Swiss Agency for Development and Cooperation

Report of the
External Review of the

Integrated Water Resources Management Ferghana Valley Project
IWRM-Ferghana
Phase III: May 2005 to April 2008

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<td>AAC</td>
<td>Aravan – Akbura Canal</td>
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<td>AAC MO</td>
<td>AAC Management Organization</td>
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<tr>
<td>AAC WC</td>
<td>AAC Water Committee</td>
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<td>ACTED</td>
<td>Agency for Technical Cooperation and Development</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
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<td>ASDP-Nau</td>
<td>Agency Support Development Process Nau (Tajik NGO)</td>
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<tr>
<td>BAIS</td>
<td>Basin Administration Irrigation System</td>
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<tr>
<td>BAMC</td>
<td>Big Andijan Magistral Canal</td>
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<td>BFC</td>
<td>Big Ferghana Canal</td>
</tr>
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<td>BFMC</td>
<td>Big Ferghana Magistral Canal</td>
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<td>BP</td>
<td>Business Plan</td>
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<tr>
<td>BWO</td>
<td>Basin Water Organisation</td>
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<td>CAR</td>
<td>Central Asian Region</td>
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<td>CECI</td>
<td>Centre for International Studies and Cooperation</td>
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<tr>
<td>CMO</td>
<td>Canal Management Organization</td>
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<tr>
<td>CTA</td>
<td>Chief Technical Advisor</td>
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<td>CWC</td>
<td>Canal Water Committee</td>
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<tr>
<td>FV</td>
<td>Ferghana Valley</td>
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<tr>
<td>FVMCA</td>
<td>Ferghana Valley Magistral Canal Administration</td>
</tr>
<tr>
<td>GA</td>
<td>General Assembly</td>
</tr>
<tr>
<td>ICARDA</td>
<td>International Center for Agricultural Research in the Dry Areas</td>
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<tr>
<td>ICWC</td>
<td>Interstate Commission for Water Coordination</td>
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<tr>
<td>IIWM</td>
<td>Integrated Irrigation Water Management</td>
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<tr>
<td>IS</td>
<td>Irrigation System</td>
</tr>
<tr>
<td>IWMI</td>
<td>International Water Management Institute</td>
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<td>IWRM</td>
<td>Integrated Water Resource Management</td>
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<tr>
<td>KBC</td>
<td>Khodja – Bakirgan Canal</td>
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<tr>
<td>KBC MO</td>
<td>KBC Management Organization</td>
</tr>
<tr>
<td>KBC WC</td>
<td>KBC Water Committee</td>
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<tr>
<td>MAWR</td>
<td>Ministries of Agriculture and Water Resources</td>
</tr>
<tr>
<td>MC</td>
<td>Magistral Canal</td>
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<tr>
<td>MIS</td>
<td>Management Information System</td>
</tr>
<tr>
<td>MLRWR</td>
<td>Ministry of Land Reclamation and Water Resources</td>
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<td>MoA</td>
<td>Ministry of Agriculture</td>
</tr>
<tr>
<td>MTP</td>
<td>Machine and Tractor Park</td>
</tr>
<tr>
<td>NCSG</td>
<td>National Coordination and Support Group</td>
</tr>
<tr>
<td>NFMC</td>
<td>North – Ferghana Magistral Canal</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Operation and Maintenance</td>
</tr>
</tbody>
</table>
PSC  Project Steering Committee
RAS  Rural Advisory Services
SFC  South – Ferghana Canal
SFC MO  SFC Management Organization
SFC WC  SFC Water Committee
SFMC  South – Ferghana Magistral Canal
SIC  Scientific Information Centre
SME  Small and Medium Enterprises
TES  Training and Extension Service
ToT  Training of Trainers
UAAC WU  Union of AAC Water Users
UCWU  Union of Canal Water Users
UKBC WU  Union of KBC Water Users
USFC WU  Union of SFC Water Users
UWU  Union of Water Users
WUA  Water User Association
WUASP  Water User Support Project (Winrock, Tajikistan)
WUG  Water User Group
YPO  Yearly Plan of Operations
The Integrated Water Resources Management Project in the Ferghana Valley (IWRM-Ferghana) is an important component of the Swiss Agency for Development and Cooperation’s (SDC) contributions to the reform of the irrigation sector in the Ferghana valley. The project is currently in its 3rd phase (5/2005 to 4/2008) and focuses on three pilot canals (Kyrgyzstan: Aravan-Akbura Canal; Uzbekistan: South Fergana Canal; Tajikistan: Khodjibakirgan Canal). Implementing Agency (parent organisation) is the Interstate Commission for Water Coordination (ICWC) of Central Asia. Project execution is mandated to a Consortium of the International Water Management Institute (IWMI) and the Scientific Information Centre (SIC) of ICWC.

The specific project phase objectives are:

- Modern water governance policies and management procedures as well as appropriate institutional arrangements are made fully functional at all selected pilot canals.
- Improved irrigation management practices and more productive water use are achieved.

SDC has fielded an external review of the IWRM-Ferghana Phase III in September 2007. Its findings are given in the current report.

Overall, the external review has found that the project has achieved substantial progress in not always favourable conditions and has managed to put the principles of Integrated Water Resources Management ‘on the map’ in the Ferghana valley. The project is also well anchored within the three governments and their respective ministries.

The project has developed a unique approach to IWRM (reorganising entire canals with both governance and management structures) for which no model was readily available. Due to this pioneering role, social mobilisation (raising awareness, explaining new concepts, convincing) has been important.

IWRM-Ferghana is rather complex – with two implementing organisations and three ‘country components’ – but also unique in that it has a strong regional or interstate collaborative focus. Progress in the three countries is uneven, with Kyrgyzstan in the lead, followed by Uzbekistan, and Tajikistan somewhat behind schedule. A range of reasons can be attributed to this, from government policies and strategies to the different size of the pilot canals as well as to structural aspects.

In order to come to grasp with the project’s complexity, the review mission has developed an analytical framework that separately addresses (i) institutional aspects (governance and management on canal and sub-canal levels); (ii) technical aspects (hydrotechnical and agronomic); (iii) systems development; (iv) capacity development; (v) management and information systems; and finally (vi) project organisation and management. Consequently, the review report is structured along these lines.
The review mission favours that the project goes into a further phase. The aim has now to be on (1) addressing the range of deficits identified by the review and consolidating progress made but, equally important, (2) to move on to next stages in the three countries. Piloting in general should be over, up-scaling and mainstreaming the core focus of future activities.

The basic questions in this respect evidently are (i) where the stage has been reached that replication at other canals is possible, and (ii) what kind replication is possible.

In Kyrgyzstan, the main advice is to (1) ‘finish the job’ at the existing pilot canal and (2) to develop a vision 2015 that addresses the question of (horizontal) up-scaling to other canals but also (vertical) up-scaling to the basin level.

In Uzbekistan, it is proposed to concentrate on finishing the on-going ‘hydrographisation’ at the (large) pilot canal by establishing a unified system for hydrographic canal governance, administration and management that transgresses the Oblast borders.

In Tajikistan, again, first the ‘job needs to be finished’ at the current pilot canal. Parallel to that, however, it is proposed to soon start activities in one canal system supplied with pumped irrigation water, as this is rather the ‘standard’ in the region than gravity-flow supplied systems.

In all canals, it is furthermore proposed to place more emphasis on economic aspects of canal operation. To this end, the economics of operating the existing as well as future canals should be thoroughly investigated in a kind of ‘due diligence’ exercises.

After the project contents have been decided, the best-suited organisational set-up to do the job at hand has to be designed (‘form follows content’) for the next phase. As general direction, the mission recommends a further ‘fusing’ of the organisational set-up into one body with unified managerial leadership.

The mission proposes to keep a strong regional overall umbrella but to better fine-tune national activities according to the differing context and stages of process. Strategic steering should clearly remain with the umbrella set-up, but more operational decentralisation should be given to the country components.
Introduction

Background

Based on its water sector strategy for Central Asia, the Swiss Agency for Development and Cooperation (SDC) contributes to the reform of the irrigation sector in the region since 2001. The Integrated Water Resources Management Project in the Fergana Valley (IWRM-Ferghana) is an important component of these efforts.

The Fergana valley has some of the most fertile soils of Central Asia and is one of the most densely populated areas in the region. The three republics Kyrgyzstan, Tajikistan and Uzbekistan divide the valley in rather complex border arrangements that date back to Soviet times. The equally complex irrigation structures in the valley are part of the Syrdarya basin system with its major canals and reservoirs that are complemented by a number of small rivers that directly feed into the system.

The IWRM-Ferghana Project is designed to improve the effectiveness of water resources management in the valley through the introduction of integrated water resources’ management (IWRM) principles. It mainly addresses possibilities for water saving, reorganisation of water administration, promotion and institutional build up of water user's association, establishment of unified management for three pilot canals and definition of transparent, fair and efficient water allocation mechanisms among users and between the countries.

During the brief Inception Phase I in 2001/2002, a detailed analysis was carried out of the valley irrigation systems and their legal, institutional, financial and managerial status. To this, an assessment was added of earlier experiences, methodologies and systems developed by other donors and regional and state organisations. The overall analysis led to the design of a subsequent three-year Phase II from May 2002 to April 2005.

A pilot canal was selected in each of the three countries (Kyrgyzstan: Aravan-Akbura Canal/AAC; Uzbekistan: South Fergana Canal/SFC; Tajikistan: Khodjibakirgan Canal/KBC). Along the pilot canals, water user organisations were created and water productivity improvement approaches tested.

The current Phase III started in May 2005 and is to last until April 2008. The institutional arrangements have been slightly adjusted and the project continues to be implemented by the same organisations as in Phase II. Implementing Agency (parent organisation) is the Interstate Commission for Water Coordination (ICWC) of Central Asia. Project execution is mandated to a Consortium of the International Water Management Institute (IWMI) and the Scientific Information Centre (SIC) of ICWC.
Phase III objectives

The overall objective of IWRM Phase III is to contribute to more secure livelihoods, increased environmental sustainability, and greater social harmony, through improved effectiveness of water resources management in the Ferghana Valley.

The Project will contribute to this goal by further developing the earlier work and by broadening and deepening institutional, legal and managerial IWRM principles and practices in selected areas of the Ferghana Valley to achieve real public participation on all levels of the water hierarchy, as well as managerial and financial sustainability. It will improve land and water productivity and equal and efficient water use on a broader scale and contribute to poverty alleviation and environmental sustainability.

The specific project objectives are:

- Modern water governance policies and management procedures as well as appropriate institutional arrangements are made fully functional at all selected pilot canals.
- Improved irrigation management practices and more productive water use are achieved.

The following figure illustrates the project’s impact logic summarising the core elements of the overall and specific objectives of Phase III according to the project document.
Phase III Impact logic

Overall Objectives
- Securer livelihoods > reduced poverty
- Environmental sustainability
- Social harmony > less conflicts

More effective and equitable water use

Specific Objectives
- Institutional arrangements
- Government policies and laws
- Irrigation system management
- Productive water use

IWRM
Institutional/ governance
Technical/ management

External review of Phase III

SDC has fielded an external review of the IWRM-Ferghana Phase III in September 2007. The team consisted of two international consultants who were complemented by a national consultant for each country component.

The objectives of the external review, conducted for the entire project and separately for each country component, were as follows:

- Assess the shift made from the command system in the irrigation sector practiced during Soviet times towards a more decentralised, demand oriented integrated water resources management approach;
- Analyse functionality of Water User Groups and Water User Associations in terms of water use efficiency; addressing the water demands of the farmers; governance and transparency as well as management and self-reliance of these new structures;
- Analyse functionality of the respective Canal Management Organizations in terms of water use efficiency; addressing the water demands of the farmers; governance and transparency as well as management and self-reliance of these new structures;
- Provide for each country component recommendations with regards to improvements in IWRM institutional arrangements, legal framework, economic preconditions and financial management, social implications and benefits as well as applicability of the findings within other regions of each recipient country.
Analytical Framework of External Review

Based on the project impact logic, the following analytical framework has been developed by the review mission as basic tool to come to grasp with the rather complex logical framework and project activities and organisation.

- The analytical framework for the review takes as starting points the two main areas of the IWRM approach as well of the project’s interventions:
  1. The institutional sphere looks at the two main elements of (i) governance and (ii) management of the various bodies at the different levels of water management, from the main (or magistral) canal to the secondary and tertiary conveyance systems.
  2. The technical sphere looks again separately at the two main fields of (i) hydro-technics of water and irrigation and (ii) agronomy, i.e. the improvement of water and land productivity.

- The project’s main lines of activities are then divided into:
  (A) Development of systems to be introduced into the above two spheres, and
  (B) Capacity development to disseminate the systems that have been developed.

- The MIS, or management and information system, should hold the many threads of the rather wide range of project activities together and would ideally serve as strategic steering tool for the project leadership.
Structure of the report

The report structure follows the components of the review mission’s analytical framework (see above):

- **PART A: OVERALL FINDINGS** presents the topics of the review mission’s analytical framework, including a separate chapter on project organisation and management. It ends with an overall assessment of the projects progress within the given context it has to operate.

- **PART B: THE FUTURE PHASE IV** proposes the future direction and set-up in general and for each country, including organisational options. In a last section, the main recommendations contained in PART A are compiled.

- **PART C: COUNTRY COMPONENTS** consists of the three separate country reports with the respective proposals for future activities in the countries.

