



Privatisation/Transfer of Irrigation Management in Central Asia

Final Report

**Department for International Development
Knowledge and Research Services Contract R8025**

December 2003

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Mott MacDonald Limited
Demeter House
Station Road
Cambridge CB1 2RS

Tel +44 (0)1223 463500
Fax +44 (0)1223 461007
www.mottmac.com

Department for International Development
94 Victoria Street
London SW1E 5JL
United Kingdom

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Station Road
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UK
Tel : 44 (0)1223 463500
Fax : 44 (0)1223 461007

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Units, Abbreviations and Glossary

SI units are employed as follows:

d	day
dS	deci-Siemens
ha	hectare; '000 ha - is used for one thousand hectares
hr	hour
kg	kilogramme
km	kilometre
kV	kilovolt
l	litre
m	metre
mm	millimetre
m ³ /s	cubic metres per second, cumec
MW	mega-Watt
Nr	number
s	second
t	(metric) tonne
yr	year

Other units and conversion factors:

meq	milli-equivalent
mln	million

1 dS/m is equivalent to 1 millimho/cm

TDS (g/l) approximately equals EC (in dS/m) times 0.64 for EC between 0.1 and 5.0 dS/m

TDS (g/l) approximately equals EC (in dS/m) times 0.80 for EC greater than 5.0 dS/m

Abbreviations and acronyms:

References are given in square brackets '[...]'; the full title is included in the section 'References and Bibliography' which follows the main text.

ADB	Asian Development Bank
AADP	Asian American Donor Program
CAR	Central Asian Republics
CDW	Collector drainage water
DWR	Department of Water Resources
EC	Electrical conductivity
FAO	Food and Agriculture Organization
FSU	Former Soviet Union
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
IIMI	International Irrigation Management Institute
IMT	Irrigation Management Transfer
INPIM	International Network on Participatory Irrigation Management
IPTRID	International Programme for Technology and Research in Irrigation and Drainage

IWMI	International Water Management Institute
MOAWR	Ministry of Agriculture and Water Resources
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOWR	Ministry of Water Resources
M&E	Mechanical and electrical
NGO	Non-governmental Organisation
n.a.	not available
OIP	Office of International Programs
O&M	Operation and maintenance
RCC	Rural Consumer Co-operative
SI	Système Internationale (international system of units)
Tacis	European Union Technical Assistance Programme
UK	United Kingdom of Great Britain and Northern Ireland
UNDP	United Nations Development Programme
USA	United States of America
WARMAP	Water Resources and Agricultural Production project
WRMLIP	Water Resources Management and Land Improvement Project
WB	World Bank
WUA	Water users' association, or water users' organisation

Glossary

Aksakal	-	Community group of 'wise men'
Collector drain	-	open channel taking drainage from field drains to point of disposal.
Intra-farm	-	normally applied to irrigation and drainage systems on the lands of the former sovkhozes and kolkhozes. On-farm generally includes the lands of successor organisations, including shirkat, private and dekhan farms.
Inter-farm	-	normally applied to irrigation and drainage systems outside the lands of the former sovkhozes and kolkhozes, excluding the main canals and collectors.
Kolkhoz	-	Co-operative farm
Losses	-	in an irrigation system, any water which is not used by the crop (including seepage from canals, wastage, water going directly to drains).
Oblast	-	region (main administrative sub-division of a CAR country).
On-farm	-	normally applied to irrigation and drainage systems on the lands of the former sovkhozes and kolkhozes. On-farm generally includes the lands of successor organisations, including shirkat, private and dekhan farms.
Off-farm	-	normally applied to irrigation and drainage systems outside the lands of the former sovkhozes and kolkhozes.
Percentage point	-	a unit of 1 %. If a factor reduces by 10 percentage points it will reduce from, say, 63 % to 53 %.
Raion	-	district (administrative sub-division of oblast).
Sovkhoz	-	State-managed farm
Tubewell	-	pumped vertical well, sometimes of 100 m or more depth.
Tuman	-	Local district (formerly, raion)
Wetland	-	an area of waterlogged land supporting water-loving plants.

Sundry

Data refers to the following periods; however, as winter wheat has become much more widespread than in the past, the terms are largely misleading:

Vegetation period: from about April / May to about October

Non-vegetation period: from about October to about April / May

Currency conversions

	Local currency equivalent of US\$ 1.00 (Spring 2002)
Kazakhstan (Tenge)	152
Kyrgyzstan (Som)	47.7
Tajikistan (Somoni)	2.8
Uzbekistan (Sum)	700

For cost estimation purposes, prices are for spring 2002, in United States dollars (US\$)

In this text a dot ‘.’ is used as the decimal point.

1 Introduction

1.1 Goals

For a little over a decade the countries of Central Asia have been experiencing considerable change in their social, institutional and economic environment. In all newly-established republics, the agricultural sector provides considerable employment and is an important source of foreign currency. Much of this agriculture depends on irrigation.

At the end of the 1980s formal irrigation systems were well established across Central Asia. They varied from massive modern developments, complete with canalette distribution systems and buried on-farm drainage, through to small valley systems served from torrents in the more mountainous areas. These systems were operated by the state through the sovkhoz and kolkhoz management at farm level and by the district (raivodkhoz) and regional (oblvodkhoz) water management authorities for the supply system¹. The systems are broadly sophisticated, and many are dependent on active interventions for efficient operation.

The disruption to the farming and irrigation systems that followed the break-up of the Soviet Union is well documented. The capacity to operate and maintain these systems fell as the economies faltered: state financing was insufficient to meet maintenance and operational needs. Many skilled personnel were laid off as a result of budget cuts and sought a living elsewhere.

One of the responses to this has been to transfer operation and maintenance (O&M) from the state to the users. To date this has focused on users at farm level, principally by encouraging (or requiring) the formation of water users' associations (WUA) though the bulk water suppliers are increasingly being considered for privatisation. By divesting its O&M obligations, state budget commitments reduce, at least in the short term.

This study looks at the process of irrigation management transfer (IMT) from the state to farmers with a view to identifying the extent to which the processes followed to date will result in a sustainable arrangement that can provide the basis for sound and developing crop production in Central Asia. This process has focused on shifting the responsibility for the on-farm system for distributing irrigation water from the state to groups of farmers (and so principally taking over the water management functions that previously were the responsibility of the state or collective farm management).

There is relatively little information available to those outside the Central Asian Republics concerning the state of IMT in the region. Therefore it is hoped that the findings of this study will provide an insight into the challenges faced in implementing IMT in the region.

The fieldwork for this study was predominantly undertaken in late 2001 to mid 2002.

1.2 Purpose of this Document

The overall purpose of the research is to provide guidelines for irrigation management transfer (IMT) applicable to the conditions which currently prevail in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan²). While focusing on these four countries, it is anticipated that these guidelines will provide insight into what may be suitable practices for implementing IMT in other locations.

This report summarises the in-country surveys undertaken, identifies relevant experience obtained in other countries, analyses the conditions affecting IMT in Central Asia and presents guidelines aimed at improving the IMT process.

¹ Infrastructure of national importance was often under the responsibility of a dedicated body, reporting at national level.

This report has five purposes:

- To describe briefly the approach and methodology employed in this investigation.
- To summarise the in-country surveys undertaken.
- To identify relevant experience obtained in other countries.
- To analyse the conditions affecting IMT in Central Asia.
- To present guidelines aimed at improving the process of IMT in Central Asia and to help sustain irrigation management recently transferred out from state operation.

Overall, the research's intended purpose is to provide guidelines and models for irrigation management transfer appropriate to the conditions prevailing in Central Asia, based on experience to date, meeting a demand for such information from development professionals engaged on IMT in the region. It is not intended that this document is a step by step general manual on how to implement IMT as this is covered in other references described in the Literature Review. It is intended that these guidelines are non-prescriptive and are capable of adaptation to differing physical, political and institutional conditions, reflecting the variety of farming systems and differing national approaches (and speed of change) to IMT.

The document is presented in two parts but is intended to be read as a whole:

Part 1 Guidelines

This part presents a summary of the phases in undertaking an irrigation management transfer programme and for each phase sets out the key issues to be addressed that are particularly applicable to Central Asia.

Part 2 Experiences of Irrigation Management Transfer in Central Asia

This part reviews current experiences of IMT in Central Asia and discusses the constraints on successful, sustainable IMT for the future. It compares experience of IMT in other countries with Central Asia by means of a literature review. There is a necessary degree of repetition between the two parts in drawing out the lessons from Part 2, the review of current experience and distilling the lessons learnt into guidance.

There are two audiences for this document with potentially conflicting needs:

- Planners and practitioners in Central Asia seeking guidance on how to better implement IMT, to understand experience from neighbouring Central Asian countries and more generally worldwide.
- Planners from outside Central Asia who are planning IMT programmes in Central Asia but who are seeking knowledge of conditions and constraints on IMT in Central Asia.

² Turkmenistan has been excluded from the study owing to problems obtaining information in the country.

1.3 Terminology

In this document the following terminology has been used in connection with the process of privatisation or transfer of irrigation management.

Table 1.2: Terminology

Term	Description
Bulk water supplier	<p>The organisation responsible for delivering irrigation water to the farm gate, or to the boundary of a water users' group.</p> <p>In the past this would have been the raivodkhoz or the oblvodkhoz.</p> <p>The bulk water supplier may control the water source or may take water from the source manager (such as a state organisation in the case of large dams).</p>
Irrigation authority/agency	<p>Here this is taken to be the organisation, which in the past was responsible for delivering bulk water supplies, but once IMT has been implemented may assume a regulatory or advisory role.</p>
Irrigation management transfer (IMT)	<p>The process of changing responsibility for irrigation management from state (governmental) organisations to (new) service-orientated organisations, where the users determine the arrangements for operating and maintaining the irrigation system within specified boundaries.</p>
Privatisation of irrigation management	<p>The process of shifting the responsibility for management of irrigation systems (and sometimes complementary agricultural drainage systems) from government or state organisations to a private organisation.</p> <p>The private organisation may be a mutual society whereby the organisation is funded and run by its members without any additional direct external involvement, other than regulatory supervision required by legislation, but in principle this need not be so.</p>
Stakeholders	<p>All groups, individuals and organisations which have an interest in an issue, the performance of a system or organisation, etc.</p> <p>Whilst some authors discussing IMT use the term to refer only to the irrigators, it is used here in its most general sense and the term 'field level' stakeholders is used to identify the practising irrigators and other interested parties in their community.</p>
Water users' association (WUA)	<p>Here, this is normally used as a general term for a group of water users that have formally (and usually legally) agreed to co-operate together to manage the operation and basic maintenance of shared parts of an irrigation and drainage system.</p> <p>In this general sense, there is no intention to imply any particular size of organisation. It embraces other commonly used terms such as water users' groups and water users' federations and where appropriate, farmer groups.</p>

Part 1 Guidelines for Privatisation or Transfer of Irrigation Management in Central Asia

2 Introduction to Part 1 Guidelines

The material presented here aims to guide professional practitioners engaged on irrigation management transfer (IMT) in Central Asia. It draws on the experiences reported from Kazakhstan and Kyrgyzstan where IMT is most advanced, and to a lesser extent from the other two countries studied. It also draws on wider international experience. Inevitably the guidelines have two audiences with potentially conflicting requirements: planners and practitioners of IMT in Central Asia seeking general guidance on how to implement IMT and planners from outside Central Asia seeking guidance about the status and conditions of IMT in Central Asia. This report attempts to satisfy both audiences. The guidelines summarise the key phases of transfer process based on the worldwide body of experience on IMT to inform Central Asian practitioners and consider how this process has been enacted so far in Central Asia and what constrains future implementation to inform practitioners new to Central Asia.

To date the experience of IMT in Central Asia is limited and caution is necessary in drawing conclusions from this experience.

The guidance is intended to be general: indeed it is important to appreciate that one model of IMT is not necessarily better than another. What is essential is that the model applied is suitable for the social, physical and institutional environment in which it is applied.

For convenience the word Water Users' Association (WUA) is used to describe the local organisation to which management of operation and maintenance (O&M) is transferred. Other types and names of organisation exist (such as Water Users' Group). The guidelines are intended to be applicable to the transfer of drainage systems as well as irrigation systems. There are potentially differences between the two in particular where drainage for flood control of non-agricultural land, property or persons is within the service provided and thus the service is seen as a more general public good.

In Central Asia, where IMT has occurred it has principally involved the transfer of irrigation management to some form of water users' association. There has been some experience in South Kazakhstan of WUAs taking over operation of 'inter-farm' canals through a trust arrangement.

It needs to be appreciated that where WUAs have formed they are vulnerable to many pressures which could bring about their demise; some of the main factors are discussed below.

The guidelines are presented as a summary of the state of irrigation management transfer in Central Asia and the key constraints on its sustainability in order to set out the overall context of IMT in Central Asia. This is followed by guidance on four phases in the IMT process:

Phase 1 Mobilisation of Support

Phase 2 Strategic Planning

Phase 3 Implementation of Reform

Phase 4 Sustaining IMT

The potential length of the process can be seen in the above phases, as actual planning and implementation only commences in Phase 3.

A checklist of key issues is located at the end of Part 1.

3 Current Conditions for IMT in Central Asia

3.1 Social and Historical Context

All the Central Asian republics have experienced a period of political, social and economic upheaval following independence. Agriculture is recognised as an important part of the national economies of the region. In Tajikistan for example, it represents 40 % of the economy and involves 60 % of the population. In Kazakhstan, after a period when agriculture was left to prosper or fail with little overt government attention, the government has recently restated the importance of agriculture to the national economy and is implementing measures to stimulate the agricultural sector. However, the agricultural sector in all countries has seen a fall in outputs, with reductions in yields as well as reductions in agricultural and irrigated areas, for example, between 1994 and 1999 irrigated areas in Kyrgyzstan reduced by about 13 %. Prior to independence there was significant investment in agriculture. The collapse of government budgets has meant that investment in irrigation infrastructure and in organisations serving the agricultural sector has been negligible since independence. Poverty is prevalent, reported to affect 60 to 80 % of the population in rural areas of Kyrgyzstan. Tajikistan is recovering from civil war. Kazakhstan has the highest GDP per head. Wealth disparities are reported to be increasing.

There is an ongoing process of farm re-structuring in all countries from the former State and collective farms into joint stock companies, co-operatives and small family farms. This is a gradual process of trying out and amending structures with bankruptcy and abandonment of land taking its toll too.

Agricultural and water resource bodies and institutes exist though considerable numbers of staff have been lost. Kyrgyzstan and Tajikistan enjoy relative water abundance, though it is not always in the right place. Almost 40 % of Tajikistan's irrigated land relies on pumped water. In Kyrgyzstan there are sufficient water resources in the large trans-boundary rivers, however agriculture is based on using the limited resources of small rivers. In Kazakhstan and Uzbekistan water resources are variable with some areas experiencing scarcity. High water charges, sometimes connected with high pumping costs are also a problem.

Though it is now over ten years since independence the effects of the move to a market economy are still being worked out in political, economic and social systems. This means that IMT has to be carried out within a dynamic framework including changing legislation on water use, land rights, taxation and ongoing farm re-structuring.

Though all countries are moving to market reforms the pace of change has been different. Kyrgyzstan has perhaps seen the most rapid changes: an example of the evidence of this is its specific legislation for Water Users' Associations since 1997. Tajikistan has been hampered in its reforms by civil war until 1996, and this is reflected in the extent of reform and legislation.

Experience from other countries' IMT programmes has demonstrated that it is essential to take account of the historical and social contexts of the country where a programme is being implemented and work with these contexts rather than against them. This includes taking account of different circumstances in different parts of a country. There are a number of former communist countries that are implementing IMT including Bulgaria, Vietnam, Macedonia and some lessons that are applicable to Central Asia can be drawn from these countries. However the important lesson to draw from other countries' experiences is that an IMT blueprint from another country may be inappropriate and instead programmes should be tailored to suit the circumstances of a particular area and type of farm structure.

Historical and social contexts that are of particular relevance when considering an IMT programme in Central Asia are:

-
- Agriculture has historically been relatively well funded but has suffered from little funding since independence with money diverted to other sectors and programmes such as industrial support.
 - Incomes, particularly of those in the agricultural sector have fallen since independence and are only just beginning to rise. Wealth disparities are increasing.
 - Political, social and economic systems and in particular the agrarian system are still in a state of restructuring.
 - Considerable bureaucracy.
 - The concept of a top-down command structure remains with power held in the hands of the few.
 - There is a cadre of institutes involved in agriculture (suffering from a lack of funds), that contain well educated professionals, but with restricted access to information about the latest technological advances in agriculture (e.g. water saving technology).

3.2 State Policy and Political Support

There is political support for the agricultural economy in all countries, and current policies are supportive, though for example in Kazakhstan the policies were less so immediately after independence. IMT in particular is also supported by government policy in all the Central Asian Republics, but to a varying extent. Tajikistan has made initial steps towards providing political and policy support to IMT through the recent introduction of a new Water Code, Civil Code and regulations on water charges. However implementation of IMT in both Tajikistan and Uzbekistan remains mainly connected with a very few externally funded rehabilitation projects. (In Uzbekistan the IMT component is at a very early stage.) A similar situation occurs in Kazakhstan where some legislation now exists. There is political support but as yet most of the practical work on the ground has been connected with externally funded rehabilitation projects, with about 70,000 ha of irrigated land under development. In Kyrgyzstan there has been greater political support and consequently IMT is more advanced. Currently there are about 300 WUAs in Kyrgyzstan covering 450,000 ha of irrigated land or 40% of the total irrigated area. The objective is to establish about 500 WUAs by the year 2010; all of the irrigated land should then be covered by WUAs. Much of the work on IMT is still externally funded but in Kyrgyzstan's case it has been more widely distributed rather than concentrated on a few rehabilitated projects.

In the CARs at the moment IMT is confined to on-farm systems with inter-farm systems remaining in the hands of State water bodies for bulk water transfers – raion and oblast vodkhoz. In Kyrgyzstan the possibility of transfer of inter-farm responsibilities from vodkhoz to large WUAs (or Water Users' Federations based on hydrological boundaries) has been considered. With some State farms splintering into tens or even hundreds of small family farms, a primary purpose of some WUAs is to arrange water use permits with the state water provider, rather than facing the administrative nightmare of each family farm applying for water use permits.

Experience from other countries such as Turkey and Mexico has shown that strong political will and commitment to the IMT process is an essential pre-requisite to successful IMT. This fact has also been strongly emphasised in the in-country responses detailed in this report. Kyrgyzstan has perhaps demonstrated this political will and the outcome is a considerable transfer of responsibilities. In other Central Asian republics the political will for general agricultural reform is present, to varying extents, but may need mobilising behind IMT in particular if IMT is to be successful. Broadly, the political will to implement IMT programmes on a project-by-project basis has been present, but it is less developed on a national scale.

3.3 Legislation

Legislation on land reforms exists in all countries, though this does not yet allow the private ownership of land. Instead land is effectively leased from the state for a period of time (99 years in the case of Kyrgyzstan, 49 years

for Kazakhstan, and up to 50 years in Uzbekistan though much shorter periods are most prevalent). In Kyrgyzstan land 'ownership' can be used as collateral, in Kazakhstan this is also true, though in practice it is nevertheless difficult to obtain credit. Currently it is not possible to use land as collateral in Uzbekistan.

Land is in various stages of privatisation, with perhaps Tajikistan furthest behind in the process. In Tajikistan four forms of ownership exist: leased farms, dekhkan farms, joint stock companies and household farms. Similar forms of ownership exist elsewhere with different names: united peasant farms, rural co-operatives, peasant farms, family farms etc. Re-distribution of land has created many small family farms in some areas; others have combined to form co-operatives or joint stock companies.

Specific legislation for the establishment of WUAs exists in Kyrgyzstan; on 13 August 1997, resolution n.º 473 ('Water Users' Associations in Rural Areas') initiated the process of IMT. A new WUA law was adopted - Law on WUA n.º 38 of 15 March 2002. In Kazakhstan specific legislation has recently been adopted (2003). The lack of legislation has been causing bureaucratic difficulties. Legislation on Rural Co-operatives – non-profit organisations – is currently used for the establishment of WUAs. In Tajikistan there is no specific legislation, though a WUA law is under preparation.

With the exception of a few (but growing number of) private farms, in Tajikistan and Uzbekistan there are state controls on which crops farmers can plant, whereas farmers in other Central Asian countries are free to grow the crops they wish.

A clear legal framework allowing the simple establishment of WUAs is cited as an essential pre-requisite of successful IMT based on experience in other countries. Such legislation it is suggested (Vermillion, 1997) should include:

- Full legal standing – access to courts, able to own assets, run bank accounts, authority to determine O&M.
- Criteria for eligibility for membership and voting rights.
- Allow WUA statutes and bye-laws.
- Ability to finance itself by levying charges.
- Powers of enforcement – e.g. for non-payment or breaking rules.
- Integration into water resource organisations – to have a role in water resource allocation.

It is apparent that such legislation is not yet present in all Central Asian countries.

3.4 Financial

Tax legislation like other legislation is undergoing a series of changes in Central Asian countries. Taxes are mentioned as a problem for WUAs in Kazakhstan and Tajikistan. In Tajikistan WUAs are liable for 17 local and 3 state taxes. In Kazakhstan WUAs are liable for VAT, land and property taxes, though exemptions are currently being sought from VAT and property tax. The need for tax reform to reduce the burden on WUAs and clarify their tax position is identified as a requirement in Kyrgyzstan, Kazakhstan and Tajikistan.

On-farm O&M is funded by water users in all countries and bulk water suppliers are also meant to be paid by the water user or WUA. There is no access to loans for O&M. There is some limited government support for O&M, for example in Kyrgyzstan through reduced electricity tariffs and land tax in remote areas; in Kazakhstan subsidies for water in areas where it is costly are planned. There is also some limited direct government assistance to farmers, for example in Kazakhstan in special circumstances for pest control. Loans for major repairs are only available through external funding. Planned repayment by farmers ranges from 0 % (Tajikistan)

to 70 % (Kazakhstan). Bulk water suppliers remain in the control of the state in all counties though they are partially self-financing through water charges.

Experience from other countries indicates that WUAs must be considered as a business needing financial resources including start-up capital and a recurrent financial stream. Once WUAs are established, they can tap into private finance thereby reducing future government support.

3.5 Country Experiences

As with many other countries that have implemented IMT, one of the primary reasons for transfer in the case of all Central Asian countries has been the reluctance or inability of the state to fund operation and maintenance of irrigation systems. Though lack of budget is a primary reason it is also in harmony with the trend post-independence for the withdrawal of state funding and the move to a market economy through privatisation. The withdrawal of state funding meant that water users had no option but to organise themselves (often informally) to carry out O&M on infrastructure. It can be seen as IMT by default, though in practice it is simply state withdrawal as active 'transfer' programmes have been limited. In hand with this withdrawal has been pressure from external sources (e.g. international donor organisations) for IMT, for example through technical assistance elements on the rehabilitation projects that they are providing loans for. In fact the evidence is that most IMT has been instigated and driven by external organisations (predominantly international financing institutions), which have also contributed financially to introducing IMT.

There have been mixed experiences reported from in-country surveys and in the published literature. Case studies from Tajikistan and Kazakhstan cite improved O&M, water delivery and water service fee collection as positive impacts of IMT. In Kyrgyzstan it is noted that IMT seems to have been most successful where cash crops are grown and hence economic conditions are more favourable and where a degree of co-operation between water users is needed – such as in water-short areas of the country.

Throughout the CARs some WUAs have failed and others have failed to thrive and may not be sustainable in the long term. The reasons for negative experiences and problems with WUAs are cited as an over-burdensome tax system and excessive bureaucracy. Problems are also mentioned where the state's anti-monopoly committee limits the Irrigation Management Fee thus limiting the amount that WUAs can raise from their members.

There has been initial resistance to formal IMT from many stakeholders. In-country experiences suggest this seems to be due to a misunderstanding and suspicion about what IMT involves and its purpose. Once this initial scepticism has been overcome, most stakeholders have been supportive (farmers, local councils, state farm officials, governments). In Kazakhstan it was noted that the bulk water providers may be less supportive owing to the threat to their staff levels and responsibilities.

Participation by external facilitators has been a feature of most IMT programmes. This is recognised as important as the in-country experience of carrying out IMT is still relatively limited. A notable criticism from experiences in several countries is the lack of follow up, support and training provided in the longer term. It seems that support is mainly linked to the duration of disbursement of a loan which has a duration related to construction periods rather than durations needed for support and training.

The situation and future of bulk water suppliers seems uncertain and unstable.

3.6 Constraints on Successful IMT

Case studies did not identify the physical infrastructure as a hindrance to IMT. However the infrastructure is designed hydraulically for the layout of the former sovkhoz and kolkhoz rather than the current patchwork of peasant farms, co-operatives etc. Irrigation system use has to cope with this fragmented farm structure which will constrain IMT. Experience from other countries is that for IMT to be successful infrastructure should be in a

good condition, be flexible for it to be possible to provide a good water delivery service and for it to have realistic O&M costs (i.e. the system is economic to run). The reason why problems with infrastructure have not been highlighted as a concern during in-country surveys is that farms chosen for IMT may be in the more favourably situated areas (e.g. irrigation has been rehabilitated and the farms chosen for rehabilitation have reasonable financial returns). Environmental issues and inter-ministerial relationships and communications were not considered to be constraints on IMT.

Also not mentioned in the country surveys was the need for procedures for transfer of ownership of the infrastructure to the WUAs. In practice this lack of ownership is creating severe problems and instability within the WUAs. In Kazakhstan water systems have changed ownership from WUAs to other organisations and even private companies.

Many of the financial constraints on IMT that were identified appear similar to those encountered in other countries and include constraints on agricultural efficiency as a whole rather than just IMT:

Financial

- Lack of short term credit.
- The poor financial condition of the agricultural sector as a whole.
- Produce marketing and development of agri-businesses is difficult.
- Inefficient small farms and the lack of group arrangements to make farming more efficient i.e. machinery pooling, input supply, etc.
- High taxes and inconsistent tax legislation.
- Bureaucracy and lack of understanding from state departments (local authorities, agriculture, water agencies and the tax departments).

Skills

- Lack of qualified staff to manage the WUAs. The WUAs do not want to pay 'reasonable' salaries for staff, so the more capable persons will not be interested and will search for higher income elsewhere. Also managing a WUA is a new activity and training of staff is required.
- Loss of younger qualified staff to other industries with fewer coming through the system.
- Lack of farm management skills as the farmers are not trained as farmers, lack of agricultural knowledge.
- Lack of co-ordination with the establishment of WUAs.

Technical shortcomings

- Systems are often not designed for and are therefore incapable of delivering water to small plots.
- The infrastructure has lacked maintenance for many years with the result that the systems are in a poor condition with a considerable backlog of maintenance faced by WUAs when they start up.
- Absence of transfer of ownership arrangements for infrastructure.

3.7 Further Key Issues

3.7.1 Legal

A clear legal framework for WUAs is needed in those Central Asian countries that have not introduced specific WUA legislation. Without such legislation there is an indication that the political will is not sufficiently behind IMT to ensure successful implementation. It also creates practical problems when establishing and running WUAs.

Current land laws are likely to constrain IMT. There will be a lack of incentives for farmers to invest in infrastructure or maintenance until land ownership rights become stronger and more secure.

3.7.2 Financial

The poor financial condition of the agricultural sector in Central Asia makes the running of any agricultural organisation difficult. WUAs are no different. Ideally an IMT programme should ensure that WUAs have some initial capital and access to credit if they are to thrive.

The current weak financial condition of many farmers means that access to credit and access to machinery is likely to take a higher priority than investment in maintenance or improvements.

Excessive bureaucracy and current tax systems that are punitive to WUAs are external state systems that need to be reformed to aid the IMT process.

3.7.3 Organisational

Organisations are still in a state of change due to ongoing re-structuring to form a market economy. In particular farms are undergoing changes. This must be recognised by IMT programmes.

The privatisation of state farms has meant that many farmers have only recently taken on farming responsibilities, particularly as many farmers who worked on former state farms have only skills and knowledge in selected areas of farm / agricultural management. A key need is therefore to develop training for farmers in financial management, farm management, agronomy, marketing, finances and maintenance/reclamation at the same time as IMT focused training.

With the majority of funds for training and support coming from external sources it should be recognised by lenders that such training and support is required over a longer period than just the design and construction phases of a rehabilitation project. This should be factored into plans and programmes for schemes.

4 Phase 1 Mobilisation of Support

4.1 Justification for Change

Before a policy of irrigation management transfer should be adopted policy makers and planners need to assess whether there is sufficient justification and support for change. It hardly needs saying that IMT is a very serious matter, which will have widely felt effects. It will influence performance of national economies and have very direct impacts on some of the most vulnerable members of the nation: the rural poor. It will alter the relationship between the state, regional and district administrators and the irrigators. IMT can bring benefits and can be sustainable, but to do so it needs to be implemented well and to be thoroughly supported. Without a well constructed, coherent overall national policy for IMT the benefits of IMT are at best likely to be gained haphazardly.

The justification and support for reform is likely to come from identification of the inadequate performance of the current irrigation and drainage system. Inadequate performance can be identified as a gap between the actual and expected (or potential) performance of the system. Poor performance can take a number of forms:

- Poor physical condition of the infrastructure.
- Poor operation of the systems.
- Poor maintenance.
- Poor financing of irrigation and drainage.
- Poor agricultural productivity.
- Poor environmental sustainability.

Support for reform can also come from an ideological move to a more liberal/free market economic policy.

It is fundamental for planners to be clear about the purpose of IMT and the particular reasons and justifications for reform. Interestingly the reasons given for IMT in the region varied among respondents questioned. This may reflect personal experiences or indeed indicate that different IMT programmes have had different origins.

Table 4.1 outlines reasons for adopting IMT.

Table 4.1 Reasons for Adopting IMT

Reason	Commentary
Part of a philosophically driven privatisation programme. This is concerned with a general government withdrawal from service delivery roles to that of enabler and regulator.	The presumption is that the private sector is better equipped to provide the irrigation management regime required.
<p>Government cannot afford to finance irrigation management services. This may be because of:</p> <ul style="list-style-type: none"> • Weaknesses in the national economy • A reluctance to raise revenue to finance irrigation services • Affording priority to other parts of the economy 	<p>If financing irrigation services is constrained because of national budget shortfalls, IMT may be negatively perceived at the level of senior policymakers but possibly accepted as the least-bad solution by irrigators.</p> <p>If the driving rationale is for the second two (or similar) reasons, IMT is more likely to be seen by senior policymakers as part of strategic planning, though professionals and irrigators may be more negative.</p>
An absence of organisations to provide irrigation management services following a major institutional upheaval.	IMT is used to cover shortfalls arising from unplanned institutional changes. It is thus responsive and not necessarily the arrangement that would otherwise be chosen by senior policymakers.
The sudden disintegration of the large state farms and co-operatives dramatically increased the number of water users. On Raion level this could mean a change from 3-5 state farms to thousands of small farmers. The existing organisations were not able to cope with the increased administrative demands.	The abolition of the large farms left a vacuum for water delivery service. IMT provides a replacement organisation to arrange the water delivery service.
A search for improving efficiencies in irrigation service delivery	This may be considered part of a strategic endeavour to reduce uneconomic practices thereby strengthening the national economy (with irrigators also benefiting).
IMT is a requirement of a financier.	If this is the primary underlying reason for IMT then there is danger that the IMT process is not well supported. If so, the necessary legislative and administrative arrangements may be delivered only grudgingly and long-term sustainability is risked.

The table indicates that different stakeholder groups may hold substantially different views on the need for IMT. For IMT to be effectively implemented it is vital that effort is put into explaining and convincing all stakeholders of the benefits so that they will actively support the IMT initiative. It is particularly important that local and national-level opinion formers are reached and convinced that IMT (in whatever form is proposed) should be supported, and ideally actively promoted by them. Only by mobilising this support will there be the environment that will allow necessary legislation to be clearly and swiftly drafted and enacted.

The policy for IMT must be developed in the context of overall ambitions for the water sector, and to form a coherent element of a strategy for the sector. A national strategy is therefore required, one in which stakeholder roles are defined. Better preparation is needed for this initial phase than has been the case to date.

4.2 Scope and Feasibility of Change

Having identified that there is inadequate performance in irrigation and drainage, planners need to assess the scope and feasibility of reforms. If the gap in performance is small it may not be necessary to change the organisational or technical structure of the irrigation and drainage authority. Instead a programme of enhancements or improvements may be more appropriate such as training, improving O&M procedures, financing the replacement of maintenance equipment.

If the gap in performance is significant then reforms which change the organisational structure of the irrigation and drainage authority are probably required. Planners should assess whether reforms within the organisation will bring about performance improvements. Internal organisational reforms could include de-centralisation and improved financing from government using budgets based on the needs of the organisation. If this is not sufficient to deliver improvements then more fundamental re-structuring of the water sector should be considered. If it is determined that internal organisational reforms will not solve the O&M problems or if such reforms have been tried and failed then management transfer should be considered as a way to overcome the poor performance and under-funding of O&M.

The decision to undertake management transfer needs to come from the highest level of government and to be sustained with political pressure. Otherwise opposition and lack of interest from politicians and government organisations may de-rail the process. If the top level political will is not present the country may not be ready to undertake reforms. IMT is also not likely to be feasible where the political pressure to undertake reform comes solely from donors and technical assistance agencies.

Having established whether IMT is politically feasible, its practical feasibility must be considered. In order for a policy of IMT to be practically feasible most of the following factors need to be in place:

- Capability to create or change organisations to take over management.
- Absence of strong political opposition.
- Supporting legislation.
- Land and water rights.
- Financially viable irrigated agriculture.
- Irrigation and drainage infrastructure which is suitable for management by farmer organisations.

