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<b>Mission reference</b>
<b>2007 C 4 T 26 M 2</b>

<b>Date: August 3 – 15, 2007</b>
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<h2>Mission report</h2>
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### Expert Name and Function

*Expert 1 – Christo Keevy (Chief Executive Officer)*

*Expert 2 – Enoch M. Dlamini (Manager – Water Management)*

*Expert 3 – Sidney Dhlamini (System Analyst)*

*Expert 4 – Mathokoza Manana (System Technician)*

**Wording of missions:** *In short, objective or content of mission*

*The OLT – KOMATI project is aimed at sharing information on Integrated Water Resources Management specifically on the following area:*

- Institutional, administrative and legal frameworks for water management.
- Operation surveillance and maintenance of dams in a River Basin.
- Monitoring networks for river flow, water quality and aquatic ecosystems.
- Drought and flood mitigation strategies.

It is expected that out of the TWINBASIN<sub>xn</sub> project, the two River Basin Organizations will:

- Promote a mutual cooperation between the water management staff.
- Strengthen ties among the basin organizations
- Improve communication between the basins participating in the Twinning Project
- Encourage exchange of expertise, knowledge and technical Personnel
- Strengthen the effectiveness of integrated water resources management in their river basins Organizations
- Improve, overall, the functioning of these institutions

The mission began by exchange and discussion and agreement on an agenda for the Olt – Komati. The mission included information exchange on the key water management areas through various meetings and presentations held throughout the mission. The main event was the meeting held at the Olt River Basin Offices in *Ramnicu Valcea* where formal presentations and discussions were held with senior officials of the Olt River Basin Organization. The mission ended with a discussion between the members of the first and second mission to conclude and identify future areas of cooperation.

The main purpose of the visit to the Olt Basin in Romania was to understand their operating environment, to observe the policies and procedures. For this reason we have attempted to compile a comprehensive report highlighting the similarities and the differences between the two

organizations. By identifying the differences we will be able to use this report as a reference for future benchmarking, identifying possible areas that should be investigated in more detail in the future.

The team used this mission as a learning experience and tried to gather as much information as possible, identify areas for future cooperation, establish a sound working relationship with the Olt Basin including personal contacts and sources of publications for future reference,

The delegation from KOBWA would also use this report to express our appreciation to the Twinbasin for making this learning experience possible. KOBWA would also appreciate if the Twinbasin organization would consider to support the two organizations to continue utilizing with this programme expand our knowledge. In the report some specific areas for future cooperation have been identified

## CONTEXT

**Place, location:** *Country visited, Basin Organization concerned, other information about location*

*Country: Romania*

*Basin Organization: Olt*

*City: Ramnicu Valcea*

*Street/ Remus Bellu Nr. 6*

*Postal Code:*

**Mission duration:**

**August 3 – 15, 2007**

## 1. OBJECTIVES

Initial objectives	Results	<b>Results indicator</b> <i>explain with some details how far the results have been achieved if compared to initial objectives</i>
<b>1 Institutional, administrative and legislative Frameworks for Water Resources Management</b>	<p>The Institutional, administrative and legislative issues for managing water resources in Romania and in the Olt River in particular were discussed.</p> <p>The Romanian institutional, administrative and legislative framework is largely guided by the European Framework for Water Directive as well as the globally accepted principles of Integrated Water Resources Management. The European Framework for Water Directive includes the principles of Integrated Water</p>	<p>A number of similarities in the institutional, administrative and legislative frameworks at regional, national and local levels in Romania and in Swaziland and South Africa were further discussed and confirmed:</p> <p><i>Regional Level</i> – Southern African Development Community (SADC) and European Community (EU).</p> <p>These regional institutions promulgated water</p>