Acknowledgements

The review team would like to gratefully acknowledge the valuable contributions made in meetings and during field visits by government officials, project management and staff, Swiss cooperation offices as well as the wide range of farmers interviewed. Without their inputs and explanations, the present report would not have been possible. Any errors or omissions are of course the sole responsibility of the mission. Special thanks are finally due to the SDC Tashkent office for perfect organisation of the sometimes rather complicated logistics and transport.
A1 Institutional Arrangements

The wider regional context

In order to understand the wider context within which the project is situated, it is important to see the role that the Interstate Commission for Water Coordination (ICWC) for the five Central Asian states plays in the Syrdarya basin in general and the Ferghana valley in particular. The ICWC was established in 1992 to protect and regulate rational use of water resources across the state boundaries. The ICWC consists of two Basin Water Organisations (BWO) for the Amudarya and Syrdarya systems respectively, as well as the Scientific Information Centre (SIC). As the Ferghana valley falls under the Syrdarya basin, the three relevant states are Kyrgyzstan, Uzbekistan and Tajikistan, represented by their respective ministries (Land Reclamation and Water Resources in Tajikistan; Agriculture and Water Resources in Uzbekistan; Agriculture, Water Resources and Processing Industries in Kyrgyzstan).

National levels

On the national level, the differences between the countries are quite pronounced. In Kyrgyzstan, the required laws and regulations to introduce the IWRM concept and related organisational structures are fully in place and prove that the government has really ‘bought-in’ to the idea of unified canal management with democratic governance structures. Partly, this might be also explained by the prevailing small units' structures and the consequent urgent need for a system that allows organising water distribution and conflict resolution involving a large number of actors.

In Uzbekistan, the government is carefully observing the pilot activities at the SFC. It has gone for a 'big bang' of setting-up WUAs, however with administrative rather than
hydrographic boundaries. The project's pilot activities with hydrographic WUAs along the SFC are closely followed by the ministry; the current difficult re-registration process for the latter, however, remains a challenge.

The institutional situation related to irrigation in Tajikistan is, as other components of the agricultural production systems, changing only slowly with still unknown path and direction. The situation is currently dominated by profound country-wide conflicts that are outside the project’s control. Disputes for control and power over land and resources are taking place between farmers and ‘investors’, between government officials and farmers, etc. As a consequence, concrete government support is less pronounced than in the other two countries.

As in many other field of technical assistance, a lack of coordination between different WUA-based irrigation projects is evident in all three countries. Efforts are being made but it proves to be a cumbersome process to bring the governments and the donors with their different agendas to one table.

The National Coordination and Support Groups (NCSG) have been set up, according to the ProDoc (page 8), in each country (i) to steer and support Project activities in selected pilot sites on national level; (ii) to organize fund raising for rehabilitation of pilot systems network; (iii) to promote the new institutional approach of the Project to transforming CWC/CMO to single participatory organizations [ ]; (iv) to transfer the results of the pilot experiments to the national policy by means of proper technical, institutional, legal, and managerial regulations; (v) to promote the implementation of extension services outside the scope of Project activity.

The mission has only met with some NCSG representatives, usually during the debriefing sessions in each country. The NSCG are not really visible and, according to reports, not very pro-active, with the partial exception of Kyrgyzstan. As such, the concept of a national level body is certainly good as it brings together people of different ministries. There are many issues that should indeed be addressed, like WUA registration process in Uzbekistan, or the high taxes and fees in Tajikistan, to name but two.

The mission is of the opinion that the current leverage of the project may not be sufficient to really motivate such a steering group on the national level. The mission, however, is also of the opinion that an active and strong national steering body is required if up-scaling is to be central to the potential next phase.

**Canal level**

It first has to be borne in mind that the canal level organisations described below – both on the governance and management side – are relatively young and an entirely new phenomenon for the region. The principle of user involvement contradicts past systems of autocratic and centralistic control; one can therefore not expect easy and fast changes. The project’s core intention has been to first create a critical mass within each canal set-up with the related expectation that this critical mass then can move things further.
Currently, the project is not yet fully into IWRM but rather into integrated irrigation water management. A start has been made in including other water users in Kyrgyzstan and Tajikistan. However, major challenges remain, as it will not be easy to include these other users. While it may be comparatively easy to bring in households that draw drinking water or irrigate their kitchen gardens, it will be more difficult to include entire city water supply systems that compete for the scarce water.

**Canal Management Organisation (CMO)**

In Kyrgyzstan, the AAC CMO is regarded as something of a 'model' and the government has agreed in a meeting with all Oblast Water Departments that it should be up-scaled, i.e. introduced also in other areas.

In Uzbekistan, the complexity of the current situation with two somewhat parallel systems of (1) the 'old' administrative Oblast and Rayon level Vodkhozes and (2) the new SFC CMO, leaves to the latter only the physical distribution of the canal water. Real canal management can only happen if water delivery contracts and fee collection is reorganised.

In Tajikistan, the CMO functions and has improved delivery to the large tail-end Kolkhoz but suffers from low collection rates from the few existing WUA and a general lack of trust from the farmers who perceive it still rather as an 'old boys network'.

For all CMO, the financial viability is an important, and in Tajikistan even the central, challenge. The respective business plans are not realistic and detailed enough to assess the real financial situation; all canal organisations should undergo a solid viability analysis. Indeed, this should from now on become project standard before any new canal is taken up for replication.

In this context, CMO staff strength is an important cost factor. The following table shows substantial differences between the three canals in terms of area coverage per staff:

<table>
<thead>
<tr>
<th>Canal</th>
<th>CMO staff</th>
<th>ha served</th>
<th>ha/staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAC</td>
<td>52</td>
<td>8'000</td>
<td>153</td>
</tr>
<tr>
<td>SFC</td>
<td>203</td>
<td>84'000</td>
<td>413</td>
</tr>
<tr>
<td>KBC</td>
<td>106</td>
<td>8'600</td>
<td>81</td>
</tr>
</tbody>
</table>

Obviously, efficiency gains seem possible, especially in the case of the KBC in Tajikistan, despite claims to the contrary.

**Canal governance: Union of (Canal) Water Users/U(C)WU**

The governance component on the canal level is strongest for the AAC in Kyrgyzstan. A first step to ‘export’ the concept has been made by setting up a WUA federation on part of the right bank canal along the secondary Uvam canal. The obvious next step now is to set up an
UWU for the whole right bank canal basin – preceded by a sound hydrographic study of the entire area.

In Uzbekistan, the UWU has been formed (along with sub-units or 'filials') and is led by a committed chairwoman. It has, however, no decision making power and is generally still finding its way.

The Tajikistan UWU is dominated by the large tail-end Kolkhoz and the WUAs are not yet members, though two have recently applied for membership.

**Canal Water Committee (CWC)**

This third body on the canal level is crucial to the entire IWRM concept as it is designed to bring together the management (CMO) and governance (UWU) bodies for joint decision-making.

Again, in Kyrgyzstan the CWC is operational and successfully meets and operates.

In Uzbekistan, the CWC was formed only recently and it still is unclear what powers it really holds, especially in relation to the administrative structures.

In Tajikistan, the CWC has also just been set up and, again, WUAs are naturally not yet included.

Both UCWs and CWCs in Uzbekistan and Tajikistan obviously need more time and careful support and monitoring before any final assessment can be made on their usefulness and best shape and function.

**Water User Associations (WUA) and Water User Groups (WUG)**

These two bodies are the core element of the below-canal level organisational set-up. The WUA has a management (director, accountant and hydro-technician) and a governance component (elected council and chairperson). The hydographic WUA visited usually work well and the concept seems to be both fitting and in demand.

The lower level WUG are an 'in-phase invention' by the project and work equally well, also because they are adapted to the different situations (in Kyrgyzstan on tertiary canal level, in Uzbekistan and Tajikistan normally on the secondary level).

Almost all WUAs and WUGs visited stated their satisfaction with the new set-up, claim that local level governance has improved, that water related conflicts could now be solved and had anyway generally decreased.

Again, progress is not uniform and the three systems are at different stages: In Kyrgyzstan, full coverage has been achieved with WUAs along the AAC; the number of WUGs was said to be continuously expanding. In Uzbekistan, along the large SFC, different generations of WUA exist side-by-side: fully hydographic ones but also a considerable number where not much has been achieved yet. Still, the concept obviously works. Tajikistan is behind as the three WUAs in the KBC perimeter are only in an embryonic stage.
Two major challenges emerge, both related to the WUAs’ finances: The first concerns the fee collection for water on the one hand (to be able to pay the CMO for water received) but also for the services delivered by the WUA (to be able to pay the staff). In Kyrgyzstan, the situation is comparatively good; in Uzbekistan progress is being made; but in Tajikistan the situation remains critical.

The second challenge is uniform in all three countries and relates to the difficulties to not only pay for running costs but to accumulate the required investment capital in order to maintain and rehabilitate the secondary canal (and drainage) infrastructure. While in the short term external funds may be sought for this, in the long term the WUAs need to be able to generate this income if they are ever to become truly independent and sustainable. One could call it a ‘killer condition’.

A2 Technical Issues

Hydrotechnical (Water and Irrigation)

The hydrotechnical information base providing data on water flow/volumes in primary canals and outflow to secondary canals is well established and being used every day. It facilitates access to updated data and allows for faster decision making faster (WUA – CMO – WUA), which is appreciated by canal management and WUA staff.

Infrastructure of primary canals is usually not a primary problem. Its status is generally OK in the project pilot canals, except for a small part of AAK that is not lined. Rehabilitation and improvements to primary canal infrastructure usually require large investments, which have to be financed by the governments and/or large (loans-based) donor projects. The SDC “Automation Project” has contributed to improving primary canal infrastructure, particularly assuring that water metering in the IWRM pilot canals is in place.

Infrastructure of secondary and lower-level canals is generally in worse condition than the one of primary canals, and big investments are needed for rehabilitation and improvements. Substantial technical (seepage and leakage) and “commercial” (unaccounted withdrawal) water losses are a major problem, and in view of the difficult financial situation of WUAs and water users the question "who pays for these water losses" is central.

Earlier, maintenance of secondary and lower-level canals used to be legally clear and operationally simple. Today, however, responsibilities for maintenance may be legally clear (although the mission hasn’t perceived that everywhere) but certainly operationally more complicated (canal management, administrative bodies, WUAs or WUGs – who decides and who does the work). Where responsibility for canal maintenance is with the WUAs, it represents a heavy burden for WUAs given their difficult financial situation. Whereas routine operation and management tasks (cleaning, minor repairs) may be accomplished (e.g. through Hashar), sufficient capital is not available for investments in rehabilitation and
infrastructure improvements. This generally leads to further deterioration of the canal systems.

Business plans of most WUAs do not include asset status and related investment needs; thus, they do generally not present a realistic picture of the situation. Including these aspects in business plans is, however, a precondition for roping in external funds for infrastructure rehabilitation/improvement. The mission has observed several success stories where external funding sources contributed to improvements at canal and WUA level, and strongly encourages the project leadership to link and lobby so that more such arrangements can be achieved.

**Water metering** (including gates) seems a key issue for achieving the project objectives. Where water volumes delivered to WUGs (in Kyrgyzstan) and farms (in Uzbekistan and Tajikistan) are measured, water use is generally reduced. Water measurement can facilitate equitable water distribution and irrigation scheduling, but also empowers farmers to only pay for actual delivery (not according to norms). It further allows identifying water losses in conveyance systems and thus prioritising investment needs for infrastructure rehabilitation and improvement. The mission has perceived a great demand for more water measuring devices and is convinced that this would be a good investment.

This implies that a **separate SDC project** (follow-up to the "Automation project"?) could well be justified for water metering. It best would focus on improving water accounting at the level of secondary and lower-level canals. It should, however, be fully demand (and not supply) driven, with user participation (in kind and preferably also in cash) as important principle.

**Water distribution and irrigation scheduling** is not an easy task for WUAs and WUGs, and the support the project has provided herein is appreciated all over. Improving water delivery to water users is crucial for achieving more equitable supply (according to specific water requirement) and thus reduces conflict potential. Adequate water distribution also results in increased satisfaction of water users with WUAs and CMOs/U(C)WUs; this may increase fee collection rates and contribute to the financial viability/sustainability of these entities.

In general the mission has observed an obvious need for improvements in **on-farm water and irrigation management** (design, layout, methods, etc.). Although the project has certainly contributed to a better understanding of irrigation principles and water requirements at various levels, more advice and training is needed and requested. Respective competence is available in the project and should be strengthened/complemented by linking in results from other projects such as the IWMI "Bright spots" or the ICARDA "Soil and Water Management" project.

Training in on-farm water and irrigation management will require careful selection of the target audience. The mission perceives Murabs as key figures in this regard, and the project will have to consider that due to the ongoing feminisation of agriculture (migration of men to Russia and Kazakhstan) many irrigators are female (>50% in certain areas).

High groundwater tables and **salinisation** represent major problems in the Ferghana Valley. The project has elaborated a number of (technical) manuals/guidelines on how to tackle
these issues. However, the mission feels that aspects relating to responsibilities and organization (institutional aspects) regarding salinity control (drainage systems, etc.) should become more important in the project's agenda.

In conclusion, overall water supply and delivery seems to have clearly improved in the project areas, particularly for tail end water users (mainly of primary canals, less within WUAs). There are, however, certain exceptional situations that tarnish these positive results:

In Uzbekistan, water flow in the SFC has been stopped in September 2007 to accumulate water for wheat irrigation. In Kyrgyzstan the Osh municipality is still withdrawing water from secondary canals that is not accounted for, and maintenance of the canal in its territory is inadequate. And in Tajikistan, WUAs are still very weak since they are not yet represented in the canal management and have little say because they are not able to pay the water fees (and related debts).

**Agronomy (Water and Land Productivity)**

The situation of farmers regarding availability and affordability inputs (production factors) differs significantly between the three countries and even within countries. This is most obvious with regard to water pricing: Whereas Uzbek farmers still get water for free, Kirgiz and Tajik farmers have to pay water fees (which are three times higher in Tajikistan than in Kyrgyzstan). In certain WUAs, farmers have to pay electricity for pumped irrigation water, in others not. However, many of the reasons for deficits in production techniques are far beyond the scope of the project (e.g. the farmers' debt problems in Tajikistan or high petrol and fertiliser prices in Kyrgyzstan).

Crop yields and productivity show big differences among farmers and countries. This is not only related to the environment (soils, crops grown, etc.) but also to a great extent to the "background" of individual farmers (experience in agriculture/agronomy). In general, crop productivity is higher in Uzbekistan than in Tajikistan and Kyrgyzstan.