Before embarking on an IMT programme planners should consider seriously whether the existing social and institutional situation is conducive to IMT. The extent of political opposition at all levels needs to be assessed. A feasibility programme to mobilise support and to test the political and physical feasibility of IMT should be considered before embarking on IMT. The feasibility testing is likely to include discussions with stakeholders, brainstorming sessions, appraisal of conditions at farm level. The feasibility programme should inform policy makers of the key issues that have to be addressed in setting out the reform policy. Table 4.2 is a preliminary checklist to test the initial feasibility of IMT. If there are too many 'No' answers in the table, conditions may not be conducive to sustainable IMT.

Table 4.2 Feasibility of IMT Checklist

Factor/Commentary	Currently exists? (Yes/No)	Can feasibly exist in future ¹ ? (Yes/No)
<p>Ability to create or change organisations to take over management. It should be practically feasible to create private organisations to take over irrigation and drainage management.</p>		
<p>Keen national administration. There needs to be strong political will to make IMT work in order to mobilise the natural institutional inertia and reluctance to hand over power.</p>		
<p>Supporting legislation. It should be legally feasible to create private organisations to take over irrigation and drainage management.</p>		
<p>Land rights. Security of land tenure. Without secure land tenure farmers are unlikely to invest their resources in O&M. In addition following IMT responsibility for parts of the irrigation and drainage infrastructure will pass from the irrigation authority to the farmer or farmer organisation. Farmers are unlikely to accept such transfer without land rights.</p>		
<p>Water rights. Like land rights, water rights after IMT have to be understood by the stakeholders. The existing formal and informal water rights prior to IMT also have to be understood and taken account of when planning and implementing the IMT process.</p>		
<p>Financially viable agriculture. Sustainable IMT will require greater financial input to O&M than exists at present. If agriculture is not financially viable, financing of O&M will come last on the list of agricultural inputs and may therefore not be carried out.</p>		
<p>Appropriate irrigation scheme design. The inherent design of an irrigation scheme can make it very unattractive for IMT. For example it may have high maintenance costs or it may be very inflexible in water allocation. IMT should not be seen as a way of offloading from the government such difficult and unattractive schemes (unless accompanied by effective measures to correct or compensate for the deficiencies).</p>		

¹ Could exist after mobilisation of support or implementation of strategic programme or after implementation of other agricultural/water sector programmes

4.3 Setting out the Reform Policy

Having identified a need for reform and the feasibility of reform, the next stage is to develop a reform policy. Development of the policy will include work to:

- Identify changes to be made in legislation.
- Identify changes to be made in policy.

- Identify changes to be made in government agencies and departments.
- Identify rights, responsibilities and functions to be transferred.
- Analyse options for stakeholder participation.

The policy must be clear on the scope of IMT. If, for example, the long-term aim is to include bulk water supplies this should be clear, as should the anticipated timeframe.

The policy should be clear on what role the future irrigation system managers are taking when the responsibility is transferred to them from the state. In particular, whether it is expected that the organisations operate commercially, on a not-for-profit basis or as a mutual self-help organisation. An important corollary of this is the taxation status of the future organisations: this needs to be evaluated in advance of introducing IMT and enshrined in the IMT policy statement.

Overall, the policy needs to define the form of organisations that will be permitted to take over the irrigation management. The need for legislation to allow this can then be assessed and enacted or promulgated as necessary in advance of IMT implementation.

The functional type of organisations envisaged to take on future irrigation management should also be clearly set out, but only if there is a policy position on this. Otherwise it is sufficient, but necessary, to state that any legal arrangement would be acceptable. For example, the aim may be to foster the development of water users' associations as developed in some other Asian countries where the irrigators co-operate in operating and maintaining the irrigation systems. Alternatively the type of organisation found in parts of America and Australia might be envisaged, where professional staff are employed to manage the irrigation system, using contractors as necessary, working to the overall direction of the irrigators. Policy might include privatisation of the raivodkhoz in which case, post-privatisation, the raivodkhoz could provide the professional and contracting services for this latter model.

Contents of Policy Statement

- The need and justification for the policy
- The overall objectives of the policy
- Existing policy and the legal basis for the policy
- An outline of what kinds of irrigation and drainage systems will be transferred
- An outline of what management functions will be transferred
- An outline of what new organisations will be required
- An outline of the required changes to government bodies
- Identification of which organisation will lead the transfer process
- A timescale for transfer
- Identification of sources of funding to implement the policy

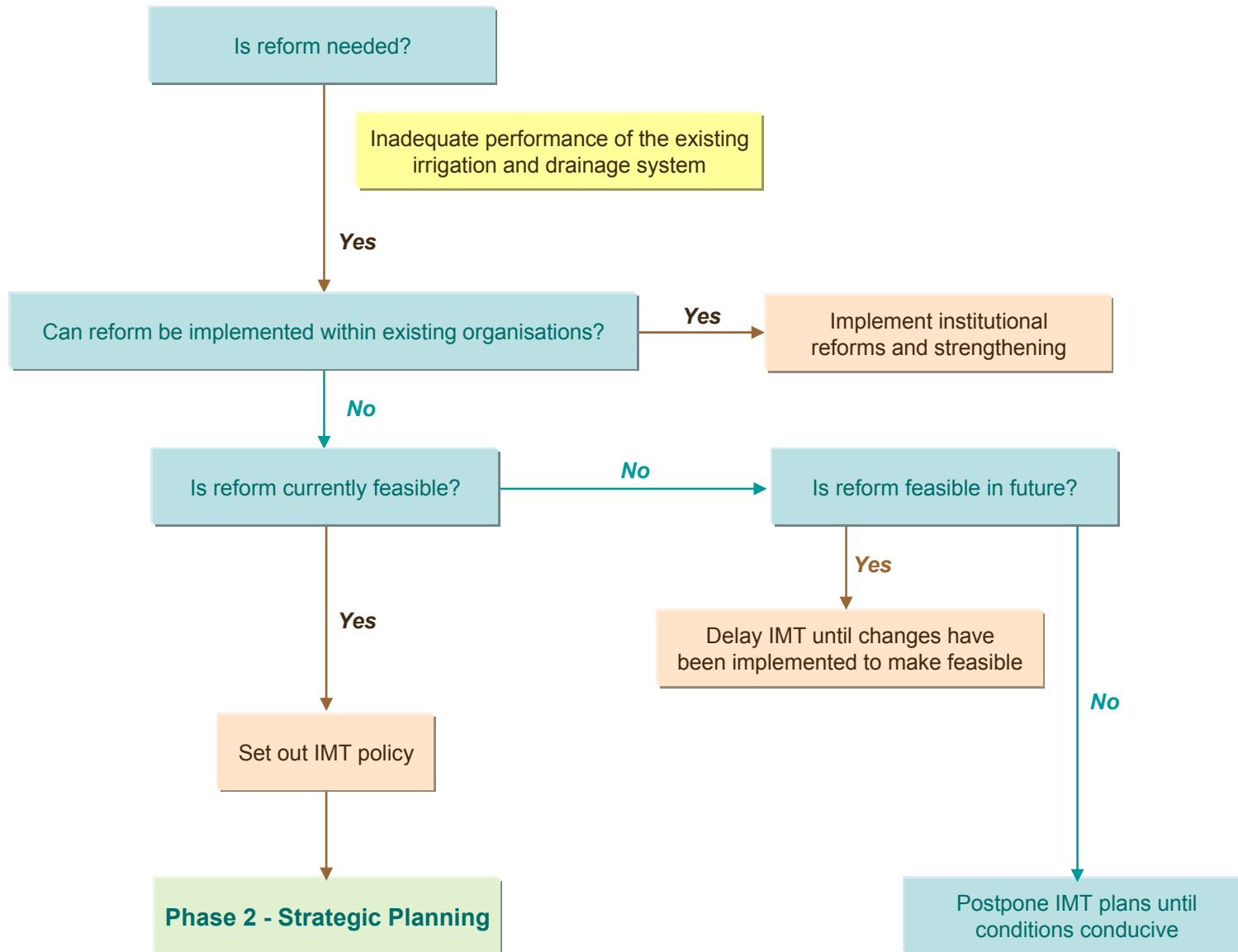
The overall objectives of the policy could be set out in terms of a vision of what the policy will achieve, such as:

The creation of sustainable organisations that provide a cost-effective, fair and competent irrigation water delivery, drainage water removal and system maintenance service to all water users

And objectives to achieve the vision:

- An institutionally sound, transparent and accountable water users' association based on wide membership participation
- A functioning government regulatory body accepted by all
- Procedures for the adequate operation of irrigation and drainage systems and their maintenance to protect against deterioration
- Accepted procedures for fee setting and collection
- Effective management processes

Figure 4.1 shows some of the decision making processes in identifying the need for reforms.



Move to Phase 2 - Strategic Planning

Phase 1 - Mobilisation of Support
Figure 4.1

5 Phase 2 Strategic Planning

5.1 Master Plan and Implementation Strategy

When a policy for IMT has been developed it should be encapsulated in an overall master plan that can be communicated to all stakeholders, providing them with a coherent statement of the objectives and means of delivery. The details of how the master plan will be implemented should be set out in an implementation strategy.

The development of the master plan and strategy should use a participatory approach with all stakeholders involved. Initially an outline master plan can be developed for consultation and development with stakeholders prior to preparation of a detailed plan. In this way a balanced plan can be developed and adopted.

While this master plan would ideally cover the whole water sector, in reality this is too ambitious a target. (An overall strategy does need to be in place for the water sector). For delivering IMT, the key is to provide an unambiguous vision of how IMT is to be implemented. It should:

- Set out the roles of the institutions involved and the organisational structure of the organisation leading the IMT process
- Define the timescales for implementation
- Outline who are the stakeholders and how they will participate
- Describe the responsibilities of participants in the IMT process, both leading up to and during implementation and in the period thereafter.
- Set out the key issues and policies.

Who will lead and drive forward IMT is a key question to be addressed. Normally this would be a government ministry but which department heads it up, (for example, agriculture or water resources) and how an implementation unit is set up and who it contains are important to define.

A particular concern arising from experience to date in Central Asia is the lack of certainty over the future of the existing bulk water suppliers: the master plan should address this.

Leading on from the master plan a more detailed strategy for implementation is required. From experience worldwide the key issues that arise when formulating a master plan and translating it into a coherent implementation strategy are:

Key Issues Checklist

- What lessons can be learnt from previous experiences?
- How will stakeholders be involved?
- How long will it take?
- What functions should be transferred to which organisations and what form will the organisations take?
- How will irrigation and drainage system operation and maintenance be financed after transfer?
- How will rehabilitation and modernisation of irrigation and drainage systems be financed after transfer?
- What legal changes are required to facilitate transfer?
- What policy changes are required to facilitate transfer?
- What changes to the duties of government departments are required?
- How should the local WUA be set up and prepared to take on management?
- What infrastructure improvements and management improvements are required?
- How should reforms to government departments be carried out?
- How can the reform be effectively monitored and evaluated?

It is important that as far as possible the issues are addressed and resolved prior to implementation. The first half of the checklist is addressed in subsequent sections of this chapter; the second half of the checklist is addressed in the Chapter 6: Phase 3 Implementing the Strategy.

Although IMT has been occurring in parts of Central Asia for a decade or so, nowhere is this preparation stage of strategic planning truly completed. Framing and enacting legislation has taken a long time, and is still not completed, as has obtaining suitable taxation arrangements. Generally it seems that implementation of IMT has not waited for preparations to be completed.

This is understandable where IMT forms part of a programme to, say, undertake urgent remedial works to the canal system, or as in the case of Kyrgyzstan and Kazakhstan, to fill an institutional vacuum. It is less understandable where IMT has been started to comply with a financing programme.

The main lesson is that this preparation period can be kept short if proactive efforts are made to convince the main stakeholders of the value of the IMT programme and to keep encouraging them to take any action necessary to complete preparation work. The evidence is that IMT can be implemented ahead of completing all

preparations: but it appears this creates an atmosphere of uncertainty and leads to efforts being required later – often involving more groups each with their own different priorities – to correct problems arising from the incomplete preparation.

To date it is unclear whether the shortfalls in preparation will have a lasting impact on the success of IMT. The overall message is, however, that providing sufficient time for preparation will allow IMT to proceed more smoothly and allow the resources for this to be directed at providing robust organisations engaged in irrigation management.

Preparing a master plan and implementation strategy will include the following steps:

- Set up a planning and co-ordination steering committee for the IMT programme. This should be representative of stakeholders and be powerful enough to influence and act at a high political level.
- Public consultations in the geographical area proposed for IMT (this will need to include several rounds of consultation).
- Identify the legislative requirements to draft the legal framework.

It may be useful at this stage to undertake a SWOT analysis (Strengths Weaknesses Opportunities Threats) to identify the risks to the overall plan. The SWOT analysis can be updated at intervals during planning and implementation to keep track of risks to successful implementation.

The implementation strategy should ensure that factors have been planned into implementation for successful IMT. Lessons learnt from other successful and unsuccessful IMT programmes in Central Asia and worldwide have identified the following ‘Critical Success Factors’:

Critical Success Factors

- A clear IMT framework with no early withdrawal by government leading to a process of gradual change – or in other words, recognition is given that the process will take time and government has to commit to support the process throughout
- Open and transparent participation and consultation process with stakeholders
- A clear legal framework defining roles and responsibilities
- Security of land tenure
- A resource base for the WUA e.g. water charges and other charges associated with the use of the infrastructure it manages, for example, fishing licences
- A simple and clear process of implementation
- Strong political will and commitment
- Good physical condition of the infrastructure or a realistic way of rehabilitating infrastructure in a poor condition
- Good training
- Capacity building involving a post-transfer support programme for building technical, financial and administrative competence

- A clear financing plan during the transfer period
- Clearly understandable rules and regulations
- Clearly defined roles for each body involved (government, agencies, users)

5.2 Learning from Experience

Experience is already being gained in the Central Asian countries. A snapshot of this is presented elsewhere in this document. The experience is dynamic and every effort should be made to capture new lessons and to modify IMT as necessary.

The social, political and historical contexts of the Central Asian states differ significantly from those in most other countries undertaking IMT. Exceptions to this generalisation are some of the former communist countries in south-east Europe. Therefore experience gained in other countries should be adapted to suit individual circumstances rather than uncritically using a 'blueprint' for an IMT programme from another country. Conditions from country to country within Central Asia and from raion to raion can differ significantly in terms of social, political and religious systems and those developing and implementing IMT programmes need to understand these differences and work within these contexts.

The wide variety of different size of farms and farm structures within each Central Asian country needs to be recognised in IMT programmes. With farm structures still in a state of flux, WUAs and other organisations responsible for irrigation management should be flexible enough to cope with the inevitable re-organisation of their members.

In Kazakhstan and Kyrgyzstan introducing IMT at field-distribution level has occurred sufficiently widely to inform those involved in the IMT programmes of where changes are desirable. Some are recapitulated in these guidelines. In Uzbekistan and Tajikistan there is not this depth of experience. Therefore, some form of piloting may be desirable. This may be done as part of ongoing internationally financed programmes. For example in Uzbekistan the Rural Enterprise Support Programme, Ak Altin and the Drainage, Irrigation and Wetland Improvement Projects all have an IMT component. It is recommended that such programmes be used to gain in-country experience before rolling out IMT to other parts of the country. However, the dangers of pilot programmes should be recognised from previous experiences in Kazakhstan and Kyrgyzstan. They are created under artificial conditions with greater resources allocated to their establishment than will occur for a countrywide IMT programme. They also risk being created in a legal and political vacuum where their status is poorly defined and poorly understood by stakeholders and without the full political backing of a more extensive IMT programme.

Crucially to ensure lessons are both learnt and disseminated there needs to be some form of annual review process which involves policy makers, professionals involved in IMT and irrigators who have experienced IMT. This could be in the form of a workshop. As the state is a major beneficiary of successful IMT, there are strong arguments for the state sponsoring such a workshop. In particular the travel and associated costs of the irrigators and professionals from smaller, financially weak organisations should be met.

There is also some potential to use the internet to disseminate information. Internet sites such as INPIM's (www.inpim.org) are useful, but language and access will be barriers for many in the Region.

5.3 Stakeholder Support

Stakeholders, from top to bottom government ranks, farmers, landowners, bodies involved in the agricultural and water sectors and all others with an interest – need to clearly understand the policy on IMT. To achieve this it is

important that the policy is presented in an open and straightforward manner; that possible difficulties are adequately addressed and the stakeholders are clear of their own roles.

Table 5.1 outlines some of the key stakeholders and how they can influence the IMT process.

Table 5.1 Stakeholder Roles

Stakeholder	Role	Influence on Process	Timing
Farmers	Key players. Often former state or collective farm employees or new to farming, holding ranges in size from small peasant farmers to large landholders	High. If they do not buy into the process the transfer will fail	Support and consultation at all stages
Politicians	Initial key players for setting reform in motion and setting it in a legal and policy framework	Very high. Strong political will required	Important at early stages to set policy and drive change
Ministry of Agriculture / Water Resources	Potential leader and driver of reform.	Very high. Buy in and acceptance of changed role essential	Involved at all stages
WUA	Implementation of the reform in the field	Very high. Willingness to take on role is key	Involved at all stages
Bulk water suppliers	The supplier and one of the key interfaces with on-farm WUAs.	Moderate.	Strategic planning, implementation
Local government	Assisting the practical running of a WUA	Moderate to high	Strategic planning, implementation
Technical assistance teams	Advice and assistance with development of IMT programme	Moderate to high. Understanding of constraints and feasibility essential	Strategic planning, implementation
General public	Assisting with acceptance of the change	Low to moderate	Involved at all stages
Funding agencies	Encouragement and advice or dictating IMT	Moderate to high. Understanding of constraints and feasibility essential	Early stages- policy development and strategic planning

Broad based stakeholder support can be achieved through a process of public consultations held at suitable administrative levels which include the irrigation scheme level or the oblast or raion levels. One way of dispelling apprehensions regarding the transfer programme is to evolve a broad based consensus through public consultations where the intentions for IMT are made clear to the agency, the farmers and civil society organisations. A balance needs to be struck between consulting too narrowly groups of like-minded stakeholders and then finding opposition from those excluded from consultation and consulting too widely with stakeholders getting ‘consultation fatigue’ and wasting their valuable time. Stakeholders can participate in a number of ways:

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- Seminars and workshops.
 - Public meetings.
 - Interest groups and lobbying of politicians and government departments.
 - Formation of issues groups.
 - During field visits.
 - Review and commenting on IMT plans.
 - Action research and pilot exercises.

Prior to embarking on IMT implementation it is vital that key opinion-formers are reached and persuaded to support IMT. In particular this includes parliamentarians, khakims and influential senior officials in ministries and line-departments concerned with irrigation and agriculture. Experience in Central Asia indicates that when this support is garnered, the tax departments can be over-looked.

Taxation appears to be a significant worry to WUAs: ensuring tax officials appreciate the purpose of WUAs and tax them in accordance with the overall state policy on WUAs is vital. Clearly establishing WUA taxation status should be done prior to IMT commencing.

While engaging the opinion-formers as noted above will result in some 'trickle-down' of information to the irrigators and those engaged in irrigation water supply and distribution, there may be many stakeholders whose knowledge of forthcoming IMT is limited to partial facts and rumours. The media and local offices of the current irrigation system managers and other public meeting points should be provided with factual material to explain the policy and implementation plans.

5.4 Setting the Timeframe

A long-term view of IMT in Central Asia is required. IMT has been slow and difficult in many countries. The conditions that have been seen to favour successful IMT in other countries are not in general present in Central Asian countries. Those encouraging the process of IMT in Central Asia should understand that it is therefore likely to be a slow process, with some failures inevitable.

IMT programmes in Central Asia have mostly to date been connected with rehabilitation using loans from foreign donor agencies. The time-scales for such loans have rarely matched the time-scales needed for IMT. In particular, there may be a seemingly reasonable period of time in the earlier stages of such projects to establish and start IMT programmes. However, the end of the loan period may be only a short time after completion of construction so funds come to a stop just at a critical time for WUAs as they become responsible for the rehabilitated systems.

Superficially transferring responsibility for irrigation management can be quite quick particularly if related to forming WUAs as part of a general WUA formation programme. Potentially, the process can take much longer if it involves privatising management of a bulk supply, where contracts covering levels of service and financial arrangements have to be written and some form of selection and award procedure followed.

The following chart indicates the time-scale that might be required for establishing a WUA, from identification of the hydraulic unit on which to base the WUA through to handing over responsibilities. In preparing the chart it was assumed that no major problems occur and that the process is not delayed by the need to complete infrastructure remedial works first.

	Months									
	1	2	3	4	5	6	7	8	9	10
Identification of system and its boundaries	■									
Promoting WUA formation to potential members	■	■								
Start up meetings of WUA			■							
Legal and administrative arrangements			■	■						
Selecting WUA officers and staff				■	■					
Initial training of WUA members, officers and staff				■	■	■				
Hand-over of irrigation management responsibilities							■	■	■	
WUA effective										◆

After the WUA has been declared effective, years of support and training will be needed to ensure that proper management, O&M, financial management, correct voting procedures and the real participation of the beneficiaries have been achieved.

5.5 Transfer of Functions

Prior to embarking on IMT the relevant policy makers must determine which services to transfer, which services to retain under government and which if any new services to create. There are four basic functions which should be provided by the water service provider and are inseparable: operation, maintenance, financing and dispute resolution.

It is critical that the services to be transferred and the physical boundaries of responsibilities are very clearly defined to avoid disputes and confusion later.

The forms of acceptable IMT recipient must also be defined. To date, within Central Asia, in the main the recipient has been some form of water user grouping (such as WUAs) who have taken over responsibility for the field and farm level water management. This is the model that has been widely applied in IMT programmes. This reflects historic boundaries of responsibilities: during the Soviet period, the irrigation and drainage system within the sovkhos and kolkhos boundaries - termed the 'on-farm' systems - was the responsibility of the farm management. The supply canals and disposal drains were the responsibility of local, regional or national government, according to the infrastructure's importance. Therefore, to date WUAs have been used to fill the vacuum left by the irrigation and drainage system management of the sovkhos and kolkhos.

Except for Kazakhstan, where trusts have been formed to operate the downstream sections of the bulk water distribution networks, there is little experience of IMT of bulk water supplies. Providing the bulk water supplies, following IMT can be viewed as requiring a commercially orientated operator. However there is experience such as in Mexico and Turkey where WUAs have formed federations to provide management of the bulk water supplies.

Political acceptability will bear strongly on the extent of transfer and the forms of IMT recipient that are considered acceptable. The raivodkhoz and oblvodkhoz have a long history of managing bulk water deliveries and their staff has considerable knowledge and expertise in this. Arguments to capitalise on this expertise are compelling. A significant foreign stakeholding in the IMT recipient organisation might be unacceptable. Some will also consider it morally wrong for a company (possibly with affiliations outside the operating area) to seek to profit from delivery of such an essential good as irrigation water. For IMT to be successful, the overall policy must address such matters so there is a clear framework to apply IMT of bulk water supplies.

As well as the four basic functions mentioned above, further functions can be performed by the water service provider to become a provider of agricultural services: providing agricultural inputs, regulating cropping patterns

etc but should be seen as secondary or supporting functions. Kazakhstan's Rural Consumer Co-operatives (RCC) are an example of such a multi-functional agricultural organisation. There are reasons why a WUA may want to take on other agricultural services:

- Improvements in agricultural productivity cannot be achieved without farmers' collaborating over other agricultural inputs.
- The WUA needs to raise funds from other sources to meet irrigation and drainage costs.
- Economies of scale in management/operational costs make it cost effective for the WUA to add value for its members by providing additional services.
- No other organisation exists to perform other agricultural services.

But there are situations where diversifying has disadvantages:

- Regulations prevent WUAs taking on other roles.
- Other organisations exist that can provide the agricultural services better.
- The structure of the WUA would be over-stretched by performing other functions.

Experience in Asia and Latin America suggests that when small in size WUAs are more likely to take on other functions.

The acceptable forms of IMT recipient organisation will probably be defined by the overall IMT policy – though the forms may not (but should) be explicitly stated.

In implementing the policy there will be many decisions concerning detail to be taken, of which one of the most far reaching is defining the structure and mode of operation of the IMT recipient. A body will need to be a legal entity for the state to transfer responsibilities and property to it.

It would appear from the in-country interviews that the form of WUA has not had a significant impact on the sustainability of IMT. Ad hoc groupings of irrigators who have collaborated to solve communal problems have been no less successful than WUAs formed under the control of an internationally financed government-supervised programme.

5.6 Financing Operation and Maintenance

Most water sector administrators and technical experts agree that the primary source of funding of operation and maintenance of irrigation and drainage systems should be water charges paid by water users. The logic of this is that the provider of the water service will be more accountable to the users if they are the primary source of funds and thus will deliver a better service. However, water charges need not necessarily be the only source of finance. WUAs may have other sources of revenue such as fishing charges or the provision of other agricultural services.

Another potential source of finance is government subsidy. However, agricultural subsidies from government are limited in Central Asia. Water charge subsidies are under consideration in Kazakhstan. Subsidy should be targeted as an investment to improve productivity rather than a gift to artificially reduce costs. It can be justified where capital intensive irrigation and drainage is required to meet national policy objectives or for example in impoverished areas where it can be justified on the grounds of food security.

5.7 Financing Rehabilitation and Modernisation

It is essential at the strategic planning phase to define how future infrastructure improvements will be funded. The current situation in many areas of Central Asia, as in many places in the world, is two alternative courses of action:

- Gradual deterioration of infrastructure contributing to agriculture becoming uneconomic and land being abandoned.
- Gradual deterioration of infrastructure followed by a government or externally funded rehabilitation project followed by further gradual deterioration and a cycle of deterioration-rehabilitation.

A preferable approach is an incremental infrastructure improvement approach. Small incremental improvements and small scale repairs to the irrigation and drainage systems would be made gradually over a period of time to avoid infrastructure deteriorating until it is costly to repair/replace. This would help to break the cycle of lack of investment in small scale repairs and farmer dependency on government to rehabilitate. One way of funding such work is through match funding: a cost sharing mechanism for minor repairs is set up with both WUA and government contributing funds. The WUA would have to set up a capital reserve fund normally by adding a surcharge to water charges. However funding of such incremental infrastructure improvements would face problems in Central Asia. Government departments and external funders are still orientated towards large scale rehabilitation projects. Few WUAs have been able to create capital reserve funds under the current difficult economic conditions in the agricultural sector. Capital reserve funds would have to be protected or insured against corrupt misuse.

5.8 Legal Changes

There is clear evidence from experience in other countries that are implementing IMT that a clear legal framework is needed to implement IMT. Legislation, in addition to permitting formal IMT to occur assures continuance of the transfer arrangement in the long-term. Aspects of legislation that may require change include: devolving of responsibility for irrigation management (in effect the formal adoption of the transfer policy), a legal status for WUAs, water rights, vesting of rights in former state infrastructure, changes to responsibilities of state bodies.

Devolution of responsibility for irrigation and drainage management has been partially side-stepped in Central Asia to date as many of the WUAs are not taking on responsibilities of the state but filling a management vacuum left by the break of the state farms and collective farms. However if transfer of bulk water suppliers is to be considered transfer of legal authority from the state will be required. This could take the form of a presidential decree, ministerial decree, or legislative act. The legislative act is the slowest of the three forms to enact, but is likely to be the more comprehensive and difficult to overturn in the future.

Only in Kyrgyzstan, (and recently (2003) in Kazakhstan) has a specific law covering water users' associations (WUAs) been enacted, in the other countries WUAs have formed under existing legislation. This has caused problems where the legal definition and obligations of an association in general do not sit easily with the purpose and operation of a WUA. In Tajikistan legislation covering WUAs is under development.

A successful legal status for WUAs should include:

- Powers to extract water.
- Powers to operate and maintain (and possibly own) irrigation and drainage infrastructure.
- Rights of access to carry out operation and maintenance.

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- Full legal standing – power to enter into contracts, purchase, own and sell property.
 - Clear and acceptable criteria for membership.
 - WUA Statutes and bye-laws.
 - Levy raising powers.
 - Enforcement powers.
 - Representation for WUAs on water resources bodies.
 - Taxation status.

Many law reforms are actively ongoing in Central Asian countries as they align their legal systems with market economies. In particular, land and water laws have been the subject of much debate and a number of acts of legislation over the last ten years. However, it should be recognised that the pace of reform differs between countries, with the order in which legislation helpful to IMT is most advanced being: Kyrgyzstan, Kazakhstan, Uzbekistan, and Tajikistan.

Legal experts and planners at the ‘front end’ of the IMT process should examine existing legislation and policy and compare it with the required duties and responsibilities required by a WUA as outlined in the criteria above to determine what changes to legislation can be made to support IMT. This may require pushing for additional WUA specific legislation or identifying non-specific legislation (such as the use of legislation on Rural Production Co-operatives in Kazakhstan). Implementers further ‘downstream’ in the IMT process should understand the constraints of the legislative framework that they are working within and how this can affect the successful establishment and running of organisations.

It is important for a WUA to have a legal identity. This primarily allows resolution of disputes through legal processes where these cannot be settled mutually. In many countries a legal identity is also required to open bank accounts.

There are some legal arrangements for operating WUAs under prevailing general laws and codes in Central Asia and recent changes such as new (2003) Rural Consumer Co-operative legislation in Kazakhstan. Existing legislation in Kyrgyzstan and Kazakhstan needs to be looked at by legal experts to assess whether it is now sufficient and appropriate for sustainable IMT. In Uzbekistan and Tajikistan further legislation will be necessary to assist sustainable IMT. Those carrying out IMT ‘in the field’ must, therefore, understand the limitations of the existing legislation that they will be working with and adapt their programmes to suit. Those involved in institutional and policy development and reforms should understand that there will be limitations on the success of IMT until legislative changes can be made and should therefore be pressing for such changes.

Legal changes may be needed to transfer rights of use and ownership to WUAs. In Central Asia main and secondary canals are state owned. In Kazakhstan transfer of use rights has been tried for secondary canals under a ‘Trust Management Transfer’. At tertiary and farm level legal ownership of infrastructure varies between countries. In Kyrgyzstan the WUA will soon be able to receive ownership of the on-farm water infrastructure as an indivisible asset. However there remains a legal question whether the state can transfer infrastructure assets on former kolkhoz farms to WUAs since the infrastructure belongs to the former kolkhoz members. In Kazakhstan the on-farm infrastructure does now belong to the farmers. The farmers in their turn can donate the on-farm infrastructure to their WUA.

Land and water reforms are underway in some form in most countries of the Region, for example, a new Land Code was approved in Kazakhstan in June 2003, providing regulations for land and land ownership. However, the current lack of secure rights and the uncertainty over land use rights, following the collapse of state farms

and the debts, bankruptcies and ongoing reorganisation in the agricultural sector should be recognised in the development of IMT programmes as a constraint on successful implementation.

Further legal changes are therefore desirable in each country to clarify the situation even at tertiary and farm level.

5.9 Reform of Government Bodies

In its broadest sense, IMT does not require a fundamental restructuring of high-level institutions (such as ministries and irrigation departments). However, it does require the functions of some of these bodies to be refocused and some right-sizing undertaken. The refocusing may also result in new quasi-independent bodies being formed.

The structure of the high-level institutions was not specifically addressed by the in-country studies, so the following guidelines are based more on general experience than that of IMT in Central Asia.

The policy and master planning / strategy development activities should provide a framework for the future high-level institutional structure. In particular, it should address:

- The function of the existing irrigation authority.
- The roles of the ministry of irrigation (or equivalent), if not the irrigation authority and ministry of agriculture.
- Which organisation should take overall leadership in promoting IMT?
- Mechanisms for ensuring that all high-level organisations affected by IMT communicate well and collaborate as necessary.
- Which organisation(s) should oversee performance of the organisations (including WUAs) which are directly responsible for irrigation management following IMT?
- The role of the courts and arbitrators.

The arrangements will vary between countries according to the circumstances prevailing prior to IMT and the specific form of IMT programme. A few general points are:

There is a need for a nation wide agency to support WUA development. This need not be directly attached to a particular ministry (it might, for example, be established under the Prime Minister's Office.)

This agency should have a steering committee containing inter-ministerial expertise, so that legal, financial, tax, agriculture, water resource, engineering, environmental and social issues can be properly addressed. This might be achieved by seconding senior staff from their parent ministries and departments. It should also include non-governmental organisations: farmer representatives, local bodies, and consultants.

The steering committee should be assisted by a working group comprising the irrigation agency/enterprise and farmer groups. The steering committee lays out policy decisions and the working group or the core group actually implements the programme. The benefit of the steering committee is as a planning and co-ordination cell which gives leadership to the programme, lays down policy and monitors the implementation process, sorts out problematic areas such as streamlining taxes payable, vesting tax levying powers, sharing of water charges collected etc. It also endorses the IMT programme at the government level. The benefit of consultant expertise enables government officials to outline suitable strategies.

In addition the agency needs to develop contacts with other Central Asian countries and even contacts outside Central Asia are really needed.

There must be adequate regulation of the privatised irrigation managers. In mutual organisations (such as WUAs) or public corporations there will be some internal regulation by the organisation's stakeholders but this will not necessarily ensure compliance with regulations governing, and commitments undertaken by the irrigation manager. Appointing an independent regulator under statute law which sets down the regulator's role, the powers available to discharge his duties and the conditions under which he may be dismissed has advantages including:

- Independence from direct political manipulation, but with accountability to the Courts should the regulator's decisions be at odds with his duties under the statute law
- The arrangement gives the sponsoring ministry greater freedom to act, including developing new policy, without compromising the regulator
- The regulator may need to take unpopular decisions that a ministerial body may find politically difficult
- Following IMT the irrigation agency will need far fewer staff than before. Its budget will also reduce. There will be many opportunities for former staff to work for the privatised irrigation managers.