		<p>Resources management were presented and discussed. Romania is a full member of the European Union. As such, Romania has reviewed its water legislation (2002), institutions and administrative frameworks to be in line with those of the European Union.</p> <p>The key elements of the these are:</p> <ul style="list-style-type: none"> <li>▪ Decentralization of water management,</li> <li>▪ Cost Recovery,</li> <li>▪ Application of User and Polluter pay principles,</li> <li>▪ Managing water using a basin approach.</li> <li>▪ Considering water as an ecological system with both ecological and biological value.</li> </ul> <p>In Southern Africa, Swaziland and South Africa have also reviewed their legislation to incorporate the principles discussed for Romania above. In South Africa, the water legislation was reviewed in 1998. Catchment Management Agencies (CMA) were established through the legislation as water management institutions at river basin level. Swaziland water legislation was revised in 2003. River Basin Authorities (RBA) were established through the legislation to manage water at river basin level. The CMAs and RBAs are currently being created through a participatory process and it will be a long way before they are fully functional. Romania in can certainly provide practical guidance from experience on the formation of these institutions.</p> <p>Romania has gone through the characterization and classification</p>	<p>management policy frameworks for water management for their respective regions. The European Frameworks for Water Directive is the policy frameworks for the European Union while the SADC Regional Water Policy and Strategy the SADC Protocol on Shared Watercourse system is a policy framework for Southern African States. Common principles of water resources management are contained in these policies and include:</p> <ul style="list-style-type: none"> <li>▪ Establishment of basin organizations e.g. Olt River Basin in Romania and Komati Catchment Management Agency and Komati River Basin Authority in South Africa and Swaziland respectively.</li> <li>▪ Managing water using a Basin approach.</li> <li>▪ Adoption of the concept of Integrated Water Resources Management and a tool for water Resources management.</li> <li>▪ The principle of considering water as an ecological system with biological value.</li> </ul> <p>National water legislation is drawn up by the Government to give effect to the regional policies.</p> <p><i>National and Local Levels:</i></p> <p>Similarities were noted</p>
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		<p>process of its water resources as required by the European Framework for Water Directive. It is currently embarking on other components of the Directive. The experiences gained by Romania in the implementation of the early phases of the European Framework for Water Directive are essential to share with its Southern African counterparts. The Komati River Basin Authority can certainly gain immensely from the experience of the Olt River Basin Organization.</p>	<p>between national water management institutions such as the Romanian Water Administration and River Basin Organizations such as the Olt that had similar functions to the National Water Authority and the Komati River Basin Authority in Swaziland as well as similar institutions in South Africa that include the Catchment Management Agencies (CMA).</p>
		<p><b>Management of Transboundary Water Resources:</b></p> <p>Romania, like Swaziland and South Africa shares water resources with other neighboring states. As such it has legislation and institutions for managing the sharing of transboundary water resources. Romania is entirely within the Danube River System. It is a member and current Chairperson of the Danube River Commission. The Danube River Commission is a basin commission responsible for the management of transboundary water resources for basin states.</p> <p>Swaziland and South Africa also has legislation and institutional frameworks for managing shared rivers. The Joint Water Commission (JWC) is responsible for the management of water resources shared between Swaziland and South Africa.</p>	<p><i>Transboundary Waters:</i></p> <p>The SADC Protocol on Shared Watercourses sets the Policy Frameworks for the management of transboundary waters in the SADC Region.</p> <p>There were similarities in the functions of the Danube River Commission in Europe and the Joint Water Commission between South Africa and Swaziland. Both the Danube River Commission and the Joint Water Commission are responsible for water sharing, development and sharing in their respective basins. They are constituted with representatives from each member state.</p> <p>It was also noted that there are a number of transboundary water resources infrastructure developments in Romania and between Swaziland and South Africa. Examples are the Komati River Basin Development Project between South Africa and Swaziland</p>

			and the Portile de Fier that supplies electricity between Romania and Bulgaria
		<p>The Olt River Basin is responsible for the development and management of the water resources of the Olt River under the guidance of the Romanian Water Administration.</p> <p>The Komati River Basin Organization is a transboundary water infrastructure development and management organization for the Komati River Between South Africa and Swaziland. The Komati Basin Authority (KOBWA) is a bi-national organization under the Joint Water Commission.</p>	<p>While both the Olt River Basin Organization and the Komati River Basin Authority (KOBWA) are responsible for water management in their respect basins, differences were noted and discussed pertaining their water development and management functions as well as their composition. The Olt River Basin Organization is a national organization under the Romanian National Water Administration responsible for all aspects of water development and management in the Olt river. On the other hand the KOBWA is a bi-national agency under the Joint Water Commission responsible for transboundary water resources infrastructure development and management.</p>
<b>2</b>	<b>Dam operation, surveillance and maintenance in the Olt River Basin.</b>	<p>The International Commission on Large Dams (ICOLD) provides technical support on the design, construction, operation and maintenance of large dams. It has branches in many countries with large dams. Consiliu National pentru Siguranta si Intretinerea Barajelor (CONSIB) represents Romania in ICOLD while the South Africa Commission on Large Dams (SANCOLD) represents South Africa. Swaziland is currently not represented in ICOLD. Both South Africa and Romania have legislation governing dams. Discussions were held on this legislation and the general state of</p>	<p>SANCOLD in South Africa and CONSIB in Romania play a vital role in the technical aspects of dams in these countries. Both Romania and South Africa have specific legislation governing dam safety. Swaziland currently has no dam safety legislation and KOBWA uses the South African legislation on Maguga Dam. Small dams falling outside the definition of large dams have become a concern in both the Olt and Komati River Basis since such dams do not have adequate design and</p>