Overall, the mission has observed a great need for agricultural/technical advice, particularly in Kyrgyzstan and Tajikistan. However, the project's core competency is certainly in the hydrotechnical (water and irrigation management) rather than agronomic field. The mission therefore feels that the project should stick to its core competencies and thus restrict itself to hydro extension (not engaging in agro extension).

A major shortcoming identified by the mission and acknowledged by several project staff is that key data important for assessing the success and impact of the project are not available. There is no assessment of key indicators such as crop productivity, water productivity, or economic performance based on 'real life' situations at farmers' level; these data are only collected on demonstration plots/farms which are not representative for standard situations. Given the specific objectives of the project ("improved irrigation management practices and more productive water use are achieved") it is crucial that a concept and methodology is developed and implemented that allows assessing and analyzing such important data. Currently, it is not possible to assess the impact of the project
with regard to this major objective at the level of 'normal' farmers, since also government line departments cannot provide the required data (such as actual water use by individual farmers).

The project has accumulated a wealth of demo-plot data from project pilot fields with sophisticated setup and monitoring drawing considerable project resources. Recording systems have been put in place, which not only cover water management and agronomic parameters but also allow consideration of economic aspects. However, the mission feels that tangible results for dissemination from these pilot/demo fields are not really visible, although considerable improvements e.g. in terms of water productivity have been achieved. Since the project is certainly not designed as a research project, a concept outlining the use of these data (dissemination? policy advice?) is urgently required. In view of the above-mentioned lack of key information from standard situations it may be necessary to shift resources from sophisticated monitoring in demonstration farms/plots to assessments at larger scale (representative sample) in farmers' fields ('real-life data'). Such data is required for system control and adaptation, and for assessing the impact of the project.

A3  Systems Development

The mission has concentrated on six specific systems that have and are being developed by the project and then mostly become part of the capacity development efforts to introduce and disseminate them to the respective target audiences.

1 Basic concept of IWRM governance/management system

The development and introduction of the overall IWRM system with its governance and management components at all levels is certainly a major achievement of the project. While many other projects work with one (or more) element(s), only this project aims at a comprehensive system that includes entire (pilot) canals. In short, IWRM principles and approach have been 'put on the map' in the Ferghana valley.

At this stage, it becomes evident that, in particular on the canal level, a differentiated approach is called for that takes into consideration the different levels of foremost (i) institutional progress made, (ii) size of the system, (iii) government position and support.

The mission strongly advocates that economic analyses or more precise cost/benefit comparisons are to become mandatory. The core question is ultimately who pays for what before the IWRM principles are introduced and who pays for what afterwards.

The point is that 'hard facts' are required to see whether the new system is really beneficial for farmers or whether just a transfer of costs has happened from government budgets to water users – without that related payments (water fees, taxes, etc.) have been correspondingly reduced. Or, in other words, who finally profits, who is really better off afterwards?
2 Water related systems: irrigation scheduling and water distribution

As mentioned, the information systems at canal level are obviously good and being used with the effect of faster information flow and more efficient and effective water management.

The project's support with regard to water distribution and irrigation scheduling within WUAs is appreciated in WUAs and WUGs. The project has developed different approaches that are suggested and applied according to different situations – an effort which is certainly commendable.

Still, the mission has to point out that the four methods for water distribution and irrigation scheduling developed in the project (options targeted to different environments and levels) do pose a question mark. Apparently, ‘cross-fertilisation’ among different project teams is not tapped to the full potential since knowledge with the developers/users of one method about the status and use of other methods is limited. This may lead to duplications of efforts or even to contradictory recommendations to water managers, and certainly impedes the development and communication of an overall concept and agreement on what method to use in what situation and how to combine them into a flexible, situation-specific and practicable modular system. The final concept also needs to strike the right balance between more sophisticated (or ‘scientific’) systems and such that are really feasible and practical, given the human power that will finally have to implement them on a larger scale.

3 Business plans

Business plans have been widely introduced and are a good and valuable instrument at all levels. The mission has got the impression that often the process that a WUA (or CMO) has undergone when drafting the plan was at least as important as the final product. It is also important to note that the long history and domination of a supply driven economy hinders the business plan concept to be easily absorbed.

However, irrespective of the above arguments, some shortcomings were observed that need to be addressed. The first relates to the fact that the plans are usually (i) not specific enough, i.e. adapted to, say, the peculiarities of a CMO, and (ii) not deep enough, i.e. do not include important financial parameters like investments needs, depreciation, etc. This applies in particular to the CMO handbook, which contains much copy/paste from standard SME models. The WUA handbook (where SIC and IWMI joined forces) is a visible effort to adapt to WUA needs. It is more specific, closer to reality, and makes good use of real-life examples.

For both handbooks, the language used was found to be still too ‘professional’ and therefore difficult to apply without external assistance. Simpler handbooks in local languages are obviously called for.
4 WUA/WUG development and organisation

The project has by now gained enough experience of how to set-up and organise WUAs and WUGs. The approach seems mature enough for up-scaling or to go from pilot to 'self-seller', especially in Kyrgyzstan and Uzbekistan.

The chosen approach as such sounds good: first a pilot WUA is set up in a Rayon and a pilot secondary canal is chosen within these WUAs. Once successfully introduced, the process is then expected to spread or disseminate to other WUAs and to other canals. Still, field staff reported (in particular in the SFC) that up-scaling would be restricted due to the limited human resources which points to a not always easy 'self-dissemination' process.

This implies that firstly experiences made so far should be analysed (including impediments to WUA/WUG formation) by taking in especially the knowledge of the field staff. In a second step a realistic up-scaling strategy and plan should be developed.

5 Up-scaling plans and strategies

Up-scaling can be horizontal, by starting on a new canal, or vertical, by moving up to the basin level. Only in Kyrgyzstan, horizontal up-scaling has started on the right bank. Also in Kyrgyzstan vertical up-scaling to the basin level is being sincerely discussed and good strategic thinking is noticeable in the project.

The situation is different in Uzbekistan and Tajikistan. In the former, much will depend on the government’s next move, whether it allows to finalise the ‘hydrographisation’ of the SFC or not. In Tajikistan, as proposed, the project should start activities on a pumped irrigation canal system in order to gain experiences in this more ‘standard’ situation.

6 Trans-boundary Small Rivers (TSR)

The TSR component was added to the project only this year and activities have really got underway only in April.

Currently the focus is on two TSR: (1) the Khodjibakirgan river that flows from Kyrgyzstan to Tajikistan; (2) the Shakhimardon river between Kyrgyzstan and Uzbekistan. Both IWMI and SIC have had a first round of activities.

The IWMI vision can be summarised as developing IWRM-based trans-boundary water user unions. IWMI has already conducted a survey and initiated WUA level discussions in the villages close to the borders.

The SIC vision has several components. An inter-state umbrella agreement on TSR should be set up by the three governments that would apply to the entire Ferghana valley basin. Under this umbrella agreement, each river can then be regulated by bi-lateral river commissions. Also, trans-boundary flow measurement systems would be installed. To this end, SIC has already successfully organised a large international conference where all the major stakeholders participated.
It is evident that the SIC and IWMI visions could meet in that trans-boundary unions would sit in the river commissions where water volumes and scheduling are decided. To this end however, it is very important that the current sub-optimal cooperation and coordination between the two project components does considerably improve.

As the TRS component includes all elements used in the overall project approach and appears to be an integral part of the project and as the small rivers feed into and are interlinked with the canals, a permanent integration into the next IWRM phase seems advisable. In addition, it seems more practical to first set up the bi-lateral agreements and joint commissions for the two pilot rivers and only later to move forward to an umbrella agreement for all small trans-boundary rivers of the basin – once the pilot activities prove that the approach is indeed feasible.

A4 Capacity Development

The IWRM project seems to be a training project: The mission estimates that possibly 70% of project staff time is invested in training-related activities. The training programme for 2007/08, e.g., includes 23 training events by IWMI and 28 by SIC, i.e. a total of 51 events to be held in 3-4 locations each. However, the project utilizes a pretty unclear terminology; workshops, seminars, training, orientation, demonstration activities are all mixed up.

Training activities seem to be the most appreciated output of the project (at WUG, WUA and canal level), and impact is visible. The mission perceived great demand for further training, not only from project stakeholders but also from other projects. It seems that the project fills a niche with its competences in water and irrigation management; its hydro knowledge could actually be seen as a ‘unique selling proposition’. It is therefore suggested that the project investigates the potential market for consultancies in this core domain, by particularly considering its existing links. Furthermore, demand for the project’s experiences in WUA development and organization exists; feedback cycles and mutual learning should be improved, for instance with organisations like Winrock in Tajikistan, who already has organised a WUA ‘learning group’ for projects and government actors.

In spite of the importance of training in the project, an overall (joint SIC and IWMI) concept, strategy, and plan with regard to training are not visible/existing (target audiences, step-wise approach and modular structure, etc.). The mission has serious doubts that no overlapping occurs (particularly between trainings given by the two implementing institutions) and that contents of trainings on similar topics are fine-tuned (screened by both institutions); it therefore sees a clear need for more integration and coordination. Given the importance of training in the project it is further surprising that no systematic follow-up and impact assessment is performed by the project.

The project has produced and distributed a lot of materials (guidelines, manuals, handouts, but also scientific papers, etc.); however, the mission poses the question whether these are really being utilised (or rather act as just dust collectors on shelves). There are certainly good examples of training materials produced by or with support of the project, such as the
monthly bulletin for farmers in Uzbekistan (even though far too few copies are produced and distributed). On the other side, academic language still dominates many of the publications, and training materials are often quite heavy in theory, rather suited for university students than for practitioners in the field. There is thus an urgent need for amalgamation of all these materials produced into practical, simplified and user-friendly handbooks or manuals for the WUA level, targeting, e.g., (1) WUA management and accounting; (2) WUA governance; and (3) WUA hydrology (water distribution, irrigation scheduling, on-farm irrigation).

Project experience shows that theory combined with practical field application is the most promising and efficient way to convey messages to practitioners. The project should therefore continue to focus and expand on in-field training rather than in-training-centres; interest by other parties for specialized in-field training is evident. To the mission's perception, training in water and irrigation management should particularly focus on murabs/mirabs as core actors at field level who are in direct contact with farmers/irrigators.

A very commendable long-term impact initiative started by the project is to introduce IWRM principles in curricula of universities and colleges; this approach might in future also be extended to vocational schools.

In view of the undisputed need for agricultural/technical advice the big challenge remains developing a strategy for a sustainable training/extension system. To address questions such as "Who is to do what trainings", "whom to target with what trainings" and "who is paying" it is important to that the project, together with its partners, develops a training and extension strategy as soon as possible. Public entities as well as NGOs and other projects should be involved in the elaboration of the project's training and extension strategy.

A5 Management Information System (MIS)

The project's Management Information System (MIS; integrated database) consists of three large data clusters:

1. SIC(a): Technical data, fully covering the service areas of primary canals, linked to canal automation project (water volumes/flows in primary canal and deliveries to secondary canals, with a component on tariff collection data for water users);

2. SIC(b): Agro-hydro technical data from pilot farms/plots, including economic indices;

3. IWMI: Annual quantitative farm level survey of 3 sample WUAs.

The operation of these three MIs (data collection and compilation) draws considerable human and financial resources.

MIS SIC(a)

This information system facilitates water demand planning and water distribution/allocation to WUAs and other big water users. It is implemented and used in all pilot canals for daily canal water management. CMOs and WUAs are satisfied with the tool since it renders faster data
availability and decision-making. In Kyrgyzstan, a bulleting informs water users on differences between actual supply and demand, including relevant explanations.

**MIS SIC(b) and MIS IWMI**

The project's pilots and demonstration plots/farms as well as the surveys on three sample WUAs have yielded an abundance of excellent primary and partly secondary data. However, to the mission's perception, these data are not sufficiently used for project strategic steering, but rather for scientific publications. The IWMI WUA surveys, e.g., include heavy quantitative data collection and tabulation, but the reports show practically no analysis and certainly no discussion of interesting (and sometimes disturbing) findings.

However, the mission was informed that the surveys did produce tangible results in that they stimulated the introduction of (i) the WUG concept, (ii) participatory infrastructure rehabilitation and (iii) on-farmers' field trainings.

Still, the mission feels an urgent need to (1) simplify these surveys (questions should yield the answers needed to assess project impact and take decisions); and to (2) add a qualitative component to the surveys in order to explain why things are as they are.

The issue is that the project performs data *warehousing* instead of data *mining*. The project will have to put considerably more emphasis on making use of the wealth of data collected: data analysis should lead to conclusions that are to be converted into recommendations, which then have to lead to strategic and operational *action*. The mission perceives the lack of strategic use of the data generated by the project as a weakness on management level.

**A6 Project Organisation and Management**

At the outset, the mission has to state that it took considerable reading time and many meetings and discussions to really understand the project organization (e.g. respective areas of shared and single responsibilities). The international backstopper plays an important role as institutional memory of the project and his reports proved to be the best source to understand the evolution of the project and the rationales behind certain activities and structures. Obviously, this backstopping is needed and has played an important role in overall project steering. The mission proposes to continue to finance this support. The question is rather why the advice given was not always followed as many issues keep coming up again and again, including in the evaluation reports for phase II and now for phase III.

The project has a large number of committed and professional staff. IWMI employs 42 people and SIC 165, resulting in a total staff strength of 207 people, some of which are working part-time. Given these numbers, the mission cannot exclude the possibility that unnecessary duplications occur between the organisations for certain functions or qualifications – although this could not be examined in detail. Related to this is the observation that comparatively large numbers of staff are posted at both headquarters in Tashkent as opposed to the Ferghana valley proper.
The substantial staff numbers obviously need substantial staff management structures and efforts (for instance in relation to time/activity planning, coordination, reporting and controlling), which would profit from one standard management and controlling system – and not the two systems that are now operated separately. No convincing justification was finally given for the double (government and project) function of SIC staff, in particular in Tajikistan.