Civil service regulations will define the treatment of individuals in this circumstance but are less likely to deal with the change in the organisation's functions and scale of activities. Planning for this is as important as preparing WUAs to take over responsibilities for irrigation management.

Figure 5.1 shows some of the phases in developing a master plan and implementation strategy.

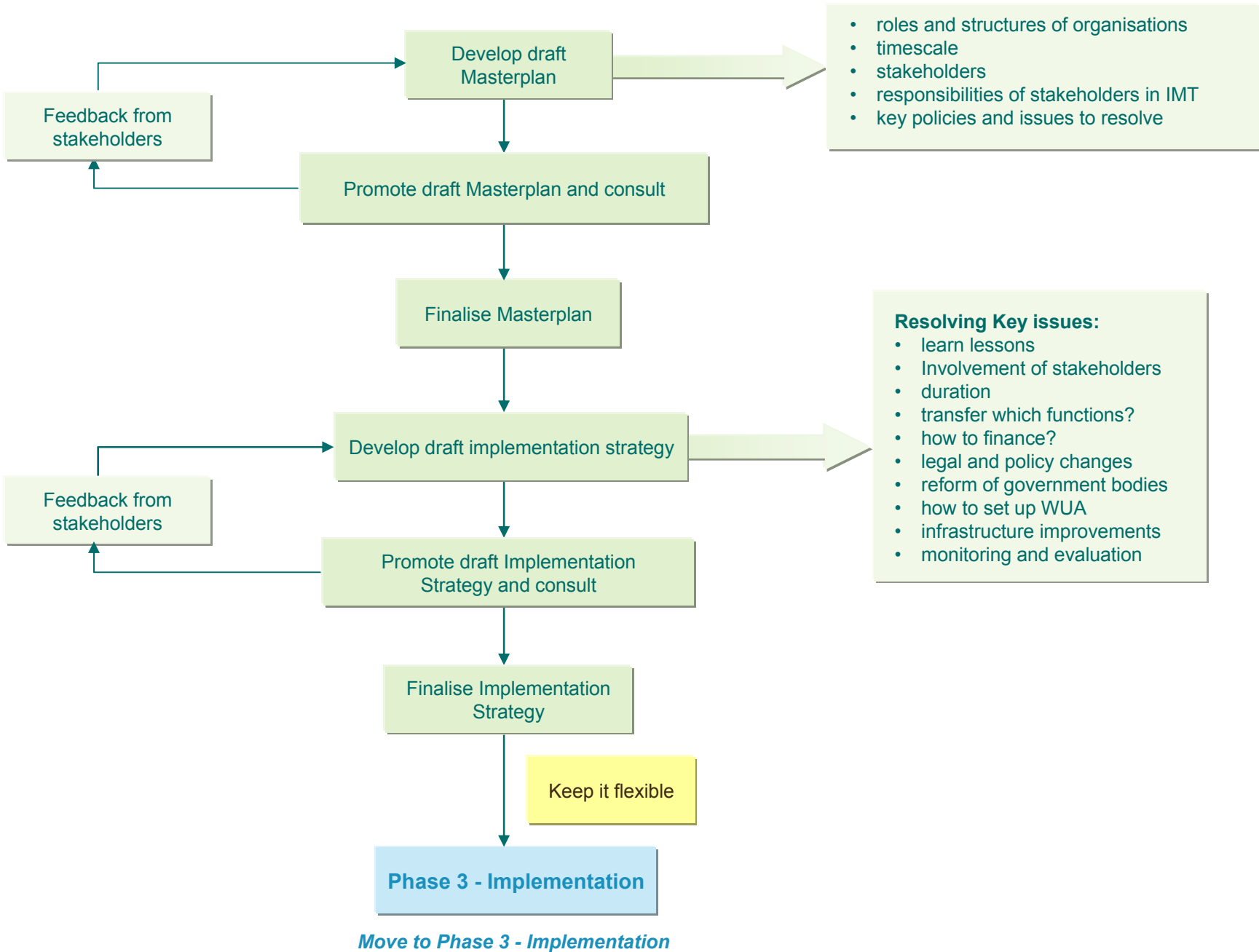


Figure 5.1
Phase 2 - Strategic Planning

6 Phase 3 Implementing the Strategy

6.1 Implementing the Strategy

Implementation is probably the most complex phase of the IMT process as it demands the pro-active instigation of the transfer itself. It is a dynamic process and will require flexibility in the implementation strategy as problems are encountered and as different elements of the process are held up or progress at different speeds.

Key elements of implementation are:

- Legal changes (as already described).
- Establishing WUAs.
- Transferring responsibility to WUAs.
- WUA's accepting responsibility.
- Changes to government bodies.
- Establishing monitoring and evaluation of transfer.

Over-arching these elements is outreach – or stakeholder participation to drive the changes.

6.2 Establishing WUAs

Establishing WUAs will include the following steps:

- Draft the rules (initially the rules may relate to delineating the jurisdiction of entities such as the WUA or its federation, eligibility for membership, elections to WUAs, functions and objectives, works procedures and financial procedure).
- Delineate the scheme areas into water users' associations and notify water users of the same, call for objections and notify the formation of WUAs.
- Publish list of water users in each of the WUAs.
- Conduct a simplified form of elections.
- Handing over jurisdiction to the WUAs for their management through a Memorandum of Understanding.

The structure of the recipient IMT organisations (in these guidelines referred to as WUAs) can be loosely defined allowing them to evolve subject to a few basic principles, including that:

- All members of the WUA have an opportunity to participate in:
 - Periodic meetings in which management and financial reports are presented and the officers preparing these are brought to account.
 - Setting tariffs for water and services received.

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- Selecting the officers of the WUA.
 - Measures are in place to prevent:
 - A few individuals having disproportionate influence over the activities of the WUA.
 - Unfair treatment of minority members of the WUA.
 - Financial irregularities. One or more individuals (jointly and severally liable in the case of the latter) are nominated to be responsible for the financial management of the WUA finances and these individuals are responsible to the whole membership of the WUA, and regularly prepare factual accounts which are offered for independent audit. Moreover these individuals may be replaced by the membership acting in a general meeting.
 - The purpose and objectives of the WUA to be altered without general agreement.

WUAs, though widely used as a building block in the IMT process both in the Region and worldwide, are only one type of potential organisation in IMT. It is unclear what type of organisation would be most appropriate for IMT of bulk water suppliers. WUAs are unfamiliar organisations to the Region and will need time to bed down, develop and adapt to local needs and circumstances. History and social preconceptions will affect how these organisations are viewed.

It is inevitable that there will be different perceptions on what is an appropriate way for the membership to control the performance of the WUA. There is no universal 'best' way that these guidelines can recommend. What is important is that periodically the membership should have the right, as individuals in the collective body, to review the structure of the organisation's management and to:

- Express their views openly and transparently
- But to have the opportunity to cast a vote on proposals in secrecy – solely as this arrangement is the only system that allows the less powerful members of an association to act without reservation.

Voting arrangements can be contentious; there will be debates evermore on whether voting should be based on area of land, amount of water received (and possibly so fees paid to the WUA) or on a one member – one vote basis. This has to be determined in the context of the individual WUAs together with the prevailing national legislation on personal rights.

Two basic documents are usually prepared to cover the issues raised above: Articles of Association (or a Charter) and bye-laws. The Articles of Association set out the purpose of the WUA, the basis of its authority and how it is organised.

The Articles of Association will generally include:

- A statement of the purpose of the organisation.
- Definition of its legal status and powers.
- Definition of its service area.
- Membership criteria.
- Functions of the organisation.
- Rights and responsibilities of the organisation and its members.

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- Structure of the organisation and its governance.
 - Method for amending the articles.

The bye-laws should include:

- Election and constitution of the governing board (period of tenure, rules for selection and dismissal).
- Rules for membership.
- Definition of the water service.
- Rules and sanctions for operational misuse, non-payment etc.
- Procedures for conflict resolution.
- Duties of the governing board.
- Procedures for amending bye-laws.

There can often be confusion when setting up a WUA as to whether the boundary of responsibility of a WUA should be based on an administration boundary (e.g. a raion) or a hydraulic boundary (e.g. all farms served by a main canal). WUAs to date in Central Asia have used both types of boundary. Sometimes WUAs have been based on hydraulic boundaries such as the boundary of a former sovkhos or kolkhoz. The WUA has therefore been taking on the responsibilities for water distribution that were formerly carried out within the large state or collective farms rather than taking on any new responsibilities from the raivodkhoz. However in other cases the WUA has been based on social group units.

6.3 Transferring Responsibility

Suggested steps in transfer of responsibility include:

- a. Following formation of the WUAs, drafting a memorandum of understanding between the agency and the WUA
- b. Setting the conditions for transfer
- c. Preparation of a rehabilitation plan
- d. Transfer of custody of finances to the WUA and defining the WUA's responsibilities
- e. Simplify financial procedures, identify tax liabilities and exemptions
- f. Carry out walkthrough survey with WUA to develop inventory of assets and their condition
- g. Assist the WUAs in the first two irrigation seasons and final transfer
- h. Identify simplified quality control procedures for works and enabling flexibility for the working of the WUAs.

In transferring responsibilities connected with bulk water supply time has to be allowed for establishing the form of IMT. Questions to be answered at this stage include:

- Is the transfer for a defined period, or indefinitely?
- Does it involve permanent or temporary transfer of infrastructure assets?
- Is the transfer limited to operational and day-to-day maintenance responsibilities?

Once these are resolved, the following actions are required:

- An asset survey.

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- Preparation of indicative contractual terms covering the transfer.
 - Tendering and identifying a preferred bidder. Here it is assumed some form of competitive process is followed. The competition can be based on several parameters, including qualifications, technical vision for the post-IMT situation, and financial issues. The criteria and marketing arrangements need to be set in advance and to be available to all interested parties. Non-competition selection might be appropriate in exceptional circumstances – in which case the process should nevertheless be wholly transparent and include independent scrutiny that there is nothing improper occurring.
 - Negotiating with preferred bidder.
 - Contract closure (which may require some form of legal endorsement).

6.4 Assuming Responsibility for Irrigation Management

This is probably the slowest part of the process in WUA formation, whereas in transferring a bulk water supply it may be the shortest.

For a WUA, during this period, the members have to learn how to interact with each other to allow a stable institution to form. This goes beyond ensuring the technical aspects of irrigation services are provided, for it includes the time during which the WUA's corporate identity evolves. If the WUA is to survive, a trusting relationship must develop between members, officers and officials. For example, unsatisfactory performance, in the members' eyes of the latter two should be met by dismissal and replacement – whether of auditors or of chairmen. Financial difficulties, perhaps due to extreme natural events, or an unwillingness of the membership to properly fund the WUA could cause terminal strains.

It is during this period that, within Central Asia, little support seemingly has been available to the WUAs to date. However this absence is hard felt. Therefore in planning IMT, allowance should be made for providing such support for an appreciable time after IMT handover occurs.

Overall, a long time-scale should be planned for IMT and this may mean either de-linking it from rehabilitation projects or allowing for extended time-scales for the IMT elements of the project.

Once a WUA (or other body) has been established, the next issue is arranging the transfer of the assets. Suggested steps in the process of assuming responsibility for such assets include:

- Establishing a standardised procedure for walking through the irrigation (and drainage) systems by those who are to hand over the system and the recipients of IMT (or their genuine representatives), to identify:
 - what parts of the system are to be transferred
 - the condition of the system, including a preliminary assessment of what urgent repair works are required and what long-term potential liabilities there might be for the future operators.
- A discussion between the two parties based on the preliminary assessment on the principles of IMT handover, concentrating on the responsibilities and the need for system modernisation and rehabilitation.
- A detailed survey of the system assets that are to be transferred, undertaken by both parties or by an independent specialist survey organisation.
- Obtaining approval of works at a properly constituted meeting which under the institutional arrangements has authority to make such a decision on behalf of the whole organisation. In the case of a WUA, this is ideally a general meeting of all farmers.

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- Execution of the works, with some supervisory or direct input from the IMT recipient, as appropriate.
 - In parallel to undertaking such works, decisions will be needed on how the system will be operated in future. This will include the mechanism for determining water supplies in total (each year and long-term) and with respect to its scheduling. Ensure operators and operating procedures are identified and agreed with all concerned parties.

6.5 Outreach

Delivering the message

Delivering the message of IMT should be carried out throughout the organisational systems involved from top to bottom. The concept of IMT can be greeted with suspicion by all parties. Farmers in Central Asia can see it as a handing over of power and a form of re-collectivisation. Local government departments can treat it with suspicion since a farmer's organisation could challenge existing local power structures. Bulk water suppliers can see it as a threat to their power and dominance of the water market. Such suspicions take time to overcome.

Media can be a very powerful tool for delivering the IMT message, as well as farmer conventions at a regional and national level. Extensive coverage through the radio, press and TV can generate mass awareness. Poster campaigns in villages and farmer conventions can motivate farmers and rural society.

Public meetings / farmer conventions presided by Ministers and politicians lend seriousness to the government's commitment to reform. It not only boosts the enthusiasm among farmers but also exerts pressure on the service provider to comply with the transfer goals.

Supporting change

It is important to include the communities and their existing community decision systems in the development of IMT programmes, for example, by the involvement of the Aksakals, where these are key local groupings, and with local authorities. Thus, idealised 'western' perceptions of democratic procedures often associated with WUA programmes need to be adapted to the reality of the local community and the existing political landscape. Local government has a surprising amount of power and autonomy in how they deal with local organisations such as WUAs and thus have the power to assist or hinder their development. Therefore gaining the participation and support of local authorities is fundamental to the success of a WUA.

Stakeholder involvement is an ongoing process. All stakeholders need to be duly informed about the whole process. A nation wide agency suggested above is one method for achieving this. It should also be clear to the stakeholders who is responsible for doing what and who is not. As IMT should be a flexible and developing process the stakeholders need to be given the possibility to adjust and improve the process of IMT.

There is a need for community development programmes in other fields of expertise to promote self-help and job creation activities. This will stimulate the development of small and medium enterprises and may be linked to running a small business – such as WUA can be considered to be.

Assisting maturity

Many small farmers in Central Asia are used to following the lead of others. Some are relatively new to farming and others are used to working within a state or collective farm. There is also a history of following state instructions. A period of maturing WUAs assisted by facilitators is needed to build confidence in making commercial, irrigation and agronomic decisions and in defending their rights.

The creation of federations of WUAs on a national or regional scale is part of the maturing process. However experience suggests that this is generally better attempted once WUAs have had time to establish themselves.

6.6 Reforming Bulk Water Suppliers

As stated elsewhere in the Guidelines, management transfer of bulk water supplies has not yet been attempted in Central Asia. If such transfer to a new organisation is to be attempted it needs to have the following:

- Legal status.
- The ability under its memorandum of association, or other formally binding statement of operating purpose, to undertake irrigation management functions for the bulk water supply system.
- Access to sufficient finance to meet its normal operating requirements, including investing to upgrade and replace significant irrigation network components (and management facilities) when needed, as well as meeting day-to-day needs.
- A management which recognises the challenges of IMT and which is prepared to seek out appropriate responses. It is very unlikely that an organisation whose senior management is exclusively drawn from raivodkhoz and oblvodkhoz will have the necessary commercial vision and skills. Equally, an organisation which fails to include credible irrigation management expertise skills at the highest levels is unlikely to understand the business sufficiently well.
- A credible resourcing plan, including ability to recruit staff with the necessary expertise in engineering, accounting, communications and management, and to purchase, hire or otherwise employ sufficient plant and equipment to properly deliver the bulk water supply.
- Safeguards for overseeing that the management of the organisation properly discharge their responsibilities. This includes regular reporting mechanisms, peer review by non-executive personnel and the ability to change the management team through clearly established normal procedures.

A variety of organisational forms will meet the above, and could include joint stock companies, organisations operating for profit, not-for-profit organisations as well as some form of mutual organisation. Federations of WUAs fall into the latter group; these are organisations which have WUAs in their service area as members. Outside Central Asia there has been some good experience with such federations. However, this has tended to be in environments where there is a much longer history of stakeholder participation in management. Until WUAs are established in the psyche as fundamental participants of irrigation management in Central Asia seeking to establish federations responsible for bulk water supply is ambitious and arguably best avoided.

6.7 Role of Other Institutions in Implementation

With most IMT in Central Asia to date being at farm level the bulk water supplier (the raivodkhoz and oblvodkhoz) has become a key frontline institution in contact with IMT implementers. One of the benefits of setting up WUAs is reported to be the better management of the interface with the bulk water supplier. However it is important to recognise that there will be both opposition and support from these organisations. Bulk water suppliers are now faced with the problem of arranging the supply and collecting fees from tens or hundreds of small farmers where formerly it was supplying a single state farm. The WUA is a way of reducing this administrative nightmare to the benefit of both parties. The WUA also provides a means for small farmers to have greater negotiating leverage on a bulk water supplier and this can be seen as a threat.

The interface between farmer/WUA and bulk water supplier in some cases also represents the interface of responsibilities between different government ministries: the Ministry of Agriculture and the Committee of Water Resources or their equivalent in respective countries. Thus, the focus of political support and institutional re-organisation will have to be significantly different from that already carried out to establish WUAs.

IMT is implemented by the irrigation authority; normally this means the Ministry of Agriculture of the country. There is a risk in this that direct contact with water resource authorities is limited. Water resource authorities

tend to be linked with agriculture ministries and may repeatedly join or split from such ministries during organisational change but staff tends to remain separate. Provision of irrigation water will be competing increasingly with industrial water use which is likely to provide a higher economic output, so irrigation water use will have to fight its corner.

It is, therefore, important that a WUA and regional or national umbrella organisations have contact with water resource authorities and have a stake and a voice in water resource planning and allocation. Such contacts and the establishment of formal mechanisms for WUA organisations to raise and voice the issues that concern them needs to be carried out at an early stage of IMT during the establishment of high level institutional structures. Without this in place early on the response from water resource bodies at a local level may be limited.

The importance of the support of local government for IMT in Central Asia should not be underestimated. The oblast and raion authorities have considerable autonomous power to make life either easy or difficult for fledgling water users' organisations. The early training/support programmes for spreading the message about IMT needs to plan in time and effort for meeting with a range of local government organisations such as real estate departments and tax departments to get them on-side. This should also include meetings with local akims and their officers, and, for example, site visits for them to the farms involved.

The legal status of land and asset ownership is frequently complex following frequent past and ongoing reorganisations and bankruptcies. Particularly where IMT is combined with rehabilitation projects this can mean that WUAs and those providing support programmes through assistance and training can be caught up with helping to sort out the bureaucratic tangle of land and asset registration and agreements with local government departments such as real estate and land registration departments. This can take up considerable time and effort that would otherwise be directed towards strengthening, developing and training the WUAs. This expenditure of manpower and time should be planned for during the design of support programmes. The inclusion of posts specifically to deal with local government departments in such legal issues needs to be designed into programmes.

6.8 Arrangements for Monitoring and Evaluation

IMT is still in its early days in Central Asia so there are valuable opportunities to evaluate progress so far and learn from experiences in a process of continuous improvement. That in effect has been the *raison d'être* of this study and report. However collection of historical data and its evaluation can be difficult (as has been found in this study) where an organised system of monitoring and feedback has not been set up at the start of IMT.

Whilst a programme of monitoring and evaluation should be seen as integral part of the IMT process there are key questions that need to be answered in the design of such a programme:

What are the objectives of monitoring and evaluation, who are the direct beneficiaries of feedback and improvements?

M&E should be a management information tool of the organisation(s) overseeing IMT. M&E should result in clear indicators of how the service provision is developing. To fully use the benefits of M&E a management style needs to be adopted that includes focused (but not necessarily detailed) planning. At this moment the beneficiaries of monitoring and evaluation will often include the international community of researchers, international consultants and NGOs and funding organisations working on new IMT programmes. The incentives for undertaking monitoring by WUAs, WUA federations and even national bodies can be weak unless these organisations can be effectively brought into the feedback loop.

Who will do the monitoring, where will the funds come from to monitor, what indicators should be monitored?

The degree of monitoring should be appropriate to the resources available. If monitoring is an added burden on WUA organisations at local or national levels with little or no clear benefit then it is unlikely to be sustained. A system of monitoring and evaluation should have a funding source which may be directly from the water users through the water service fees, and be straightforward to implement and maintain otherwise the collection of data will be a burden and the data will not be evaluated well. Monitoring by an independent team will often yield better results than from the service provider.

There will often be a reluctance to reveal accurate information (over crop yields for example) because of concerns over tax and other liabilities.

An M&E programme should therefore:

- Identify who will be involved and in what ways.
- Clarify stakeholder priorities (Government, service provider, water users' association, farmers)
- Identify how finding will be used.
- Develop and select simple indicators, for example covering:
 - a. WUAs active
 - b. Improvement to Infrastructure
 - c. Management transfer process
 - d. Capacity building of the agency, WUA etc
 - e. Finances
 - f. Water management
 - g. Environmental impacts
 - h. Revenue collection
 - i. Taxes
- Identify the method of data collection and analysis.
- Identify how the M&E results will be presented, disseminated and utilised.

Monitoring and evaluation programmes should understand the likely administrative limitations on WUAs, imposed by their lack of funds. Thus, the establishment of elaborate computer programs to feed information from WUA to the monitoring programme are unlikely to succeed. This has been shown to be the case in other countries, where complex computerised reporting systems have not been a priority for WUAs who have more basic priorities (cost recovery, organising limited resources etc), which can be carried out on paper or spreadsheet. Monitoring and evaluation procedures need therefore to be simple and effective and appropriate both to the level of resources that will in reality be available in the long term to carry out the monitoring and to obtaining data that will allow objective assessment of achievement at a practical level.

Who will evaluate, how will that be funded, how and to whom will that be fed back?

Monitoring is a long term process and much IMT in Central Asia to date has been connected with internationally funded rehabilitation projects. Thus, monitoring after completion of a project could be a problem both in terms of funding and enthusiasm. A long term programme to support monitoring and evaluation should be an integral component of the design of the IMT process.

Cross-fertilisation of ideas and experience between Central Asian countries and between Central Asia and the rest of the world has on the whole been limited, with funding for travel, establishing contacts and attendance at meetings and conferences a problem. Nevertheless, it should be considered important to stimulate the national entities working with IMT in Central Asia to contact and visit other Central Asian Republics to learn from their experience. In this context it is also important that the Central Asian Republics follow and analyse progress made outside Central Asia. Keen local experts in the irrigation authority or WUA federations need to be assisted

to establish and develop contacts with their counterparts worldwide. Language barriers and lack of funds make this difficult: this is an area where targeted externally funded programmes might make a useful contribution. Figure 6.1 shows some of the processes in implementing IMT.

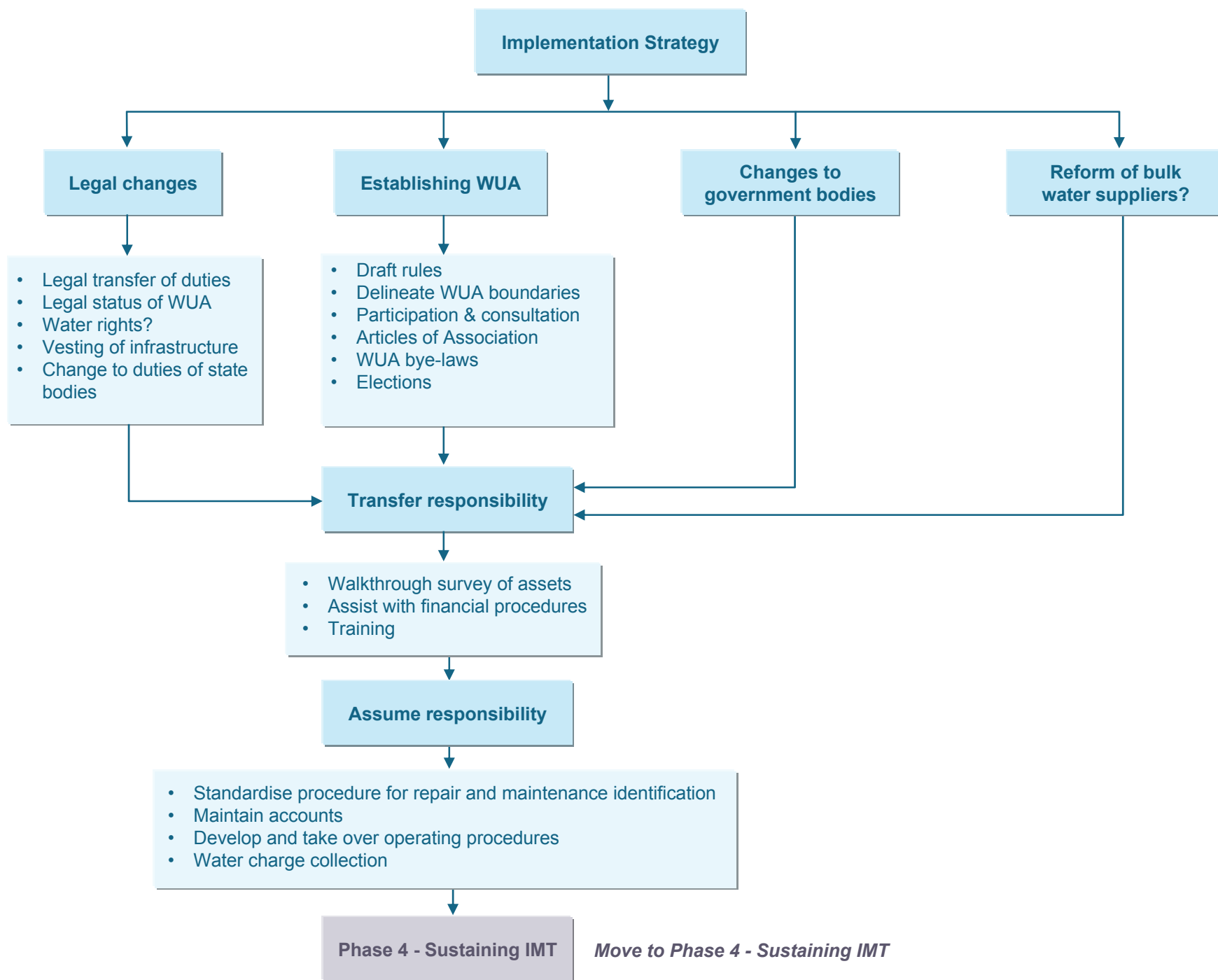


Figure 6.1
 Phase 3 - Implementation of Reform

7 Phase 4 Sustaining IMT

7.1 Is IMT sustainable in Central Asia?

Sustaining IMT is all about organisations and individuals at all levels assuming responsibility for making IMT work. With IMT in its early days in Central Asia, experience of long term sustainability is limited, though organisations in the Region are now at the stage of having to assume this responsibility as some of the earlier internationally funded IMT projects come to an end. Experience from other countries suggests that not all IMT will be successful and sustainable. At the same time it is important to be aware of the risks and consequences of failure.

This chapter looks at some of the constraints on sustainable IMT in Central Asia.

7.2 Financial Arrangements

Financial Procedures

In order to operate as commercial (possibly non-profit making) organisations, WUAs need to be able to establish and follow arrangements for the following key financial procedures:

- Operation of bank accounts.
- Auditing.
- Taxation.
- Inheriting debts.
- Bankruptcy.

Limitation on financial resources

The agricultural sector has been characterised by under-investment since independence. Therefore, the resources that WUAs (or other organisations to which irrigation management is transferred) can call on will be very limited and often the resources will be 'in kind' or bartered rather than cash. This may seriously affect their ability to recover costs and limit their operational and maintenance abilities. It will also seriously limit their basic administrative capabilities – such as running bank accounts, running offices, computers, office supplies, furniture and vehicles, as well as affecting their ability to employ and retain staff. This must be recognised and allowed for in IMT programmes.

Apart from raising resources through water charges, irrigation service providers may also be able to raise resources by way of rents, and other sources (fishing licences etc). The resource base of the provider (such as WUAs) therefore needs to be well defined in the law.

Financial support of WUA

To date, WUAs have often been left with no financial support following their initial establishment. There should be no surprise then that many subsequently fail to thrive. WUAs are small businesses which will require financial support beyond their initial set-up stage.

Volumetric pricing may have to be adjusted to include standing charges where the volume to be supplied is likely to vary a lot (e.g. due to rains or drought) in order to cover WUAs' fixed costs.

7.3 Auditing Standards and Requirements

Poor accounting is a common weakness of WUAs which undermines their accountability to members. It also undermines the checks and balances necessary for reducing corruption and ensuring financial soundness in an organisation. The legal framework set up at the outset for WUAs or other IMT organisations therefore needs to clearly define the auditing standards required for such organisations and the procedures for dealing with failures to meet the standards set.

Training in accounting should be an integral part of the WUA training programme. Accountancy procedures need to be realistic to the organisation's needs. This means they should be straightforward and they should be affordable to carry out in terms of the organisation's time and resources. Imposing overly-complex systems should be avoided.

In the South Kazakhstan Oblast training has been carried out under projects for RCC and WUA specialists in different aspects including tax legislation and bookkeeping.

7.4 Training

Particularly where IMT programmes are part of rehabilitation projects there is a risk that the technical assistance element of the project becomes a low priority compared with 'getting things built'. This can result in an inadequate budget, in insufficient time for training and a poorly thought out training programme.

During the Soviet period, virtually all irrigation was undertaken on state farms (sovkhozes) or collectives (kolkhozes). These units had up to around 7,000 ha under irrigation, with an average size of about 2,000 ha in many CARs, though farms as large as 15,000 ha are not unusual, particularly in Kazakhstan. Invariably the functions of agronomic and water management was a specialised activity, which was understood and undertaken by a few. Many current farmers have relatively little experience in general farm management practices, either because they are new to farming or because their jobs on the state and collective farms was specialised (e.g. tractor operator). Therefore there are considerable training needs both for general agricultural practices and specifically for water management. Nevertheless though many of the technical staff involved in irrigation and drainage have left agriculture there are still technical staff who could be employed to run irrigation and drainage services for WUAs. In Uzbekistan, large agricultural enterprises still remain in the form of shirkats - co-operatives which largely have taken over the farming within the boundaries of the former sovkhoz and kolkhoz. These benefit from some continuity of operation and retention of a skills-base.

Time should be allowed for the preparation of technical assistance work. Before work starts there should be a programme of training local TA consultants. This should include the involvement of those with external experience as well as sharing and learning from experience in other Central Asian Republics.

Technical Assistance should be seen as a long term investment with continuous updating of training of local consultants needed. Programmes should be continued, even after foreign donor agencies pull out. An example that is now under implementation is in Kyrgyzstan – the WB-OIP project. Adequate planning and budget is required for training as it often effectively bears the responsibility of institutional change. In the case of IMT such changes can be considerable in terms of skills and attitudes.

From the start of foreign aided projects, the salary structure of the local consultants should be more in harmony with their colleagues not working on these projects. Before the implementation of the project the continuity of the new to-be-developed workforce needs to be ensured and the local governments need to ensure that there will be post project funding for these specialised units.

Training should include short and consistent on the job training in a number of fields of expertise. Such training should recognise the current skills and expertise of staff particularly where they are being expected to take on new roles and learn new skills and attitudes.

IMT implementation needs to be far up enough an organisation's priorities. Implementation of IMT needs the focus and attention of an organisation in order to be carried through and to avoid being distracted by shorter term problems that arise day to day.

1. Key training areas for WUAs include:
2. Legal training – rights and responsibilities
3. Works procedures (participatory walkthrough surveys, identification and prioritisation of works) and quality control
4. Contract procedures
5. Writing of accounts and maintenance of records
6. Resolution of disputes
7. Writing up of minutes of general body meetings etc.

7.5 Modernisation and Rehabilitation of Infrastructure

It is important to recognise the difference between rehabilitation and modernisation of infrastructure. Rehabilitation is simply restoring infrastructure to its original design condition and function. Modernisation includes elements of rehabilitation but is directed at current needs rather than the needs catered for in the original system design. Thus when preparing for IMT it is preferable to consider modernising the irrigation systems so that they suit the intended institutional and operational structure. In this case the repair work undertaken would take into account the capacity of the organisation taking over the irrigation system to operate the system and to maintain it using resources that are realistically available to it.

Infrastructure - asset or liability?

Some of the infrastructure in Central Asia comprises large irrigation schemes with high running costs and negative environmental impacts. For IMT to be attractive to farmers it must be attractive for them to take over responsibility for the infrastructure. This makes it difficult for an IMT to be a success where the infrastructure is in a poor condition, where it is inflexible in operation and where it is expensive to operate and maintain.

Though land has been divided into small plots of a similar size to many Asian and South East Asian countries, the layout of irrigation and drainage systems remains based on large land plots from former state farms. Within such systems there is now a complex mix of small peasant farms, co-operatives and large farm units.

Appropriate engineering

Engineering of rehabilitation or improvement projects should be straightforward and appropriate to the needs of the users. Responsibility for the operation and maintenance of the system following IMT will be in the hands of farmers and the availability of their resources and skills for operation and maintenance should be fully understood and be an integral factor in designing the works.

7.6 Role of Financiers and Consultants

International financiers of projects have been instrumental in instigating and beginning to develop IMT in the Region. International consultants have provided the know-how and experience through training, institutional strengthening and technical assistance to help implement IMT programmes.