		<p>Romanian Dams. The Olt River Basin has a number of Dams in its tributaries. These dams serve a number of purposes such as hydropower, water supply and flood control. The general state (safety, operation and maintenance) of these dams was discussed including the state and requirements for monitoring instruments for pressure, seepage and movement. Discussions were held on small dams falling outside the Dam Safety legislation. The environmental impact of large dams was discussed as well as possible ways for mitigating such effects.</p>	<p>construction yet they have a potential to cause damage. Dams on the Olt and Komati rivers serve multiple purposes such as flood control, flow augmentation, hydropower and water supply. Of late the environmental effects (fish migration) of dams are a great concern and efforts to rectify and mitigate these impacts are at the top of the agenda for both the Komati and Olt River basins.</p>
<p><b>3</b></p>	<p><b>Implementation and improvement of monitoring networks</b></p>	<p>The European Framework for Water Directive and Romanian legislation requires that basin organizations to monitor both water quality and quantity. The information collected and analyzed is sent to Bucharest via electronic media to the Romanian National Water Administration Dispatch Office.</p> <p>The Governments of South Africa and Swaziland also carry out water quality and quantity monitoring on the Komati River as per national legislation. KOBWA carries out water quality monitoring on the Komati River on selected sites to indicate transboundary water quality and quantity conditions.</p>	<p>Water Quantity monitoring in Romania is such that it is inclined to providing information on normal flows and floods while that of South Africa and Swaziland is generally aimed at providing low flow conditions.</p>
		<p>The Olt River Basin Organization carries out an integrated water quality monitoring programme involving both qualitative and quantitative analysis. The Olt River Basin Organization and its regional offices operate water quality laboratories. The main water quality laboratory is based in Ramnicu Valcea and is one of four internationally accredited</p>	<p>Currently Romania has a comprehensive water quality monitoring system. In comparison, the Komati Basin Water Authority is only monitoring for indicative quantitative indicators such as temperature and conductivity. The Governments of South Africa and Swaziland have parallel</p>

		<p>laboratories in Romania. The results are dispatched electronically to the Romanian National Water Administration Dispatch Office in Bucharest. The Water quality monitoring activities include biological, bacteriological, microbiological, physical and chemical. Both surface and ground water bodies are monitored in lakes, rivers and groundwater. Currently the water quality monitoring activity is carried out manually. However, real-time water quality monitoring is planned.</p>	<p>water quality monitoring activities on the Komati River system that are more comprehensive and KOBWA uses this information to monitor water quality. KOBWA has plans at an advanced stage for an internationally accredited laboratory.</p>
		<p>A number of water quantity measuring stations in Romania measure both surface and ground water quantity on lakes, rivers and ground water. On the Olt River, the information is gathered by the regional offices and dispatched to the Olt River main Office in Ramnicu Valcea and from there it is dispatched to the National Dispatch Office in Bucharest. Currently water quantity is measured manually although plans are underway to measure and transmit the information electronically in real-time.</p> <p>In the Komati River, the Swaziland Government and the South African Governments carry out both manual and near real-time surface and groundwater water quantity measurements. The near real time data is transmitted either via satellite or GSM networks.</p> <p>KOBWA operates near real-time water quantity measurements on the Komati River at strategic locations such as rivers and lakes for operational purposes. KOBWA is currently establishing a program for groundwater monitoring.</p>	<p>KOBWA is at the planning phase of groundwater quantity measurement while the Olt River Basin maintains and operates networks of both surface and groundwater quantity measurement.</p> <p>In the Olt River water quantity data is measured manually and plans are underway to have this data transmitted in real time electronically. In the Komati River water quantity data is transmitted mainly in near real time using either satellite or GSM network.</p>