The two organisations have visibly retained their separate corporate identities and corporate cultures and work according to their specific strengths. The question is whether the current set-up does not lead to transmission losses (some examples of which were observed by the mission) and potential synergies are underutilised to reach the project objectives. However, it is important to state that the mission observed very good informal collaboration at the field level between the respective staff.

Why exactly the project operates separate SIC and IWMI offices in Tashkent and in all three countries, has not really become clear. It certainly does not foster project identity and is hardly cost-effective.

The main management instruments, i.e. the YPOs and progress reports and thus the M&E system, show that integration has improved since the last phase, but in large parts there are still separate sections for each institution that are not really coordinated. Core parameters like budgets or staffing remained rather in-transparent (for the mission but also others, including the donor). Further integration and transparency is clearly required.

This is not to say that coordination meetings are not organised. But more operational meetings would certainly be useful, in particular at country level. According to the “minutes of work meetings” of the PSC, the overall management is also very much activity or output oriented, and little analysis and strategic discussions seem to take place.

Related to this is the fact that plans and reports deal with what can be termed a large number of single trees but do not show the forest. Planning and reporting are focused on the activity, result or output level. The outcome and purpose level is not really treated (probably also because core data to monitor the project's success are not generated). As a consequence, one finds little analysis and few strategic conclusions in the reports. In-depth discussions, however, show that in peoples’ heads, the situation is markedly different. Still, the M&E system does not readily produce some basic information, which was therefore not readily available to the mission (for instance related to gender, etc.).

The mission finally did not investigate the project accounts. According to information received, spending is on track and on schedule. SDC has established procedures to monitor project activities and accounts, including annual and quarterly audits, quarterly field missions, meetings with accountants and discussions with the key project leaders. These systems are being followed by both organisations. The mission, however, is of the opinion that the current two separate accounting systems, involving in IWMI’s case its Colombo headquarters, are heavy and expensive to operate. One unified system would certainly be easier (not least for SDC to monitor), faster and cheaper.
A7 Overall Assessment

This chapter attempts to summarise the mission's assessment of progress made in Phase III of IWRM Ferghana – not by repeating findings made in earlier chapters – but by taking the larger overview position and look at what the project has set out to do and what it has achieved within the context it has to operate.

Despite the number of shortcomings observed, the project has certainly achieved substantial progress, and not always in very favourable conditions. Matching of water supply with demand and equitability of supply to and within WUAs has generally improved, and overall water use has been substantially reduced. Particularly at WUG and WUA level but, where the hydrographic approach has been fully implemented, also at canal level, water management has become easier and water users can take part in decision-making. If compared to expensive irrigation infrastructure projects, progress made has to be rated even higher.

The core assumption at the start – that the command agriculture would gradually be relaxed, which would lead to changes in cropping patterns, which in turn would require changes in water management – did not materialise in Uzbekistan and Tajikistan and is certainly one of the reasons for the better progress made in Kyrgyzstan. The second assumption – that indeed water saving and more equitable distribution is possible – has been shown (though exact figures would be very welcome to 'prove' this field level observation).

The project has developed a unique approach to IWRM for which no model was readily available. Due to this pioneering role, social mobilisation (raising awareness, explaining new concepts, convincing) has been a very important and successful component of the project. Stakeholders at all levels acknowledge having learned a lot, and that they nowadays better understand each other's positions. It may thus be assumed that progress (e.g. in view of up-scaling) will be faster in the future.

The project is well anchored with the three governments and their respective ministries and its progress is being carefully observed. However, convincing any government to make fundamental changes to any established system takes time and needs pilot results that prove that something new does indeed work. By and large, the project has been successful in convincing the ministries. As said before, the project's approach to IWRM is now very much known among the valley's decision makers.

And, finally, water is indeed power in irrigated agriculture systems. And changing the way power is distributed is always bound to generate conflicts, especially from those that will loose power when things are reorganised. Smooth sailing could therefore never be expected and compromises were necessary and have been sought where appropriate. The challenge, as will be shown below, is now on how to move on and up-scale from the current pilot mode to further expanding and mainstreaming of IWRM in the Ferghana valley.
PART B  THE FUTURE PHASE IV

The review mission favours that the project goes into a further phase. The aim should now be on (1) consolidating progress made on the three pilot canals but, equally important, (2) to move on to next stages in the three countries. Piloting in general should be over, up-scaling and mainstreaming the core focus of future activities.

The basic questions in this respect evidently are (i) where the stage has been reached when replication is possible to other canals and (ii) what kind replication is possible. Below, proposals are made for each country component.

To this end, more essential information has to be made available, for instance on farmers’ (not pilot plot) water productivity. Also, economic analyses need to be made at all levels (canal, WUA, farm) to allow taking informed decisions. As first immediate step, professional financial analyses (‘due diligence’) need to be made of the three canals and any potential up-scaling canals.

Once the contents have been decided, the best-suited organisational set-up to do the job at hand has to be designed (‘form follows content’).

B1 Kyrgyzstan

In Kyrgyzstan, the project has achieved considerable impact, particularly with regard to organisational and institutional improvements. The AAC is almost fully covered; only the WUG introduction process (and the related metering) has still to be completed. The current policy environment is favourable and the project has developed something like ready-made ‘packages’ for introducing IWRM on the canal and below canal levels. The mission therefore concludes that the time for serious up-scaling has come as this can be the only justification for continuing the project in Kyrgyzstan.

To this end, something like a vision 2015 is now required. This relates to the question of (horizontal) up-scaling to other canals but also (vertical) up-scaling to the basin level (also as pilot to be ready, should things move in Uzbekistan and become ready for basin level efforts). Also, the move has to be made from the current ‘integrated irrigation water management’ to real IWRM by including other users, in particular the important city water supply of Osh. In addition, ideas are in the air of further developing WUAs into more comprehensive farmer cooperatives (‘Japan model’, as it was named in discussions).

The evident challenge, however, will be how to move from the ‘pampered’ pilot situation (with sufficient human and financial resources at disposition to cover a limited area) to the ‘standard’ situation when limited human and financial resources will have to suffice for considerable more coverage.
B2 Uzbekistan

In the SFC, the diagnosed 'pilot trap' situation leaves basically three options for further project activities:

• Option 1 sees a stop of major activities in the SFC pilot canal but is to provide limited support to 'finish' the work started at WUA and WUG level.

• Option 2 consists of a 'big bang' transfer of all magistral canals in the Ferghana valley at once in fully hydrographically managed units. This would include converting the existing administrative BAIS and IS into new, truly hydrographic units for each magistral canal.

• Options 3 means to finish 'hydrographisation' at SFC level: Take out SFC WUA hydrographic areas from the existing IS Isfayram/Shahrimardan (Fergana Oblast) and IS Shahrihonsoy (Andijan Oblast) and establish a new unified hydrographic Irrigation System that transgresses the Oblast borders.

The mission clearly discourages the first option, as this would mean abandoning a process where already much headway has been made. The mission then clearly favours the third option as it is (i) more realistic than option 2 and (ii) allows again following the established path of first testing out the next necessary step towards a fully managed canal along hydrographic and IWRM principles.

Should things really move on the SFC, there is evidently also the possibility to move on to another canal to start the introduction of IWRM based canal management. An obvious candidate would be the North Ferghana MC as its perimeter is entirely within the Namangan Oblast.

B3 Tajikistan

The Tajikistan component needs special attention if a real take-off is to be achieved in the near future. To this end, the mission has identified the major current challenges and proposes basic measures how to address them.

The first proposals relate to 'finishing the job' at the KBC: There, the core challenge is the fact that a considerable number of 'clients', i.e. foremost the Dekhan farms, have not yet perceived real improvements in their water supply related situation (some evidence even emerged of contrary developments). While this can only partially be attributed to the project, especially with the last two very dry seasons, it still has to be taken serious if the project objectives are to be achieved.

The mission proposes to address the following challenges below and assumes that then the situation may indeed improve in terms of client satisfaction:

The interface between the WUAs and the CMO/UWU/CWC is not yet formed by a mutual trust relationship. It is urgent to address the issues of how to ensure democratic governance instead of top-down control and how to increase transparency and trust from farmers' side.
The mission strongly proposes to make these deficits the main focus in future and monitor related developments carefully.

Another challenge relates to the WUA and Kolkhozes. The mission proposes to put substantially more efforts on newly emerging WUAs or the soon to be dismantled Kolkhozes. The project needs to know what is important when Kolkhozes are broken up (what to do with assets like pumps and drainage systems, how to best prepare people)? It seems that collaboration and coordination with Uzbekistan activities in the same field is called for.

Also on the WUA level is the challenge of the inclusion of other users. To this end, the project needs to experiment in order to develop a 'model' process on how to include in particular settlements and their kitchen gardens as well as the presidential lands.

The second proposal relates to expanding project activities beyond the currently covered KBC canal area. It is clear that further activities in Tajikistan can only be justified if up-scaling takes place in the near future. As said above, the KBC is not the most typical of pilots in that pumping of irrigation water generally dominates over gravity supply in Tajikistan and also in the Sughd Oblast. In systems involving pumping, the economics of administrative versus hydrographic organisation is particularly important. The issue at hand is quite simply that if the IWRM approach does not work (i.e. is not viable) in pumped canal systems, it is hard to see how canal level IWRM can be further advocated in the country. The most obvious candidates for up-scaling are in the two rayons the project is already working: the systems supplied with water which is pumped from the Syrdarya.

The project should therefore take in as soon as possible one canal system supplied with water pumped from the Syrdarya. However, before doing that, the selected system should be included in the proposed ‘due diligence’ analysis effort for the KBC. Such an analysis can then serve as baseline for the new canal activities – provided the due diligence predicts a fair chance for the canal to become viable.

### B4 Project Management and Organisation

The efficiency, in particular related to the overall project management structures and processes should be increased. As up-scaling is the proposed focus of a new phase, project management (and not research) will be of paramount importance.

The Logframe design should also be adjusted as the current component set-up does not seem to be the optimal solution and a topics-based matrix organisation may be more appropriate (taking, for instance the review mission’s analytical framework as starting point).

The big question that emerged in discussion is clearly the relative importance of the overall regional focus versus national components. While the mission agrees that the time has come to react now to country specific progress made, it nevertheless sees a considerable danger of ‘throwing the baby out with the bath’ in that the unique regional focus is neglected. In order to avoid this danger, the mission proposes to keep a strong regional overall umbrella but to better fine-tune national activities according to the differing context and stages of process.
Strategic steering should clearly remain with the umbrella set-up, but more operational decentralisation should be given to the country components.

To this end, the mission proposes (1) to screen staff numbers and their tasks for eventual duplications, and (2) to change to a more decentralised staffing pattern with more people permanently stationed in the Ferghana valley (“reduce the number of senior officers in favour of more junior officers and soldiers”).

The following three basic options for the overall project organisation are meant to start and stimulate the necessary discussions on the best-suited and most effective and efficient set-up.

**Organisational options for Phase IV**

**Option 1**

- SIC
- IWMI

2 organisations 1 organisation
2 budgets 1 budget
2 staff 1 staff
2 everything 1 everything

**Option 2**

- SIC
- IWMI
- CTA
- 3 local country offices
- fully integrated field activities

**Option 3**

- SDC
- $3rd party implementer
- subcontracting
- SIC
- local orgs

Option 1 more or less refers to the current set-up that, according to the review mission, should not be continued. Option 2 and option 3 are possible ways to improve efficiency and effectiveness. Naturally, the latter two need to be discussed in further detail, also taking legal and organisational aspects into consideration.
**B5 Summary of Recommendations**

In the following, the recommendations spread throughout the text of **PART A: Overall Findings**, are compiled for easy reference (largely as a ‘cut-and-paste’ exercise). The recommendations given in **PART B: The Future**, are NOT repeated here as this would largely be a duplication of the preceding sections.

**Institutional issues**

**NCSG**

The mission is of the opinion that the current leverage of the project may not be sufficient to really motivate such a steering group on the national level. The mission, however, is also of the opinion that an active and strong national steering body is required if up-scaling is to be central to the potential next phase.

**CMO**

For all CMO, the financial viability is an important, and in Tajikistan even the central, challenge. The respective business plans are not realistic and detailed enough to assess the real financial situation; all canal organisations should undergo a solid viability analysis (‘due diligence’), including staff strength. Indeed, such analysis should from now on become project standard before any new canal is taken up for replication.

**Canal governance (UWU/CWC)**

The governance component on the canal level is strongest for the AAC in Kyrgyzstan. A first step to ‘export’ the concept has been made by setting up a WUA federation on part of the right bank canal along the secondary Uvam canal. The obvious next step now is to set up UWU/CWC for the whole right bank canal basin – preceded by a sound hydrographic study of the entire area.

UCWs and CWCs in Uzbekistan and Tajikistan, on the other hand, need more time and careful support and monitoring before any final assessment can be made on their usefulness and best form and function.

**WUA/WUG**

Two major challenges emerge, both related to the WUAs' finances: The first concerns the fee collection for water on the one hand (to be able to pay the CMO for water received) but also for the services delivered by the WUA (to be able to pay the staff). In Kyrgyzstan, the situation is comparatively good; in Uzbekistan progress is being made; but in Tajikistan the situation remains critical.

The second challenge is uniform in all three countries and relates to the difficulties to not only pay for running costs but to accumulate the required investment capital in order to maintain
and rehabilitate the secondary canal (and drainage) infrastructure. While in the short term external funds may be sought for this, in the long term the WUAs need to be able to generate this income if they are ever to become truly independent and sustainable. One could call this a 'killer condition'.

Hydrotechnical issues

The mission has observed several success stories where external funding sources contributed to improvements at canal and WUA level, and strongly encourages the project leadership to link and lobby so that more such arrangements can be achieved.

For water metering, a separate SDC project (follow-up to the "Automation project"?) could well be justified. It best would focus on improving water accounting at the level of secondary and lower-level canals. It should, however, be fully demand (and not supply) driven, with user participation (in kind and preferably also in cash) as important principle.