Risks to the success of donor-led IMT programmes include:

-
- IMT has been imposed as a requirement of a loan agreement but the recipient government has not fully bought into the idea and supported it.
 - Early withdrawal by donors after construction of rehabilitation schemes but before organisations have had time to bed down
 - Limited long term training
 - Limited monitoring, evaluation and feedback
 - Implementation of IMT for ideological reasons rather than from a clear assessment of its benefits for the rural poor
 - Lack of understanding of the Region's social, historical, legal and institutional constraints on successful IMT.

7.7 Reforms

Implementation of IMT has often run ahead of preparation (legal, institutional) for IMT. Even once IMT is implemented pro-active efforts need to continue to be made to implement the reforms such as framing and enacting legislation, institutional organisation, and policy development that were planned and started (but not implemented) at the commencement of IMT.

Ongoing agricultural sector reforms and the increased recognition by governments of the economic importance of the agricultural sector in the Region mean that the sustainability of IMT in the Region is likely to improve. Elsewhere in this report some of the factors that lead to successful IMT have been set out and it has been explained how these factors are not yet fully present in the Region. A recognition of this and continued encouragement to put these factors in place by reform will be important for the sustainability of IMT.

7.8 Financial Stability

Experience from other countries has shown that IMT is more sustainable where the underlying economics of the agricultural sector is reasonable and the finances of organisations are stable. The sustainability of IMT will be dependent on the financial stability of the WUA. Farm finances are generally poor in the Region but with some signs of improvements. However financial instability and farm reorganisation should be recognised as brakes on the long term sustainability of IMT in Central Asia.

Credit schemes and other financial support will be important for the survival of WUAs.

7.9 National and International Support

Regardless of whether these have a direct water management function, there can be benefits in arranging regional federations of WUAs and national co-ordination bodies. These appear to be most effective once individual WUAs have become reasonably established. The benefits of these organisations will be in their influence with government at regional and national level such as water resource bodies. They also provide a focus for contacts with other countries and international organisations. They are a focus for WUAs to share experience and in some cases resources. They also help to avoid WUAs becoming isolated which reduces the risk of failure. Such organisations will need at least start up funding. In the longer term they may get some financial support from their WUA members, but it is likely that they will need some form of grant from government.

International support for the cross-fertilisation of ideas both within the Region, and with the rest of the world will strengthen the national federations of WUAs and support those implementing IMT in irrigation authorities. The language barrier and lack of budget for travel should be recognised as problems for participation that need to be addressed and overcome.

State and international grants are required to support the initial stages of RCC, WUA establishment.

7.10 Development through Flexibility

As the agricultural sector develops, changes and reforms in the Region, so too the organisations set up for IMT need to be flexible enough to adapt and change to suit the reforms and changed needs. Once established WUAs may expand their remit from water provision to include other agricultural services, purchase of seed and other inputs, plant hire etc. There is debate whether diversification is a benefit or a hazard as it brings with it new risks of failure through bankruptcy and such like. However with the handover of responsibility to WUA members comes the acceptance that WUAs will be responsible for the development of their own organisation. If the structure of the organisation has inherent flexibility to meet changed needs then IMT is more likely to be sustainable.

In order to extend RCC or WUA activities, preferential credits should be considered – at least in the short term - in particular to purchase required equipment, fertilisers, seeds etc.

7.11 Feedback and Improvements

The case for the benefits of implementing IMT in Central Asia has not been sufficiently made and is unlikely to be made without good feedback from IMT programmes in the Region. Organised programmes of feedback are required with adequate funding to ensure that the lessons learnt from implementing IMT in the situation peculiar to Central Asia are passed on and used to improve IMT development.

Figure 7.1 shows some of the issues to be considered for long term sustainability.

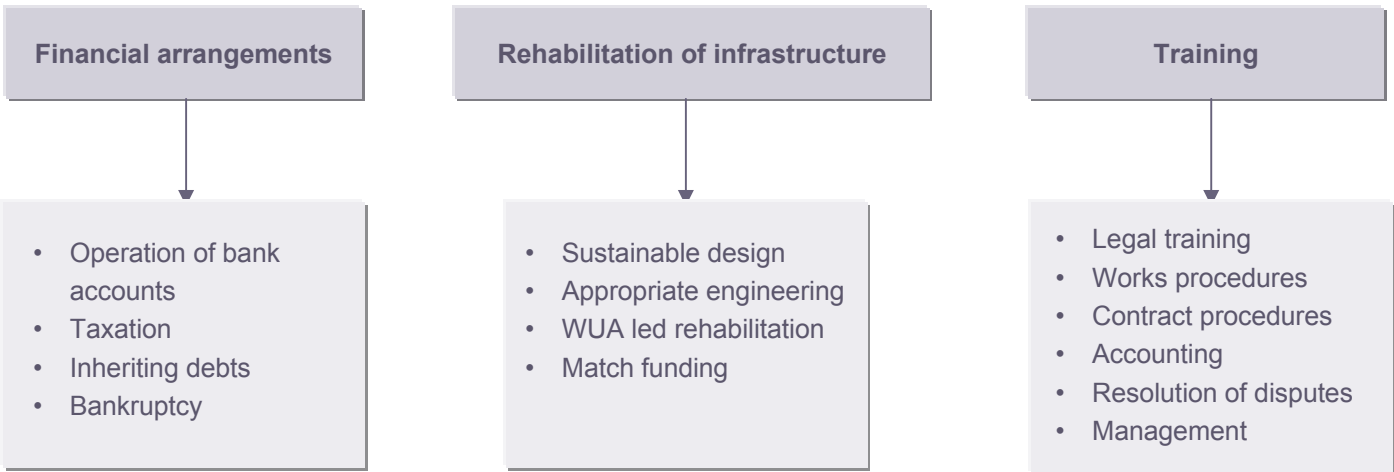


Figure 7.1
Phase 4 - Sustaining IMT

8 Issues Checklist

Social/Political Context

- WUA should be flexible to cope with the inevitable re-organisation of its members.
- IMT programmes should recognise the different pace of reforms in different Central Asian countries and be relevant to prevailing /developing circumstances.
- Tailor IMT programme to recognise the different social/political and historical contexts in Central Asia compared with other countries undertaking IMT.
- In designing IMT programmes, recognise that there are a wide variety of different farm sizes and farm structures within each country.
- Work with and involve existing community structures.

Institutional Issues

- IMT of bulk water suppliers has not been attempted on any significant scale. The legal framework and policy support for such IMT may not yet be present.
- Recognise that a primary rationale of setting up WUAs to date has been to arrange structured water use and maintenance where former state farms have divided into large numbers of family farms.
- A long term view of IMT in Central Asia is required; many of the pre-requisites for successful IMT are not yet present.
- Planners of IMT should take a realistic view of the duration of an IMT programme and avoid being limited by short loan or rehabilitation construction periods.
- A national cross department agency to develop WUAs is needed at raion, oblast and republican levels.
- Salary structures of local consultants should be in harmony with their colleagues.
- A nation wide agency (cross department) to develop/support WUAs is needed.
- Farmer and stakeholder opposition to IMT may be encountered where WUAs are seen as a return to a state farm system.
- Stakeholder involvement is an ongoing process.
- IMT should be flexible so that stakeholders can adjust and improve the programme as it develops.
- IMT needs to be a key component of an organisation's purpose and priorities to avoid it being sidelined by other concerns.

Training Issues

- Technical Assistance is required long term, with continuous updating of training.
- Adequate budget is required for training. This needs to be based on a structured, pertinent training plan designed to support IMT. If insufficient finance is available, consider curtailing the scope (eg areal extent) of IMT.
- Training, where part of a rehabilitation/improvement project should not be considered as an after-thought in the desire to get schemes constructed.
- Training programmes should recognise that many farmers may only have limited (and even no) previous experience of farming and thus have limited agricultural, management and business knowledge.
- Training may be necessary for some of the bulk water supplier employees where WUAs are formed. Bulk water supplier employees may also require training where the supplier is participating in IMT.
- Initial training by external trainers (training of trainers) is judged to be needed by local experts as local experience of IMT is still limited.

Legal Issues

- IMT programmes need to recognise that the legal framework required for successful IMT is not yet present in most Central Asian countries. This means either assisting in its development or understanding the limitations of the existing legal framework.
- IMT programmes need to recognise that land tenure arrangements are changing and tenure is not as secure as in many other countries.
- IMT programmes need to recognise that local bureaucracy and tax legislation is a disincentive to implement IMT.

Financial Issues

- When designing IMT programmes account should be taken of all WUA financing needs, including those for office start-up and initial years of operation.
- Support for WUAs for even basic office running is likely to be required due to lack of resources.
- Attracting qualified staff for WUAs is likely to be a problem.
- WUAs will require a source of business capital in order to thrive. Existing credit availability can

be limited.

- IMT programmes need to recognise the financial constraints that exist in the agricultural sector throughout Central Asia.
- Irrigation service fees may need to be a combination of volumetric pricing and standing charges to cover WUA costs.
- The aim should be for the IMT recipient to be in a financially stable position as soon as possible and preferably not reliant on any specifically-targeted subsidy. Time-limited financial support in the early years may facilitate this; whether this is as a loan or grant will depend on individual circumstances.

Engineering Issues

- The infrastructure that farmers are expected to take responsibility for should be an asset not a liability.
- Engineer into rehabilitation projects appropriate technology for affordable O&M cost.
- User (e.g. farmers and WUA) participation should be a priority.
- Governments and funding agencies should develop programmes for WUA led incremental and small scale rehabilitation works with contributions from both government and farmers as far is appropriate.

Monitoring and Evaluation

- A well-thought out monitoring and evaluation programme is essential.
- The programme should understand the likely limited reporting resources of the various organisations participating, whether WUAs, state organisations or whatever.
- Cross fertilisation of ideas between Central Asian countries and the development of contacts worldwide is important but there is a role for government and financing agencies to facilitate activities which individuals, WUAs or others cannot afford themselves, where for the general (national) good.

Part 2 Experiences of Transfer of Irrigation Management in Central Asia

9 Introduction to Part 2 Transfer Experiences in Central Asia

9.1 In-country Surveys

The in-country surveys were undertaken by local specialists based around a specially prepared questionnaire. The same questionnaire was used in all four countries. Initial results were reviewed, gaps identified and additional efforts made to plug these.

Evaluation of the survey results is presented item by item in the Appendices, considering the responses from all four countries together thereby identifying differences and common features. In the main text the material is summarised. Firstly, the part of the in-country survey covering national policy and experience is presented to provide the context for the subsequent literature review. This is then followed by the review of specific experience in IMT gained in the four countries.

9.2 Literature Review

The literature review presented in Chapter 11 has focused on experience obtained in Central Asia together with comparable situations elsewhere in the world. In doing this it was recognised that within Central Asia there are two, arguably three, forms of irrigation system:

- In some areas there are large irrigated areas which formerly were divided into large farming units – either kolkhozes or sovkhozes. In some regions, the framework of this farm structure persists with the result that water management has evolved from the former regime. Whether voluntary or not, this has resulted in a co-ordinated approach to water management and canal system maintenance. For these areas, there may be lessons on IMT arising from transfer of large, often modern formal irrigation systems, possibly as has occurred in places such as Mexico.
- On other areas there has been a radical change with the establishment of a mixture of many small farms (peasant farms) interspersed with larger farming units and co-operatives, which are both competing with their neighbours for resources as well as collaborating where this is seen to be mutually beneficial. Whilst lessons from the transfer of modern schemes may also apply here, there may also be useful insight from systems in South and South-east Asia where a large number of farmers have to be accommodated in irrigation system management.
- Hill systems which are generally relatively unsophisticated. Such systems tend to be relatively small – sometimes involving a single community. The management of such systems is probably less sensitive to the fragmentation of farming occurring in some steppe areas. Institutionally these may belong alongside either of the above; there may be some features (such as high maintenance of areas subject to siltation and mudslides) where experience in similar environments elsewhere has particular relevance.

Within each of these systems it should be understood that the organisational structures are still undergoing a period of change, both as market forces impact on structures set up following the collapse of the Soviet regime, and as necessity and opportunity provide alternative structures.

Sources used in the research include the websites of IWMI, INPIM, IPTRID, FAO, the World and Asian Development Banks, UNDP as well as documents produced by these bodies.

In parallel with the general literature review the discussions in the 2002 FAO/INPIM sponsored (supported by the Ford Foundation) International Email Conference on Irrigation Management Transfer have been monitored. This discussion showed how little information there was on the initiatives in Central Asia. Though a few participants were from FSU and former communist countries none were from Central Asia. Nevertheless, the conference provided useful material on the state of IMT worldwide.

The general literature review highlighted the relatively sparse literature available on IMT in Central Asia. Instead there is a tendency for the literature to concentrate on the large IMT programmes over the last ten years in countries such as Mexico, the Philippines and Turkey. The majority of literature takes the form of working papers and conference papers reporting on IMT programmes, with relatively little in the way of formal guidelines or handbooks on IMT.

The literature review takes the form of suggested reading and key websites for further information on IMT; a discussion of some of the key aspects of IMT, primarily using the email conference as a background and then a consideration of how the key principles apply to conditions in Central Asia.

10 Review of Policy and Institutional Circumstances Affecting IMT

This chapter looks at the environmental and institutional features prevailing in the Central Asian Republics that may affect the success of IMT. The chapter concentrates on national and macro-level matters. Table 10.1 summarises some of the key features affecting IMT in the CARs.

Table 10.1 Summary of Key Features Affecting IMT in the Central Asian Republics

	Kyrgyzstan	Tajikistan	Kazakhstan	Uzbekistan
High level political support	+++	+	++	+
Legal framework	+++	+	++	
Financial stability of agricultural sector	-	--	-	-
Type of irrigation and drainage infrastructure		-		+
Condition of irrigation and drainage infrastructure	-	-	-	-
Land tenure and water rights				
Tax status	-	-	-	-

- = negative impact on the sustainability of IMT

+ = positive impact on the sustainability of IMT

10.1 The Irrigated Areas: Physical and Organisational Features

10.1.1 Characteristics of Irrigated Areas

As irrigation in Central Asia is practised under a wide range of physical, geographical and organisational conditions there are few characteristics common across the region. Arguably, the single unifying aspect is the use of a common approach to designing and managing irrigation and farming systems at least since the Russian administration was established in the region at the end of the 19th Century. In fact, large centrally managed irrigation systems are a feature of Central Asian history that pre-date the arrival of the Russians. Nevertheless local differences are commonplace, adding to the diversity arising from the range of physical conditions. Thus we have:

- In Kyrgyzstan and Tajikistan irrigation is practised up to about 2 500 m above sea level; in the Amu Darya and Syrdarya deltas (Uzbekistan and Kazakhstan respectively) elevations are little more than 50 m above sea level.
- In the mountainous regions irrigation performance is limited by the short period of frost-free days (down to 5 months or so) and cool summers: consequently barley is a favoured crop. By contrast in northern Uzbekistan the winters may be cold (mean monthly minimum temperatures below freezing five months of the year) but the summers are still long and hot enough to grow rice and cotton.

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- Irrigation systems established in ancient times (such as the Khorezm oasis in Uzbekistan) which have been gradually modified over time but which retain the characteristics of small field sizes and winding supply channels.
 - Modern ‘engineered’ irrigation systems occur, such as those found on the Golodnye Steppe (Kazakhstan) and Chu valley (Kyrgyzstan). They often include water distribution via concrete canalettes, and are more likely to have formal drainage systems, including tubewell and buried horizontal pipe systems.
 - Surface irrigation is predominant, though some sprinkler systems are found (notably in Kyrgyzstan and Kazakhstan). Slowly, use of drip and sprinkler systems is being reintroduced, but due to the high initial capital investment and recurrent financial needs for operation and maintenance, the development is not significant in terms of area served.
 - During the Soviet period, virtually all irrigation was undertaken on state farms (sovkhozes) or collectives (kolkhozes). These units had up to around 7,000 ha under irrigation, with an average size of about 2,000 ha in many CARs, though farms as large as 15,000 ha are not unusual, particularly in Kazakhstan. Invariably the functions of agronomic and water management was a specialised activity, which was understood and undertaken by a few. Since independence in 1991 all states have moved to give greater autonomy to the farming communities. The pace and the challenges of agronomic change have been very different. For example Kyrgyzstan, and to a lesser extent Kazakhstan, swiftly reduced the state’s involvement in farming. Here, the farms have fragmented, generally with land being distributed among the former farm labour force. These new-found farmers have often had to learn new agronomic skills in a short time, as well as skills in managing an enterprise and dealing with the national organisations which were also undergoing transition. In Uzbekistan, large agricultural enterprises still remain in the form of shirkats - co-operatives which largely have taken over the farming within the boundaries of the former sovkhozes and kolkhozes. These benefit from some continuity of operation and retention of a skills-base but state controls considerably limit their flexibility in choosing cropping patterns.

10.1.2 Characteristics of Water Systems

During the Soviet period, the irrigation and drainage system within the sovkhoz and kolkhoz boundaries - termed the ‘on-farm’ systems - was the responsibility of the farm management. The supply canals and disposal drains were the responsibility of local, regional or national government, according to the infrastructure’s importance.

The major ‘engineered’ systems such as on Djizzak, Karshi and Golodnye Steppes were constructed in the past half century (with some development in the Tsarist period) while the older systems were developed around the deltas of the Zarafshan and Amu Darya or in the Ferghana valley. Predominately such areas have a shallow topographical gradient contrasting with the hill systems in Kyrgyzstan and Tajikistan (and peripheral areas in Kazakhstan and Uzbekistan), and form extensive contiguous irrigated areas. In such areas artificial drainage systems are often necessary, though arguably there is under-provision of such drainage. In Tajikistan and Kyrgyzstan there are small village based irrigation systems using flows diverted from mountain rivers. But there are also substantial ‘lowland’ irrigation systems similar to the large schemes found on the steppes of Uzbekistan and Kazakhstan.

Many systems have pumped components. In Kyrgyzstan and Tajikistan pump schemes are widespread: around 10 – 20 % of the irrigated area in Kyrgyzstan receives pumped water – with average static lift of about 100 m. In Uzbekistan major pump systems raise water to the Karshi Steppe and Bukhara oasis, from where water distribution is largely by gravity, while in the Amu Darya delta small capacity pumps lift water 3 m or so from the delta canals to feed on-farm systems directly. Extensive systems of vertical drainage wells are present in southern Kazakhstan with high energy and maintenance costs.

10.2 National Institutional and Policy Framework

10.2.1 Overview

During the past decade, the four countries have adopted different strategies regarding sustaining rural communities and the agricultural sector:

Table 10.2: Strategies for Sustaining Rural Communities and the Agricultural Sector

Support for irrigated agriculture	State officials are considerably involved in this in Uzbekistan whereas in Kyrgyzstan they are more distant. The civil disturbances in Tajikistan reduced direct state participation in some areas, though links are now much stronger, with the exception of autonomous regions. In Kazakhstan irrigated agriculture was outside government focus for a period but recently its importance has been recognised more.
Privatisation of agricultural land	All land remains the property of the states. Private entities can lease the land. Leases can be up to 50 to 99 years but (in Uzbekistan for example) can be for ten years or less. Security of tenure is weak. To date, selling or otherwise transferring leases is difficult or impossible (other than in Kazakhstan), though the lease may be bequeathed to heirs. Uzbekistan supports the continuation of large production units (though allowing much smaller farms to be established). Elsewhere, policy encourages fragmentation of the former sovkhozes and kolkhozes resulting in formation of many farms, generally of a size manageable by a single family. However, following fragmentation, re-consolidation of farms into larger units can occur either when joint stock companies or co-operatives are formed or when individual landholders become strong and take over land from others.
Controls on cropping patterns	Cropping is unregulated in Kyrgyzstan and Kazakhstan and wholly regulated in Tajikistan. In Uzbekistan farmers have to produce specified quantities of cotton, wheat and rice but thereafter are free to grow what they want.
Marketing	Crops in Tajikistan and cotton, wheat and rice quotas in Uzbekistan have to be sold to state agencies. Otherwise farmers can sell their produce freely. However, there is little support by national agencies (state or private) for marketing crops.
Credit	Obtaining credit is a common difficulty for many farmers. A problem particular to former Soviet countries is that without land ownership (and with limited other assets) farmers cannot put up collateral for loans. Thus short term credits for input supply or machinery is difficult. Credit for rehabilitation or maintenance is practically non-existent other than through international donors.

10.2.2 Policies on IMT

All four countries have developed strategies for IMT, though to date this focuses on the 'on-farm' systems of the former sovkhoz and kolkhoz. No concrete action has been taken for transferring into private management or ownership the management of bulk water supplies to the farm gate or drainage disposal from the farms. The exception is in Kazakhstan, predominantly South Kazakhstan, where inter-farm canals can be transferred under trust management to a Rural Consumer Cooperative (RCC) or federations of RCCs. This has been carried out within internationally funded rehabilitation projects. In Kyrgyzstan the process of transfer of ownership of the on-farm irrigation and drainage network is being undertaken. The WUA will be the owner of the infrastructure.

Only in Kyrgyzstan (though also recently (2003) in Kazakhstan) has a specific law covering water users' associations (WUAs) been enacted, though in the other countries WUAs have formed under existing legislation. This has caused problems where the legal definition and obligations of an association in general do not sit easily with the purpose and operation of a WUA. In Tajikistan legislation covering WUAs is under development.

In Kyrgyzstan and Kazakhstan farmers can formally associate as United Peasant Farms or Rural Consumer Co-operatives respectively instead of specific WUAs. Recent (April 2003) Rural Consumer Cooperative legislation in Kazakhstan makes particular reference to WUAs. In Uzbekistan private farms may in practice act co-operatively outside WUAs. These arrangements facilitate sharing of machinery and arranging input supply and marketing.

10.2.3 Factors of Change over the Last Fifteen Years

Up to the time when the Soviet Union broke up, the region's economies were expanding, with considerable investment in irrigation infrastructure. Russia and Siberia were important markets for agricultural produce.

The economic disruption following the political changes associated with the Soviet Union's abolition left Central Asia with much reduced internal and external markets while the inflow of funds to support and expand irrigated agriculture dried up.

Kazakhstan is emerging from this period with a real GDP growth rate of 12.2 % and per capita GDP of US\$ 5 900 (on a purchasing power parity basis) [CIA, 2002]. Tajikistan, which suffered considerable civil disorder, also now has respectable GDP growth (8.3%) but from a low base: per capita GDP is only US\$ 1 140. Kyrgyzstan is currently doing slightly better than Uzbekistan with per capita GDP of US\$ 2 800 and 5% growth compared with US\$ 2 500 and 3 % growth in the latter. It would appear that inflows into the countries' agriculture sectors somewhat mirrors the wider economy. Finance is increasing in Kazakhstan's agriculture but in Uzbekistan this is not (and as cotton comprises 41.5 % of Uzbekistan's export commodities there is a risk that the latter will remain an economic laggard for some time with a consequent impact on irrigated agriculture).

Agriculture remains a key industry in all countries, employing 60 % of Tajikistan's population, rather less in the more industrialised Uzbekistan (45%) and 20 % in Kazakhstan [CIA Factbook]. Nevertheless, in Tajikistan Kazakhstan and Kyrgyzstan the last decade has seen a decline in irrigated area (particularly associated with pumped water supplies) and crop yields. In Uzbekistan the irrigated area has remained essentially unchanged, though crop yields have declined (partially ascribed to water shortages).

In Kyrgyzstan shortly after independence state farms were re-organised into small family farms of around 2 ha size. In Kazakhstan similar changes occurred but land has often been consolidated in the hands of larger landholders, co-operatives and joint stock companies. Change has been very limited in Uzbekistan with the former state farms becoming farmer co-operatives (shirkats) but predominantly working the same land. Some small and family private farms have appeared but these are often dependent on the shirkats for water and services and frequently are located disadvantageously on the perimeter of the shirkat.

The removal of state control on cropping pattern choices in Kyrgyzstan and Kazakhstan has provided considerable opportunity for farmers, though this has been tempered by weak markets and a lack of marketing experience. It has also removed some security, though the straightened national economic circumstances would also do this somewhat – as experienced in Uzbekistan.

The consequence of the economic retrenchment has been a widespread deterioration of the irrigation and drainage infrastructure. This has been arrested piecemeal, principally through internationally-financed rehabilitation projects, notably in Kyrgyzstan (serving approaching half the irrigated area) and Kazakhstan (covering around 75 000 ha, or 3 % of the total), and in recent years in Tajikistan. To date there has been little concrete external investment in Uzbekistan and although recently there has been some improvement using national financing, overall this has had little impact.

There is anecdotal evidence of a substantial skill loss from irrigation. In Uzbekistan recruitment of young staff to manage canal systems is difficult as the wages and returns from other employment is superior. A similar situation persists in Kazakhstan. Thus compensating for the migration of skilled personnel (to patrial homes and elsewhere) is problematic. In Kyrgyzstan when the sovkhoses and kolkhozes fragmented, many specialists (such as vets and water managers) became general farmers, with the loss of their expertise to the wider farming community.

Institutional change is proceeding with the role of the state reducing particularly in Kyrgyzstan and Kazakhstan. In all countries the former state design and research institutes are continuing to work in agriculture but lack of finance is a constraint on their activities and performance.

The arrangements for social provision and support, inherited from the Soviet period, proved unsustainable in all countries. Whilst there is recovery in state provision, for example of free schooling, private sector provision is developing. There is a perception that social inequalities are widening appreciably (except perhaps in Tajikistan).

10.3 Experience of IMT

10.3.1 Overview

Whilst IMT has been advocated within Central Asia for much of the past decade, there has been relatively little tangible progress. The IMT that has occurred has been nearly always connected with a donor-financed project, of limited duration. When the project has stopped, IMT has halted and ailing WUAs have not been supported. Much experience has been gained in Kyrgyzstan where forming WUAs has been a primary focus of the On-farm Irrigation Project. However, as these WUAs have been in place for only a short time, it is unclear whether in their establishment the factors that will make them sustainable have been fully tackled. It is still an ongoing process and after the project finishes (2007) the Department of Water Resources (DWR) will continue the support to the WUA.

Kazakhstan also provides some valuable insights, with examples of both successes and failures arising from WUA formation over the past eight years. Tajikistan has had very limited experience with IMT, though a national-level framework for IMT is in place, whilst Uzbekistan is in the process of preparing for IMT. Thus, besides a few pilot systems there is little experience on which to draw for the following analysis.

10.3.2 Achievements and Disappointments

Given the general acceptance among policy makers through the region that in future water users' associations will be an essential part of the irrigation and drainage system management, there remains much to be done. IMT is proceeding at different rates among the four countries. Whilst some experiences elsewhere (see Literature

Review) indicate that rapid IMT brings with it success, there is no guarantee that this experience can be applied in Central Asia. The Central Asian governments are proceeding relatively cautiously, Uzbekistan in particular is seeking to avoid some of the hyperbole put forward by IMT advocates, and to determine independently the form and functions of WUAs. In the other countries IMT is part and parcel of other irrigation-related investment being supported by donors in the region, and may be overly driven by infrastructure rehabilitation project timetables.

Some 300 WUAs have been established in Kyrgyzstan, operating over 40 % of the irrigated area. WUAs have been widely established in the Kazakhstan irrigated areas since 1996, though only a small proportion continues to function. To date establishment of WUAs in Tajikistan has been restricted to systems where international finance has been injected (including 10 WUAs associated with a World Bank project and others where there is support from FAO and CARE): less than 5 % of the irrigated area has experienced any form of IMT. In Uzbekistan several quasi-WUAs have been formed on a pilot basis (including five in Khorezm and one in Ak Altin) as the government seeks an acceptable and appropriate form of IMT.

That some WUAs function poorly or collapse is to be expected. However, in the context of IMT being a policy objective, it must be disappointing that so many WUAs in Kazakhstan have failed. For the time being, there appears no concerted effort, other than as an adjunct to donor-supported intervention, to re-establish such WUAs (after having tackled the causes of their earlier demise). Such poor performance appears to be associated here (and in Kyrgyzstan) with organisational difficulties, including the apparent hijacking of the organisation by the senior officers and also a notion that WUAs are a vehicle to receive credit rather than having a wide range of responsibilities and potential benefits.

There is an ongoing process of re-registering WUAs in Kyrgyzstan (also in Romania and Georgia) and shortly in Tajikistan (and Azerbaijan). The re-registration is in response to new WUA laws but is also directly related to the fact that when many WUAs were formed initially they were a replication of the sovkhos and kolkhos models with a strong chairman running the association and deciding policy. Re-registration will involve re-writing charters to separate governance of the organisation from management of the service. Chairmen may then be faced with the decision to be a member (or chairman, if selected by the board) of the WUA Board (an unpaid position) or as a hired manager of the service (who could be dismissed).

10.4 Issues Affecting Implementation of IMT

10.4.1 Legal Issues

Only in Kyrgyzstan (though now also Kazakhstan) has legislation been introduced to specifically support IMT. A resolution on forming WUAs issued in 1997 was followed in 2002 by the 'Law on WUA'. In Tajikistan legislation is under preparation: IMT will be covered by a new Water Code, Civil Code and regulations on water charges. For several years, efforts to pass a law in Kazakhstan were unsuccessful: currently WUAs are formed as Rural Consumer Co-operatives (which are required to be not-for-profit organisations).

In Uzbekistan, it is possible to draw up a charter and bye-laws for WUAs, subject to the approval of the Tuman Khakim, under the 1992 law on 'Associations and Enterprises'. Nevertheless, preparations for a WUA law have commenced in Uzbekistan with suggested draft legislation, WUA charters and regulations placed with the judicial department of the Ministry of Agriculture and Water Resources.

In Kyrgyzstan, individual peasant farms may associate to form United Peasant Farms, whose activities can be water-related but are primarily formed for sharing of machinery, input supply, marketing, etc.

In Kazakhstan new legislation governing the formation and operation of Rural Consumer Co-operatives (RK Law No 404-11) was enacted on 8 April 2003. The law identifies legal entities and RCC activities. The RCC is a non-profit making service group of water users and legal entities having (using) commanded areas who have

voluntarily formed an association to take responsibility for operating and maintaining part of the irrigation and drainage network, associated hydro structures, works and equipment for agricultural needs. In accordance with the law the process of RCC formation and their organisation would be stipulated.

10.4.2 Taxation

In all the countries farmers are subject to a range of taxes, generally including VAT, land and property taxes, road and other social taxes.

In Kazakhstan there is an ongoing dispute on whether WUAs should pay VAT (focusing on the question of whether WUAs add value) and property tax (when in receipt of secondary canal management responsibilities – but not the ownership of the canal). This has been partially clarified by a law of 8 January 2003 on variations and additions to some legal documents including the Tax Code, The Presidential Decree effectual as the Privatisation law and the RCC Law. Primarily the tax code was changed, whereby tax preferences for investment and exemptions for land tax were extended for newly-operated property in investment project areas for more than five years.

In Kyrgyzstan, WUAs pay local taxes like the road tax but individual farmers are exempt several taxes including profit tax, road tax and emergency tax. In Kyrgyzstan the WUAs are supposed to pay 20 % VAT if their services exceed 300,000 Som (6,700 US\$).

In Tajikistan WUAs are liable to pay 17 national and 3 local taxes.

The position on WUA taxation in Uzbekistan is not clear: generally farm taxation is beyond the means of the farms to pay. There seems to be tacit acknowledgement that the low prices paid to farmers under State Orders in some way balances the non-payment of taxes by farmers.

Taxation remains a major issue because until Ministries of Finance and Tax Departments recognise WUAs as not-for-profit with tax exempt status it will be almost impossible for WUAs to function financially if they have to pay local and national taxes on top of their bulk water supply costs, operation and maintenance costs and rehabilitation repayment costs.

10.4.3 Financial Aspects

(i) Affecting Individual Farmers

In Kyrgyzstan there is no state control on the charges WUAs set their members, whereas in Kazakhstan the charges cannot exceed the limit set by the 'Anti-Monopoly Committee'. It is possible though that the WUAs apply for exemption of this rule by written request to the Anti-Monopoly Committee. Exemptions have been granted.

In all countries, the Government sets the charge payable to the bulk water supplier (generally payable through the WUAs where they exist).

In Uzbekistan low prices are paid by the government agencies receiving crops produced under the State Orders system.

Government supports O&M in Kyrgyzstan through subsidised electricity costs and a reduced rate for land tax in remote, impoverished parts of the country. There is negligible other state support for O&M activities. However, major repairs / rehabilitation may be undertaken or supported by the state, often in conjunction with a donor-supported project. In Kyrgyzstan and Kazakhstan the farmers may have to provide a contribution to loan

repayment. In Kyrgyzstan farmers on both the WB OIP project and the ADB Chui AADP project have paid 25 % of rehabilitation costs, with a 4 year grace period and payment over 3 years. In Kazakhstan farmers on the KIDIP project pay 70 % of rehabilitation costs, with a 5 year grace period and payment over 20 years. So far in Uzbekistan and Tajikistan farmer contributions have not become the norm.

In Uzbekistan where a state farm is undergoing restructuring a credit equivalent to 300 times the minimum salary may be provided by the state, for repayment over 24 months.

In Kazakhstan subsidies for water supply were approved by a Governmental Resolution of 6 February 2003 No.132 on Subsidies for Water Supply – 2003.

Generally there is little direct government financial support to individual farmers: in Kazakhstan, however, in response to high incidence of crop diseases (and an incident of locust infestation) the government provided some free pesticide and fertilisers.