<p><b>4</b></p>	<p><b>Drought and Flood Mitigation Strategies</b></p>	<p>Flood Management in the Olt River Basin is guided by the European Framework for Water Directive. Flood monitoring is very advanced because of the large river system with numerous dams. There are flood defenses in the form of levies around settlements such as cities, towns and villages. The Olt River Basin Organization maintains a fully fledged flood-monitoring Department that receives information about floods from regional offices with monitoring stations in strategic locations such in rivers and lakes. The flood information is dispatched to the National Dispatch Office in Bucharest and when there is a flood, the information is dispatched to local structures that perform flood warning and evacuation.</p> <p>A simple but effective colour coded system (green, yellow, orange and red) is used to indicate flood conditions. The colour code indicates the possibility of flooding based on meteorological and hydrological information. Such a system is easy for the public to understand.</p>	<p>The southern part of Romania is currently experiencing drought conditions. The situation improves a little as one move inland to places like Sibiu and Ramnicu Valcea. However, in some parts of the Olt River there is some localized flooding. The Komati Basin is also currently undergoing a drought and water supplies for irrigation have been curtailed by 25% this year.</p> <p>The Olt River Basin has large rivers with several dams that are prone to flooding. Flood planning and mitigation is taken very seriously. As a result, Flood Monitoring, Surveillance, Protection, Emergency Preparedness and Mitigation is advanced.</p> <p>The Komati River has small rivers in comparison to the Olt River. The rivers do not have large human settlements and have generally steeper slopes. But flooding is a problem in localized areas. The Komati Basin Water Authority has a flood Emergency Preparedness Plan mainly aimed at Dams.</p>

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		<p>The Olt River Basin Organization has drought plan that is activated during drought conditions. The plan involves monitoring the Olt River flows at various stations on lakes, rivers and groundwater. Static operating rules are used to curtail water supplies. There are curtailment rules for each water user sector and given for various flow duration in progressive order as the drought gets worse. User sectors such as water for aquatic ecosystem and domestic water supply are given priority during curtailment. None efficient and non-productive water user sectors are curtailed first.</p>	<p>The Komati River uses dynamic operating rules to curtail water supplies during drought condition. This is possible because water allocations are issued in volumes for each water year. These volumes are curtailed pro-rata for each water user sector beginning with low assurance water use such as irrigation. This method called fractional water allocation allows each water user to use water according to their requirements without the fear of losing their allocated water to priority users. Fractional water allocation is very complex and demands a high degree of water user abstraction measurement as well as a sophisticated, up-to-date and reliable flow measuring system.</p>

## 2. ACTIVITES DEVELOPED during the mission

A large number very interesting components and activities were visited, this also included sufficient opportunities to meet for discussions and exchange of information with various professionals involved in policy and operational level. The benefits and lessons are shared in the sections following the description of these activities in this section of the report.

<b>Activity 1</b>	<b>Topic: Tour of National Dispatch Office in Bucharest, Mihailesti Dam and confluence of the Danube and Olt Rivers</b>
<b>Description</b> <i>(Exchange of experience or practice, increasing of knowledge and learning, Development of methodology, Training...)</i>	<p>A tour of the Romanian National Water Administration Dispatch Office in Bucharest was conducted. The office receives and dispatches surface and groundwater water quality and quantity data from stations all over Romania. The tour proceeded to the Mihailesti Dam and hydropower station on the Arges River. As the tour proceeded to the confluence of the Danube and the Olt River, the effects of the drought were evident on the maize and sunflower crop. The Danube River forms the boundary between Romania and Hungary. At</p>

	<p>the confluence of the Danube and Olt River the flow of the Danube River was low (about 3.5 thousand m<sup>3</sup>/s). The low flow impacted on navigation since the average flow depth of about half a meter.</p>
<b>Activity 2</b>	<p><b>Topic: <i>Institutional framework and Tour of Dispatch Office, Ciunget and Raureni Dam and Hydropower Stations</i></b></p>
<b>Description</b>	<p>Presentations and discussions were held with senior officials of the Olt River Basin Organizations in Ramnicu Valcea on the institutional, administrative and legislative aspects of water resources management in Romania from regional, national and local (basin) scales. The functions of each department were presented and discussed including successes and challenges faced by each institution as it carries out its mandate under the Romanian and European Water Directives.</p> <p>A tour of the Olt River Organization dispatch office was conducted and its functions were explained. The Dispatch Office receives river flow, lake levels and pollution data from the regional stations in the Olt River Basin (Olt, Valcea, Sibiu, Brasov, Covasna, Harghita) and dispatches the information to the National Dispatch Office in Bucharest.</p> <p>A technical tour of Raureni dam and hydropower and Ciunget hydropower stations was made. Ciunget hydropower is located on the Lotru River. The Ciunget hydropower station has an installed capacity of 510 Mega Watts from three 170 Megawatts sets of turbines. The Hydropower is located 140 meters below ground. The Ciunget hydropower station is a peaking power station and water is pumped to this system from other dams during off peak periods. The Raureni dam on the Olt River is near Ramnicu Valcea city. The dam has a net capacity of 8 million m<sup>3</sup>. The hydropower at the Raureni dam generates at base power and has an installed capacity of 24 Mega Watts from two turbines.</p>