Although the project has certainly contributed to a better understanding of irrigation principles and water requirements at various levels, more advice and training is needed and requested. Respective competence is available in project and should be strengthened/complemented by linking in results from other projects such as the IWMI "Bright spots" or the ICARDA "Soil and Water Management" project.

The project has elaborated a number of (technical) manuals/guidelines on how to tackle high groundwater tables and salinisation. However, the mission feels that aspects relating to responsibilities and organisation (institutional aspects) regarding salinity control (drainage systems, etc.) should become more important in the project's agenda.

Specifically in Uzbekistan, a potentially important technology innovation should be investigated: Since the fruit orchards are clearly the most profitable activities but the related irrigation practices not efficient, the mission suggests to investigate the potential to initiate market-based private sector drip irrigation as option to improve water productivity. After all, SDC has substantial experiences with supporting such an approach, foremost in India.

Agronomy

Overall, the mission has observed a great need for agricultural/technical advice, particularly in Kyrgyzstan and Tajikistan. However, the project’s core competency is certainly in the hydrotechnical (water and irrigation management) rather than agronomic field. The mission therefore feels that the project should stick to its core competencies and thus restrict itself to hydro-extension (and not engaging itself in agro-extension).

A major shortcoming identified by the mission is that key agronomic data, important for assessing the success and impact of the project, are not available. There is no assessment of key indicators such as crop productivity, water productivity, or economic performance based on 'real life' situations at farmers' level. Given the specific objectives of the project ("improved irrigation management practices and more productive water use are achieved"), it
is crucial that a concept and methodology is developed and implemented that allows assessing and analysing such important data. The project has accumulated a wealth of demo-plot data from project pilot fields with sophisticated setup and monitoring drawing considerable project resources. Since the project is certainly not designed as a research project, a concept outlining the use of these data (dissemination? policy advice?) is urgently required. In view of the above-mentioned lack of key information from standard situations it may be necessary to shift resources from sophisticated monitoring in demonstration farms/plots to assessments at larger scale (representative sample) in farmers' fields.

**Systems development**

**Basic IWRM concept**

At this stage, in particular on the canal level, a differentiated approach is called for that takes into consideration the different levels of foremost (i) institutional progress made, (ii) size of the system, (iii) government position and support.

The mission strongly advocates that economic analyses or more precise cost/benefit comparisons are to become mandatory. The core question is ultimately who pays for what before the IWRM principles are introduced and who pays for what afterwards.

The point is that ‘hard facts’ are required to see whether the new system is really beneficial for farmers or whether just a transfer of costs has happened from government budgets to water users – without that related payments (water fees, taxes, etc.) have been correspondingly reduced. Or, in other words, who finally profits, who is really better off afterwards?

**Irrigation scheduling and water distribution**

There is a need for an overall concept and agreement on which of the four currently advocated method to use in what situation and how to combine them into a flexible, situation-specific and practicable modular system. The final concept also needs to strike the right balance between more sophisticated (or ‘scientific’) systems and such that are really feasible and practical, given the human power that will finally have to implement them on a larger scale.

**Business plans**

For both CMO and WUA handbooks, the language used is too ‘professional’ and therefore difficult to apply without external assistance. Simpler handbooks in local languages are obviously called for.

**WUA/WUG development and organisation**

The successful experiences made so far with setting up WUA/WUGs and starting to disseminate them should be analysed (under what conditions are they ‘self-sellers’ and
which are impediments to WUA/WUG formation?) by taking in especially the knowledge of the field staff. As second step then a realistic up-scaling strategy and plan must be developed. Exchange with other organisations engaged in this domain should be intensified.

Trans-boundary Small Rivers

It is evident that the SIC and IWMI visions could meet in that trans-boundary unions would sit in the river commissions where water volumes and scheduling are decided. To this end however, it is very important that the current sub-optimal cooperation and coordination between the two project components does considerably improve.

As the TRS component includes all elements used in the overall project approach and appears to be an integral part of the project and as the small rivers feed into and are interlinked with the canals, a permanent integration into the next IWRM phase seems advisable. In addition, it seems more practical to first set up the bi-lateral agreements and joint commissions for the two pilot rivers and only later to move forward to an umbrella agreement for all small trans-boundary rivers of the basin – once the pilot activities prove that the approach is indeed feasible.

Capacity Development

There is an urgent need for amalgamation of all training materials produced into practical, simplified and user-friendly handbooks or manuals for the WUA level, targeting, e.g., (1) WUA management and accounting; (2) WUA governance; and (3) WUA hydrology (water distribution, irrigation scheduling, on-farm irrigation).

The project should continue to focus on and expand in-field training rather than in-training-centres; interest by other parties for specialized in-field training is evident. To the mission's perception, training in water and irrigation management should particularly focus on murabs/mirabs as core actors at field level who are in direct contact with farmers/irrigators. The project also has to address the ongoing feminisation of agriculture with more than 50% of female irrigators in certain areas.

The introduction of IWRM principles in curricula of universities and colleges might in future also be extended to vocational schools.

In view of the undisputed need for agricultural/technical advice the big challenge remains developing a strategy for a sustainable training/extension system. To address questions such as "Who is to do what trainings", "whom to target with what trainings" and "who is paying" it is important that the project, together with its partners, develops a training and extension strategy as soon as possible. Public entities as well as NGOs and other projects should be involved in the elaboration.

MIS

To the mission's perception, the wealth of data generated in the project is not sufficiently used for project strategic steering, but rather for scientific publications.
There is an urgent need to (1) simplify the user perception surveys (questions should yield the answers needed to assess project impact and take decisions); and to (2) add a qualitative component to the surveys in order to explain why things are as they are.

The issue is that the project performs data **warehousing** instead of data **mining**. The project will have to put considerably more emphasis on making use of the wealth of data collected: data analysis should lead to conclusions that are to be converted into recommendations, which then have to lead to strategic and operational **action**.

**Project Organisation and Management**

The international backstopper plays an important role as institutional memory and strategic adviser in the project and his reports proved to be the best source to understand the evolution of the project and the rationales behind certain activities and structures. Obviously, this backstopping is needed and has played an important role in overall project steering. The mission proposes to continue to finance this support.

The substantial staff numbers are obviously difficult manage (time/activity reporting and controlling?) and would profit from one standard management and controlling system. The policy of employing SIC staff with double (government and project) function, in particular in Tajikistan, should be justified and eventually reconsidered.

The operation of separate SIC and IWMI offices in Tashkent and in all three countries does not foster project identity and is hardly cost-effective.

The main management instruments (YPOs, progress reports) are in large parts still consisting of separate sections for each institution that are not fully integrated. Core parameters like budgets, staffing, etc., need to be further integrated and made more transparent. Staff numbers should be screened for eventual duplications in functions, and staffing pattern should become more decentralised with more people permanently stationed in the Ferghana valley.

More operational meetings are required to discuss activities and results/outputs, in particular at country level. At project level, the PSC should then focus on the important outcome or purpose level discussions and provide the important strategic guidance.

The mission is of the opinion that the current two separate accounting systems are heavy and expensive to operate. One unified system would certainly be easier (not least for SDC to monitor), faster and cheaper.
Overall, the review mission’s assessment of the Kyrgyzstan component is positive. The newly introduced IWRM approach and the related organisations and bodies seem to work and people are satisfied. The atmosphere among users has improved and people interviewed state that there is more mutual respect and correspondingly less conflicts and water distribution would now be easier and more equal.

While the project certainly has done its part, it is also important to acknowledge that the government has fully bought-in and realised its regulatory functions.

**Technical Issues**

**Hydrotechnical**

The hydrotechnical information base (MIS SIC1, see MIS chapter) is well established for the primary canal, including water delivery to secondary canals and thus WUAs (it does not contain within-WUA data). The information base seems to be used every day (even for other canals) and yields a wealth of data not only relating to water volumes/flows but also to fee collection, etc.

Status of primary canal infrastructure of the AAC is quite good except for one part which is not completely lined (out of the reach of this project). The SDC Automation Project has yielded further improvements.

Secondary and lower-level canal infrastructure, however, is in less good shape. Maintenance of secondary canals remains a problem (e.g. in Osh) although 'Ashar' works well at WUG and WUA level, sometimes even at canal level (e.g. to pay off debts). Technical and 'commercial' water losses are still considerable; unaccounted water use is particularly a problem where important users (such as the municipality of Osh) have not yet been integrated in the UCWU/CWC.

More gates and water meters at WUG/WUA level are needed; project experience has shown that installing water meters not only reduces water use but also allows for more equitable water supply and identification of most problematic water losses. The high demand for water meters is dampened by the relatively high price for simple tertiary measuring (ca. 300$); therefore, the project should certainly investigate cheaper alternatives. The project has started compiling information on total infrastructure repair needs, investment costs and of costs for installing essential metering devices. The mission has observed four successful
examples of roping in external funds for rehabilitation and improvement of canal infrastructure at WUA/WUG level.

**Water distribution and irrigation scheduling** at WUA/WUG level has improved, water distribution become more equal. The introduction of WUGs has rendered this difficult task considerably easier, and social mobilization and training by the project has definitively shown positive impact. However, mission deprecates a lack of cross-fertilization within the project regarding the method(s) of water distribution and irrigation scheduling to be applied; SIC and IWMI are promoting different models (developed within the project) but a clear concept (synthesis, guideline) on where to apply what method and how to possibly combine them into a flexible, situation-specific and modular system is not visible. Although most stakeholders agree that volume-based water distribution and payment should be the medium-term objective to be achieved, some farmers have decided to use flat rates (based on crops and areas) for the moment as a more simple method which may level out differences in cropping patterns over the years.

There is an obvious need for improving **on-farm irrigation management** (design, layout, methods, infrastructure). Training of Murabs and irrigators in this respect is definitively required (demand is evident) and should be strengthened within the project; all the improvements in water management at canal level can not make a real difference if water is used inefficiently (wasted) at farm level.

**Agronomy**

Farmers and WUA staff unanimously state that the project has supported them in improving their understanding of irrigation principles and crop water requirements (trainings). However, farmers still face major deficits in production techniques, especially with regard to mechanization, fertilization, availability of quality seed, and marketing – i.e. issues that are clearly not within the scope of the project. The major issue remains the deplorable financial situation of the farmers who cannot afford the inputs required, particularly if they have to be imported; taxes, pension fund payments and other fees add to this financial burden.

**Extension system discussion**

It is clear that there remains an urgent need for agronomic advice at farmers’ level. The project strategy for Phase III has foreseen that the project does not engage in direct extension, but that this task would be out-sourced to RAS and/or TES, both organizations that provide fee-for-service consultancies. The project has thus concluded agreements with the two organizations and provided ToT to RAS consultants. However, the mission could not observe any facts on impact and effectiveness of these arrangements, as no impact post-training assessments were ever made (surprising, given number of training conducted!). RAS was not visible in the three WUAs visited (it is known that RAS in Osh is pretty weak). TES admits to be weak in aspects related to irrigation, and remains interested in collaboration. However, it will only engage in consultancies if demanded and financed by project.

Considering the undisputed need for agricultural/technical advice three main questions have to be answered:
1. Who is to do extension, who is the best extensionist? The challenge is to find a long-term sustainable, cost-efficient and effective solution. Outsourcing as of now to third party has not exactly impressive results and only sustainable as long as the project pays. And: irrigation knowledge is actually with the project (not with TES and RAS), which means that going a long way round could lead to transmission losses. On the other hand, hydro-technicians (at WUA and/or WUG level) are already there and paid, and have a relationship with the project and framers. The mission thus sees them as preliminary best-bet to train farmers. A three-year training cycle (‘one-off campaign’), combined with simultaneous exposure-type training for WUG leaders, might yield more tangible and sustainable results than the outsourcing to RAS and TES.

2. Who trains extensionists? The mission feels that training of extensionists should be done in a separate component (or even a separate project?).

3. Who pays for it? The mission considers it important to remember that the core business of project is water and irrigation, not agricultural production. The evaluation report is not the place to develop an extension strategy, but a strategy is definitely required that also looks at the best sustainable solution for financing.

**Project pilot fields**

Project activities in project pilot fields/farms (which are actually demonstration plots) include sophisticated setup and monitoring which have been generating a wealth of data. On the other hand, these pilot fields draw considerable project resources. Since the mission has not clearly seen tangible results for dissemination after the third phase of the project, the question arises whether the project is re-inventing the wheel instead of rolling out experiences and assessing impact.

The heavily research-oriented approach in these pilot fields is all the more disturbing because 'important' data from 'real-life' farmers' fields are not available. Thus, questions whether water use has been reduced, production increased, or water productivity improved in 'normal' farmers' fields (in standard situations) cannot be answered, and economic cost/benefit analysis is only available for demonstration sites (which are generally all but real-life situations). How can the project monitor and assess whether it is achieving its specific objectives if the data required for this assessment are not available? The mission therefore strongly suggests developing a concept and methodology that allows assessing and analyzing the 'important' data. This may require shifting resources from sophisticated monitoring in demonstration plots to assessments at larger scale in farmers' fields.

**Institutional Arrangements**

The institutional arrangements have most progressed in Kyrgyzstan. The illustration below depicts the existing situation. In **bold** given are the most recent project sponsored innovations, i.e. the Union of Canal Water Users (UCWU), the joint management body Canal Water Committee (CWC), the Canal Management Organisation (CMO) and the new tertiary level Water User Groups (WUG).
Along the pilot Aravan-Akbura canal (AAC), the IWRM principles and organisation have been implemented to a large extent. WUA coverage is 100%; WUG coverage only some 25%, the latter however being an ‘in-phase’ invention. Activities have now also started on two secondary canals of the right-bank main canal (Uvam and Yakalik).

**National level**

As mentioned, the government has provided its full support to introducing the core IWRM concepts of decentralisation, autonomy and participation. Unlike in Tajikistan and Uzbekistan, the necessary laws and regulations are in place in Kyrgyzstan. In 2006, a meeting was held between MAWRPI, the Oblast Departments of Water Resources and project leadership where a decision has been taken to apply the project's concept of IWRM in all Oblast. While this did not yet have any concrete implications, it nevertheless shows that IWRM is now 'on the map' in Kyrgyzstan.