(ii) Affecting Groups of Farmers and Water Users' Associations

WUAs are formally responsible for repaying loans received. In Tajikistan, for example, they are also supposed to pay the debts inherited from the former state farms in favour of other state bodies and suppliers. Inherited debts can be large amounts, which either WUAs or farmers would find impossible to pay. This has been a disincentive to formalise land tenure agreements in case old debts are uncovered. Some countries have recognised this and instituted an amnesty.

WUAs are also generally responsible for paying water charges to the bulk water supplier on behalf of their members. In Kazakhstan bulk water charges are set by the bulk water supply but moderated by an anti-monoploy commission, though there are very wide variations between raions. In Kyrgyzstan and Tajikistan charges are set by parliament and are significantly below real supply costs (about \$0.6 per 1000 m³ in Kyrgyzstan and about half that in Tajikistan).

Generally WUAs cannot obtain credit for O&M activities, though in Tajikistan they may seek micro-credits available for small and medium businesses.

10.4.4 Institutions for Irrigation and Drainage

The institutions responsible for the irrigation and drainage systems during the Soviet period largely remain in place, with limited restructuring and often with much reduced staff and other resources. Those formerly engaged in developing irrigated lands have generally switched to rehabilitation work. These organisations have broadly kept pace with the changes occurring in the irrigation sub-sector and adapted to suit somewhat. Often the changes are supported by donors, and in some cases with the donors (through external consultants) giving strong guidance. As farms have fragmented and new systems of organising irrigation and drainage services (such as IMT) are introduced, it is questionable whether the existing institutions (including oblast and raion organisations) have the capacity to respond appropriately to prevailing farmers' needs.

10.4.5 Participation by Foreign Organisations in IMT

Foreign organisations have played three roles in supporting IMT:

- Promoting IMT (particularly donors).
- Providing specialist procurement services (including associated studies, design and supervision of implementation) for rehabilitation works undertaken to support IMT.

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- Capacity building activities, including transferring knowledge concerning legislation and organisational arrangements (for example, how to organise WUAs, typical requirements of a WUA law).

Whilst the first has tended to be part of an organisation's long-running relation with local policy makers and specialists, the second two are invariably project-based, with a relatively short time-span. On completion of the project, follow up to support the IMT process is rare, except as a continuation of a similar (generally large-scale) project.

10.4.6 Institutional Constraints Affecting IMT

There will always be some problems in any change process; often these are resolved during implementation. In some cases problems are exacerbated by an unwillingness to support the IMT - perhaps of just a few front-line individuals, or through corporate bodies' (departments, local authorities, agriculture and water agencies, and tax departments) ignorance or objection to IMT on principle.

A perceived constraint on IMT is the need for 'projects' to be approved by several ministries, and for there to be formal environmental assessments. Arguably, such permissions should need to be obtained irrespective of whether IMT is to be implemented.

The considerable experience gained in Kyrgyzstan suggests some of the main problems with the implementation of IMT are:

- Lack of co-ordination in the establishment of WUAs: for example watershed boundaries were not always respected.
- Lack of qualified staff to manage the WUA, attributable to the low salaries the farmers are willing to pay for such staff.
- The farmers are not trained as farmers, lack of agricultural knowledge and therefore farm profitability is low or even negative.
- Lack of short term credits for input supply.
- The very small farm units in Kyrgyzstan reduce profitability and sustainability of irrigated agriculture.
- Lack of farm management skills.
- The agricultural sector is without money – de-capitalised.
- High taxes and inconsistent tax legislation.
- Marketing of produce and agro-processing facilities is extremely difficult.
- In rural areas there is a lack of alternative work: most of the people depend on agriculture, which results in inefficiencies affecting farm profitability through over-manning.

IMT in Uzbekistan is currently constrained by the lack of legislation, shortage of finance within agriculture and the continuation of State Orders together with low product prices.

10.4.7 Technical Constraints

Though land has been divided into small individual plots in much of Central Asia, in practice there is a complex mixture of small peasant farms, co-operatives and large farming units. With the irrigation and drainage system

still predominantly based around the land plots of the former state farms WUAs will tend to be composed of large numbers of farmers with widely differing land holdings.

10.4.8 Other Factors

Whilst the need for suitable legislation, taxation and credit arrangements is important in all countries, a need to improve the skills and competencies of farmers is seen as an important contribution to successful IMT. In Kazakhstan (which has undertaken considerable IMT activity), development of a nationwide support programme for IMT with sufficient funding was seen to be important, as was training of staff (using a combination of foreign and local specialists) involved in the initiation and follow up of IMT. This approach has been largely followed in Kyrgyzstan.

Unless farms are profitable, IMT will fail. Within Central Asia there is a perceived need to develop markets and marketing skills and also for complementary developments in the agro-processing sector. In Uzbekistan, privatisation of agriculture was identified as an important part of developing profitable farm enterprises.

In Kyrgyzstan, there is a view that many farms are currently too small to be viable (regardless of any IMT considerations).

11 Literature Review

11.1 Key Sources of Information

The literature review identified the following key references and sources of further information that would be useful for those involved in developing IMT in Central Asia and who are seeking greater detail of the processes and examples of how IMT has been implemented in other countries. The references and websites are in English:

11.1.1 Key Websites

Food and Agriculture Organisation of the United Nations (FAO) Land and Water Development Division website: <http://www.fao.org/ag/AGL/aglw/waterinstitutions/index.stm>

The site is a highly useful resource containing case studies, country profiles and links to key publications and suggested reading.

The World Bank website on Participatory Irrigation Management (PIM)

<http://www.worldbank.org/wbi/pimelg/index.htm>

This consists of an electronic learning guidebook: the Handbook on Participatory Irrigation Management, providing advice on how to implement and promote Participatory Irrigation Management at a country level. It is intended as a resource for task managers, staff of borrowing countries, irrigation managers, consultants, trainers, and NGOs. It covers implementation strategy, legal framework, organising processes, re-orientating agencies, financial aspects and the World Bank Institute training programme, country cases, lessons learnt. Though concerned with PIM rather than IMT there are cross cutting issues.

The International Network on Participatory Irrigation Management (INPIM): <http://www.inpim.org/>

INPIM is a non-profit [global network](#) promoting participatory irrigation and water resources management. The site contains latest news on Participatory Irrigation Management, country information, library, suggested reading and contacts with specialists/consultants.

The International Water Management Institute (IWMI) website: <http://www.cgiar.org/iwmi/>

IWMI is a non-profit scientific research organisation focusing on the sustainable use of water and land resources in agriculture and on the water needs of developing countries. As well as news and information the publications section of its website has a number of IMT related papers, primarily based on studies of schemes throughout the world.

11.1.2 Key Published References

In addition to the above, the following references are given as suggested reading. The majority of these references are available through the websites listed above:

International E-mail Conference on Irrigation Management Transfer (2002), FAO.

The proceedings from this FAO/INPIM sponsored International E-mail Conference on Irrigation Management Transfer is one of the primary sources of information used for the discussion in subsequent sections of this chapter. It provided an up-to-date global forum to identify and share key issues and lessons gained from experiences around the world on transferring the management of irrigation.

Transfer of Irrigation Management Services (1999), Vermillion, D, Sagadoy, J, FAO.

Guidelines to assist policy-makers, planners, technical assistance experts and other stakeholders to decide whether or not to adopt irrigation management transfer, and if so, how to formulate an effective programme. It distils the lessons from research and practical experience over the last decade in planning, implementing and evaluating irrigation management transfer programmes around the world. As such it should be considered as required reading for those involved in IMT.

Recent results from IIMI's Research Program on Irrigation Management Transfer (1997), Vermillion, D.

A rigorously conducted assessment of recent IMT in five countries to measure its success (or failure). The reference provides details of an IIMI study that objectively measured the success of IMT in delivering the key benefits claimed for IMT. Provides lessons learnt and information on what were the most common improvements experienced by farmers post-IMT.

Demand Management of Irrigation Systems through Users Participation (undated), Groenfeldt, D. and Sun, P.

A review of the aims and purposes of IMT with examples from Mexico and Turkey.

Transferring Irrigation Systems from the State to Users: Questions of Management, Authority and Ownership (1997), Groenfeldt, D.

Consideration of the transferring of property rights during management transfer.

State Administration Devolution and Water Markets in Irrigation Management (undated), Meinzen-Dick, R.

Explanation of why state run systems are not efficient and how IMT programmes have developed recently. Goes on to discuss water markets.

Managing irrigation systems in preparation for management transfer (2001), Abernethy, C.

Describes how staff in a government agency can proceed in preparing for a management transfer, so that the chances of success after the actual transfer will be maximised.

Impacts of Irrigation Management Transfer: A Review of the Evidence (1997), Vermillion, D.

Evaluates and summarises the evidence available of the impacts of IMT from an analysis of data from 29 studies world-wide. Concludes that though the evidence points to positive impacts more rigorous data collection and analysis is needed of schemes to assess the real impacts of IMT.

Participatory Irrigation Management: Benefits and Second Generation Problems (1997), Svendsen, M, Trava, J, Johnson, S.

Problems that have arisen over time after IMT with suggested solutions.

It should be noted that none of these references are available in Russian.

References to IMT world-wide tend to concentrate on a small number of countries where substantial programmes of IMT have been undertaken over the last 10 to 15 years, in particular Mexico, Philippines and Turkey, though also Chile, Nepal, Sri Lanka, Columbia, India. There are relatively few references concerning IMT in Central Asia. This can partly be accounted for because there has only been a relatively short period between the current time and the period following the collapse of the Soviet regime when organisations were in

turmoil. There have thus only been a relatively limited number of opportunities to implement IMT and insufficient time to report on successes and failures. Useful Central Asia specific references include:

Water Users' Associations in Kazakhstan: An Institutional Analysis (1998), Burger, R.

A useful reference giving a summary of conditions following the collapse of the Soviet regime, an analysis of the need for WUAs in Kazakhstan and their benefits, the problems facing their establishment and success and key recommendations for farmers and government. Required reading.

After the State Farm: A Water Users' Association in Kazakhstan (1998), S Rosen, J Strickland.

A study of probably the first WUA in Kazakhstan, the problems faced by it, highlighting the problems that are likely to be encountered by other similar organisations.

Economics of Water Users' Associations: The Case of Maktaraal Region, Southern Kazakhstan (1998), Johnson, S.

Examines the economic viability of the WUAs being set up in southern Kazakhstan and considers issues and recommendations for the future.

Lessons from the past: water management in Central Asia (2000), O'Hara, S.

Reviews historic water management strategies in Central Asia to suggest how water could be managed sustainably in the future.

Dashowuz Irrigation Management Study, (2000), Hutchens et al.

Based on a USAID mission to Turkmenistan, it sets out some of the conditions faced in the country and provides some useful appendices on IMT in general.

Of interest is also the experience of other former Communist countries:

Draft Paper for Participatory Irrigation Management (PIM), National Seminar in Albania.

A review of a programme to establish WUAs in Albania.

Participatory Management for Agricultural Water Control in Vietnam: Challenges and Opportunities (1997), Bruns, B.

Highlighting some of the issues concerning participatory management of O&M, considering both the current situation in Vietnam and generally applicable issues.

Though the International Email Conference on Irrigation Management Transfer had very limited contributions concerning Central Asia it nevertheless provided a highly useful summary of the state of knowledge of practitioners working in the field of IMT. With its discussion of the causes of success and failure of IMT in other countries it provided a benchmark for comparison of the situations experienced in Central Asia. It also provided a forum for an open discussion of the purposes and processes of IMT the applicability of which can be assessed for Central Asia. The Conference was divided into six themes and these themes provide a useful framework within which to discuss the findings of the literature review. The themes are:

1. IMT Policy and the Scope for Reform

Key issues concerning IMT policies, their objectives and motivations, processes of reform, requirements for success.

2. Organisational Change

Options and methods for changing the organisational structure of organisations involved in the irrigation sector, how to establish and organise WUAs.

3. Legislative Framework for IMT

The kinds of legislative frameworks needed to implement and sustain IMT, distribution of rights, authority and obligations.

4. Modernisation of Irrigation Infrastructure and Management Systems

Consideration of how modernisation can aid or hinder current and future IMT.

5. Support Services for Irrigation Systems and Irrigated Agriculture

The kinds of support services needed for WUAs after management transfer and the role of government in providing these services.

6. Financing Irrigation

How to finance the irrigation sector after transfer, budget preparation, fee systems.

11.2 Discussion

This discussion comprises two sources. One is the distillation of the ideas, opinions and information provided by participants in the International Email Conference on Irrigation Management Transfer and the other is information extracted from published journals and papers. The former is therefore a sounding of the views and experiences of many of the practitioners in the field of IMT (individuals from funding organisations, NGO's, research institutes and government irrigation authorities) often drawing on their own and others published references but also on their own practical experience. It also lacks a formal peer review other than comments by others on what has been written during the conference. The views arising in the conference have been summarised below and where possible backed up by reference to published literature.

In the discussion it has been attempted to draw out conclusions that are not region or social/economic condition specific but that can be applied to the IMT process in general.

11.2.1 IMT Policy and the Scope for Reform

Various contributors to the FAO email Conference put forward both the sceptic's arguments and the advocate's arguments for IMT: There is an apparent paradox in IMT. Whilst IMT aims to devolve responsibilities downwards (de-centralisation) to farmers, large irrigation systems tend to be organised in a hierarchical way which demand centralised decision making and technical expertise to run the system. There are therefore a number of fears in the minds of the decision makers that have to be overcome. One is that the authorities hitherto responsible for irrigation system management are concerned that IMT will reduce their relevance, and the skills available within the authority will be lost to the system management. To deliberately give up responsibilities to others is often difficult. The worry that farmers will be unable to manage a complex system is a real and valid fear. However the counter argument to the latter is that it is still possible with farmer led governing bodies to

provide necessary centralised decision making and to employ the technical expertise required to run and manage a complex system using a service organisation.

The objectives and purposes of IMT are not always clearly defined. It is often being pressed on national governments by donor agencies, NGOs and consultants as being the preferred model for irrigation systems. The reasons for this appear in part to stem from a global tendency to move towards deregulation, de-centralisation and privatisation of formerly state-controlled activities rather than a strict consideration of the benefits for stakeholders of a particular scheme. For national governments the financial benefit of IMT of a reduction in budget demands (by passing on the burden of O&M costs and irrigation management costs to non-government bodies) may over-ride considerations of the practicality of such transfers and the ability and willingness of farmers to accept the new system. Abernethy (1998) suggested that the objectives of transfer are:

- To reduce public expenditure.
- To improve irrigation performance.
- To enhance sustainability of irrigation systems and facilities.
- To conserve water resources and reduce resource consumption.

Bhattarai et al [2002] suggest that IMT can also reduce income inequality, partly as water distribution among WUA members is more equitable (with the tail-end farmers receiving a greater proportion of the available flow than in government-managed schemes).

Just as IMT is being pressed on governments it is also most frequently being imposed on farmers by the state rather than being sought by farmers, though there are examples of the bottom-up impetus for change. For example 150 WUAs were formed spontaneously in Kyrgyzstan with similar experience in north west Mexico where demands by farmers led to IMT. The impetus for change has commonly come from government budget crises and the state's consequent need to shed the responsibility for expenditure on irrigation system operation and maintenance.

Generally IMT has focused on relatively small management units, though there are examples (notably in North and Central America) where units of up to 77 000 ha have been transferred [Vermillion, 1997a].

Whilst IMT can provide increased motivation to farmers and in theory provide more efficient management of irrigation systems, this may not be enough. New responsibilities for farmers are merely drawbacks and additional costs if they do not result in better flexibility, maintenance and financial benefits. In addition transfer policies do not necessarily create self-reliance. It has been shown in some cases (Vermillion et al 2000) that the opposite occurs and organisations become more reliant on government bodies. The degree of self-reliance can be affected by the way in which the transfer programme is planned and implemented.

A study of IMT in Bangladesh (www.fao.org/landandwater/aglw/waterinstitutions/docs/Bangladesh.pdf) for example found that there were no clear benefits in terms of crop yields from IMT. Even in the case of what is considered an IMT success story, Mexico, a study by IWMI (Impact Assessment of Irrigation Management Transfer in the Alto Rio Lerma Irrigation District, Mexico, Kloezen et al) has shown that the increase in productivity as a consequence of IMT is marginal. However increased crop yields should not be seen as the main benefit of IMT. A major benefit can be the sustainability of irrigation and drainage systems that have been to all intents and purposes abandoned by governments. In the CARs governments did not provide support for on-farm systems, which without WUAs or other forms of organisation taking on operation and maintenance would deteriorate. In addition, R. Peter (FAO email Conference) suggests the benefits of IMT have to be seen from a wider perspective. This includes, stakeholder participation, better decision making, control of the resources, creating a platform for debate, improved cost recovery and water charge collection, improved maintenance of the system as well as enhanced accountability of the irrigation agencies to the farmers. From a government point of

view the benefits of IMT are to meet the demand for better management in the face of reducing government budgets and increasing O&M costs, and to avoid inefficient bureaucracies.

A benefit of IMT is sometimes claimed to be better use of natural resources (in particular water). However P Ridell (FAO email Conference) suggests that successful IMT is no guarantee of the sustainable use of natural resources. The devolution process may only provide a way of exploiting natural resources for short term agricultural productivity if the checks and balances are not provided to allow long term environmental sustainability to be taken account of.

The potential impacts of IMT on the primary stakeholders, farmers, the irrigation agency and government should be considered. Using experience from Mexico and Turkey as examples, Groenfeldt and Sun suggest the following potential impacts:

Table 11.1: Potential Impacts

Farmer Perspective	
Positive Impacts	Negative impacts
Sense of ownership	Higher costs
Increased transparency of processes	More time and effort required to manage
Greater accessibility to system personnel	Less disaster assistance
Improved maintenance	No assured rehabilitation assistance
Improved irrigation service	Less secure water right
Reduced conflict among users	Decreased agricultural productivity
Increased agricultural productivity	
Government Perspective	
Positive Impacts	Negative impacts
Reduced costs to government	Less direct control over cropping patterns
Greater farmers' satisfaction	Need to reduce staff levels, sometimes over union opposition
Reduced civil service staffing levels	Reduced ability to implement new agricultural policies through the irrigation agency
Reduced costs to the economy (greater economic efficiency)	
Irrigation Authority Perspective	
Positive Impacts	Negative impacts
Fewer conflicts to deal with	Reduced bureaucratic and political influence
Reduced operational involvement	Uncertainty over Agency role
New responsibilities	Reduced opportunity for funding
Reduced opportunity for rent seeking	Reduced control over water resources
Reduced political interference	
Reduced O&M staff levels	

Source: Demand Management of Irrigation Systems Through Users Participation, Groenfeldt, D, Sun, P,

Whilst the main positive impacts from the farmers' perspective are often intangible, such as a sense of ownership, reduced conflict, increased transparency in the irrigation process, the impacts are nonetheless real. The main negative impact will often be higher water costs.

For the national government the primary positive impact is often a reduced subsidy to agriculture and is often the main incentive for implementing IMT. Other positive but less obvious impacts can be the increased irrigated area and reductions in resource (water) use. The negative impact that is most keenly noted by the irrigation authority is the significant reduction in staff, particularly field and O&M staff, that occurs. For example, in Mexico 5 000 out of 7 000 irrigation staff were released, in the Philippines staff levels reduced from over 19 000 to under 11 000 after IMT (Groenfeldt, D, Sun, P). This can be a painful process and is coupled with the difficult process of the remaining staff adopting new roles of guidance, monitoring and technical support to the WUAs. However, as Vermillion notes [1997a], whilst under IMT the number of state employees engaged in managing the irrigation system falls, the number of people employed in managing the irrigation system does not change much (which is not to hide that individuals' terms of employment may have changed appreciably). For example experience in Columbia indicated that after IMT staffing levels by the WUA were similar as in the Irrigation Agency. However after IMT more staff were involved in O&M in the field with less involved in office based administration.

Some of the main reasons cited for failure of IMT schemes by contributors to the FAO email Conference (theme co-ordinators S Burchi, I Betlen), but also cited by some of the key references (e.g. Transfer of Irrigation Management Services) can be summarised as:

- **Reluctant national administrations.** There needs to be strong political will to make IMT work in order to mobilise the natural institutional inertia and reluctance to hand over power. Whilst pressure can be exerted from below by farmers or by staff in irrigation agencies, without high level support any move to change is likely to meet with opposition at the middle to senior professional and administrator levels, if not lower down the hierarchy.
- **Unclear ownership of infrastructure.** At a certain point in the irrigation systems, responsibility for the infrastructure passes from the irrigation authority to the farmer or farmer organisation. In IMT this division should be identified and understood by all stakeholders. It may also be necessary to transfer infrastructure ownership or responsibility during IMT. If stakeholders are not clear where their responsibility for infrastructure starts and ends then conflict is likely to arise and good operation and maintenance of systems is less likely. The conflict is more real, and harder to resolve, if the ownership of the infrastructure is open to interpretation.
- **Poor training.** The successful transfer of responsibilities requires future operators to have the knowledge, skills and attitudes needed to operate, manage and administer and finance the irrigation system. For example on an IMT scheme in Chad small scale farmer organisations were only given training in crop management but not water or financial management and so were poorly equipped to run the irrigation and administration side of their farming business.
- **Inappropriate irrigation scheme design.** The inherent design of an irrigation scheme can make it very unattractive for IMT. For example it may have high maintenance costs or it may be very inflexible in water allocation. Large scale schemes with high operating and maintenance costs can be particularly unattractive for subsistence farmers. IMT should not be seen as a way of offloading from the government such difficult and unattractive schemes (unless accompanied by effective measures to correct or compensate for the deficiencies).
- **Water rights issues.** Like ownership of infrastructure, water rights after IMT have to be understood by the stakeholders. The existing formal and informal water rights prior to IMT also have to be understood and taken account of when planning and implementing the IMT process.

Some of the reasons cited for success of IMT schemes (from the FAO email Conference; Abernethy, 2001; Vermillion, 1994) can be summarised as:

- **Schemes were considered as individual cases.** This meant that organisational structures were set up to suit a particular scheme rather than trying to force a scheme to fit a predetermined (inflexible) organisational structure.
- **Efforts were concentrated on management processes.** The new organisational structures require the stakeholders to adopt different roles and functions which all take time to learn and develop. Providing time and support for this made the difference between success and failure.
- **Cultural issues were taken into account.** Cultural issues are important and the methodology for IMT should be chosen to suit and build on the culture of the community. An example from India (Meinzen-Dick, 2000) is a study of the factors that would increase the likelihood of a WUA, once set up, continuing to be run. In the study the presence of a temple in the irrigation district was a good indicator that a WUA would be successful, as it provided a focal point for meeting and sorting out issues to be discussed.
- **The historical and political contexts are taken into account.** Like cultural issues, the historical context of water use must be considered as IMT programmes are developed, otherwise IMT can become a revolution rather than a process of change, with the negative impacts that sudden change can have. IMT is set within a cultural and historical context and in the context of other organisations and politics that affect the stakeholders.

The concept or proof of success can be considered in terms of simply the success in transfer of management. In which case success can be judged by the formation and ongoing operation of organisations which are genuinely independent, that choose their own objectives, that make and amend their own rules, select their own leaders, raise and spend their own funds and ensure rule-compliance through their own internal procedures (Abernethy, 2001). Or in summary, the organisation should become:

‘Self governing, self regulating and self supporting’

Pradhan & Bandaragoda (1997)

However, the proof of success can also be measured in terms of whether the perceived benefits or impacts of IMT have been achieved. Vermillion (1997) reports on the results of IIMI’s research programme on IMT which tested whether the following hypotheses were met:

- Irrigation management transfer (IMT) causes or occurs together with a reduction in government expenditure for operation and maintenance.
- Where farmers did not pay for O&M prior to IMT, the reform will significantly increase the cost of irrigation to farmers.
- IMT results in improved quality of irrigation service to farmers, defined in terms of adequacy and equity of water distribution.
- IMT supports the objective of more sustainable maintenance of irrigation infrastructure.
- IMT gradually results in higher agricultural productivity per unit of land and water (depending on which is the more scarce resource in a given context).
- IMT gradually results in higher economic productivity per unit of land and water (depending on which is the more scarce resource in a given context).
- Due to more cost efficient management and improving economic productivity after IMT, the cost of irrigation to farmers relative to gross value of output of irrigated agriculture will decline over time after IMT.

It can be argued that these are as much a test of the success of IMT as the success of individual schemes or programmes of transfer.

The prerequisites for successful IMT can be summarised (from contributions to the FAO email Conference) as:

- A clear IMT framework with no early withdrawal by government leading to a process of gradual change – or in other words, recognition is given that the process will take time and government has to commit to support process throughout.
- Open and transparent participation and consultation process with stakeholders.
- A clear legal framework defining roles and responsibilities.
- Land reform programmes may be a necessary precondition if active and effective WUAs are to be formed. Pradhan (FAO email Conference) noted his experience of the problems in Nigeria of successful transfer where land ownership was in the hands of government or communities and suggested that land reform was a pre-requisite in such cases.
- A resource base for the WUA eg water charges and other charges associated with the use of the infrastructure it manages, for example, fishing licences.
- A simple and clear process of implementation.
- Strong political will and commitment.
- Good physical condition of the infrastructure, without which farmers would be naturally reluctant to take over management of infrastructure that is a liability rather than an asset.
- Good training.
- Capacity building involving a post-transfer support programme for building technical, financial and administrative competence.
- A clear financing plan during the transfer period.
- Clearly understandable rules and regulations.
- Clearly defined roles for each body involved (government, agencies, and users).

The above are the common lessons learnt in countries which have had massive transfer programmes such as Mexico, Turkey and Andhra Pradesh (India).

Abernethy (2001) using examples from west Africa and south east Asia, proposes the following essential and desirable pre-requisites to IMT:

National policy

Essential:

- A law defining the status, governance, scope, and financing of irrigators' organisations.
- Political will and consistency in applying the transfer policy.

Desirable:

-
- A clear and secure system of water rights.
 - Laws and procedures that will be applied in case of bankruptcy or other organisational failure.

Local policy

Essential:

- Clear definition of ownership and responsibilities.
- Clear rules of membership.
- Consultation with all affected farmers to define their objectives; and assistance to them in drawing up a constitution that reflects some combination of government's and members' goals.
- Skill training in aspects of management, especially communication and record-keeping.
- Adequate initial capital.

Desirable:

- A secure water right for the irrigation system.
- A clear contract or level-of-service declaration (In larger systems where the government will continue to operate main system facilities).
- Appropriate infrastructure that the farmers can operate and maintain with minimal need for external skills.

R Peter (FAO email Conference) suggested the following stages for an IMT Programme based on his experience in Andhra Pradesh:

Stage one: Generate political support at the highest level – this is essential to provide the required motivation.

Stage two: Creating a favourable environment.

Stage three: Developing a legal frame work.

Stage four: Formation of farmers' organisations – WUAs and Distributory Committees.

Stage five: Implement the programme with clarity of roles of the farmers' organisation, irrigation authority and other government agencies.

Stage six: Capacity building of WUA, irrigation authority and other government agencies.

Stage seven: Ensure transparency, accountability in the working of farmers' organisations and social audit.

Stage eight: Monitoring and evaluation.

'IMT is not an end in itself but a prerequisite to a new approach in modern irrigation management to move towards a service orientated concept of irrigation.'

H Plusquellec, (FAO email Conference)

11.2.2 Organisational Change

R Bansal (FAO email Conference) notes that the key to organisational change is forward planning, with the following issues addressed beforehand:

- The role of the irrigation agency should be well defined in advance, as it will change substantially from a regulatory body to a facilitator.
- The organisational changes required for IMT will be particularly difficult for agencies that are bureaucratic and overburdened with past legacies.
- Irrigation agencies may have to refocus their technical expertise away from being engineering-orientated to being service orientated. This may include the need for expertise in the fields of sociology, environment, agriculture, agronomy, and economics in order to provide a high quality service to WUAs. Therefore, all these institutional arrangements must be taken into account and accepted before embarking upon the organisational changes.
- A campaign of involving all the stakeholders needs to be launched with workshops, seminars, meetings etc, including interactive sessions with agency staff to come up with the final plans for the change. Involvement of all stakeholders is more likely to succeed than a top-down approach as 'field level' stakeholders will have had more chance to commit themselves to the process and to have had a say in how it is carried out.
- WUAs have to decide upon their requirements so far as the structure of their particular organisation is concerned, but the guidance in the form of suggestions must come from agency staff.
- It is important to build in flexibility into the rules and structure of organisations so that they can adapt to changing circumstances, such as the need or desire to diversify.
- Where the staffing requirement of irrigation agency staff is less after IMT than before, the process of shedding staff should be considered well in advance and provisions made for it. Such arrangements might include a good package for voluntary retirements, golden handshakes, giving staff that leave the option of future employment, etc.

It should be borne in mind that IMT is most often imposed by the state on farmers. This may not necessarily encourage organisations to become self-reliant. In addition, for an organisation to be successful in whatever sphere, its members need a strong understanding of the objectives of the organisation and be keen to see that the objectives are achieved. There is therefore a danger that impetus and motivation may be lacking where transfer is enforced by the state and the objectives come from the state.

In the case of Andhra Pradesh, to generate broad based stakeholder support extensive consultations were held with farmers, irrigation agency staff, political parties, media and the different ministries of the Government over a period of nine months. The consultations identified key areas of intervention and defined the scope and form of the IMT. Initial rounds of consultation may not yield results however several rounds of consultations clearly identify pathways to reform.

IMT has tended to focus on the establishment of WUAs to operate and maintain irrigation systems. However this is not the only type of organisation that should be considered when planning IMT. In some cases, particularly large scale irrigation schemes, different organisational structures should be considered. On large scale schemes the existing organisational traditions between farmers may be poor, there may also be a low capacity to manage large scale infrastructure and the prevailing legislation may be inappropriate. Under these conditions private companies (as in the municipal water supply sector) may be an appropriate body to operate and manage the system with the state providing regulatory control and WUAs representing the users to ensure standards of service. Studies in Vietnam (an emerging, liberalised communist system) by the Japan International Co-operation Agency (JICA) show some diverse examples of successful organisations:

An example from Vietnam (by V. Anbumozhi, FAO email Conference):

In Vietnam (and also in Cambodia & Laos) generally, an irrigation management company is responsible for the O&M of each scheme from head works to tertiary canal. This company, or a subsidiary company dealing with part of a scheme makes a written contract for the provision of water with each agricultural co-operative/community. The co-operatives are significant organisations controlling farming activities, particularly in the north of Vietnam. Revenue for the O&M comes from several sources, but principally from the irrigation service fees (ISF), and to a lesser extent from the government. Individual households make contributions to co-operatives not only as ISF but also for communal improvements. These co-operatives also have a role in input supply, marketing and extension work. After Doi Moi or liberalisation, there is an increasing trend for farmers to operate independently, arranging for inputs & marketing. However, the co-operatives continue to contract the water rights with irrigation companies. The amount of ISF includes the amount required by the law, plus an additional amount set by the co-operative for improvement of local infrastructure. The total amount payable to the co-operative may be as much as 14% of crop production.

Example of experience from Macedonia of two WUAs (from W Boissevain and S Dimitrievic, FAO email Conference):

The WUA took at least 2 years to become established and to sort out their organisation and management. One WUA employed permanent staff to carry out repairs and cleaning. In the other WUA the farmers carried out repairs themselves. In return they received a reduction in water fees. Other repairs and new work are done after the irrigation season using surplus funds from water charges. The larger WUA employs 5 water masters each responsible for a tertiary gate. The smaller WUA is comprised of 10 groups of farmers. Water is allocated on a time basis with each group having 24 hours within a 10 day cycle. Within the 24 hour rotation each farmer is allocated a time share based on his irrigated area. These time shares can be traded between farmers and between groups of farmers. A flat fee per irrigated area is paid. A fee collector is employed for a month prior to the irrigation season. A receipt is issued to the farmer on payment which must be shown to the water master before irrigation is allowed. In the summer an inspection committee composed of farmers checks that irrigation is authorised and being carried out properly. The smaller WUG employs (on remuneration) a part-time treasurer throughout the year plus 1 full-time worker in the month of May for preparing irrigation contracts with the individual farmers. Farmers must declare their crop plan and pay the water fee to the treasurer after harvest of their crops. The full amount must be paid before the start of the next irrigation season. The spontaneous, self-organised WUAs demonstrate that farmers are able and willing to pay their full O&M costs, and even to make gradual improvements to the irrigation system. This in a country which suffers from poor economic and marketing conditions. The keys are probably (i) a shared sense of responsibility, (ii) adequate and timely delivery of irrigation water and (iii) strong social pressure to ensure payment for irrigation supply.

IMT can be a means of reducing inequalities of gender, poverty, ethnicity and water rights. However if not carefully taken into account during the development of the IMT programme it can reinforce inequalities, concentrating power in the hands of the already powerful. The impact of IMT on inequality should therefore be carefully thought through.

Successes in Japan can be linked to long term evolution of local community based organisations with internal rules and co-ordination mechanisms (by V. Anbumozhi, FAO email Conference). It seems that these have developed mainly organically into what would be considered to be a model of what is trying to be achieved in IMT. This reinforces the concept of gradual change and building on existing community organisational structures.

It is often the case that WUAs perform more functions than just irrigation and drainage management. They will sometimes be effectively farmer co-operatives. Multi-functionality of WUAs is an important issue but diversification has risks (Frederiksen and Vissia, 1998). Often WUAs have to diversify to ensure enough resource mobilisation (P Pradan, FAO email Conference). Common diversification activities include: input supply, marketing and provision of credit. Some organisations will adopt much wider activities such as forestry, fishing, crop processing, community activities and transportation. Examples of such diversification can be found for example in China. There are risks in diversification as O&M of water services are quite different from some of the commercial activities mentioned. However where the private sector is weak the diversification may be a temporary means of providing these activities until an active private sector can develop. Where co-operatives exist to perform some of these activities already then there seems less risk as the WUA element is incorporated into the co-operatives' responsibilities and thus the WUA is not being asked to perform activities for which it was not set up.