<b>Activity 3</b>	<p><b>Topic: <i>Press Conference and Tour of Olt River Organization Water Quality Laboratory</i></b></p>
<b>Description</b>	<p>A press conference was held with the local press to provide information on the Olt – Komati Twinning arrangement. This was followed by a tour of the Olt River Organization laboratory was conducted. The laboratory conduct biological, chemical, physical, toxicological, bacteriological and other parameters from samples collected at various stations (lakes, industrial effluent, drinking water abstraction points, groundwater etc.) on the Olt River. It is one of four accredited laboratories in</p>

	Romania. The laboratory also coordinates the work of other smaller laboratories in the regions within the Olt River.
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<b>Activity 4</b>	<b>Topic: Visit to Gura Raului, monitoring stations and Catchment area</b>
<b>Description</b>	<p>A tour of the Gura Raului in the Sibiu region of the Olt River was conducted. The dam was completed in 1980. It has gross capacity of 15-million m<sup>3</sup> and supplies water to the city of Sibiu and has a 4 Mega Watts hydropower. The dam has a maximum height of 75 meters, a crest length of 330 meters a spillway capacity of 800 m<sup>3</sup>/s. An inspection of the flow measuring station above the Gura Raului dam was carried out. The station is a rated section fitted with a chart recorder that is read regularly.</p> <p>A tour of the Cibin River catchment was made. This catchment is heavily forested with natural forest and mountain areas with their peak at 1400 meters above sea level. The catchment has pristine streams that are used as reference sites for mountain river ecology.</p>

<b>Activity 5</b>	<b>Topic: Visit to Sibiu Water Management Offices and Balea Lake</b>
<b>Description</b>	<p>A visit to the Sibiu Water Management Office was made. A tour of the various departments was conducted. The Departments have the same structure and function to those of the Olt River Basin head Office in Ramnicu Valcea. The increase in the demand for the services of the Departments has highlighted the need for an increase in personnel as well as modernization of equipment.</p> <p>The Balea natural lake high up in the Fagaras mountains at an altitude above 2000 meters above sea level was visited. The lake is the source of the Balea river. It attracts many tourists especially during the skiing period and mountain walking trails attract tourist in summer. The lake is used as a reference monitoring lake for lakes at high altitude.</p>
<b>Activity 6</b>	<b>Topic: Visit to Sibiu Waste Water Treatment Plant and Clear Water Treatment Plant</b>
<b>Description</b>	<p>The Sibiu Water Treatment Plant was visited. The treatment plant receives and treats water from Gura Rului Dam. It supplies treated water to the city of Sibiu.</p> <p>A tour of the Wastewater Treatment for the city of Sibiu was conducted. The treatment plant is being upgraded and</p>

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	<p>modernized under the European Union rehabilitation programme for wastewater treatment plants. Both the wastewater and the clearwater treatments are operated by an organization owned by the Sibiu municipality.</p>
<b>Activity 7</b>	<b>Topic: Visit to the Tarlung and Dopca Dams and meeting with the Brasov of local Government representatives</b>
<b>Description</b>	<p>The Tarlung Dam that provides flood attenuation and water supply to Brasov-Secele was visited. The dam was originally a 45-meter high dam made from natural material is currently being raised to 50 meters. This will increase the volume of the dam from 18 million m<sup>3</sup> to 28 million m<sup>3</sup>. A mini hydropower station is also under construction at the dam. Some slopes stabilization works have been constructed to stabilize the right flanks (looking downstream) from landslides.</p> <p>A courtesy call was made to the office of the mayor of Brasov where discussion with the representatives of the Brasov local Government was made on the progress of the Twinning Arrangement and the current mission.</p> <p>The tour proceeded to the Dopca Dam that supplies water to Rupea. The dam is a concrete faced dam with a crest length of 160 meters and a volume of 1 million m<sup>3</sup>.</p>
<b>Activity 8</b>	<b>Visit to the local Government Office to meet with representatives of local Government, Frumoasa dam and Rosu natural lake</b>
<b>Description</b>	<p>A meeting was held with the local Government representative of Miercurea Ciuc. A tour of the Frumoasa dam on the Frumoasa river was conducted. The Dam supplies water to Miercurea Ciuc city. Rosu natural lake on the Bicz river was visited.</p>