Less positive is the fact that many similar projects that address the organisation of irrigation systems are not synchronised in their approach to, for instance, WUA. This evidently is a policy issue to which the project leadership has made the sensible proposal that the situation will not change unless a commonly agreed approach to WUA is made mandatory part of all project consultants' TOR.

A last point to be mentioned is that, within the project, good strategic thinking is on-going on ways and means of moving to the next higher basin level in the Kyrgyzstan component.

**Aravan-Akbura Canal (AAC) level**

For unified canal management, the recently concluded agreement on joint governance is certainly the core innovation. The UCWU, the CWC and the CMO now exist and function. Cooperation was said to be smooth and problems could be discussed and solved. The tail-
end supply situation has improved and water theft is more difficult due to 'peer' control. In short, the mechanism that has been set-up seems to work.

The challenge now is the move from the current integrated irrigation water management (IiWM) to a full-fledged IWRM. This foremost means the integration of other water users, in particular Osh municipality. The process has been started but can be expected to require some time and complex negotiations.

**WUA level**

In the WUAs visited by the mission, the relationship between the governance actors (council/chairman) and the management (director/staff) was reported as being very good.

All WUA now have their own business plan. Next to the product (which is used for internal operations and financial management, including debt reduction), WUAs also appreciated the process of drafting the plan as it would have, for the first time, opened their eyes on their real situation. An additional benefit is the fact that the business plans are an essential pre-condition for roping-in outside, i.e. donor project support for infrastructure rehabilitation.

Tertiary canal distribution has improved but head/tail discrepancies could only partially be solved. The Project idea to establish WUG at this level is therefore said to be fully supported and even pushed by WUAs.

The water fee collection rate has improved to 85% and WUAs were able to (partly) pay back their debts. The running cost are covered by the service fees and basic O&M can be undertaken (by also using Ashar were possible). The WUA, however, lack funds for rehabilitation and improvements of their infrastructure. The current preferred solution is to seek out donors for grant contributions but it is clear that capital accumulation for investments constitutes an unresolved problem for the medium and long run sustainability and independence of WUA.

**WUG level**

As said above, WUGs are a good project ‘invention’. It is clear that earlier problems in large WUAs could be overcome by establishing WUGs that have led to substantially less problems in terms of transparency, equity, and water losses and theft.

Two factors seem to be particularly important for successful WUGs. The first is that the personality of the leader is decisive and the second that social 'neighbourhood' control plays an important role.

An interesting trend that could be observed on WUG level is a range of on-going experiments on joint management on various scales and in different forms, provisionally termed 'cooperativisation'. As small plot cropping patterns make for difficult irrigation scheduling and based on the well-established tradition of collective farming, many farmers seem to see in cooperative approaches a way out of their difficult financial situation.
The Future in Kyrgyzstan

Medium-term perspective

In Kyrgyzstan, the project has achieved considerable impact, particularly with regard to organisational and institutional improvements. The AAC is almost fully covered, only the WUG introduction process (and the related metering) has still to be completed. The current policy environment is favourable and the project has developed something like ready-made ‘packages’ for introducing IWRM on the canal and below canal levels. The mission therefore concludes that the time for serious up-scaling has come as this can be the only justification for continuing the project in Kyrgyzstan.

To this end, something like a vision 2015 is now required. This relates to the question of (horizontal) up-scaling to other canals but also (vertical) up-scaling to the basin level. The obvious first step in this respect now is to set up an UWU for the whole right bank canal basin, by expanding from the initiated Uvam federation – based on a sound hydrographic study of the area.

In addition, ideas are in the air of further developing WUAs into more comprehensive farmer cooperatives (‘Japan model’). Also, the move has to be made from the current ‘integrated irrigation water management’ to real IWRM by including other users, in particular the important city water supply of Osh.

The evident challenge, however, will be how to move from the 'pampered' pilot situation (with sufficient human and financial resources for a limited area) to the ‘standard’ situation when limited human and financial resources should suffice for considerable more coverage.

Short-term requirements

Top prepare for the medium-perspective, the project should already now start with adjustments to its current work plan. These should include (but need not be limited to):

1. Start binding negotiations with the Osh water supply authorities;
2. Develop a concept and costing plan for tertiary canal metering at WUG level to be ready for submitting either as part of the new Phase or as separate small project;
3. Increase dialogue with other projects, both on a policy level (government and SDC) as well as on the field level directly by the project. To this end, a comparative analysis should be undertaken of the different projects' approaches to WUA formation, experiences made and lessons learnt. The idea is to eventually arrive at one common system that could be mainstreamed throughout the country.
C2  Report on the Uzbekistan Component

Overall observations

At the outset, the mission would like to convey the message that, in the Uzbekistan component and its South Ferghana Canal (SFC), institutional and organisational issues dominate over technical issues; the main future challenges are clearly in this first area. Related to this is the assumption of higher capacities and capabilities in the dominant agricultural production systems in Uzbekistan as compared to Kyrgyzstan and Tajikistan. A case in point are the widespread and apparently very profitable fruit orchards, which constitute the booming element of Uzbekistan’s rural economy in the Ferghana valley.

Still, as will be shown below, major hydrological issues need to be addressed on all levels. Added to this is the fundamental difference to Uzbekistan’s neighbouring countries: water is free and it is therefore especially difficult to convince people saving something that has no price tag attached.

The project has made good overall progress in Uzbekistan and the established pilots do work, both on the canal level as well as below on the WUA/WUG levels. Field staff is committed and enjoys very good collaboration with government actors. Also to be complimented is the IWMI and SIC field staff, which collaborate well. The question remains, however, why two separate offices are operated. The fact that the SFC is considerably larger than the two other pilot canals, with a corresponding substantial number of WUAs, limits what the project can achieve with the human resources at its disposition.

Technical Issues

Hydrotechnical

Currently, hydrographic mapping still is a major activity within the project to lay the basis for the hydrographic approach (WUAs have been established through government decree along administrative borders). The hydrotechnical information base (water volumes/flows) is well established at canal and WUA level (outlets of secondary canals); in Uzbekistan with its large farms the question arises whether integration with other levels/entities would be possible.

The primary canal level infrastructure is in good shape and the ‘SDC Automation Project’ is adding further improvements particularly with regard to water measurement.

The state of secondary and lower canal infrastructure is pretty variable, although rather better than in Kyrgyzstan. Ownership of infrastructure is mixed, resulting in different responsibilities (State vs. Shirkat/WUA), which seem not always clear to everybody. In other words, the mission noticed a marked difference in perception of the legal situation, particularly related to the drainage systems. Since substantial investments are still required (repairs, maintenance, improvements), particularly to reduce the substantial technical water losses in canals, clarification of responsibilities is of great importance. Assets (i.e. their
status) and investments requirements will have to be included in WUA business plans accordingly. Although WUA Akbarabad has developed a proposal for accessing external funds, the mission has not spotted any infrastructure improvement successfully requested from other donor projects.

Large areas in the Uzbek part of the Ferghana Valley suffer from very high groundwater table and salinisation problems. Thus, functioning drainage systems (vertical, horizontal, combined) are extremely important for productive and sustainable production. However, the high groundwater tables also emphasize the crucial importance of reducing water losses in conveyance (canals) and on-farm irrigation (over-watering).

With regard to on-farm irrigation management, considerable improvements are possible and required. So-called 'Polygons' for testing and demonstration have been established by the State; they not only show improved irrigation practices (explaining irrigation principles, water requirements, etc.) but also demonstrate best agronomic practices. The mission felt that Murabs are decisive key actors with direct farmer contact that should be especially motivated and targeted in terms of irrigation and water management training. Improving on-farm irrigation management may still require certain infrastructure improvements with regard to canals, gates, and particularly water metering (the government seems to push farmers to install water measurement devices).

Since the fruit orchards are clearly the most profitable activities but the related irrigation practices clearly not efficient, the mission suggests to investigate the potential to initiate market-based private sector drip irrigation as option to improve water productivity. After all, SDC has substantial experiences with supporting such an approach, foremost in India. However, as a caveat, it must also be said that farmers may not be inclined to invest in water-saving technologies as long as water is free.

The mission observed that there are 'lucky' and 'less lucky' farmers and WUAs: In September 2007, water flow in the SFC has been stopped, whereas the BFC still supplies water. This not only has inequitable consequences for filed crop growers but may severely affect the profitable orchard farmers. WUAs and farmers having access to functioning vertical drainage or water from side-rivers are certainly privileged over farmers fully depending on SFC water.

**Agronomy**

Average crop yields in the Uzbek part of Ferghana valley are relatively high (higher than in Kyrgyzstan and Tajikistan), and seem to further increase continuously. Uzbek farmers have access to various sources for agronomic advice: Polygons and 'trainer consultants' (State initiative, in each Rayon), a monthly bulletin providing guidance to farmers with regard to specific crop husbandry practices, advisors affiliated to cotton gins, or MTP (Machine and Tractor Park where farmers rent machinery). The mission has, however not come across any entity providing advice to orchard farmers.

The 'Polygons' seem to be a good intervention by the State, and the mission felt good collaboration between the state and the project (project support regarding water and irrigation management). Demonstrations and advice are irrigation technology and agronomy-
oriented, a holistic approach that is commendable. The 'Polygons' focus on cotton and wheat production, orchard farmers are not targeted. The problem with the 'Polygons' is in their very limited reach: only 20-40 farmers are reached per polygon which corresponds to an estimated coverage of 4-5%. The major challenges to capitalize on the 'Polygons' are therefore: How to scale up? human resources required? how to reach orchard farmers? The mission is convinced that not additional training centres (with computers, etc.) in every Rayon should be established, but that the in-field training approach initiated with the 'Polygon' idea should be further developed.

The monthly bulletin issued by the government with support by the project is very much appreciated by farmers and WUA members. Again, the good collaboration between State and project is commendable. However, the potential given by these bulletins is by far not realized! Only 300 copies are printed although thousands of farmers could benefit from this initiative. Since the bulletins seem to be written in an understandable language (for farmers), increasing the print run is more than commended.

The project pilot WUA Akbarabad has produced impressive results. Now, a focus on dissemination is required, which the project and WUA have already initiated by establishing a 'training centre' and linking with a nearby agricultural college. Sophisticated monitoring in the pilot farms may be reduced or abandoned since a wealth of data is available, waiting to be used; monitoring on demonstration sites should be restricted to the 'important' data, but focus should be shifted to assessing the situation in 'real life', i.e. from farmers' fields in standard situations.

With regard to the dissemination of project experiences, the mission felt (again) that there is a lack of a comprehensive extension strategy in the project.

The mission also observed that free water and electricity cross-subsidizes the very profitable orchards, which may lead to conflicts and raises questions about sustainability. It is therefore suggested to engage in a full-cost profitability investigation, possibly within a (few) project WUA(s).

**Institutional and organisational issues**

At the outset, it is important to note that the tail-end WUAs and farmers interviewed did fully agree that the tail end supply in the SFC has improved in last two unusually dry years. This good feedback for these difficult years points to a considerable potential for better years. The new arrangements have thus indeed brought improvements.

**Governance function and units: WUG > WUA > Filial > UWU/CWC**

Along the SFC, hydrographic and administrative WUA exist side-by-side. In administrative WUA, the former Shirkat leadership is more or less identical with the new WUA leadership, supplemented by representatives of the local administration.

Hydrographic WUAs and WUGs are usually organised as follows: a WUA encompasses several secondary canals, along with some of which WUGs are organised. If the area serviced on
one canal is covered by many small units, a WUG is set-up; if a few large unit(s) are serviced, no WUG is established.

**WUG**

WUGs, which were ‘invented’, i.e. introduced by the project only during Phase III, are assessed as a good and need-based concept that produces ‘fast’ results in terms of better water distribution along the secondary canals. The WUGs visited by the mission seem to function well and can largely solve internal distribution problems, especially for the tail end plots. The selected approach consists of forming one initial WUG per WUA with strong project assistance; with the intention that additional ones are then formed by the WUA with limited assistance only.

**WUA**

The number of WUA along the SFC is by far larger than along the other two pilot canals. The current situation has been analysed and presents itself more or less as follows (the numbers given to the mission did slightly differ though, depending on the source of information):

- 1\textsuperscript{st} generation: fully hydrographic with BP, etc. \hspace{1cm} 10
- 2\textsuperscript{nd} generation: plus/minus ready to become hydro (with budget) \hspace{1cm} 13
- 3\textsuperscript{rd} generation: initial steps made/baseline survey \hspace{1cm} 35
- 4\textsuperscript{th} generation: 1\textsuperscript{st} contacts made, no action yet \hspace{1cm} 5
- **Total original SFC** \hspace{1cm} 63
- 5\textsuperscript{th} generation: govt demand on side-river (Isfayram-Shohrimardan) \hspace{1cm} 26
- **TOTAL PLANNED** \hspace{1cm} 89

The 1\textsuperscript{st} and 2\textsuperscript{nd} generation WUA show that the chosen approach works and that it produces results in terms of functioning hydrographic WUA and WUG. The request to start activities in 5\textsuperscript{th} generation shows that the government took note of the progress made and sees a potential in the project’s hydrographic WUA approach.

The 3\textsuperscript{rd}, 4\textsuperscript{th} and 5\textsuperscript{th} generation, on the other hand, show that much still needs to be done as these WUA constitute some 60% of the total 89 WUA that should become functional in the
wider SFC command area. For instance, it still needs to be confirmed whether the chosen approach to pilot one WUG in each WUA, which then is to be multiplied by the WUA itself, actually works.

The currently very complex re-registration process for converting an administrative WUA into a hydrographic one is an important impediment to faster progress with the latter. Basically, at this point, two options seem to exist: The project either continues to provide support to the complicated registration – for which purpose a commission is planned to be set-up – or, better, the project lobbies with the government for producing legislation for an easy registration process.