In many countries a prime motivation for WUAs is raising funds through water charges for operation and maintenance of the irrigation system. Experience from Kazakhstan (Burger, 1998) suggests a somewhat different role for WUAs: that of negotiating water deliveries with the water management authorities. Where formerly this would be carried out by a large collective farm, where farms have divided into many smaller units it can be difficult and impractical for each farmer to arrange his/her own water use.

WUAs after transfer are a type of business and should be viewed as such. Capital is often a forgotten factor for WUAs as an excess of income over expenditure may still not provide sufficient funds to provide adequate capital for the organisation to thrive. After transfer WUAs are independent organisations and as such carry the risk of failure like a business (Abernethy, 2001). The authorities involved in transfer must be aware of this risk and in fact the likelihood that some of the organisations that are set up will make mistakes will fall into debt and fail. The policy for such organisations must be delicate, it is important that irrigation system assets continue to be used even if the organisation fails. However bailing out failing organisations is a disincentive for the organisation to work to survive and by example is a disincentive for other similar organisations to work out their problems themselves and to prosper.

Recent studies by IWMI and others on the impact of the transfer of management on the performance of irrigation projects have shown a considerable improvement in the collection of water charges and therefore in the recovery of Operation and Maintenance costs (Vermillion, 1997). However, there is no strong evidence that the transfer has an impact on the use of water and agricultural productivity. It must also be borne in mind that farmers' organisations have rarely been strong enough to raise long term capital. This has serious implications for sustainable maintenance particularly for rehabilitation and major repairs.

'Social realities and power relations must be recognised in the WUA development process. It is thus long term, complex and messy and we should be prepared for a range of possible outcomes. It would be unwise to judge success or failure within a limited time-span. Even the successfully run WUAs have a long history of conflict before they turned into more stable functional organisations'.

K Puspa Raj, (FAO email Conference)

11.2.3 Legislative Framework for IMT

Because of the nature of the obligations on the various stakeholders, an appropriate legislative framework is required for IMT to be successful. Often new legislation will be required to ensure that IMT can be carried out within the laws of a country and that the WUAs established have the legal powers to operate. Past experience suggests that to be successful, legislation for WUAs should include at least the following (S Burchi and I Betlen, FAO email Conference and Vermillion, 1997):

1. Legal status for the WUA

A WUA should have full legal standing and be recognised by the state. This means it should have access to the courts, have the authority to enter into contracts, own assets, have a bank account, have rights of way, have the authority to define what the irrigation service should be, have the authority to determine the O&M plan and budget and be able to hire and dismiss staff. Without all these powers a WUA may not be able to function properly.

2. Eligibility for membership

The criteria for membership of a WUA should be clear and acceptable to those involved. Consideration is needed on how wide and inclusive membership should be. There can be advantages in making membership inclusive to include all those benefiting from the water supply and having an interest in the functions of the WUA in order to make the organisation more effective. However there may be a need to restrict membership or voting rights to those who invest in construction and accept the rules and statutes of the organisation. Appropriate membership and voting rights also need to be considered in terms of the relationship between owners and tenants. Membership criteria should be developed on the basis of local concepts of fairness and the different costs, benefits and rights (to land, water and infrastructure) of the stakeholders.

3. Internal structure of a WUA

A WUA would usually be formally established by the adoption of a statute (or constitution or articles of association) and bye-laws. The statute describes the basis of authority for the WUA and its purpose and internal structure. The statute should define the criteria for membership in the WUA and the basic rights and obligations of members of the WUA. The bye-laws go into more detail about specific rules, procedures and sanctions.

4. Financing WUAs

Legislation should allow WUAs to levy charges on their members and other water users for water services. Where countries have constitutions that contain provisions that water is a free public good, governments may avoid contradicting basic law by charging for the water service, not the water itself. Accounting is a common weakness in WUAs after IMT and it may be advisable that legislation specifies accounting procedures and audits in detail to ensure adequate checks and balances are present.

5. Enforcement

WUAs should have the powers to sanctions their members and other water users in the case of non-payment, or non-performance of required tasks, or breaking of rules.

6. Integration into water resource organisations

WUAs should have the forum to defend their interests at river basin and national levels by being represented on bodies that have the political power to effect water resource allocation and use. This also allows them to monitor other water users to see if they conform to water use agreements and also allows them to be able to negotiate as water use changes and allocations are redefined/reallocated.

Burger (1998) provides some useful recommendations for policy makers and government officials on the above matters (written for Kazakhstan, but applicable to other former Soviet countries), including tax issues and the issue of careful consideration of voting rights to reduce the risk of power being concentrated in the hands of the few.

The role of the irrigation agency (or responsible ministry and its departments) will need to be re-defined by the legislation. A frequent weakness of IMT policies is the lack of a clear policy about where the future

responsibility to finance rehabilitation and improvement of irrigation schemes lies, with the government or with the farmers.

It is important to decide and clearly identify which elements of the irrigation infrastructure responsibility will be passed from government to WUA (Groenfeldt, undated). For example in the past a single (government) authority may have been responsible for an on-river dam and irrigation intake structure. After IMT the dam may remain the responsibility of the river basin authority but responsibility for the intake structure is passed to the WUA. There can be reluctance from both parties to transfer ownership. The state takes the view that the system is a public asset for which public funds have been used to construct and maintain it in the past, and thus to transfer it to private individuals could be considered to be a waste of state revenues. (Indeed, in some jurisdictions the action may be illegal without specific legislation authorising the transfer.)

There can also be reluctance because of the risk that the assets will not be managed well by the new and untested organisation. There may then either be no recourse to take back the assets or the assets will be returned in an even worse condition than if the state had continued to manage them. Farmers can also be reluctant to take on ownership of a system, particularly one in poor repair, as it will be a liability rather than an asset. Programmes that require users to contribute to investment in the infrastructure such as modernisation or rehabilitation schemes as a precondition to gaining rights over the infrastructure or water can help to overcome these concerns. In these cases the investment is not solely from the state, the users demonstrate an ability to contribute to system maintenance and the infrastructure will be improved so that it is an asset rather than a liability.

Whilst considering issues of legislation related to IMT the following should also be considered:

- Is IMT part of a larger agricultural reform package?
- Other water resource issues may need to be/should be considered as part of the IMT package, such as drainage, groundwater, discharges to watercourses, effluents and other environmental issues.

It may be difficult to establish legal backing for water rights for WUAs and this has proved difficult in many countries. However there are tradable water rights in some countries – United States and Chile (Meinzen-Dick, undated). Most water basin systems will have complex and conflicting uses, sometimes with water rights established through historical precedence or based on old, poorly defined or out-of-date legislation. This makes the establishment of allocation rules or water rights difficult as part of the IMT process. Instead attention may be focused on establishing WUA entitlements. In this sense IMT is about empowering WUAs to set out their needs and to negotiate with other water users about water resource allocation. It should be noted that agriculture can be low down the resource allocation priority as it tends to yield lower economic returns per cubic metre than other uses, such as industry. Only after control of allocation and distribution has matured is it realistic to move from entitlements to rights underpinned by legal recourse (F Molle, FAO email Conference).

With the right to charge members for the water service comes the potential for members seeking compensation for failure of the service. In practice this is difficult to achieve and a more likely outcome if service delivery is persistently inadequate is that users will default on payments and organisations will be disbanded/discredited (F Molle, FAO email Conference).

‘A legal framework is strongly required within the policy context of IMT. It symbolises the political recognition from the national administration and thus to a certain extent the high level political support towards water users organisation as a formal stakeholder in the irrigation context... However, water users groups, as all other organisations, depend also on their internal dynamics, their actual capabilities to direct, discuss, negotiate and cope with certain problems and conflicts. While it is important for the group to be recognised as a formal, legal organisation, this should not overshadow its actual organisational functioning.’

D Suhardiman, (FAO email Conference)

11.2.4 Modernisation of Irrigation Infrastructure and Management Systems

IMT is often tied in with a capital scheme to modernise, rehabilitate or extend an irrigation system. Whilst IMT can correct organisational problems of a system such as administrative, institutional and relational problems it should be borne in mind that it can rarely rectify problems with existing infrastructure. Problems may include inflexibility, inequality in water distribution, high operation and maintenance costs and complex operation. With current irrigation projects often taking the form of low cost rehabilitation of existing systems there may not be significant opportunities to correct deficiencies in the original system design. Where initial repairs, rehabilitation or modernisation has not focused on reducing these deficiencies such as high future maintenance costs, the resulting scheme has often failed to produce the expected results.

There remains an issue about how to deal with systems that in the Soviet era were maintained by state funding but that appear uneconomic under a market economy. To rehabilitate and modernise such systems will never see a return on investment so either users will be faced with problems paying O&M costs or the state will continue to have a burden placed on it to pay these costs (S Johnson, FAO email Conference). However a recent study by the World Bank (Bucknall et al, 2003) suggests that the problem of uneconomic schemes may be less widespread than generally thought, and that subsidising uneconomical schemes may be cheaper than using financial incentives to soften the social impact of failure of unsupported schemes.

To reduce the risk of WUAs being presented at the end of a modernisation or rehabilitation project with an inflexible or high cost scheme that is inappropriate to their needs it is important that such projects should concentrate on a service-orientated approach (Vermillion & Sagaroy, 1999). This means that the end users must be involved at the start in strategic development of the project. Without this approach the problems inherent in the original scheme may continue through into the new system making it unattractive for users to take on its running. Involvement of the operators and experience of management of the system are therefore a key part of project development. This means a move towards the design of structures that allow flexible operating strategies, a move away from standard designs where they do not meet the farmers' needs and the involvement of operators in design. Other aspects include the use of off-the-shelf robust components and software and gradual implementation of improvements to de-centralisation of water management and to increase the robustness, reliability and equity of distribution. Incremental rehabilitation can often be more efficient than a large wholesale rehabilitation of a large area (T Facon, FAO email Conference).

Though IMT is often part of a modernisation or rehabilitation programme, it may also be initiated by changes in water resource management or changes to water allocations. The provision of enabling technology to provide better and timelier information means that water management can be improved which can be the driver for change. An example from the United States is the Sevier River Water Users' Association in central Utah (www.sevierriver.org). They have put information on water resource allocation and basic SCADA information online, this, along with low cost gate automation has led to water users wanting improved water management and to them implementing changes. This fits with a philosophy of gradual upgrade and retro-fitting of irrigation systems and has worked elsewhere in the US. Another example where rehabilitation was carried out after IMT is Mexico, which is considered to have one of the most successful IMT programmes.

Improvements to low water use efficiency are often the key requirements for infrastructure modernisation or rehabilitation. Three primary tools are available: infrastructure improvements, improved irrigation methods and changes to water use administration.

Rehabilitation and improvement of an irrigation system does not have to come before IMT. A case can be made for either to come first. The case for IMT first is that because farmers will be more closely involved in the improvement scheme, particularly where they have to pay a proportion of the costs, it encourages the design of a realistic system that can be maintained at appropriate levels of investment. The case for improvements first is that without a functioning system in good condition farmers will be reluctant to take over responsibility for what will for them be a liability rather than an asset.

Performance monitoring is often seen in terms of water delivery however one of the main justifications for governments to support institutional reform in O&M may be in the hope of encouraging better, more efficient maintenance, trying to escape cycles of under-investment in maintenance, neglect, rapid deterioration, consequent poor service and expensive premature rehabilitation. One method of performance monitoring would be to assess whether the backlog of maintenance work is increasing or decreasing. This can be as straightforward as a walkover inspection to see if the system is deteriorating or for complex systems could include a range of indicators such as sediment depths. It is important to monitor whether institutional reforms are delivering more optimal investment in maintenance, not just improved water delivery or crop yields. More details on performance monitoring can be found in Guide to Monitoring and Evaluation of Irrigation Management Transfer (Vermillion, 2000).

Integrated management of surface and groundwater irrigation sources together with drainage provision is important. Without integration, water management problems can develop as conflicts over scarce resources or their quality can occur. Also if not managed in an integrated way then use of groundwater may provide irrigation authorities with an excuse not to manage and maintain its surface systems. Even (as in many cases) where groundwater supplies have a substantially higher cost than surface water they are preferred by users because it offers improvements in service and autonomy of management (G van Halsema, FAO email Conference).

Some experiences of a gradual modernisation programme in the United States (C Burt, FAO email Conference):

A key to modernisation is to start with small straightforward works that are bound to succeed before attempting more elaborate works. This might involve, for example, reviewing or modifying operating rules or modifications to regulators to give more flexibility. If the first works are seen to work and provide benefits then the next stage of modernisation is more likely to be accepted and implemented. This also helps to spread the word of modernisation to others in the district and to other districts. There will almost always be a section of the community involved who are reluctant to modernise. Quick successes will quieten these voices of dissent. However if there is very strong objection to modernisation it is often better to avoid a difficult and prolonged fight and concentrate resources in other districts and let the process of word of mouth change people's minds.

There are many examples worldwide of failures in attempting to introduce computer systems not only in the agricultural sector but also in many other sectors (health, finance etc). The introduction of computer systems may therefore be better at some stage down the line of modernisation rather than at the start. There must also be an acceptance that their use eg of SCADA systems will require a long term commitment to training and upgrading.

The benefits of irrigation system modernisation are not restricted to the irrigators. For example, improved water use and modern water delivery systems can reduce demand on water resources and drainage provision with environmental and economic benefits. Such benefits can be more appreciated and relevant to the wider community than to the farmers. In such circumstances, it is important that farmers do not individually bear a disproportionate cost of any modernisation.

It should be noted that interest in wide scale modernisation will almost always come first from government organisations rather than WUAs. This is because farmers concentrate on the day-to-day problems of running their farms and may not have the knowledge of the options that could be available for modernisation. Individuals will often have difficulty researching options; promoting modernisation among fellow irrigators may be time consuming. Without knowledge of modernisation options it is difficult or impossible to have the vision to seek modernisation.

‘Trying to start and sustain a WUA without providing the farmers fiscal responsibility and opportunities, and without providing equitable and reliable water delivery service to the WUA is like asking any one of us to join a service club that provides no service, and only costs money to join, and almost no one attends.’

C Burt, (FAO email Conference)

11.2.5 Support Services for Irrigation Systems and Irrigated Agriculture

The importance of training and support services is recognised as an important element of an IMT programme, however, even so there is generally a preference for funds to be channelled towards physical infrastructure with training programmes allocated only a small proportion of funds and not considered in detail. Because it is often carried out by NGOs rather than government bodies there is generally little published information available to help those wanting to set up a training programme and avoid mistakes made by others in the past (M Kay, FAO email Conference). However an IFAD and FAO led initiative aims to publish a review of IMT training undertaken in recent years which may be of value to others preparing training initiatives.

IMT training will tend to be one of the primary routes for developing attitudes to the new roles that the parties will have to adopt after organisational changes. This should be borne in mind when designing a training programme. The new roles will require not only new skills and knowledge but also new attitudes. A training programme should address all three. K Blok (FAO email Conference) suggested the following key questions to ask of a training programme:

Who to train?

There tends to be two key parties in IMT, those passing on irrigation management responsibilities and those receiving it. Both of these parties will need training in their new roles. For staff in the irrigation authority this may mean training in assuming a facilitator’s role, whilst for farmers it may mean training in resource utilisation. The programme should assist in developing the new relationship between these parties.

What to train?

The new roles of the two parties will require new skills and competencies, such as bookkeeping, budgeting, and preparation of maintenance schedules. However in addition the training needs to develop new competencies i.e. new behaviour to match their new roles.

Some important areas of training for WUAs are (R Peter, FAO email Conference):

- legal aspects – rules, regulations etc.
- administrative aspects – writing of a minutes registers, cash book and day to day transactions.
- financial and accounting training – to maintain the cash book, list of water charges collected and remitted in the Bank account etc.
- water management.
- inventory management.
- monitoring and evaluation methods with special reference to beneficiary evaluation methods.
- levy and collection of water charges.

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- booking of offences and levying of penalties.
 - principles of negotiations and conduct of general body and other meetings.
 - use of computer and information technology for day to day functioning, water distribution scheduling and management information.

How to train

Training methods for knowledge and skills transfer are well established. Methods for attitude or behaviour development are less well established and subtler to implement.

It is important to provide time for follow up after implementation as though at the start it may appear that full training has been given, it is only by using the system over a longer period that problems and questions become apparent.

An example of experiences from Peru of a technical assistance programme (J Sagardoy, FAO email Conference and Kay, 2001):

There were two elements to the programme: an awareness programme and an in-service training programme. The awareness programme was a series of workshops for the irrigation committee to make them aware of the importance of paying water charges and the importance of their participation in issues that leaders of the committees are involved in. The key objectives of the workshops were:

- *To raise awareness among users regarding their rights and obligations as water users.*
- *To highlight the importance of the water fees to the operation and maintenance plans.*
- *To encourage the preparation of a budget based upon the rehabilitation of the irrigation infrastructure.*
- *To establish a schedule of all management activities together with performance indicators.*
- *To establish water fee payment programmes in order to match the required resources to undertake the activities scheduled.*

The workshop included a walk over inspection of irrigation and drainage infrastructure to identify problems and then to use that within the workshop for participants to develop a programme and budget for maintenance.

The in-service training programme involved seconding NGO staff to water users' association bodies for a period (up to 12 months). The training programme was divided into three phases: briefing (1 month), preparative (5 months), and operational (12 months). The briefing phase included a diagnosis of the users' committees defining their training needs and the corresponding training plans. The operational phase included training in seven main aspects:

1. *Rules for Operation and Maintenance*
2. *Cropping patterns*
3. *Water delivery plans*
4. *Control system through water measurement*

5. *Maintenance plans*

6. *Systems to calculate and collect fees*

7. *Capacity building*

The training programme included a monitoring system that allowed evaluation of the progress made in each of the seven aspects. For each of these, each user's committee proposed specific goals.

A case study abstracted from a review of training initiatives in IMT (Kay, 2001) provides further details, using Peru as an example, of how training can be an effective component of IMT.

Governments can fund training in more imaginative ways than just on the back of an infrastructure improvement project, with the aim of offering users a more flexible range of options for training. This should allow users to decide what they want training in, and to give a wider choice of training. For example this could include subsidised grants, vouchers or allowing choice from a menu of qualified service providers (government agencies, educational institutions, private sector, NGOs, farmer-to-farmer training by WUAs, etc) who are then reimbursed by government (B Bruns, FAO email Conference).

'the training component is often asked to carry the weight of the organisational changes underpinning the IMT. In the design of a training programme one should take this into account.'

K Blok, (FAO email Conference)

11.2.6 Financing Irrigation

M Svendsen (FAO email Conference) posed some key questions for the financing of irrigation:

- Should direct beneficiaries of irrigation investments (farmers, landholders) pay the full cost of providing irrigation service?
- How can irrigation charging systems create positive incentives for:
 - effective service provision by the provider?
 - efficient use of water by irrigators?
 - sound investment decisions in constructing new irrigation systems and rehabilitating old ones?
- How can fees be appropriately assessed and successfully collected from farmers receiving water from an irrigation service provider?
- What realistic and workable mechanisms are available to ensure competent and honest handling of WUA finances?

Service agreements are increasingly used as a method of transition to service orientated irrigation agencies and subsequent management transfer. A service agreement consists of two elements; transactions and accountability (T Facon, FAO email Conference). A service agreement should include:

- Specification of service to be provided.
- Amount and form of payment of service by users.

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- Monitoring procedures to verify whether services are provided as agreed.
 - Liability to both parties for not fulfilling the agreement.
 - Relevant authority to settle conflicts.
 - Procedure for reviewing and updating the service agreement.

Accountability mechanisms are important otherwise the agreement becomes simply a statement of what each party intends to do with no come back and little obligation to fulfil it. Mechanisms include:

- Operational accountability: monitoring, evaluating, controlling and enforcing.
- Strategic accountability: mechanisms that users have to control the formulation of the service agreement.
- Constitutional accountability: mechanisms by which users can influence the strategic decision making process of the organisation.

Refer to Transfer of Irrigation Management Services FAO, 2001 and Vermillion and Sagardoy (1999) for further information.

Volumetric charging for water use is considered to be the best method of water pricing in an ideal situation as it should encourage the more efficient use of water. However there are acknowledged to be problems adopting this in practice particularly for smallholdings where the cost of efficiently and reliably measuring the amount of water used can exceed the cost of water supply. In some cases partial volumetric charging is used where water charging has been applied to an area of land for which a WUA is responsible and the WUA has to pay for volumetric water use with the WUA recovering costs from its members. This however just shifts the burden of water measurement to the WUA, which can be over-burdensome for it. However simple and flexible quasi-volumetric charging is applied in many countries by irrigating on a rotation or time basis. This is straightforward, transparent and still encourages water saving by rewarding those who use less water.

It is considered critical by many that basic O&M costs are recovered. In this respect it is important to consider the size of each irrigation system as different system management and financing will be appropriate depending on the size and types of holdings. For example, small 100 – 300 ha holdings such as in Indonesia, Thailand and the Philippines manage the system at village level, often with payment in kind and the use of direct labour. Larger systems of 3000 to 30 000 ha such as in Kyrgyzstan, Mexico and Colombia require cash to pay technical staff costs to give a higher level of management expertise. Economies of scale are often needed for small WUA because to be able to afford to improve the technical management of their systems they need to employ technical/professional staff but do not have the resources. By combining into area or regional WUA bodies they can share such costs.

Consideration needs to be given as to whether the WUA is a voluntary or a paid organisation. If the whole of the work of the WUA is voluntary then participation in the often difficult and time consuming tasks will be abandoned after a period of time when the initial enthusiasm as died down. A better method appears to be to make membership of ‘the board’ a voluntary contribution as this is the part that sets policy and has power and therefore there is some personal interest in being involved.

There is beginning to be a feeling that one way of generating better incentives for rehabilitation is to gradually move away from large one off rehabilitation projects towards a more gradual, incremental rehabilitation using a decentralised process. Large investments from externally funded agencies can often overwhelm local capacity. It encourages recipients to sign up to cost sharing commitments that in the future they will seek to avoid. With many rehabilitation projects involving a series of small scale works it allows funding using smaller tranches of money spread over a longer period. This creates a pattern of an ongoing relationship between WUA and

government bodies over a period of time. This can promote learning, organisational development and resource mobilisation on a scale more in keeping with the farmers' capacities (B Bruns, FAO email Conference).

With IMT being driven in some cases by the State's inability to fund sustainable O&M leading to a poor service, all parties must be open to the idea that improved O&M whether from state or WUA will only be possible through increased funding, whether this is from increased water charges or some form of state subsidies. In countries such as China, Mexico and Turkey that have instituted successful IMT this funding has come from increased irrigation service charges paid by the users (S Johnson, FAO email Conference). There are basic minimum costs to operate and maintain systems in a sustainable manner. If these costs are not met for example because water charges are kept low then the cycle of deferred maintenance, systems falling into disrepair and then borrowing from development to rehabilitate will not be broken.

'Organisations, including in some cases INPIM and donor agency staff, have attempted to sell IMT by arguing IMT will result in improved O&M with a decrease in costs to the State as well as the users. If the reason IMT is needed in the first place is that O&M is under-funded, it is illogical to think you can pay even less by simply creating a local organisation and turning all O&M responsibility to them!'

S.Johnson, (FAO email conference)

11.3 Summary of Key Factors Pertinent to IMT in Central Asia

Organised programmes of IMT are still young in Central Asia with the oldest WUA only being founded about 7 years ago. The withdrawal of state involvement and subsidy in agriculture following the collapse of the Soviet regime can be considered as a form of forced management transfer including that of irrigation. During this period, throughout the region agricultural output has plummeted, though is now recovering. The reasons for this are many, and are more to do with the general economic dislocation than with poorly implemented IMT. Planned IMT programmes that are now being implemented, mainly through donor funded projects, are in their early stages and it is too early to determine their long term success. There is currently therefore a unique window of opportunity to consider the experiences of IMT in other countries and assess how the lessons learnt can be applied to the countries in Central Asia, whether to facilitate better structuring and start up of IMT programmes, or to highlight actions needed during the early years of IMT, to give a better outcome. This section considers how the success and failure mentioned above and the pre-requisites for successful IMT can be applied to Central Asia, drawing on the limited Central Asia specific references, and from other sections of this report.

Earlier sections set out the pre-requisites for successful IMT. The limited references from Central Asia and local experiences described in Chapters 10 and 11 would suggest that many of the pre-requisites are not currently in place. Therefore any IMT programme will need to proceed with caution either to develop conditions such that the pre-requisites are achieved or to understand where IMT may not yet be appropriate under the current conditions. Unless this is done failure is likely and the lessons learnt from other countries will have been wasted to the detriment of those grinding out a living from the land.

11.3.1 Legal and Financial Issues

- **WUA Legislation**

A clear legal framework for WUAs is repeated by many references (eg Vermillion, 1997) as a key requirement for successful IMT. Many Central Asian countries are in the process of redrafting legislation to allow WUAs or similar forms of co-operative organisations to exist. Reference should be made to Section 11.2.3 for the minimum requirements for such legislation (as proposed by Vermillion, 1997). In summary it should include:

- Full legal standing.

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- Clear and acceptable criteria for membership.
 - WUA Statutes and bye-laws.
 - Levy raising powers.
 - Enforcement powers.
 - Representation for WUAs on water resources bodies.

In addition it is important that the legislation allows WUAs to disband and re-structure as experience suggests that there is a general tendency for WUAs to combine.

Although little mentioned in the literature, regulation of WUAs must be addressed. This includes ensuring that they conform to statutory requirements; discharge their obligations in terms of water deliveries, maintain infrastructure in a condition consistent with the terms of the IMT handover; and observe legal obligations. Some elements of this regulation are best achieved through applications of the general legal system. However, the establishment of an independent regulator (or adjudicator) with powers of enforcement is an alternative, particularly when concerned with technical issues. The irrigation agency, or ministry may have a role. In Kyrgyzstan the WUA law contains a clause creating a WUA Regulatory Authority. This responsibility has been assigned by the Government to the Department of Water Resources, who in turn has assigned it to the Central WUA Support Unit. Similar units also exist in Armenia and Georgia, with another being created in Azerbaijan. Each country has chosen to assign the role to a different Government office.

Included within this legal framework are issues of tax liability such as property and business tax (refer to Burger 1998). Burger (1998) also noted that in the WUA in southern Kazakhstan there seemed to be only vague fee-collecting and non-payment provisions and the WUA only came to appreciate the importance of such WUA rules and regulations when problems arose. Insufficient attention to voting structures was also mentioned as an issue that required closer attention in future programmes.

It is also important that such legislation makes it simple and straightforward to establish and run WUAs. Evidence presented in Chapter 10, and also by Burger (1998) and Rosen & Strickland (1998), suggests that the legal status of farm organisations is often confused and given the historically bureaucratic nature of governments in the region combining into a WUA different forms of farm ownership such as peasant farms and co-operatives can be difficult. For example Burger (1998) notes that in Kazakhstan, WUAs have been set up making use of legislation for the establishment of Rural User Co-operatives rather than specifically aimed at WUAs, which has presented problems.

Another point rarely dealt with in the literature is the legislation and WUA statutes. Bye-laws should also cover arrangements for disbanding WUAs where the WUA is operationally defunct (for whatever reason). The closure of a WUA should not be undertaken lightly but the legal arrangements should recognise that there may be occasions where this provides the most satisfactory long-term arrangement. Related to this, there need to be appropriate arrangements should a WUA be bankrupt to allow for restructuring, refinancing or, if necessary, liquidation.

A part of the required clear and acceptable criteria for WUA membership is for there to be reasonable arrangements for a member to leave the WUA should he choose to, provided that he agrees to forego the rights and benefits of membership. Similarly, members should not fear losing their membership forcibly, provided that they meet their obligations to the WUA.

- **Land and water rights, ownership of infrastructure**

Land reform was noted in Section 12.2.1 as a pre-requisite for IMT where land is currently in the hands of the government or communities. This is particularly pertinent to Central Asia where land reforms are underway but

in general current land laws only allow leasing from the State (land use rights) rather than ownership and where inheritance rights are often not secure. This may be a significant risk to the establishment of successful WUAs. Without such secure rights there will be a lack of incentive for investment as there are still concerns that land will be taken off farmers. It also makes the provision of collateral for loans difficult. The lack of sense of ownership does not encourage the concept of self sufficiency either. This also has an impact on maintenance of the irrigation system: if the land and irrigation system is state owned then the corollary is that the state should pay to maintain and improve it.

- **Cost recovery and resource base**

Hard cash appears to be a major problem confronting WUAs in Central Asia after they have been established (Rosen and Strickland, 1998), particularly for smaller peasant farms rather than the larger agricultural co-operatives. In order to function WUAs must be able to levy charges on their members, both in the legal sense and practically. With agricultural commodities (power, pesticides, fuels, water etc) frequently transacted on a barter basis in Central Asia, WUAs will have to overcome the practical problems of fee collection.

- **WUAs are businesses needing capital**

It was noted in the FAO email Conference that WUAs have often been left with no financial support once their initial structure has been set up. This problem was also noted by Rosen & Strickland (1998) for a WUA in Southern Kazakhstan. Without initial capital WUAs will often find it is only possible to just cover their recurrent costs and be unable to raise capital (by fees or loans) and thus will find it hard to prosper. Government officials, donors and NGOs must be aware of the risks of not providing adequate financial resources to WUAs when designing IMT programmes.

11.3.2 Political and Social Issues

- **Political will**

The starting point for IMT is strong political commitment. Without it IMT will be slow and difficult to implement. In a number of countries, e.g. Mexico, the impetus for IMT has come from a financial crisis in the government being unable and increasingly unwilling to provide budgets for irrigation operation and maintenance (Kloezen et al). These sorts of financial pressures are being felt by all governments in Central Asia, which means that there are incentives for governments to embrace IMT. For example, from local experience, after a number of years of neglect the Kazakhstan government has come to see the importance of agriculture to the economy and its society and has over the last few years encouraged the agricultural sector. The conditions are therefore right for strong political support and commitment to implement IMT.

- **Realistic view of purpose and impacts**

The evidence presented by the references in the above sections, particularly the contributions to the FAO email Conference, is that IMT is a difficult, long term process with the risk of failure. To avoid discrediting the process by highlighting failures the promoting authorities must be clear of the purpose of IMT and realistic about the likely scope of its impacts. Vermillion (1997) provides some words of caution on the impacts of IMT.

It must be appreciated that however good the environment for IMT, some WUAs will fail. The challenge is to both minimise the number that do so, and to have arrangements in place that actively facilitate establishment of viable replacements.

- **Work within social and historical context**

Successful IMT in other countries seems to have worked with the existing social structures and organisations of the country – building on existing community participation for example. While it seems sensible to apply the

principle in Central Asia, there are few highly relevant examples to follow as the social and historical contexts differ significantly from many other countries where IMT has been implemented. Perhaps the closest social/historical comparisons can be made with IMT in Albania and Bulgaria (Shahriari, 1996). Burger (1998) reports on some of the contexts as they apply to Kazakhstan, though similar contexts can be found elsewhere in Central Asia. In summary:

Private farmers who have only recently become established may be suspicious of WUAs as a form of re-collectivisation, which threatens to take away from the individuals the results of their enterprise and distribute it, without compensation, among the local community. This may be particularly prevalent where private farmers are still heavily dependent on the large scale farms for access to irrigation and machinery. Conversely other farmers may see the WUA as a collective and have unrealistic expectations of it – such as a source of social benefits, credit etc.

IMT is concerned with the de-centralisation of power which runs counter to practices prior to independence. There must therefore be an awareness that there is a considerable legacy of centralisation in the mind sets of people which will slow down reforms. This includes a reluctance to challenge authority or to easily conceive of organisational structures that are not command driven. The organisational structure of farms is one example of this with many farms retaining the state farm structure with power held by former farm managers. This presents the very real danger that the formation of WUAs will further concentrate power in the hands of an entrenched few. In many cases, people like former state farm managers have considerable expertise that could be used to good effect within WUAs. In the long-term, however, the future of the WUA will depend on the leading officials being credible representatives and servants of the WUA membership.

The experience of farmers in CAR differs significantly from those in many other countries that are implementing IMT. In particular, many farmers with previous experience on state farms have experience of a specific type of work, for example tractor operation, but may not have experience of all farmers' tasks. Many farmers have also started working the land with no previous experience.

On the positive side there is still social cohesion in farming communities from the days of state farm systems and this can be built upon to encourage the co-operation necessary to establish and run WUAs.

Overall the key lesson to be drawn is that the social and historical context should be considered on a case by case basis and to avoid uncritically using a blueprint for WUA organisations from another country or even from a different oblast or different irrigation system.

11.3.3 Technical Issues

- **Condition and sustainability of infrastructure**

For IMT to be attractive to farmers, the infrastructure that they take responsibility for must be in an acceptable condition, it must be flexible enough to be operated and must not have excessive maintenance demands. Otherwise farmers are being asked to take on a liability rather than an asset and few will be keen to do so.

Following the collapse of the Soviet Union, investment in infrastructure plummeted and the quality of infrastructure and maintenance fell significantly (Burger, 1998). The legacy of this in many countries is poor quality infrastructure with a serious backlog of maintenance. It therefore seems unrealistic to expect IMT to occur successfully in Central Asia unless it goes hand in hand with a rehabilitation or modernisation programme.