### 3. LESSON LEARNT during the mission

*(what could be shared with other partners and/or introduced in guidelines, as far as IWRM is concerted)*

The Olt River Basin Organization demonstrates how appropriate institutions supported by an appropriate legislative framework can aid the application of **Integrated Water Resources Management** at basin scale. The Romanian National Water Administration, the Olt River Basin Organization and its sub-regions have been implementing the European Framework for Water Directive policies and programs for some time. The experience gained by these institutions can be very valuable for other regions such as SADC and countries such as Swaziland and South Africa who are at an early stage of a similar process.

The Olt River Basin Organization implements the European Framework for Water Directive and Romanian Water law at Basin level. One the key concepts of the European Framework for Water Directive and Romanian water Law is the management of water

resources using an **ecological, biological and river basin approach**. This approach to water resources management will have far reaching effects in ensuring that the rivers are able to deliver the goods and services that are essential to human survival. The Romanian National Water Administration and the Olt River Basin Organization have gone through the initial stage of the Romanian Water Management Plan. Surface and groundwater resources have been characterized and classified according to the guidelines of the European Framework for Water Directive. The Olt River has gained vast experience in this exercise and the Komati Basin Water Authority and others can certainly learn a lot from the experience of the Olt River Basin Organization.

The Olt River Basin Organization has a **comprehensive water quality monitoring programme** focusing on both quantitative and qualitative aspects of both surface and groundwater sources. Water quality sites are located at strategic places on rivers, lakes, groundwater, water supply abstraction points and industrial discharge sites. The Olt River Organization operates internationally accredited water quality laboratories that analyses water samples for bacteriological, chemical, physical and toxical parameters. This high standard and comprehensive water quality monitoring programme is vital for human safety and to ensure the ecological biodiversity of water resources. The Komati River Basin Authority and others can benefit a lot from the experience gained by the Olt River on water quality monitoring.

Rivers transcend political boundaries and as such demand that they are managed from a basin approach. Cooperation between nations on water resources management is essential. For this to happen, it is important to **share the benefits and cost of water resources development and management** at international level. Romania has shown that this is feasible. The cooperation of Romania and its co-basin states on floods and sharing of water quality and quantity information is an example for other countries to copy. Projects such as the Portile de Fier hydropower project between Romania and Bulgaria show how costs and benefits for water resources development can be shared between countries.

The Olt River Basin Organization and Romania in general have realized the **ecological effects of large dams** that impede the migration of fish on rivers. The Olt River Organization is currently searching for ways and means to solve this problem. Certainly there is room to cooperate with the Olt River on this initiative because it is a global problem. Section 4 below expands on how the experiences gained from the Olt Basin can benefit basin authorities in Southern Africa in general and more specifically also benefit KOBWA. Amongst the most important being the benefits to KOBWA in the field of water quality monitoring as conducted by the Olt Basin and also from their experiences regarding the development and operation of laboratories. and the communication network as used by the National Authority.

#### 4. DISSEMINATION (opportunities and difficulties)

*In what measure these learnt lessons are applicable to:*

- **Basin Level**

The experiences of the Olt River Basin Organisation can be applied by basin institutions such as the Catchment Management Agencies (CMA) in South Africa and the River Basin Authorities (RBA) in Swaziland. The Olt River Basin has

demonstrated that River Basin Organisation can operate effectively and efficiently if these are set-up appropriately. It has also demonstrated the institutional, technical, operational and financial viability of basin organisations. The Olt River Basin Organisation has shown how to respectfully coordinate the functions of its local and regional (Olt, Vilcea, Sibiu, Brasov, Covasna, Harghita) structures without compromising national water resources functions.

The comprehensive water quality monitoring programme for the Olt River Basin Organisation can be applied at Basin level anywhere in the world. The Komati Basin Water Authority stands to benefit immensely (a lot) from the experiences learnt from the Olt River Basin Organisation.

- **National IWRM practice**

The success of the Romanian National Water Administration in implementing the European Frameworks for Water Directive policies and programme is a lesson that can be applied by similar national water bodies such as the Swaziland National Water Authority. The functional relationships that the Romanian National Water Administration has established with its Basin affiliates such as Olt River Organization is valuable particularly because it is carried out without compromising the interest of the European Union interest in water resources management.