Some unresolved issues surround secondary infrastructure ownership and the related maintenance obligations but also budgets. The secondary canal infrastructure (WUA level) still belongs de facto and de jure to the 'old' administrative system outside the CMO. This also applies to the ownership of the inter-WUA infrastructure and the drainage systems. We therefore find in the SFC command area currently a hybrid situation between the established administrative and the new hydrographic system.

**Union of Water Users (UWU) and Canal Water Committee (CWC)**

In 2007, the SFC UWU has obtained legal status, its council has been elected and an evidently capable chairwoman currently leads it. The UWU still has no real decision making power as it can only lobby and search for commonly accepted solutions. From the CMO it only receives information. Currently, it is therefore still rather a 'virtual' body without an income of its own. Should the planned service fee of 115 Som/ha be indeed 'collectable', its annual budget would come to some 10m Som.

The SFC CWC has also recently established and is now ‘finding its way’. An agreement has been concluded between the UWU and the FVMCA (not the CMO). To the mission's understanding, however, the relevant administrative Infrastructure Systems (see below) are not party to CWC.

**Branches of UWU (filial)**

Given the more than 180km length of the SFC, the UWU has established branches or ‘filials’ that correspond with hydrographic units of the CMO. The mission has visited one branch in the central canal area that seemed well organised and keeps transparent water supply records. This filial seems ready to be given more powers in governing their part of the SFC. Whether the other branches in the recently incorporated canal part in the Andijan Oblast and the filial at the tail end work equally well could not be assessed.

**Management function and units**

**National Level**

The change of the former Shirkats to individually owned farms has only recently been finished and 2007 saw the ‘big bang’ introduction of administrative WUAs in the country.

It is certainly very positive – and was again confirmed during the mission’s debriefing in Tashkent – that the government evidently sees a need for change and a good opportunity in
introducing the IWRM approach and is therefore very interested in the project’s pilot activities at the SFC. The government obviously follows a sound strategy of careful observation of pilot in order to then act if the pilot results are positive. Like in the other countries, the NCSG was reported to be not (yet?) very active.

The core issue for discussion is certainly the fact that the SFC management and governance are currently in a transitional period where new pilot WUAs, the UWU, the CWC as well as the CMO are ‘grafted’ on the old administrative system that continues to play decisive role.

**Current organisational set-up**

![Diagram of organisational set-up]

**Emerging issues**

The above illustration is the result of a wide range of discussions in which the mission tried to come to grasp with the current set-up. The picture may still not paint the correct situation but, frankly, neither did the differing explanations given by different actors.

The SFC governance and management today is a complex system that (1) mixes administrative with hydrographic structures; and (2) separates water supply and management process. The CMO is something of a branch of the Ferghana Valley Magistral Canal Administration (FVMCA). It only organises the supply of canal water but does not manage the SFC irrigation system as a whole. An additional complication in the SFC perimeter is the small rivers that also feed into the canal.

The second important group of players are the former Oblvodkhozes, now called Basin Administration Irrigation Systems (BAIS) and their lower level Irrigations Systems (IS). Despite their change of name, they are still organised along administrative boundaries. The secondary canal infrastructure and the drainage systems are still fully under their authority. The related budgets and responsibilities for O&M also remain with the administrative
structures. A telling fact is that WUAs make their contracts for water delivery with the IS and not with the CMO. Naturally, the two IS of the SFC (Isfayram-Shahrimardan in the Fergana Oblast and Shohrihonsoy in the Andijan Oblast) also cover WUAs from other canals as they are not hydrographic units.

**Main conclusion**

The main conclusion of the mission is that the SFC governance and management is currently in what we name a 'pilot trap' (of which the project is aware and which can be attributed to the on-going change from the old administrative to the new hydrographic principle). Still, the time has now come when any further development needs first organisational and institutional changes to the above-sketched set-up. Either a next step is now made in fully fusing the administrative and hydrographic systems, or meaningful hydrographic development will come to a standstill. To solely proceed with below canal level (WUA/WUG) efforts can have only a very limited impact in the current set-up.

To paint a plain picture: The SFC is but one finger of the hand that is the Fergana valley basin with its five magistral canals as fingers. One finger (i.e. the SFC) can (1) not really move without the invisible parts inside the hand and is (2) tied to another finger through the WUAs within the Irrigation Systems (IS) that also cover another magistral canal.

The core issue is therefore the transfer of governance responsibilities from the current administrative system to one hydrographic system, with corresponding clear roles and powers for the CMO, the UWU, the CWC and the WUAs. Coupled to this is naturally the discussion on the secondary canal budgets and O&M responsibilities.

**Future options**

The diagnosed ‘pilot trap’ situation leaves basically three options for further project activities in the SFC:

**Option 1**

**Stop** activities in the SFC pilot canal but provide limited support to 'finish' the work started at WUA and WUG level.

**Option 2**

'Big bang' transfer of all magistral canals in the Ferghana valley at once in fully hydrographically managed units. This would include converting the existing administrative BAlS and IS into new, truly hydrographic units for each magistral canal.

**Option 3**

**Finish 'hyodrografisation'** at SFC level: Take out SFC WUA hydrographic areas from the existing IS Isfayram/Shahrimardan (Fergana Oblast) and IS Shahrihonsoy (Andijan Oblast) and establish a new unified hydrographic Irrigation Unit that transgresses the Oblast borders. Organisationally, this would look as follows:
The mission clearly discourages the first option, as this would mean abandoning a process where already much headway has been made. The mission then clearly favours the third option as it is (i) more realistic than option 2 and (ii) allows again following the established path of first testing out the next necessary step towards a fully managed canal along hydrographic and IWRM principles.
C3  Report on the Tajikistan Component

Specific characteristics

When assessing the situation in the irrigation system as well as project progress in this country, it is important to take into consideration the different history of Tajikistan with its civil war from 1992 to 1997 and the enormous social, political but also infrastructure related consequences.

The Khodjibakirgan canal is, unlike the other two pilot canals, exclusively river fed and water buffering is consequently not possible. Competition for the scarce water is therefore more pronounced in the dry season than in Kyrgyzstan and Uzbekistan and the direct impact of the two dry years 2006 and 2007 is felt stronger than in the other buffered systems.

The Kolkhoze dissolution process is currently on-going with new Kolkhozes to be split up at the end of this year. This provides additional complications for the project as the planning has, so to speak, to hit a moving target.

The obscene level of indebtedness of the Tajik Dekhan farms and the way they are treated by their so-called ‘investors’ is a widely known fact that crops up in almost any discussion with farmers – without that any solution seems to be emerging in the near future.

The government’s track record seems to be mixed. Public displays of support contradict with less pronounced support given to farmers and the irrigation systems than is the case in Uzbekistan and Kyrgyzstan, and it continues to charge the highest water fees in the region (which are actually still increasing). Added to this is a very complex fee and tax system, again with high rates.

The Khodjibakirgan canal, finally, does not only serve as irrigation system and village water supply but is also used by large urban drinking water systems. Chkalovsk and Kistikuz are already drawing, Khujand was said to be starting soon. Competition for the scarce canal water will in any case only increase and the leverage of the farmers probably decrease.

Main achievements and shortcomings

As in the other components, the capacity building activities of the project have received high praise with impact of the technical, organisational training activities visible. As one WUA leader put it: "we understand for the first time our situation and have the tools to act on it". Consequently, there is a strong demand for more training and a good potential for up-scaling this activity.

In terms of better and more timely water supply, the large tail-end Kolkhoz Samadav today is more satisfied. The following table 7 from the Draft IWMI User Perception Survey 2007 (based on 05/06 data), however, shows also pertinent shortcomings when farmers themselves judge water delivery services.
Technical Issues

Hydrotechnical

The canal selected for the IWRM project in Tajikistan (Sughd province) seems to be a special case in the two Rayons the project works: Whereas most irrigation systems are fed by first pumping water from the Syrdarya river (that is then distributed by gravity), the Khodjibakirgan canal is directly fed from the Khodjibakirgan river flowing from Kirgizstan into Tajikistan. The head-works for the canal are located on Kyrgyz territory and the water is conveyed by gravity flow to the users along the canal.

Water flow in the Khodjibakirgan canal is very unstable because it fully depends on the natural water flow in the river; no reservoir allows for regulating the flow. This renders water availability for irrigation a difficult issue, particularly between mid March and mid May, when river flow is low because snow and ice melting at its origin hasn't fully started yet.

Water losses in conveyance systems are significant. However, the condition of the primary canal seems not the primary problem; the infrastructure (canal and gates) is an acceptable condition. Furthermore, efficiency of water delivery through the canal is being improved by a three-day rotation regime for water delivery to the two Rayons, which seems to have been introduced some 10-15 years ago (or even earlier).

However, conveyance water losses in secondary and particularly tertiary canals are immense. A farmer of Zarafshan WUA mentioned that he only receives 50-60% of the water delivered for him at the outlet of the secondary canal, mainly due to seepage losses due to desolate infrastructure (and probably because the canal flows through a settlement where the population also gets water from 'his' canal). Since the amount of water delivered to the farmer is measured at the outlet from the secondary canal, the farmer has to pay for all the water delivered although 40% are lost on the way to his fields. This situation obviously fosters discontent about water delivery services and is all but motivating for paying water tariffs and service fees. Since water tariffs are high in Tajikistan, the question of who has to pay for conveyance losses is an extremely important issue to solve.
In perspective of WUAs, **maintenance of secondary canals** has worsened since management of the canal has shifted from the two Rayon water administration bodies ('Rayon Vodkhozes') to the single CMO established through the project. The reasons for this have not become clear to the mission: Water Department officials claim that responsibilities for maintenance of secondary canals have not changed (i.e. are with the Kolkhozes and WUAs) since the management of the canal was shifted to the CMO (which is certainly in a difficult financial situation), but it seems that water users do not fully agree with that.

Because not only lower-level conveyance infrastructure but also the pumping stations visited by the mission are in pretty bad shape there is great need for **rehabilitation and improvement of infrastructure**. Roping in external funding from other projects seems very important in this regard, and some successful examples have been observed. ADB invested a considerable sum (around 1.5m Somoni) in the rehabilitation of the primary canal (although, despite a head works visit, the mission was not able to detect any recent improvements), and at WUA level UNDP and ACTED (Agency for Technical Cooperation and Development; headquarters in Paris) have invested in rehabilitation of lower-level canals and installed gates and water meters.

**Water delivery** through the primary canal to water users seems, in general, not having improved over the past years. Although daytime delivery to tail end users (e.g. the Kolkhoz Samadov) has improved, night supply remains a problem. Occasional cut-off of water supply to WUAs because they cannot pay water tariffs to the CMO (and possibly due to pressure from influential users?) represents an important problem for the WUAs; farmers often suffer considerable crop losses. Project data from SIC shows slight improvements in sustainability of supply (i.e. timely performance of meeting water requests) but reductions in equitability (i.e. supply in relation to requests) between 2004 and 2006. The above User Perception Survey 2007 illustration clearly shows that water users perceive water delivery having deteriorated.

**Water distribution to farms and fields** is a difficult task for the WUAs. Thus, advice from the project in this regard is very much appreciated and demand for further support and training seems high. It seems that the daily water scheduling method developed by SIC is being applied on the pilot WUA Zarafshan. However, lack of water measurement devices still constrains this approach.

**Water metering**, possibly for each farmer, seems a very important task to achieve. Measuring water flows to individual farmers has several advantages, such as empowering water users to pay only for actual water delivery or allowing the identification of water losses in conveyance systems (and thus most important investment needs). Wherever water measurement devices are installed water use seem to be reduced. There certainly exists a demand for more water measuring devices, but no government support is provided to WUAs and/or farmers (unlike Uzbekistan and Kyrgyzstan).

**On-farm irrigation management** still leaves great room for improvement, particularly where sandy soils with gravel render irrigation difficult (frequent irrigation with rather low doses
required). The project could certainly provide advice and training needed. Since more than 50% of the irrigators seem to be female (feminisation of agriculture/irrigation due to migration of men) training will have to particularly consider gender aspects (e.g. timing of trainings concerted with workload of women).

**Salinisation** problems seem quite widespread in the two Rayons. The mission was told that only few functioning drainage systems exist (due to the very permeable soils). Proper leaching and drainage should therefore be considered by the project and possibly become an issue in its training activities.

**Agronomy**

**Crop yields** observed in the Tajik project area are generally low. Probable reasons for low productivity are:

- Lack of sufficient and timely water supply;
- Difficult soils (not very fertile; suitability for cotton?);
- Difficult access to quality seed;
- Restricted access to inputs (including labour) due to the very difficult financial situation of farmers and lack of access to agro-credits. The problematic financial situation of farmers has most likely two main reasons: (1) the debts of Kolkhozes have been passed on to farm(er)s and (2) contracts with so-called ‘investors’ (cotton purchasers) entrap farmers into a vicious circle of indebtedness which is very difficult to break (only few cases have been observed where this cycle could be broken).

**Kitchen gardens and 'presidential land'** seem very important in terms of production and agricultural income. The comparatively high-intensity cash crop production on these lands proves a considerable potential for agricultural development. Many farmers try to tap this potential by diversifying their production portfolios. However, both the impact of improved water and irrigation management as well as the potential for profitable diversified production is severely curtailed by dominant forces (larger processes and structures outside project reach). The IWRM project demonstration plot on WUA Zarafshan clearly demonstrates the difficult situation of farmers (lack of financial resources for inputs and labour) and is therefore not really of value as a demonstration ‘polygon’.

The increasing number of Dehkan farms (restructuring of Kolkhozes and splitting of large Dekhan farms) increases the demand for **agro/hydro extension**. The IWRM Project and SDC links with CECI (Centre for International Studies and Cooperation), ASDP-NAU (and through this NGO indirectly with MoA) or Winrock WUASP offer great opportunities to:

- Disseminate project experiences and specialized staff hydro-knowledge (e.g. on ‘polygons’ or by training of trainers), and
- Strengthen agro-extension within the project by linking agro consultants in other projects with IWRM project farmers (‘sell hydro, buy agro’).
Institutional Arrangements

**National level**

The NCSG is, for similar reasons as in Uzbekistan, apparently not very active. Still, the presence of the relevant Deputy Minister at the mission’s debriefing shows that the government does indeed take interest in the project and carefully observes its pilot activities.