A number of irrigation schemes may be uneconomic to operate and maintain. The question of what to do with these schemes is a complex and difficult political and social problem (refer to Bucknall et al, 2003). However it is clear that transfer of these uneconomic schemes to WUAs will only lead to the collapse of the WUAs.

- **Rehabilitation and modernisation should meet farmer needs**

A criticism of past rehabilitation and modernisation schemes is that their design perpetuates hierarchical irrigation systems with overly complex operating rules requiring irrigation engineers to manage it and not meeting the real needs of farmers in terms of flexibility of supply. IMT puts future operation and maintenance in the hands of the farmers, either directly, or as employers of the irrigation system managers. Farmers therefore need to be fully integrated into the planning and design process. This process should be service orientated to meet the needs of the farmers rather than imposing a system on them.

This will require a change in the way a rehabilitation programme is implemented, a change in the mind sets of people involved in irrigation design and a change in the designs themselves (for example, moving away from Soviet Standards and Norms where these do not allow the design of a flexible system).

11.3.4 Organisational Issues

- **Reorganisation of Irrigation Authority**

IMT will result in great upheavals for the irrigation authority which is in effect the authority promoting the change. The roles and purposes of the organisation will change to a more service-orientated organisation. The relinquishing of power following transfer of responsibilities and the rightsizing of the organisation both require careful planning.

The role of the irrigation authority in future regulation, or in providing services (informational or technical) to the WUAs needs to be ascertained and appropriate resourcing arrangements made.

- **Capacity building and training**

With the change in roles and purposes of the irrigation authority comes the need for training in new skills. As already noted, K Blok (FAO email Conference) makes the point that training needs to be not just aimed at skills and knowledge transfer but also attitude or behavioural development so irrigation authority staff can take on their new roles. The aspects of training highlighted by R Peter, listed above are as relevant in Central Asia as elsewhere.

Training and capacity building is a long term process requiring long term inputs. This needs to be recognised and taken account of in an IMT programme to overcome the problem that many loan packages (for rehabilitation, for example) are working to a shorter timescale.

Though training is recognised as an essential element of an IMT/rehabilitation programme and often bears the burden of the implementation of institutional change, there is a tendency (identified in the FAO email Conference) in practice for training to be the neglected part of the programme. This is possibly because those involved are keen to see physical results (new pump stations and such like), but may also be because in cost terms it is usually a small percentage of the total costs. The lessons learnt from IMT in other countries are therefore that a conscious effort is required to allocate sufficient resources and to develop a sound training/development programme covering a sufficient period of time.

- **Monitoring and Evaluation**

IMT is an ongoing and developing process. Only by monitoring and evaluating performance can reliable lessons be learnt and fed back into the development of IMT. Vermillion (1997a&b) puts the case for monitoring and evaluation of the impacts of IMT as well as highlighting the lack of monitoring that has generally been carried out. Both this reference and the FAO's Transfer of Irrigation Management Services (2001) give recommendations on what indicators should be included in a monitoring programme.

12 Specific Experience with IMT

12.1 Introduction

This section reviews the case studies undertaken in four countries in Central Asia, and draws on individual experience of the consultants.

Whilst in all four countries the state is backing introduction of IMT, the purpose is not necessarily clearly understood by all those involved in the process. It would appear that there are the following objectives, which are accorded different priorities according to location and the responsibilities of those concerned:

- To retain a functional irrigation and drainage system, avoiding abandoning previously irrigated areas.
- To mobilise private sector resources (as cash or as in-kind labour) to fill the funding gap between what is required to retain operating systems and what the state can currently support from its own resources or via international financing agencies.
- To provide an organisational framework to succeed the arrangements for operating and maintaining the irrigation and drainage systems that operated during the Soviet Union. The emphasis for the moment is on the systems within the former kolkhoz and sovkhoz boundaries.
- To privatise parts of the irrigation and drainage system operation and day-to-day maintenance.
- To involve the users (customers) in managing some or all of the systems supplying and distributing water.
- To involve users in planning the future form of the irrigation systems and developing their commitment to partially fund improvements (or restoration).
- To introduce arrangements which will prevent failure of irrigation and drainage systems such that significant impoverishment of the community served is avoided.

There is overlap between the above, but each can be seen to separately encompass different concepts.

12.2 The Process of Implementing IMT

12.2.1 The Factors Leading to IMT

For Kazakhstan and Kyrgyzstan the most important factor that led to IMT was that the organisational form of the farming enterprises changed. The former state and co-operative farms were suddenly transformed into other types of farming operations. Organisation of O&M of the water infrastructure was left in a vacuum. The lack of financial resources to support the existing organisational structures fuelled the transfer of responsibilities to the water users.

Uzbekistan and Tajikistan are now working towards re-organisation of the arrangements of the agricultural sector and water infrastructure. In the case of Uzbekistan this is occurring slowly, partly as in common with other socio-economic changes, there is an understandable reluctance to embrace radical changes which may have unpredictable consequences. Nevertheless, it is recognised that the current organisational arrangements are difficult to sustain and that the IMT process is being trumpeted by the main donors.

12.2.2 The Factors Enabling IMT Implementation

The change in organisation of the agricultural enterprises, the liberalisation of cropping patterns and the freedom to market the agricultural produce, enabled the new 'farmers' to run their own business in Kyrgyzstan and Kazakhstan. The former on-farm irrigation infrastructure was without management organisation, so the farmers had to organise themselves to ensure their water supply. These new organisations can be formal as well as informal.

Changes in legislation in Kyrgyzstan have aided the implementation of IMT by formalising the procedure for establishing WUAs and by defining their legal position. In Kazakhstan legislation on rural co-operatives has aided IMT implementation but in this case the legal framework is less clear.

12.2.3 Willingness of Stakeholders

The farmers in Kazakhstan and Kyrgyzstan had no choice other than to organise themselves. The bulk water suppliers were not able to deliver service to individual farmers in the fragmented farms because they were overwhelmed by the dramatic increase in the number of 'water clients'. The bulk water supplier used to deliver irrigation water to the head intake of the former state farm; the farm management being responsible thereafter.

In Tajikistan it would seem the farmers are positive to IMT as they see this potentially will give more secure, reliable water supplies. The situation is more mixed in Uzbekistan, partly as the IMT concept is not widely comprehended, but also as the viability of their farms is a more pressing concern for the irrigators and there is a fear that IMT will be an additional burden.

The bulk water provider had, and often still has mixed feelings. The lack of a clear plan setting out the anticipated roles of the organisation has made the future uncertain. The positive effect of IMT is that part of the water charges levied are to pay for salaries of the bulk water supplier staff, so they have an incentive to deliver water.

The Governments are willing to implement IMT, because the former system was not sustainable anymore, it is a logical consequence of liberalisation of agriculture. At oblast and raion level there is a fair amount of support but it can be more variable by country and region. Within the Oblvodkhoz and Raivodkhoz support is variable as they may see their role change. The move to WUAs is seen as giving administrative and financial benefits as Raivodkhoz can move from arranging contracts, supplying and trying to collect fees from a large number of small farmers to dealing with a single WUA. However when IMT moves further upstream to secondary and main canals the management and staff may view this as a threat or an opportunity, depending on the details of the local proposals on implementing IMT.

12.2.4 Resistance Experienced to IMT

There has been and still is resistance towards IMT. Local authorities and branch offices of the tax department are noted for this, though suspicions over the general impacts of IMT and the details of implementation are probably widely held. This is attributed to a lack of understanding of the aims and potential benefits of IMT, absence of clear guidelines as well as the fact that farmer based organisations are perceived as a threat to existing power structures.

Having clear and transparent procedures gives all the stakeholders the possibility to participate in a constructive way to overcome such resistance.

There has also been some (initial) resistance from farmers who saw the creation of WUAs as a disguise for reintroducing a form of collective farming, from which they had only recently gained independence.

12.2.5 Significance of Political Support for Implementing IMT

In all four countries the state supports the principle of IMT. At a detailed level the strength of this support is somewhat diminished for reasons including:

- Differences in views among state-employed professionals overseeing implementing IMT as to the form of the final arrangements.
- Concern over future role of organisations formerly engaged in bulk water supply (for example the raivodkhoz in one country, when the issue of possible federation of WUAs to manage bulk water supplies was raised).
- Concern over the abilities of farmers to form sustainable WUAs. Some professionals foresee the need for extensive coaching for the farmers to become effective managers of the irrigation and drainage systems. Whilst this is true, the main issue is that the resources for such coaching can be very limited.

It is clearly important to achieve arrangements that provide the basis for making IMT permanent (though flexible to changing circumstances in the future) and the concerns noted above have led to protracted attempts to introduce suitable laws governing the function and operation of WUAs.

WUAs would not form in a hostile political environment. Experience in Kyrgyzstan and Kazakhstan demonstrates that where there is a compelling need for informal associations to form, they will. Where the driving rationale for IMT lies with reducing government expenditure on the irrigation systems, political support (among all levels of government) for IMT is essential. The inability of politicians to deliver a workable and relevant legal environment hinders further development of the IMT process.

12.2.6 Effect of National Policies on the Form of IMT

Whilst all four states have a policy for the development of water users' associations, implementation of the policy has tended to suffer from an over-optimistic view on how easily and quickly the policies could be introduced. Probably the most significant oversight is in providing adequate longer-term funding for the programme.

All four states have provided support programmes. In Kazakhstan and Kyrgyzstan, the support consisted of local institutes providing guidance. In the case of Kyrgyzstan the local institutions were initially trained by an ADB funded project (1997, 1998), currently followed up by a WB project that will run up to 2007. In the case of Kazakhstan no fundamental training was provided. The guidance provided to the future WUA members was given during the first year or two, after that the support was withdrawn (for financing reasons, presumably). However on an ongoing ADB funded project (WRMLIP) several training courses and two overseas study tours have been carried out.

After the withdrawal of support, many of the WUAs or other organisations experienced difficulties in continuing their operations. As a result, while theoretically a large number of WUAs exist, in reality many of these are very weak and some are almost non-functional organisations.

12.2.7 Participation in the IMT Process

Participation by those to whom the irrigation management is to be transferred is essential for effective IMT. To ensure participation of the farmers, democratic procedures have been widely introduced^{3,4}, notably in voting for

³The role of potential donors is probably instrumental here.

senior WUA officers and arrangements for providing accountability to the membership. However, it is not possible to just implement a 'blueprint' of procedures taken from elsewhere.

Traditionally in many parts of Central Asia the most important people in a community are the community group of 'wise men' (Aksakal). They take the important decisions for the community. Even during the Soviet Union period, the Aksakal played a fundamental role. To achieve results with IMT, the Aksakal (or any equivalent) need to be deeply involved. They will decide if and how things will go ahead. They will probably not be involved in the day-to-day operations of a WUA, but the Aksakal will help to decide who will be involved in the WUA. The community respects the decisions of the Aksakal and will implement their proposals.

The participation of the local authorities is also fundamental for the success of a WUA. If there is no support from the authorities – or if there is resistance, life will be made very difficult for the organisation.

As WUAs are community-based organisations; key relevant entities in the community need to be involved in the IMT process. This means engaging existing formal and informal groups rather than exclusively focusing on individuals. However, there are risks involved where village leaders take so much control that it is difficult for the WUA to function. This was reported to be a problem in Armenia. This was overcome only when WUAs were made larger and cut across village boundaries so no single mayor or council could take control.

The bulk water suppliers are inevitably involved. They play a very important, indirect role in facilitating the WUA establishment and WUA running because close liaison between the organisations is essential. If IMT is well prepared, the bulk water supplier can play a very important and constructive role. They have skilled specialists, machinery and equipment. In the South Kazakhstan Oblast, some of the workforce that had to be laid off is now being employed by the WUA. In Kyrgyzstan staff of the Bulk Water Supplier and Local Authorities are also engaged in the WUA. This can clearly be beneficial, as these people know the water systems so they can ensure proper operation⁵ as long as funds are being made available. Attention must be given to the fact that the WUAs are farmer based organisations. The situation should be avoided where the Bulk Water Supplier and Local Authorities staff take control over the WUA.

12.2.8 Role of External Facilitators

Facilitators external to the farming community are the main initiators of IMT. At a primary level these can be ministries and donors, with IMT being carried to the farming community by local organisations as described before, as well as international consultants through projects. When IMT is first initiated, it often comes with a lot of resources for training and support. After some years, the external facilitators are withdrawn on the presumption that the communities have gained the expertise to continue the development, but this assumption is questionable: in Kazakhstan and Kyrgyzstan lack of continuing training and support was cited as an issue adversely impacting on WUA sustainability. This is because the WUA development process is likely to take more time than the external facilitator's presence. Elsewhere there is evidence (Vermillion et al, 2000) that this results in significant disruption in the process. However it should be noted that the IMT programme in Kyrgyzstan does include the formation of WUA Support Units at Ministry, oblvodkhoz and raivodkhoz levels. This is reported to be successful with the government twice requesting the number at raion level to be expanded. It should be noted that the Support Units are located in all oblasts and not confined to areas where rehabilitation projects were planned. The system is designed for WUA Support to be permanent units within the Department of Water Resources.

⁴ Whilst some might argue this is a good thing to do, this is not necessarily so where the 'citizenry' do not have the experience to provide the moral framework for the democratic processes to function properly. Possibly other arrangements might be as effective in gaining the support of the farmers.

⁵ Worldwide experience indicates that under IMT while there is a significant reduction in the number of state employees, the total number of people involved in managing the irrigation system does not fall very much [Vermillion, 1997a]

It is fairly commonplace that members of the established local power structures influence the IMT initiatives as they think appropriate⁶.

Much of the farming population is used to following a lead from local decision makers rather than making commercial and agronomic decisions based on their needs and perceptions. There is negligible experience of democratic procedures and, broadly, in defending their own rights. Consequently many are perhaps too easily influenced by senior and well-established members of the community. There is a lack of self confidence among the farming community.

The Aksakal have a fundamental role in all matters related to the WUA. Without their approval, nothing will happen. This has not been foreseen in any WUA charters or bye-laws, although in reality, these are the people that play a major role. However there are risks of the WUA being hijacked by those with power.

External facilitators are needed for longer time periods until IMT is well established. In this way there will be more time to integrate the past with the future and ensure that all stakeholders have a well defined role to play.

12.3 Experience to Date

12.3.1 Involvement of Participants in Development of IMT Structure

Without exception, farmers are confronted with a model provided by state organisations. The farmers have little opportunity to participate in the development of the process structure itself. Although the model and legal framework are often incomplete, the process has been and continues to be implemented.

In all four countries there are many outstanding issues to be resolved, like specific law, role of tax authorities and which taxes to pay and which not, the influence of local authorities and courts in the allocation of canals to WUAs.

Many of the problems are caused by unclear regulations, as well as a lack of communication from central to raion level and back. The issues are known, but from the central government level, apparently little clarification is forthcoming. There are probably many reasons for this, including difficulties in drafting regulations acceptable to all interested parties, inexperience in communicating with field level stakeholders, and perhaps a difficulty in appreciating the impact of the lack of clarity.

Overall, the opportunity to involve participants in development of the IMT process is missed. An adverse by-product of this is the lack of feedback which could identify potential improvements.

12.3.2 Infrastructure and Ownership

In most cases the major canals and reservoirs are state owned and operated.

In some instances the secondary canals have been transferred to WUAs. The infrastructure remains state owned, but the WUA can be given a so-called 'Trust Management Transfer'. For example some inter-farm canals in the WRMLIP area (Kazakhstan) have been transferred under trust management.

The tertiary and lower level canals used to belong to the state farms (sovkhoz) or kolkhoz (the 'on-farm' systems). In the case of Kyrgyzstan and Kazakhstan these state farms do not exist anymore and the land is now

⁶ This fact of life presents an opportunity and should not be considered to be a threat! The implication is that the membership of this group should be convinced of the merits of IMT and their suggestions taken into account and captured to make the IMT work.

under direct farmer control. In Kyrgyzstan the WUA will soon be able to receive ownership of the on-farm water infrastructure as an indivisible asset. However there remains a legal question whether the state can transfer infrastructure assets on former kolkhoz farms to WUAs since the infrastructure belongs to former members. In Kazakhstan the on-farm infrastructure does now belong to the farmers. The farmers in their turn can donate the on-farm infrastructure to their WUA; the concept of indivisibility of the infrastructure is not so clear in this case.

It is desirable for these WUAs to be based on a hydraulic unit. In reality, to date it often happens that the command area of a WUA is not based on a hydraulic unit, but on a social group unit. This means that within a hydraulic unit there might be more than one WUA which then requires these to act co-operatively.

In Uzbekistan the kolkhozes and sovkhozes have been replaced by non-state farms. The largest farm type is a shirkat – a co-operative venture which has generally taken over the role of the sovkhoz and kolkhoz in operating the ‘on-farm’ irrigation and drainage systems. Where there are smaller farms (dekhan and private farms) these in the main rely on the shirkat management to operate the systems. The shirkats may have a lease of up to 50 years length but ownership of the infrastructure remains with the state. It is possible that if a farm does not perform the lease may be forfeited and this prevents the system being put up as collateral when loans are taken out.

12.3.3 Facilities and Resources

(i) WUA Staff

It can be difficult to recruit qualified staff. The financial situation of the organisations is often unstable, there is no willingness of the farmers to increase staff wages and consequently the irrigation service fees, and therefore the organisations do not provide much attraction for qualified technicians and managers. Thus the staff of the WUA changes often because of low salaries. Running a WUA is a new activity, therefore staff need to be trained in how these organisations operate. However problems in recruitment are not universal. With wages poor in many other parts of the economy and in the public sector WUAs can still attract staff if they are able to pay a reliable wage.

During the last 10 years rapid changes have been made to the legal and taxation arrangements in all four countries. The tax codes as well as accounting procedures have changed. Accountants have to be aware of these changes and their impact, but WUAs seemingly are unwilling to pay for the necessary training (consequently the accountants work following out-of-date procedures). It is believed that this reluctance to pay for training is more to do with the limited finances of the WUAs – and whilst they can get away with it, decisions are made to give such training low priority. A certification need for bookkeepers could also improve this situation.

Nevertheless, a clear and reliable accounting system is one of the essential requirements to ensure trust among the WUA members which would underpin the sustainability of the organisations.

WUA Salaries

When the annual budget is approved by the WUA members, the amount that can be paid to staff is usually fixed. In setting the budget (in which the staff salaries currently form the largest part), WUAs take note that farmers want to pay the minimum possible (and in Kazakhstan the anti monopoly committee sets the level of service charges the WUA can levy their members). These two factors put appreciable downward pressure on WUA staff salaries. In the long term, the WUA members might be expected to value the services of good WUA staff over the benefit of saving expenditure on salaries: in the short term the lack of motivated staff is a potential threat.

Where the WUAs charge for water delivery on a volumetric basis, in years with little water availability, or if there is significant amount of rain during the vegetation period, this results in reduced income. The consequent cash shortages lead to reduced payments to staff with the result that it is almost impossible to create a stable

team of people employed by the WUA. This in turn undermines the sustainability of the WUA and the success of IMT.

This situation is especially prevalent in Kazakhstan, where alternative employment is available and the WUA competes for staff with enterprises that pay higher wages. A similar situation occurs in parts of Kyrgyzstan. WUAs are beginning to realise that combining a fixed per hectare charge with a volumetric charge is a sensible fee mechanism. It took WUAs in Mexico some years to come round to this understanding with consequent changes in fee mechanisms. WUAs in Kyrgyzstan are also beginning to instigate such a mechanism.

(ii) WUA Facilities

In general the WUA facilities are poor, predominantly because of the lack of willingness and capacity of the members to pay for facilities. Most of the WUAs have an office in a room of a former farm or village administration building. These facilities generally need repair – although the WUA facilities are rarely alone in this, along with other rural enterprises. There is also a need for office supplies like tables, chairs, computers, printers, transport and communication equipment, etc.

(iii) WUA Plant and Equipment

WUAs own little plant or equipment.

If works are to be done, local contractors tend to be hired to carry out the work. Also farmers that own plant, might use this for the benefit of the WUA. Existing plant and equipment greatly exceeds their notional technical lifespan: probably the average age of plant is between 20 and 30 years.

12.4 Reasons Contributing to Poor or Failed IMT

Seldom is there an unambiguous cause for difficulties in implementing IMT. The following sets out reasons suggested (but not corroborated) during the field studies for poor IMT implementation:

Government level

- Lack of a sound, clear, non-contradictory legal framework.
- Inappropriate system of taxation related to water and water infrastructure.
- Misunderstandings between different governmental bodies over the rules governing IMT and the implementation arrangements.
- Weak communication between central, oblast and raion level authorities.
- Over hasty implementation of IMT - preparation work insufficiently thought out and implemented.

District / Raion level

- The lack of a national or regional master plan that caters for the interest of all stakeholders.
- Insufficient support prior to, during and after the establishment of WUAs.
- Lack of focus in implementing IMT (other activities are too distracting to those charged with implementing and supervising implementation of IMT).

Community level

- The affected communities do not understand that under IMT they have rights and duties, nor is the nature of the legal framework covering IMT understood.
- Weak financial situation of the rural population. This results in under-funding of the WUA and poor cash flow. This results in staff being paid late, and sometimes despite the low wages, not at all.
- Problems arise where the payment of irrigation service fees is based predominantly on the actual volume of water delivered. This ignores the fact that there are fixed organisational costs incurred regardless of quantity delivered. Consequently if the volume delivered to farmers is less than anticipated (because of rain or drought) the income to the WUA is reduced so its costs may not be covered.
- The members decide on the level of irrigation service fees. Given their weak financial situation, the WUA budget is set to a bare minimum, often below the level required for the maintenance necessary to keep the system operating over the longer term.

Project level⁷

- Largely the supporting structures and training is stopped on project completion. During the time of the project, local specialists can sometimes be paid much higher salaries than government employees. Consequently after a project finishes, these people do not feel greatly inclined to work with the government directly or in a state design or scientific institute⁸.
- In the Makhtarl area, in South Kazakhstan, there are significant problems concerning ownership of the infrastructure. The entity that owns the main and secondary infrastructure is the State Property Committee. There are a lot of other entities involved in the process of allocating canals or transferring the right of use. Entities are taking decisions for which they are not competent. The result is that the canal ownership, and right to use it, often changes. This is not a stable environment for IMT, again the cause is the lack of a thoroughly thought out, disseminated plan.
- There is seldom a monitoring and evaluation system operated within the WUA. Consequently management information systems driven by objectives and results are not generally used. Whilst there is, of course, a good understanding and feeling of how things are going, some issues may be missed which would be picked up by using a more professional system of management. Although a WUA has many characteristics shared with businesses, the senior members of the WUA generally have little experience in running such organisations.

12.5 Other Results

Although there are many factors which hinder IMT, and in some cases can lead to local failure, implementation of IMT continues. The difficulties are being dealt with during IMT. It is very important to appreciate that the process can take a long time even where the stakeholders have more experience of individual property rights and an established legal framework to support the process⁹.

The positive achievement is that problems are being identified and addressed, results are being achieved and that communication at community and raion level is improving. Understanding between all stakeholders can only be achieved through effective and continuous communication.

⁷ This refers to internationally financed projects.

⁸ In Kyrgyzstan, under the World Bank funded OIP project, the local consultants receive only a slightly higher wage than their colleagues in the Department of Water Resources. This is to ensure continuity of the work of these specialists after the project finishes.

⁹ In some places such as Mexico, however, IMT has been introduced very rapidly and arguably with long-lasting success.

Interestingly, contrary to what might be expected, the WUAs mainly concentrate on water related issues. There is not much diversification into activities like purchase of agricultural inputs or marketing produce.

12.6 Regional Overview: A Summary

12.6.1 Institutional Issues

Central government is generally supportive of IMT in principle. However because staff have limited experience of its implementation there is perceived need for external assistance in establishing programmes and at least providing initial training (for example training of trainers).

Bulk water suppliers in the Region are in the hands of state organisations that are partly funded through water charges. There has been no transfer of responsibilities of inter-farm water supply from bulk water suppliers to farmer organisations, though this seems in theory possible in Kyrgyzstan. IMT to date in the Region has therefore concentrated on the development of organisations at farm level to join small farms together so that they can work and negotiate with bulk water suppliers. IMT has not concentrated on the transfer of power and responsibilities from bulk water suppliers to farmer organisations – indeed such transfer is rare.

Each country has a number of institutions involved in irrigation and drainage, water resources and environmental protection, some of which are involved in the externally funded rehabilitation schemes. Many of these institutions have lost significant numbers of staff since independence as work dried up and salaries did not match those available in other employment sectors. Moreover they suffer an ageing staffing profile in which many of the specialists are unfamiliar with modern planning and design tools and methods and some have narrow, highly specialised skills. In some countries, independent (private) consultants are developing the capacity to assume the role hitherto occupied by these institutions. Where this is not happening, there is a risk that unless significant steps are made to address the situation, in the longer term there will be a lack of capacity in planning and design.

12.6.2 Legal Issues

Legislation in some of the Region is undergoing rapid change as part of the move to market economies. The existing legislation from the Soviet period, relating to business (and applied to WUAs), is inappropriate. Current legislation in the Region, in general, makes IMT difficult and bureaucratic to implement.

Only in Kyrgyzstan (though now also in Kazakhstan) has a legislative framework been put in place specifically for IMT. In other Central Asian countries legislation designed for other purposes is used to try and establish IMT in a legal context. This lack of legislation is recognised and there are moves to implement legislation in Tajikistan and Kazakhstan. However this is a slow process. In April 2003 a new Rural Consumer Cooperative Law was enacted in Kazakhstan. This defines the Rural Consumer Co-operative as a non-commercial association of water users.

Current tax legislation in the Region can also make the establishment of WUAs unattractive because once formally established an association is liable to a range of taxes (for example 20 different taxes in Tajikistan). Tax breaks for farmers do exist in some countries such as Kyrgyzstan in remote areas, but non payment of taxes by farmers is common too. The purposes of WUAs are poorly understood by the tax authorities and with no specific legislation for IMT it means that full business tax burdens are frequently being applied to these organisations which the organisations are unlikely to be able and willing to pay.

No country in the Region has moved to complete private ownership of land, though they now have land laws permitting leasehold by private individuals and private companies. It should be noted that Russia has recently introduced land laws permitting private ownership.

A new Land Law has been recently approved in Kazakhstan. Land is divided into private and state property.

The main aims of the law are the following:

- Establishment, conditions, variations of land use.
- Rights and obligations of land owners.
- Land management to achieve rational land use and keep conservation.
- Reclamation.
- Improvement of environmental conditions.
- Equal development of all farming types.
- Protection of land ownership for physical and legal entities and the state.
- Creation and development of the land market.
- Strengthening of land legislation.

Transfer of land from state to private ownership on a recovered basis by immediate or partial selling under the decision of the local executive body will be permitted for the following:

- Kazakhstan citizens for owning dwellings
- Kazakhstan citizens for individual household, gardening, individual, dwelling and countrified construction in accord with requirements.
- Other cases, covered by the present code and laws of the RoK.

Payment for valued selling of the private property for land (payment for land areas) or rights of temporary valued land use should be defined based on the cadastre cost, calculated at basic rate for land areas applying the adjustment coefficients.

In Kyrgyzstan, during the year 2000, proposals were made to allow full privatisation of land, but this was not adopted. Land itself can be sold, however there are no guidelines for valuing the land and effectively no land market at the moment. Therefore current legislation though providing stability does not yet provide good land tenure rights. This is a disincentive for both investment and IMT.

The legal ownership of land rights in practice at a farm level is often confusing. Following privatisation of state farms and re-distribution of land, generally to the state farm employees, there was a period of land rights changing hands as people abandoned farming or went bankrupt. Often transfer of land rights was not carried out formally and the transfer of debts was unclear. This can impact on IMT as farmers can be wary that the bureaucracy of IMT will also uncover problems with land rights and debts.

12.6.3 Operational and Engineering Issues

The development of new irrigated areas, which had been expanding in the Eighties, has ceased in the Region since independence. Due to lack of funding, rehabilitation of existing areas has also practically halted apart from a number of rehabilitation schemes in each country financed by loans from foreign agencies, primarily the World

Bank and Asian Development Bank. Significant areas of irrigated land have been abandoned (for example all 50 000 ha of irrigated land in Western Kazakhstan oblast).

Obtaining credit to carry out operation or maintenance is reported to be practically impossible, partially due to high interest rates, bureaucracy, and lack of collateral.

The physical layout of the irrigation systems is not reported to be a limiting factor for IMT. However in reality the system should provide more regulation structures to improve water management to serve the smaller irrigation units.

12.6.4 Finance

Operation and maintenance of on-farm systems is supposed to be paid for by the water users throughout the Region. Inter-farm systems are the responsibility of the bulk water suppliers who recover some costs from water users with water charges generally set by the government.

Except for Uzbekistan where assets are state owned and cannot be sold, assets of WUAs can be sold; WUAs can be declared bankrupt.

There is almost no direct government financial support for farmers. Limited assistance in some countries does come in the form of subsidies (for example for electricity) and tax rebates.

Access to credit is limited in the Region exacerbated by the problem of lack of collateral and poor returns from agriculture. A micro-credit scheme exists in Tajikistan but it is not much sought after due to high interest rates and bureaucracy. Credit does come in the form of loans for rehabilitation through foreign lending agencies. Larger landholders as might be expected have greater access to credit.

References and Bibliography

Central Asia

Bucknall, J., Klytchnikova, I., Lampietti, J., Lundell, M., Scatasta, M., Thurman, M. (2003), Irrigation in Central Asia: Social, Economic and Environmental Considerations.

Burger, R. (1998) Water User Associations in Kazakhstan: An Institutional Analysis, Environment Discussion Paper No 45.

Horinkova, V. Kyrgyzstan – Gradual Institutional Change and Intensive Capacity Building for Formation of Water User's Associations, INPIM Newsletter No 4.

Hutchens, A. Johanson, S., Strickland J. (2000), Dashowuz Irrigation Management Study, US Agency for International Development.

Hutchens, A. O. (1999) Irrigation Management Transfer Issues in Turkmenistan, Central Asia Mission, US Agency for International Development, www.epic.kz/epic-99-05e.pdf.

Johnson, S. (1998) Economics of Water User Associations: The Case of Maktaraal Region, Southern Kazakhstan.

Lusk, M. Irrigation Management Transfer in Kyrgyzstan, INPIM Newsletter No 8.

O'Hara, S. (2000), Lessons from the past: water management in Central Asia, Water Policy 2.

Rosen, S., Strickland, J. (1998), After the State Farm: A Water User Association in Kazakhstan Central Asia Mission, US Agency for International Development, www.uwin.siu.edu/ucowr/updates/pdf/v115_A4.pdf.

Rest of the World

Abernethy, C. (2001), Managing irrigation systems in preparation for management transfer (2001), ICID 19th European Conference, Brno, June 2001.

Bhattarai, M., Sakthivadivel, R., Hussain, I. (2002) Irrigation Impacts on Income Inequality and Poverty Alleviation: Policy Issues and Options for Improved Management of Irrigation Systems. IWMI Working Paper 39.

Bruns, B. (1997), Participatory Management for Agricultural Water Control in Vietnam: Challenges and Opportunities, National Seminar on Participatory Irrigation Management, April 7-11, 1997 Vinh City, Nghe An Province, Vietnam.

Bruns, B., and Helmi. (1996), Participatory irrigation management in Indonesia: lessons from experience and issues for the future, from World Bank Electronic Learning Handbook for Participatory Irrigation Management.

Bruns, B. Reflections on Turning over Irrigation to Farmers: Collected Papers 1989-1994, www.BryanBruns.com.

Burt, C.M. and Styles, S.W. (1998) Modern Water Control and Management Practices in Irrigation: Impact on Performance.

Groenfeldt, D., Sun, P., Demand Management of Irrigation Systems Through Users Participation.

Groenfeldt, D. Moving Upstream: Changing Roles for Users and the State in Irrigation Management, Economic Development Institute, World Bank.

Groenfeldt, D. Transferring Irrigation Systems from the State to Users: Questions of Management, Authority, and Ownership, Economic Development Institute, World Bank.

Groenfeldt, D. and Svendsen, M. (2000), Case Studies in Participatory Irrigation Management

FAO (2001), Transfer of Irrigation Management Services: Guidelines FAO Irrigation and Drainage Paper Nr 58.

Jairath J. (2000), Participatory Irrigation Management in Andhra Pradesh Contradictions of a Supply Side Approach, South Asia Regional Poverty Monitoring and Evaluation Workshop, June 8-10, 2000, New Delhi, India.

Kay, M. (2001), Case study abstracted from a review of training initiatives in IMT prepared for IFAD, <http://www.fao.org/ag/AGL/aglw/waterinstitutions/docs/PeruCS.pdf>.

Kloezen, W, Garcés-Restrepo, C., Johnson III, S. Impact Assessment of Irrigation Management Transfer in the Alto Rio Lerma Irrigation District, Mexico, IWMI.

Malano, H.M. and van Hofwegen (1999), Management of Irrigation Systems – A Service Approach.

Meinzen-Dick, R., Raju, K. and Gulati, A. (2000), What Affects Organization & Collective Action for Managing Resources? Evidence from Canal Irrigation Systems in India, International Food Policy Research Institute, Environment and Production Division Discussion Paper 61.

Meinzen-Dick, R., State Administration, Devolution, and Water Markets in Irrigation Management, DVWK Bulletin 20: Deregulation, Decentralisation and Privatisation in Irrigation.

Palacios, E. (1996), Benefits and Second Generation Problems of Irrigation Management Transfer in Mexico, from World Bank Electronic Learning Handbook for Participatory Irrigation Management.