- **Regional experience**

Regions such as the Southern African Development Community can learn to share the costs and benefits of joint water resources development and management. The Komati River Basin Project between South Africa and Swaziland as well as the Portile de Fier hydropower project between Romania and Bulgaria has shown the practical application of this concept. Already a number of similar projects in regions such as the Mikong River Basin, Niger River Basin, Nile Basin and the Zambezi River Basin initiatives that are currently embarking on benefits and cost sharing initiatives for water resources development. These stand to benefit from the Romanian experience.

- **Worldwide**

The experience gained by the Olt River on the ecological and river basin approach to water resources monitoring can be applied globally. There are huge benefits to be gained in applying this approach to water resources management. Currently countries around the world are losing the ecological biodiversity of rivers which results in rivers failing to produce the much needed goods and services particularly to the world poor people.

## 5. IDENTIFIED TIPS

The following tips are offered for future missions and other missions of this nature.

- It is advisable to have people in the mission who have a good command of the languages used by members of the delegation because language can be a barrier and can delay progress.

- It is wise to exchange programmes and have them agreed well in advance to allow for proper preparation.
- It is essential to include the media, and other cultural activities in the programme because these play a vital role in the implementation of integrated water resources management. It is also important to include meetings with political figures and decision makers in the programme because ultimately they are the ones who make things happen.

## 6. PERSONAL COMMENTS

*What does the missionary think about his mission?*

The mission was very beneficial, informative and well organized. Numerous people as indicated in the list of contacts below were met. These included senior officials, political figures as well as professionals and technicians. The hospitality of the Romanian people and the professional manner in which they organised the mission was unparalleled. There were many similarities in the implementation of integrated water resources management but certainly in many areas Romania and the Olt River Organisation have made some advances over the Komati Basin Authority.

7. As the main purpose of the initial visits were for the representatives of Olt Basin and KOBWA to learn from each other, identify areas of mutual interest and also identify specific areas where we could concentrate on to optimise future benefits. This includes areas where we need to concentrate often in the future. In addition we have also identified areas of how the visits could be improved in future. See section 5 above.
- ### CONCLUSIONS AND POSSIBLE AREAS OF FUTURE COOPERATION

- The Komati Basin Water Authority identified the need to visit the meteorology and hydrology institutes in Bucharest to find out in detail the decision support tools (computer models) that are utilised in Romania for flood forecasting.
- The Olt River Basin Organisation identified need to visit the Komati Basin Water Authority to study in detail the application of the concept of Fractional Water Allocation that is used by KOBWA to allocate and manage water to various users.

## 8. CONTACTS

*Principal local contacts met*

*A comprehensive list of contacts has been compile to ensure that it will be easy to identify and contact specific individuals in future.*

Name	Occupation	E-mail	Phone number
<b>Manolescu Maria Ana</b>	<b>Engineer National Administration</b>	<a href="mailto:maria.manolescu@rowater.ro">maria.manolescu@rowater.ro</a>	<b>(+40) 21 315 5535 (O)</b>

	<b>Romanian Water</b>		<b>(+40) 74 506 4173</b>
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## 9. BIBLIOGRAPHY

*Main documents, manuals or supports used during the mission which could be useful for colleagues*

*A detailed list of all relevant documentation is attached as this report will be used for future reference by KOBWA.*

<b>Name</b>	<b>Description / Notice</b>
<ul style="list-style-type: none"> <li>▪ European Water Directive 75/440/EEC – Romanian Legislative General Directive 100/2002 amended by General Directive 662/2005 and 567/2006</li> </ul>	Surface Water Directive for Drinking Water Abstraction
<ul style="list-style-type: none"> <li>▪ European Water Directive 76/464/EEC – Romanian Legislative General Directive 351/2005 amended by General Directive 783/2006</li> </ul>	The Dangerous Substance Directive