Unfortunately, the Project does not seem to be aware of and is therefore not participating in the existing Tajikistan WUA development coordination group that brings together, in monthly meetings, most projects involved in irrigation management at the lower canals’ level.

**Canal level management**

The unified KBC was taken out of the responsibility of the two regional Rayvodkhozes. It is important to understand that the KBC constituted, so to speak, the ‘best piece of the cake’ as the canal systems remaining with the Rayvodkhozes are Syrdarya pumping systems that are obviously more expensive to run than the gravity KBC.

The three-day rotation system, introduced in Soviet times between the areas covered by the two Rayons, is being continued. Supply in the lower rayon’s area is again divided equally in days between the large Samadav Kolkhoz and the WUAs.

The CMO is in charge of the entire KBC since 02/04 and, since 2007, also ‘owns’ the four pumping stations situated along the canal. The latter have of course come at a price as they are in relatively bad shape and will have to be rehabilitated, now from the CMO budgets instead of the Rayvodkhozes.

The KBC has a total of 63 outlets to secondary canals. Ownership of the secondary canals is with the Kolkhozes and WUAs. Given the precarious financial situation of the WUAs, this has and will continue to have consequences for the maintenance of the canals. The CMO employs a total of 106 staff giving substantially lower hectare coverage per employee when compared with the other two pilot canals. In absence of data on the former situation it is difficult to assess whether the new organisational set-up is more efficient that the former. Some doubts however remain. Still, the involved operational staff assured that information flow and decision-making today would be much faster than in the past system.

The financial situation of the CMO clearly needs special attention. Naturally, the mission could not make anything like a financial viability analysis (did the project ever make one before the experiment with the unified management was started?). A cursory assessment shows the following situation: A business plan has recently been made but seems to be somewhat optimistic in terms of expected income and planned expenditures. The mission has not come across a thorough analysis of the existing assets (including pumps), and a related costing of the most important rehabilitation needs; nor does depreciation of assets seem to be in the books.

The 2007 situation was said to be more or less as follows: Since spring, water has been delivered to the value of some 750'000 Somoni but only 56% of the related water fees could
be collected so far, leaving a considerable income gap for this year. Large differences exist in the payment practices. Out on top comes the Kolkhoz Samadav that has paid more than 90% of its dues; at the bottom ranks the ‘old’ pilot WUA Zarafshan, which has transferred a mere 22% so far. The WUA explained this by the need to collect the fees from its individual members while the Kolkhoz could just take it from its cash box. The good payment practice of Samadav gives it naturally a stronger position when competing for water. WUAs reported also direct payments to the CMO by Dekhan farms or single WUA members for speedy water release.

The government subsidises the CMO with paying 25% of its salaries but asks, on the other hand, for 10% of the water fees. Though no exact figures were readily available, the CMO assumed the outflow of water fees to be larger than the salary subsidies.

Overall, the CMO seems to just about have the necessary income for paying its running costs, in particular salaries, but can not accumulate any capital for its substantial investment needs (rehabilitation main canal, pumping stations, etc.). A complicated and unresolved tax issue with the Ministry of Finance further aggravates the situation. The project is aware of the precarious financial situation and has come up with some ‘out of the box thinking’ for alternative income ideas. The mission does not think these to be realistic (sale of gravel from canal cleaning, etc.). Also, the CMO should anyway stick to its core business – managing the canal – and do it well rather than embark on strange business ventures.

The mission thus concludes that the medium- and long-term financial sustainability of the CMO is a very serious concern indeed and naturally jeopardises any progress made on the WUA level. As shown in the final chapter, it seems high time that a proper professional financial viability study (linked to a technical analysis of investment needs) is undertaken as soon as possible.

Related to any potential up-scaling plans for the remaining – more expensive! – pumped canal systems in the two Rayons is the need to also explore the financial viability question before any activities would be started.

**Canal level: Governance function (UWU and CWC)**

**Union of Water Users (UWU)**

The UWU was founded in November 2006 with six Kolkhozes as founding members. This decision was taken as it is legally only possible to have either just commercial or only non-commercial founding members. Once founded, other members then may join, whether commercial or non-commercial.

So far, however, no WUA has joined, also not the pilot WUA Zarafshan. Why exactly this did not happen, especially in the case of the latter, has not become fully clear to the mission. However, as of now, two WUAs have applied for membership and can be taken on board in the next UWU general assembly. A third WUA was said to be the in preparation stage for an application.
Up to now therefore, the three WUA have no voice in the UWU, i.e. canal governance; the current chairman is also not a ‘farmer’ but the ex-chief engineer of the canal. From WUA interviews a picture emerged of the WUA currently rather being controlled by CMO and UWU than controlling the latter.

Other users are approached for being roped-in but the process is in its initial stages only. In the KBC, this relates on the one hand to the settlements and their kitchen gardens and the presidential lands. On the other hand, the large city drinking water systems are in a class of their own. Interestingly enough, SECO currently finances an urban water supply project in Khujand but no contacts seem to have been made so far between the two projects.

Canal Water Committee (CWC)

The CWC is functional as a body that brings together the CMO and Union of Water Users organisation only since June 2007, i.e. for less than four months. It also has sub-units, organised along the hydrographic units’ level since August this year. As such it has little experience and the WUAs, not yet being in the UWU, do not take part so far.

WUA and WUG level

At the outset, the forming of a mere four WUAs is certainly not impressive. One of them is furthermore not within the hydrographic canal perimeter.

One WUA ‘controls’ several outlets and their secondary canals. Along each of these canals then, one WUG is organised, usually consisting of some four to five larger Dehkan farms. The number of WUG members is thus considerably smaller than Kyrgyzstan and parts of Uzbekistan making it easier to distribute water equally.

Organisationally, the chosen set-up seems to work as far as the limited experience with three WUA can tell. There seems to considerable demand for advice and assistance from the remaining Kolkhozes that are about to be broken up. The project has taken initial steps to introduce IWRM principles into Kolkhozes in order to improve their internal water distribution. The mission feels that these efforts should be increase in order not to loose this ‘window of opportunity’.

As regards their financial systems, one WUA visited had a basic system in place but still deficits in its accounting; the second WUA visited had no system in place yet and does not collect service fees so far. As mentioned, water fee collection rates of WUA are very low.

The lower level WUG seem to be currently well adapted to the needs of the few Dekhan farms on one canal. However, the situation will change, if and when the further splitting up of farms into individual units occurs.

The main current challenges on WUA and WUG level are the inclusion of (1) settlements/kitchen gardens and (2) presidential lands. As mentioned, first steps have been made but clearly need to be strengthened. However, hierarchical questions will emerge like whether new groups of kitchen garden users along a secondary canal will become a sort of Sub-WUGs? It is evident that a concept is urgently required on how to approach this question.
At the end of this chapter, the question has to be posed who is to be blamed for the remaining problems like timely water delivery, secondary canal maintenance, low fee collection rates, etc.? If talking to the CMO, it is clear that the fault is with the WUAs ("they do not want to pay though they could, they need a strong hand, etc."). Talking to WUAs does, not surprisingly, reveal the opposite opinion ("the CMO is not transparent, we have no voice, the strong players dominate, we simply have no money as our investors do not pay us, etc."). While both opinions may have their merits, it still is clear that mutual trust, transparency and 'democracy' are not yet very well developed among the actors along the KBC.

**Capacity Development**

In the Tajikistan component, the capacity development has produced the best project results. There is apparently considerable interest by other parties, in particular development projects, for specialized on-field (not in-training centres) hydro-knowledge related training to their extensionists. This might constitute an opportunity for dissemination of project knowledge packages, like secondary canal water distribution systems and on-farm irrigation management. Before embarking on any major venture in this direction, the project should first investigate the potential demand for such packages.

It is therefore advisable to discuss any up-scaling ideas for hydro-capacity development together with interested parties (Ministry of Agriculture, MLRWR, CECI, ASDP, Winrock, etc.). At the same time this could also help to rope in specialised knowledge on WUA organisation and set-up process from other experienced organisations in Tajikistan.

**Project organization and management**

The mission has observed some special features of the Tajikistan set-up: this relates foremost to the fact that 13 of the 23 staff serve in a double function as (senior) officials in the project and at the same time are still holding on to their job in the (water) administration. The extent of these double-jobs by far exceeds the situation in Uzbekistan and Kyrgyzstan. The reasons given for this special set-up were not fully convincing to the mission (dissemination of project knowledge into the government system, not wanting to break the career path of officials, etc.). One explanation for the slow progress in Tajikistan could certainly be the double strain put on the staff that have to obey two masters. Also, a certain uneasiness remains as to the consequences of this arrangement on the relative emphasis on top-down management versus the envisaged democratic and bottom-up governance structures.

In terms of overall project management, Tajikistan has shown that decision-making is very centralised and little or no knowledge is locally available on respective budgets or detailed activity planning. The Oblast coordinator’s job is rather one of logistics’ assistant than real coordinator of activities and he has no function and no leverage in terms of controlling.

Another emerging issue is related to local project identity. Currently, three offices are operated: one is in Khujand (where SIC/government officials work, also on their normal
tasks); the second is in Chkalovsk (the CMO office on ‘neutral ground’ but also ‘far from the people’ with consequences on felt transparency), the third, finally, is the IWMI office in Proletarsk (close to people of one rayon but not of the other). Overall this seems hardly a satisfactory situation, which can and should be improved, not least for cost-efficiency.

While the project was certainly designed in a way that each country component was to receive equal attention and support, the mission still got the impression that in reality Tajikistan has been, for a range of external and internal reasons, rather at the ‘tail-end’ of project efforts. It is advised to remedy this situation by placing particular emphasis on this country component in the future Phase. Organisationally, operational decision-making should be decentralised, while strategic analysis and steering/controlling from the centre should be increased.

**The Future of the Tajikistan Component**

**Main current challenges and proposed measures**

As said above, the Tajikistan component needs special attention if a real take-off is to be achieved in future. To this end, the mission has identified the major current challenges and proposes basic measures how to address them.

The core challenge is the fact that the field level discussions have shown that ‘clients’, i.e. foremost the Dekhan farms, have not perceived real improvements in their water supply related situation (some evidence even emerged of contrary developments). While this can only partially be attributed to the project, especially with the last two very dry seasons, it still has to be taken serious if the project objectives are to be achieved.

The mission proposes to address the following challenges below and assumes that then the situation may indeed improve in terms of client satisfaction.

The interface between the WUAs and the CMO/UWU/CWC is not yet formed by a mutual trust relationship. It is urgent to address the issues of how to ensure democratic governance instead of top-down control and how to increase transparency and trust from farmers' side?

The mission strongly proposes to make these deficits the main focus in future and monitor related developments carefully.

Another challenge relates to the WUA and or Kolkhozes. The mission proposes to put substantially more efforts on newly emerging WUAs or the soon to be dismantled Kolkhozes. The project needs to know what is important when Kolkhozes are broken up (what to do with assets like pumps and drainage systems, how to best prepare people)? It seems that collaboration and coordination with Uzbekistan activities in the same field is called for.

Also on the WUA level is the challenge of the inclusion of other users. To this end, the project needs to experiment in order to develop a 'model' process on how to include in particular settlements and their kitchen gardens as well as the presidential lands.

The final challenge relates to information that is not readily available. Does the project really have the data that it needs, for instance on farmers' (not pilot plot) water productivity?
Related to this is the absence of any economic analysis at all levels (canal, WUA, farm) that would allow taking informed investment decisions. It is evident that these information systems need to be put in place as soon as possible. Particular importance has to be given to the CMO’s economic viability and sustainability. As a first step it is advised to invest in a professional and comprehensive financial analysis (‘due diligence’) and take any decisions only after solid figures are on the table.

**Expansion/up-scaling to other canals**

Further activities in Tajikistan can only be justified if up-scaling takes place in the near future. The most obvious candidates for up-scaling are in the same area, i.e. the same two rayons: the systems supplied with water pumped from the Syrdarya. Irrigation involving pumping dominates over gravity supply in Tajikistan and also in the Sughd Oblast. In pumped systems, the economics of administrative versus hydrographic organisation is particularly important. The issue at hand is quite simply that if the IWRM approach does not work (i.e. is not viable) in pumped canal systems, it is hard to see how canal level IWRM can be further advocated in the country.

To pilot this, the project should take in as soon as possible one irrigation canal system supplied with water pumped from the Syrdarya. However, before doing that, the pre-selected ‘candidate’ system should be included in the proposed ‘due diligence’ analysis effort for the KBC. Such an analysis can then serve as baseline for the new canal’s activities – provided the analysis predicts a fair chance of it becoming viable.
IWMI "Bright Spots" project:
IWMI is leading an ADB-funded project "Enabling farming communities in the Aral Sea Basin to reverse water and land degradation by the creation of "Bright Spots". Bright Spots are areas where land degradation and low productivity have been successfully reversed through soil remediation technologies and best practices. The project develops and adopts specific technologies that increase productivity and provide income-generating opportunities for disadvantaged rural farmers through effective management of saline soils and water, while initiating changes in current resource and agricultural management systems. (http://centralasia.iwmi.org/prj-bs.html)

ICARDA "Soil and Water Management" project:
The International Center for Agricultural Research in the Dry Areas (ICARDA), in partnership with the national programs of the Central Asian Republics, initiated in 2000 an applied research project on soil and water management supported by ADB (second phase: "Improving rural livelihoods through efficient on-farm water and soil fertility management in Central Asia"). The project addresses major on-farm soil and water management constraints with the aim to increase agricultural production through maintaining soil fertility, enhancing nutrient-use efficiency and improving the productivity of water. (http://www.icarda.org/cac/sw/index.htm)