will provide a means of getting the CWR out of the Ministry of Agriculture.
- Consider and move the Committee for Water Resources out of Ministry of Agriculture and into a position under the office of the Prime Minister. Every day of delay in moving CWR out of Agriculture is another day of poor water resources management.
- Establish River Basin Councils – in all river basins of Kazakhstan and make a decision on financing them.
- Develop a National Water Policy - to improve water resources management, based on the new Water Code
- Start to develop and implement a Strategy for the Improvement of Water Quality – initial training in the use of water quality field kits for RBOs is being provided by the project. It will also require beginning to build connections with Ministry of Environment and cooperation between RBOs and Oblast Departments for Environmental Protection at the river basin level. It requires recruiting water quality specialists to RBOs and CWR right away.
- Start capacity building in RBOs and CWR – notably staffing and budget increases as described in this Concept Note.
- Assess requirements for amendments to the Water Code and to ensure there are no gaps in water environment aspects in the Environment Code in 2006.
- Fund and establish the National Water Information Centre
- Begin to rebuild the water monitoring system (both hydrotechnical and water quality)
- Move Kazhydromet back to being a government organisation rather than a State Enterprise and ensure access to information, especially by the RBOs and CWR and other organisations working in water management
- Begin to Rebuild the Education System and send students abroad for study
- Develop and start a Public Awareness campaign for water resources management

14 Proposed Budget Additions for 2006

To facilitate the start of implementation of the IWRM Plan the budgets for CWR and the RBOs as well as other organisations need to be significantly increased. Much of the increases in CWR and RBOs have to do with staffing increases, as described in Section 10. Other elements for the 2006 budget are special research and projects to support the IWRM implementation, as well as improvements in education, etc.

Table 14.1 provides recommended additional budget requirements for 2006. Note that this is additional budget specific to the implementation of the IWRM Plan, and is therefore over and above CWR's and RBOs' other budget plans and needs.

Not all of the budget items are for CWR and RBOs. These are indicated under the 'Budget Location' heading. All costs are estimates but are indicative of likely costs. The costs for additional staffing are not included (marked as N/A) because they are not known at this time.

Further budget items will likely be identified between the dissemination of this Concept Note and the Draft National IWRM and WE Plan in May 2005. Table 14.1 is an initial indication only.

Table 14.1: Recommended Additional Budget for CWR, RBOs and Others for 2006 for Implementing the IWRM Plan

Area	Item	Budget Location	Number	Unit Cost ('000 Tenge)	Total Cost ('000 Tenge)
Education	Foreign Study in Water Resources Management	CWR	10	3,250	32,500
	Foreign Study in International Water Law	CWR	2	3,250	6,500
	Restoring Universities and Research Institutes	Min of Education			* N/A
	Training of CWR and RBO Staff	CWR / RBOs			3,250
	Public Awareness Programme	CWR / RBOs			1,950
Staffing	Additional CWR Staff	CWR	35	* N/A	* N/A
	Additional RBO Staff	CWR / RBOs	246	* N/A	* N/A
Equipment, etc.					
Consultancies	Assessment of Needs for Restoring Universities and Research Institutes	Min of Education / CWR	1	6,500	6,500
	Development of new Methodology for 'Schemes'	CWR	1	39,000	39,000
	Assessment of irrigation tariffs	CWR	1	6,500	6,500
Expenses for River Basin Councils		CWR / RBOs	8	650	
Monitoring	Reconstruction of Kazhydromet Monitoring Network	Kazhydromet / Min of Environment		* N/A	* N/A
	Restoring and Upgrading Water Quality Labs at Oblast Level	Kazhydromet / Min of Environment / Oblast DEPs		* N/A	* N/A
	Establishing the National Water Information Centre	CWR			3,250
	Develop the Information Departments in all RBOs (including email and internet access)	CWR / RBOs	8	3,000	3,120

Note: no total is provided as cost per staff member unknown

15 Indicators and Monitoring of Progress on IWRM

A set of indicators to monitor progress of the implementation of the National IWRM and WE Plan will be necessary and will be developed through the preparation of the Plan over the coming months. Likely headings for indicators include:

- Information (including hydrological)
- Budgets, staff increases
- Education programmes, people going abroad for education
- Water related information and/or programmes in schools (like the environmental)
- Inter-ministerial linkages
- Ability to carry out river basin IWRM Plans
- Activity on improving water efficiency in: irrigation, etc.
- Legal aspects