<ul style="list-style-type: none"> <li>European Water Directive 80/68/EEC – Romanian Legislative General Directive 351/2006 amended by General Directive 783/2006</li> </ul>	Ground Water Directive
<ul style="list-style-type: none"> <li>European Water Directive 78/659/EEC – Romanian Legislative General Directive 202/2002 amended by General Directive 563/2006</li> </ul>	Fresh Water Fish Directive
<ul style="list-style-type: none"> <li>European Water Directive 79/923/EEC – Romanian Legislative General Directive 201/2002</li> </ul>	Shellfish Water Directive
<ul style="list-style-type: none"> <li>European Water Directive 79/869/EEC – Romanian Legislative General Directive 100/2002 amended by General Directive 662/2005 and 567/2006</li> </ul>	Measurement of Surface Drinking Water Directive
<ul style="list-style-type: none"> <li>European Water Directive 91/676/EEC – Romanian Legislative General Directive 964/2000</li> </ul>	Nitrates Directive
<ul style="list-style-type: none"> <li>European Water Directive 91/271/EEC – Romanian Legislative General Directive 188/2002 amended by General Directive 352/2005</li> </ul>	Urban Waste Water Treatment Directive
<ul style="list-style-type: none"> <li>European Water Directive 98/83/EEC – Romanian Legislative General Directive 458/2002 amended by General Directive 381/2004</li> </ul>	Drinking Water Directive
<ul style="list-style-type: none"> <li>European Water Directive 2000/60/EEC – Romanian Legislative General Directive 107/1996 amended by General Directive 310/2004 and 112/2006</li> </ul>	Water Framework Directive
<ul style="list-style-type: none"> <li></li> </ul>	

**Websites**

<b>Name</b>	<b>Description/ Notice</b>	<b>Address</b>
Olt River Directorate	Site of Olt Water Directorate	<a href="http://www.apeot.ro">www.apeot.ro</a>

National Water Administration	Romanian National Water Administration	<a href="http://www.rowater.ro">www.rowater.ro</a>
Danube River Commission	International Commission for the Protection of the Danube River	<a href="http://www.icpdr.org">www.icpdr.org</a>
Sibiu Water Management Unit	Sibiu Water Management Unit	<a href="http://www.apesb.ro">www.apesb.ro</a>
SADC	Southern Africa Development Community	<a href="http://www.sadc.int">www.sadc.int</a>
KOBWA	Komati Basin Water Authority	<a href="http://www.kobwa.co.za">www.kobwa.co.za</a>
DWAF	Department of Water Affairs	<a href="http://www.dwaf.org">www.dwaf.org</a>
SANCOLD	South African Commission on Large Dams	(Use search internet engine )
ICOLD	International Commission on large Dams	(Use search internet engine)
OKACOM	Okavango Basin River Commission	(Use search internet engine)
ZAMCOM	Zambezi River Basin Commission	(Use search internet engine)
ORASECOM	Orange – Senqu River Basin Commission	(Use search internet engine)

*N.B. This framework provides necessary information for further capitalisation and dissemination, but should not prevent experts from making any other comments (as far as basins characterisation is concerned, for instance).*



## Mission reference

2007 C4 T26 M2

Date: 03.08 – 15.08.2007

## Financial report

<b>Expert Name:</b>	<b>Arrival and departure dates</b>
Chris Keevy	3 to 10 August 2007
Enoch M Dlamini	3 to 15 August 2007
Sidney M Dlamini	3 to 15 August 2007
Mathokoza Manana	3 to 15 August 2007

Date of arrival	Date of departure	Number of days	days cost (€)	travel cost (€)	Total*
3 August 07	10 August 07	8	700	1000	1700
3 August 07	15 August 07	14	700	1000	1700
3 August 07	15 August 07	14	700	1000	1700
3 August 07	15 August 07	14	700	1000	1700

- We use the Oanda currency converter to exchange in euro at the date on the travel invoice.
- 

Copies of invoice from travel agency, boarding passes and airtickets are attached.

In addition to the above experts KOBWA also included Mr Knox M Nxumalo (Chairperson and legal expert) and Angel Gwebo (Technician Operations Maguga dam) into the delegation to visit the Olt Basin in Romania. This was done to get the maximum benefit out of the visit and these costs were funded in full by KOBWA. Mr Nxumalo stayed 9 days and Mr Gwebo 14 days.

KOBWA would like to express our sincere appreciation to Twinbasin for making this unique opportunity possible.

**Name and address of the Basin Organization : Komati Basin Water Authority**

To:	Komati Basin Water Authority
Bank's name:	Standard Bank of South Africa
Bank's address:	PO Box 37, Nelspruit, 1200. South Africa
Account number:	03 289 437 6
Bank Code:	052 852
IBAN code **:	
SWIFT BIC CODE:	SBZA ZA JJ

\*\* IBAN CODE is only for European country.

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E-mail: [info@techwarenet.org](mailto:info@techwarenet.org)

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