Pradhan, P. and Bandaragoda, D. (1997), Legal and institutional environment of water users' association for sustainable irrigation management, Irrigation association for participatory management in Asia. Proceedings of a seminar at Lahore. Asian Productivity Organisation, Tokyo.

Raby N. From Participatory Irrigation Management to Irrigation Management Transfer: The Process and Progress in Sri Lanka.

Samad, M. and Vermillion, D. (1999), Assessment of Participatory Management of Irrigation Schemes in Sri Lanka: Partial Reforms, Partial Benefits, IWMI.

Shahriari, H. (1996), Participatory irrigation management in Albania, from World Bank Electronic Learning Handbook for Participatory Irrigation Management.

Svendsen, M., Trava, J., Johnson, S. (1997), Participatory Irrigation Management: Benefits and Second Generation Problems.

Vermillion, D. (2000), Guide to Monitoring and Evaluation of Irrigation Management Transfer (2000), Japanese Institute for Irrigation and Drainage.

Vermillion, D., Samad, M., Pusposutardjo, S., Sigit S. Arif, and Rochdyanto S. (2000), An Assessment of the Small-scale Irrigation Management Turnover Program in Indonesia, IWMI.

Vermillion, D. Management Devolution and the Sustainability of Irrigation: Results of Comprehensive versus Partial Strategies.

Vermillion, D. (1997a), Recent Results from IIMI's Research Program on Irrigation Management Transfer.

Vermillion, D. (1997b), Management Devolution and the Sustainability of Irrigation: Results of Comprehensive versus Partial Strategies.

Vermillion, D. and Garcés-Restrepo, C. (1998), Impacts of Colombia's Current Irrigation Management Transfer Program, IWMI.

Vermillion, D. (1994), Irrigation management turnover: the shift from agency to local control, Quarterly Journal of International Agriculture, no 4.

Vermillion, D. and Sagardoy, J.A. (1999), Transfer of Irrigation Management Services – Guidelines.

Zwarteveen, M. and Neupane, N., Free-Riders or Victims: Women's Non-participation in Irrigation Management in Nepal's Chhattis Mauja Irrigation Scheme, IWMI.

Economic Development Institute of the World Bank, (1996), Handbook on participatory irrigation management.

Socio-economic impact of smallholder irrigation development in Zimbabwe.

Draft Paper for Participatory Irrigation Management (PIM), National Seminar in Albania.

Can poor farmers in South Africa shoulder the burden of irrigation management?

Irrigation Management Transfer: The View from Wuhan (China), article INPIM Newsletter No 1.

Capacitandonos: una metodología de interprendizaje para promover la gestion local del agua de riego published by IPROGA Peru (Email: iproga@amauta.rcp.net.pe).

Appendices

Appendix A: In-country Survey Evaluation - National Framework (part A questionnaire)

A.1 Institutional and Policy framework

A.1.1 Laws on Privatisation of Agricultural Land:

Existing legislation:

Kyrgyzstan

Legislation for the reform of agricultural land exists in the form of Governmental resolution n.º 632, August 22, 1994 'Regulation of land and agrarians reforms'. It states that land from the former state farms can be used by private entities, except for public areas, collective grazing lands and gardens around villages. Foreigners are excluded from receiving land. There are no state orders, so farmers can produce what they want and sell it where they like.

Tajikistan

In 1996 the Land Code named 'All state property including enterprises and assets in industry should be privatised'. The condition of the privatisation is that the privatised organisations have to produce under state order, in other words, they have to grow what the state indicates and have to sell it to state organisations. A presidential order from 1992 and the law on land reform (1992) allow the allotment of 75,000 ha from state farms to smallholder Dekhan farms.

Kazakhstan

In 1996 the state farms started to be liquidated. After this co-operatives were established based on a Decree on Production Co-operatives (5 Oct 1995). Most of the production co-operatives were liquidated after some years. At present the land is divided between individuals. They now can use the land for up to 49 years; in the meantime the land remains state owned. The farmers pay a land tax to compensate for the use of the land; the magnitude of land tax depends on the land quality rating (bonitet). The farmers can let the land to third parties.

In accordance with the new Land Code, land would be obtained by private entities on a recovered basis through immediate or partial purchase.

Uzbekistan

Shirkats were established under Presidential Decree n.º 299 dated on 15 July 1998. This decree transformed the territory of the state farms into agricultural co-operatives.

Dekhan farms (units smaller than 10 ha) were established under Presidential Decree dated at 18 March 1997.

Privatisation of land:

Kyrgyzstan

The land has been divided between the people. The process was co-ordinated by rural committees. The amount of land to be received depended on the number of family members at the moment of division. The maximum number of hectares for a family was the following: i) intensive lands (i.e. irrigated areas) not more than 20 ha., ii) moderate intensive land 25 ha, and iii) grazing land not more than 30 ha.

The land was given for 'ownership' for 99 years. A land certificate is required to prove this, it states the name of the family head as well as the other family members. The 'owners' have the right to join with other users, form farms, co-operatives, and associations. The land 'ownership' rights can be used as collateral, but the land still remains state owned.

Land cannot be sold. Proposals were drafted in 2000 for legislation to enable the sale of land, but it was not approved.

The farmers are free to decide what to produce and where to sell their produce. There is no state order system for agricultural produce.

Tajikistan

There are four organisational forms: lease, dekhan farms, joint stock companies and household facilities. Between 50% and 66% of the state farms have been divided into about 15,000 Dekhan farms.

Kazakhstan

See before

Uzbekistan

In some cases there exists the possibility to lease land for periods of between 10 and 50 years.

A.1.2 Laws on Establishment of WUAs

Existing legislation:

Kyrgyzstan

A resolution on WUAs in rural areas (13 August 1997, resolution n.º 473 'Water Users' Associations in Rural Areas') initiated the process of IMT. A new WUA law was adopted: the Law on WUAs n.º 38 of 15 March 2002.

Tajikistan

The water code issued on 29 November 2001 does not allow for the establishment of WUAs. At the moment a WUA law is under preparation.

Kazakhstan

There is no WUA law. Many attempts have been made during the last few years, but no final version has been approved. WUAs are established as Rural Consumer Co-operatives.

A new RCC Law has been enacted in April 2003 defining members as water users.

Uzbekistan

There is no specific legislation for WUA establishment in Uzbekistan.

During 1999-2000, Mirob-A organisation carried out preparation work concerning setting up of WUA in Uzbekistan. Their handbook: *'A handbook on organisational and legal procedures for establishing WUA's'* contains the following information:

- draft law on WUAs;

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- regulations of WUAs;
 - sample charter of WUAs;
 - establishment procedures;
 - documentation on:
 - O&M
 - Relations with raion vodkhoz
 - a report on experiences of WUAs in other parts of the world and a study visit to The Republic of Armenia.

The documentation was reviewed by the MoAWR and stopped at the juridical department of the Ministry.

Establishment of WUAs under legislation:

Kyrgyzstan

WUAs have been established since 1997. On 15 March 2002 a new WUA law was approved, the WUAs need to be re-registered under the new law by September 2002. At the moment there are about 300 WUAs in Kyrgyzstan, all of these were established under the old law. The inter-farm canals used to be state owned and the on farm canals used to belong to the farms. With the break-up of the state farms the former on-farm irrigation and drainage infrastructure was without an 'owner'. In the first instance, the infrastructure was transferred to the Village Councils (Ayil Okmotu) on temporary basis. These village organisations did not possess funds for O&M, therefore the establishment of WUAs was needed.

Tajikistan

Since 1999 ten WUAs have been established under a WB project.

Kazakhstan

WUAs are established as Rural Consumer Co-operatives (Law dates from 21 July 1999).

In accordance with the new law RCC should re-register under newly adopted conditions.

Uzbekistan

There is a possibility to organise water related activities under existing legislation for Co-operatives, Associations and other legal forms. Initiatives and pilot projects were set up in the area of Golodnaya Steppe, Ak-Altin raion, Siddikov Shirkat and at Gafur Gulyam farm in Gulistan area. There exists a form of small private farms, so called 'Shirkat'. The Shirkats, in the cases where they form a hydraulic unit, need to organise water distribution. There is no legislation supporting this at present.

Under the law dated 7 May 1993 on '*Associations and Enterprises*', it is possible to draw up a charter and by-laws for WUAs. These have to be approved by the Raion Hakim. The documents become effective when they are accepted by the Authorities.

The World Bank (WB) is preparing the Agricultural Reform Project (ARP). This will also have a component for the establishment of WUAs. The World Bank financed the MoAWR to make proposals for the development of a legal framework for WUAs.

A.1.3 Establishment of Other Rural or Village Based Associations

Existing legislation:

Kyrgyzstan

The most widespread other type of association established is: United Peasant Farms, this is the grouping of individual peasant farms.

Also Joint Stock Companies and Co-operatives have been established.

Tajikistan

There is no specific law on the establishment of other rural or village based associations, but the existing Water Code does not exclude this possibility. Village based federations of WUAs can be established under the existing legislation.

Kazakhstan

Rural Consumer Co-operatives provide the legal basis to establish a large variety of associations.

Uzbekistan

Shirkats are established under Presidential Decree n.º 299 dated on 15 July 1998. This decree allows the transformation of the territory of state farms into agricultural co-operatives.

Dekhan farms (units smaller than 10 ha) are established under Presidential Decree dated at 18 March 1997.

What functions does this legislation allow?

Kyrgyzstan

The United Peasant Farms can be established at village level. Their activities are mostly related to water, but other activities, like sharing of machinery, input supply, marketing, are not excluded.

Tajikistan

The functions are related to on-farm systems: O&M, equitable and timely water distribution, collection of water charges and conflict resolution amongst water users.

Kazakhstan

Most activities, as long as the RCC is a non profit organisation.

Uzbekistan

Shirkats and Dekhan farms are to transform state farm land to agricultural co-operatives (Shirkats) and Dekhan farms (individual farms).

A.2 Physical Characteristics: Agricultural Land

Table A.1: Physical Characteristics: Agricultural Land

Republic	Total area	Agricultural land	Irrigated land
Kyrgyzstan	19,995,100	10,670,000	1,059,000
Tajikistan	14,310,000	4,000,000	720,000
Kazakhstan	272,000,000	192,300,000	2,301,852
Uzbekistan			4,259,000

A.3 Physical Characteristics: Irrigation and Drainage Systems

Table A.3: Physical Characteristics: Irrigation and Drainage Systems

Republic	Largest system (ha)	Smallest system (ha)	Typical system (ha)	Under pumping (%)	Pump lift (m)
Kyrgyzstan				10%	50
Tajikistan	38,000	123	14,000	38%	30 – 300
Kazakhstan	280,000	400	10,000 – 15,000	3-5%	10
Uzbekistan	8,500	400	6,000	42%	2.5

A.4 Historical Perspective and Factors of Change over Last 15 years

A.4.1 National Economy

Kyrgyzstan

The years of 1991-1992 were the first stage of independence. The national economy was totally dependent on the Soviet Union. Kyrgyzstan was always an exporter of animal related products as well as agricultural produce. The break-up of the Soviet Union resulted in the loss of Kyrgyzstan's primary external market, only the internal market was left. The national economy rapidly declined. At the moment Kyrgyzstan GDP is US\$ 500 per person. There are some new markets that generate external income, like gold mining, but there is still not much. In former times Kyrgyzstan exported a lot of agricultural produce to Russia. This is now very much reduced because of disagreements with Kazakhstan, which result in no transport of agricultural produce through Kazakh territory.

Tajikistan

During the era of the Soviet Union the national economy developed and agricultural production increased. The war, independence, natural disasters, meant that the national economy was very much reduced. The main decline

was felt in 1991, after independence. The last few years has seen an improvement in the status of the national economy. In the industrial sector (Aluminium) exports have increased. The agricultural sector counts for 20% of the total national produce, 60% of the people work in and are dependant on agriculture.

Kazakhstan

During the era of the Soviet Union, Kazakhstan made a strong development. After the break-up of the Soviet Union, budgets were cut and the whole economy collapsed. During the last five years, Kazakhstan increased its exports of oil and mining products, as a result cash is coming in. The government is investing in the rehabilitation of the agricultural sector. The economy as a whole is improving. The GDP is around US\$ 1,000 per person.

Uzbekistan

In Uzbekistan agricultural land is mainly still being used in the form of state farms. The country's agriculture provides 26% of GNP, 60% of foreign currency and 45% of employment. Therefore agriculture is an extremely important part of the country's economy.

The Republic has a natural resources potential and a high level of human development, but usage of main funds created in agriculture does not meet the existing potential. After the Soviet Union collapsed, the irrigation sector inherited a huge network of reservoirs, dams, pumping stations, canals and other structures, but also a great number of problems connected with all of them. Rehabilitation and operation of irrigation and drainage networks and other measures for improving the land condition are financed by the state budget annually. Over the last 10 years due to economic problems in the country, the amount of financing has reduced drastically. It resulted in a decrease in crop capacity, slow development, low export income, and adverse impact on the general living standard of the population.

A.4.2 Development of Irrigated Areas

Kyrgyzstan

The area of irrigated land in 1994 was around 1,059,000 ha. In 1999, this had reduced to 782,000 ha (i.e. a reduction of 13%). There was a rapid decline in crop productivity. However from 1997-1999 a rise has been seen in crop productivity.

Tajikistan

The lack of financial resources continues to cause the deterioration of the operational status of the water systems. Almost 40% of agricultural land depends on pumped water. The lack of finance reduces the irrigated area. At the moment international projects are rehabilitating infrastructure.

Kazakhstan

Due to lack of funding, the development of new irrigated areas has stopped. The rehabilitation of existing areas was also halted in the early years of independence. Now there are several initiatives for the rehabilitation of existing irrigation systems, mainly financed by foreign agencies.

The ADB funded Water Resources Management and Land Improvement Project is being implemented in the South-Kazakhstan Oblast over an area of 39,259 ha. A similar World Bank Project for 32,000 ha in fifteen different areas was recently completed.

Uzbekistan

Political changes after independence, the transformation of institutional structures and the economic situation resulted in inadequate maintenance of infrastructure, aggravated by irrigation water shortages. Available water

resources have been exhausted in full. In years of drought the tendency is worsened by water shortages during the irrigation season. Under existing administrative territorial schemes of water resource management formed in their redundancy period, authorities are not connected with their water sources (i.e. they are not organised under watershed boundaries), but to the boundaries of oblast and raion, where parochial interests frequently prevail over principles of rational water use.

Water shortages under the existing management and distribution system give rise to conflicts between users at regional and local levels (for example between the head and tail reaches of canals). Raivodkhozes are not able to ensure timely water supply and are not responsible for farm losses connected with lack of water.

In the country there is no practice of irrigation and drainage infrastructure privatisation, and IMT. The first steps for Uzbekistan on irrigation management transfer began from the establishment of WUAs on the basis of economically unsound kolkhozes and shirkat farms. Over the last 2 to 3 years WUAs are formed on a voluntary basis according to territorial principles and approved by the Oblast Khokimiyats. Obviously, this small-scale active experience of WUAs has been recently created and lessons learnt are imperative for all stakeholder groups and further IMT development in Uzbekistan. It is assumed that creation of double level schemes for water resources management planned by the Government Programme of Measures to 2010 will facilitate the widespread development of IMT.

A.4.3 Social Structures & Poverty

Kyrgyzstan

As a result of the reduction in financial resources all social structures deteriorated following independence.

Since independence, the poor people have got poorer and the rich people have got richer. The middle income group has also reduced in prosperity. The highest percentages of poor are in the rural areas and are said to comprise between 65% and 83% of the population, this mainly occurs in the remote areas.

Tajikistan

Up to the end of the 1980s, social structures had been significantly developed. From independence in 1991 up to the end of the war in 1996, the social structures deteriorated. Since the end of the war, the Government has adopted reforms in education, public health and welfare. Now there are several international donors sponsoring training of teachers, supply of schoolbooks, institutional strengthening.

Kazakhstan

In the earlier years of independence many social structures such as schools, medical centres, sport facilities were closed down. Now there is a programme to rehabilitate and re-open facilities.

Some schools and medical centres did not obtain the financial support. Nowadays, rehabilitation and construction of new facilities is in process.

Uzbekistan

There is free healthcare and education for everybody. More recently private clinics and education have appeared. This indicates that there is a difference being created between social groups.

A.4.4 Organisation of Agricultural Enterprises

Kyrgyzstan

The state farms were reorganised initially into smaller co-operative units. From 1994 onwards, privatisation of agricultural land has been carried out. Each person has the right to 0.21 ha of irrigated land. So in a short time the large scale agricultural enterprises were transformed into small family farms of a couple of hectares. These small units often joined into so-called United Peasant Farms. Land use rights, documented with written proof, are valid for a period of 99 years.

Large-scale agricultural processing enterprises went bankrupt or were privatised. Agro-processing enterprises are still very much needed to transform agricultural production into exportable products. Due to difficulties with Kazakhstan, the export to Russia of agricultural products is not possible at this moment.

Tajikistan

Agricultural enterprises are slowly being transformed into different organisational structures like: joint stock companies, co-operatives and processing enterprises.

Kazakhstan

Many of the former agricultural enterprises were closed. In places where economic activity allows, the agricultural enterprises have been reinforced, like in the South Kazakhstan Oblast in the case of the cotton ginneries. The organisational form of farming enterprises ranges from individuals, joint stock companies, to co-operatives.

Uzbekistan

In recent years Shirkats and Dekhan farmers have appeared. These private entities still depend very much on the existing state structures for all supplies. They have difficult times to acquire agricultural inputs and they might have to pay higher prices to obtain them than state farms. The farmers have to produce cotton and wheat for the state, and receive state prices that are very low.

A.4.5 Key Institutions

Kyrgyzstan

The number of institutions has reduced since independence. At the moment there are different institutions such as the Department of Water Resources, which is responsible for O&M of the main irrigation systems and reservoirs and is a stimulator in the initiation of WUAs. The Kyrgyz Institute of Irrigation Research is involved in a large number of initiatives, as WUAs, development of water management software, water measurement devices, and several investigation projects funded by external donors.

Tajikistan

At the moment there are four main institutions:

- 1) NPO Tajik hydrotechnic and amelioration,
- 2) Tajikgyprovodkhoz
- 3) Tajik Agricultural University
- 4) Tajik Agricultural Academy

Kazakhstan

The leading institutions related to irrigation and drainage at present are:

Kazakh Scientific Water Institute (Taraz, former Djambul). They are engaged in new technologies for irrigation, irrigation scheduling etc. They also supply consulting services to the state and private entities;

Aral Agroecological Institute (Kyzyl Orda). An agricultural research institute that works on the development of new varieties of crops. They also provide consulting services to the state and private enterprises;

Kagiprovodkhoz (Almaty) Design institute;

National Agricultural University (Almaty);

Azhkazvodproject (Shimkent) Design institute;

Zher-Ana Ltd (Shimkent) Design consultant.

The institutes have in common a lack of financing and have experienced a severe reduction in staffing. Some of them are providing services to the state and others. They function as counterpart organisations for foreign funded projects. This enables them to adopt new methodologies, carry out work and maintain their staff.

Uzbekistan

The Ministry of Agriculture and Water Resources is the main institution. There are a number of agricultural research institutes and irrigation institutes. The lack of financing reduces their operational status and the provision of service.

A.4.6 Policy Framework

Kyrgyzstan

The general policy framework is geared towards privatisation of agricultural and water related enterprises. Kyrgyzstan was one of the first republics in Central Asia to adopt privatisation of the agricultural sector.

Tajikistan

After independence, the policy framework has been changing slowly towards more private initiatives. In the agricultural sector this resulted in a new Land Law, Water Code and several Presidential Resolutions related to agriculture. Tajikistan has been, and still is, participating in interstate projects in Central Asia like WARMAP, FEF, SPEKA.

Kazakhstan

The current policy framework is heading towards the improvement of irrigated agriculture.

Uzbekistan

At government level there is an understanding of the necessity to reform the organisation of water systems to improve O&M and water use efficiencies. The President of Uzbekistan instructed a commission to prepare proposals to improve irrigated land conditions. The main concepts of that study are i) at national level reorganise the water allocation management on basin level (7), ii) within these basins organise water users' associations to establish water use limits, water management, self financing O&M, and conflict resolution.

This study indicates the need for enabling legislation and amendments to the existing water code.

A.4.7 Water Resources

Kyrgyzstan

In Kyrgyzstan water resources are abundant. However the water is not always in the right location for utilisation. Water in the large trans-boundary rivers is relatively abundant, however much agriculture is based on using the resources of small rivers whose capacity is virtually exhausted. As a result practically all the irrigation systems at some point experience water shortage. The average annual water inflow is 44.5 km³, from ground water another 13 km³, and an ice reserve of 650 km³.

Water supply to irrigated land has reduced by 21%. So the water supply has reduced faster than the reduction in irrigated area. The reasons for that are changes in cropping pattern, the introduction of an Irrigation Service Fee by the bulk water supplier, deterioration of the water infrastructure and the reduction in the area of irrigated land.

Tajikistan

About 55% of the Aral Sea basin water resources originates in Tajikistan. Tajikistan contains 60% of the ice volume in Central Asia, which is said to be 13 times the average annual river discharge volume.

Kazakhstan

The national total water resources amount to about 100,500 million m³, of which 53,000 million m³ originates in Kazakhstan, the rest comes from international rivers like Syr-Darya, Chui, Talas, Ishym, Irtysh, Ural, Ili and others.

The national water extraction limit is 15,792 million m³, of which 11,900 million m³ arrives at the irrigated fields. These numbers reflect the so-called plan; the actual figures are about 25%-30% lower.

In Kazakhstan there is 2,301,000 ha of irrigated land. In South Kazakhstan there is 500,000 ha.

Uzbekistan

Not answered.

A.5 Policy on IMT

A.5.1 National Policy and Objectives:

Kyrgyzstan

Agricultural land has been distributed between the rural population. The on-farm water systems have been partly handed over to WUAs and partly to village councils. The policy is that the on-farm water systems will be legally handed over to WUAs. The WUAs, currently under re-registration, will be based on hydraulic units and the water infrastructure will be indivisible, so it must stay as a whole system. O&M of on-farm systems is handed over to WUAs.

The inter-farm systems are state owned and their O&M will continue to be carried out by the raion and oblast vodkhozses. At a later stage it might be possible that large WUAs will take over the O&M of the inter-farm systems.

There have been and still are projects addressing the establishment of WUAs. The first one was an ADB funded project that started in 1998. Now there is a WB funded project that works nationwide for the support of WUAs and provides loans for rehabilitation. There is an ADB funded project in the Chui Oblast that provides

rehabilitation and training on marketing, farm management etc. The WB and ADB projects work closely together.

Tajikistan

The Government of Tajikistan has established a legislative base for the transfer of irrigation management through a new Water Code, Civil Code and regulations on water charges. The initial steps are taken by international projects to guide privatisation of agricultural activities and to transfer the management of water systems to WUAs and cooperative village based organisations.

Kazakhstan

Agricultural land has been given to the rural population. They have the right of use for 49 years. Land cannot be sold.

The on-farm water infrastructure that used to belong to the state farm now belongs to the farmers; they might transfer the infrastructure to a RCC.

The interfarm canals belong to the oblast water authorities. For certain areas, mainly in South Kazakhstan, these canals can be transferred under trust management for 10 years to RCC or federations of RCC.

Transfer of on-farm irrigation networks to RCC for operation and maintenance is in process.

Uzbekistan

Agricultural land is state owned and most of it is still being cultivated as state farms. The state issues 'State Orders' that determine what main crops to grow, mainly for cotton and grain. The farms are not allowed to decide what to grow and where to sell it. The state is the buyer.

The objective of gradual introduction of Irrigation Management Transfer, water pricing, self financing etc. should go hand in hand with privatisation of agricultural land and relaxation of the state orders. The rural population needs to have a stimulation to undertake all these activities.

At the moment this is under study.

A.5.2 Status of Implementation

Kyrgyzstan

At the moment there are about 300 WUAs in Kyrgyzstan covering 450,000 ha of irrigated land or 40% of the total irrigated area. The objective is to establish about 500 WUAs by the year 2010, all of the irrigated land should then be covered by WUAs.

Tajikistan

Since 1999, 10 WUAs have been established under a WB project. Other international organisations like FAO and CARE have also initiated the establishment of WUAs. The establishment of WUAs is mainly related to rehabilitation projects with a credit component.

Kazakhstan

Since 1996, WUAs have been established. The major part of those WUAs do not function anymore.

There are 80 WUAs in South Kazakhstan Oblast, 50 of them are in Makhtaaraal of which 27 are located in the WRMLIP area.

Uzbekistan

Under study – some pilot efforts have been undertaken.

A.6 Experience on IMT, National Perspective

A.6.1 Extent of Experience

Kyrgyzstan

Nationwide there are about 300 WUAs. The cropping patterns can vary per region, in the south cotton is grown, in the north, where the climate is cooler, other crops like sugar beet, maize and vegetables are grown.

Tajikistan

Chatlon Oblast:

Yavan Raion: 2 WUAs, 416 ha and 770 ha

Shachrynai Raion: 1 WUA, 670 ha

Lenin Raion: 1 WUA, 997 ha

Khlokhov Raion: 2 WUAs, 508 ha, 1,655 ha

Sogd Oblast:

Match Raion: 1 WUA, 1,724 ha

Zafarabad Raion: 1 WUA, 1,497 ha

Kazakhstan

Oblast	System name	Association name	Command area (ha)
Almaty	Shingeldy	RCC Birlesu	2,368
	Kyzyl-Agash		1,420
	Kerbulak	6 farms, Darkhan Farm	2,920 867
Kyzyl-Orda	Akkumski	RCC Zhana-Su	1,034
South Kazakhstan	Makhtaaral	RCC Taza Su RCC Bereke	4,731 5,202
East Kazakhstan	Kurchum	RCC Sary- Uzhim	3,037 1,574
Dzambyl		RCC Intiman	1,144
Pavlodar		RCC Bolashak	3,574
West Kazakhstan		Zhusupova Farm	671
		Zhaik Agro Farm	533

		Bakhtiyar Farm	991
Karaganda		Irrigation Ltd	915
Akmolinsk		Kaisar Ltd	1,404
South Kazakhstan (WRMLIP project)	Phase I	Ata-Su	4,108
		Birlik	19,760
	Phase II	Agyn-su	10,651
		Adambeksu	1,322
		Toizhan	784
		Ketebai	1,524
		10 years	778
Murat	330		
Total			71,644

In south Kazakhstan there are 87 WUAs and RCCs. At the moment 71 of those are operational, of which 55 are in Makhtalar Raion, and 25 in the project area of WRMLIP.

Uzbekistan

In Khorezm, 5 WUAs have been established.

A.6.2 Identification of Case Studies

Kyrgyzstan

Positive experience:

WUA Altyn Kol Bakhmal, Osh Oblast, Uzgen Raion

The WUA was officially registered in April 1999, it serves an area of 1,549 ha, the command area covers the irrigated territory of 3 villages, there are 2000 land users who are members of the WUA. Because of the large number of land users there is a Representative Assembly, instead of a General Assembly. The Representative assembly consists of 250 delegates. The WUA staff consists of 6 persons: a director, deputy director, accountant and three ditch riders. The cropping pattern is Wheat (859 ha), Maize (350 ha), Tobacco (200 ha), Rice (100 ha), Vegetables (65 ha).

The budget of the association for internal costs is about 130.000 Som (2,900 US\$: or 1.4 US\$/ha/y), to obtain the water from the bulk water supplier costs 230.000 Som (5,100 US\$: or 2.6 US\$/ha/y).

WUA Toru-Aigyr, Issyk Kul Oblast

The WUA was established in July 1998, the command area is 1,249 ha. This used to be a pilot WUA and office facilities, including a computer were supplied. Also funds have been allocated to allow for the backlog of maintenance of the water system. The WUA takes water directly from the river, the WUA does not pay a fee to the raion vodkhoz. The WUA owns the infrastructure. The staff includes 5 persons: 3 ditch riders, a director and an accountant. The cropping pattern is Wheat (575 ha), Potato (30 ha), Perennials (229 ha), Vegetables (34 ha).

The total annual budget is 57,000 Som (1,267 US\$: 1US\$/ha/y). The staff cost is 24,000 Som (533 US\$: 0.43 US\$/ha/y), 13,500 Som for maintenance (300 US\$: 0.24 US\$/ha/y) and repayment of the loan 19,500 Som (433 US\$: 0.35 US\$/ha/y).

The WUA works well and is well managed. It has an organised bookkeeping system, there is a plan for O&M, the WUA members pay the ISF that is approved by the General Assembly.

Negative experience:

WUA Bal-Sarz, Chui Oblast, Issyk Ata Raion

The WUA was established in April 2000. The command area is 6,092 ha, there are 4 co-operatives and 120 farmers. The WUA is said to not understand the way to manage a WUA. Operation and maintenance is poor and there is a large number of disputes between the members. The command area of the WUA is not based on hydraulic boundaries. The WUA management and the director take many decisions without consulting the WUA council. There is no register of minutes of meetings, there is a lack of transparency. It is reported that the members are not active and are basically waiting for a credit to appear.

WUA Zheralghan, Issyk Kul Oblast

The WUA was established in October 1997. The command area is 2,815 ha. The WUA council consists of 6 members. The chairman of the council is at the same time the executive director. The farmers sign direct contracts with the raion vodkhoz for water delivery, and in this way the WUA is bypassed. The WUA used to function well, but not at the moment. Farmers refuse to pay for water service to the WUA. The farmers prefer one entity responsible for water delivery. The WUA staff is not paid, the compensation for their work in the WUA is the right to farm some additional land. The WUA is reported to be near collapse.

Tajikistan

No case studies identified.

Kazakhstan

Where	Command area	Crops
South Kazakhstan Oblast	1) K-19, 21,23; 39,259 ha	Cotton
	2) K-15, K-17, 9,900 ha	Cotton
Almaty Oblast	Shengeldy system 2,368 ha	Onion, sugar beet, fodder crops, vegetables
Kyzyl Orda Oblast	Akkum farm, 1,430 ha	Rice

Indicator	1. Abay	2. K15/K17	3. Shengeldy	4. Akkum	Average
1	2	2	2	2	2
2	1	2	2	2	1.75
3	1,5	1	1	2	1.38
4	2	0	2	2	1.50
5	2	2	0	2	1.50
6	2	2	2	2	2.0
Total	10,5	9	9	12	10.1

See A.7 for definition of indicators.

Uzbekistan

Not answered.

A.7 Classification of Achievements: National Perspective

Indicators and quantification of successes

Indicator	Question	Kyrgyzstan	Tajikistan	Kazakhstan	Uzbekistan
1. Water Distribution	Has water distribution changed	-	2	2	
2. Maintenance	Has maintenance status changed	-	2	1.75	
3. Conflict resolution	Change in way water disputes handled	-	2	1.38	
4. Water service fee 1	Has the amount changed	-	2	1.5	
5. Water service fee 2	Has recovery of fees changed	-	2	1.5	
6. Rehabilitation	Has rehabilitation been done after IMT	-	2	2	
		-			
Total:		-	12	10.1	

Kyrgyzstan

No indicators given.

Tajikistan

IMT has impacted positively on all the indicators listed in the questionnaire.

Kazakhstan

As can be seen from the above table, the global effect of IMT impact has been quite positive. The maximum value to be obtained could have been 12, the actual one is 10.1.

Uzbekistan

Not answered.

A.8 Legal Situation

A.8.1 Summary of Legislation

Law	Kyrgyzstan	Tajikistan	Kazakhstan	Uzbekistan
Water Code		√	√	
Land Code	√	√	√	
Tax Code	√	√	√	
Civil Code	√	√	√	
Criminal Code		√	√	
Farm Law	√	√	√	
Environmental Law		√	√	
Energy Law		√	√	
Minerals Law		√	√	
WUA Law	√	X	X	X
Other Laws			RCC law	Agricultural cooperatives, Dekhan farms

A.8.2 Legal Status of WUAs

Kyrgyzstan

Non-commercial organisation, non-profit organisation.

Tajikistan

No reply.

Kazakhstan

The first WUAs in the country were registered under a law that allows all kinds of associations rather than being specific to water organisations. The WUA members could only be legal entities. In Kazakhstan an individual is not a legal entity. The distribution of land was made to all kinds of associations and limited company structures. Most of these broke up or were liquidated. That resulted in the fact that the WUAs were without members, because individuals cannot form a WUA.

The law on Rural Consumer Co-operatives (RCC) allowed individuals to become members. In areas where an international project is being implemented the old WUAs were re-registered as RCC (e.g. South Kazakhstan – WRMLIP project).

The general concept of the RCC is that it is a non-profit organisation.

Uzbekistan

Not answered.

A.8.3 Legal Status of Bulk Water Supplier

Kyrgyzstan

A state body under the Ministry of Agriculture and Water Resources, partly self-financing through water charges.

Tajikistan

State bodies under the Ministry of Water or Agriculture.

Kazakhstan

The bulk water suppliers fall under the oblast vodkhoz, which is a state organisation. However that does not mean that all their funds come from the state budget; the water charges are meant to finance part of their costs.

Uzbekistan

State organisation, financed from the national budget.

A.8.4 Taxes

Type of taxes

Kyrgyzstan

VAT, Local taxes such as road tax.

Tajikistan

WUAs are subject to 17 types of taxes for the national budget and 3 taxes to the local administration.

Kazakhstan

WUAs are subject to VAT, land tax, property tax. It has been and still is under discussion that WUAs should not pay VAT, because they do not add value, but no achievements are obtained yet. The property tax is also a problem: at the moment if the WUAs/RCCs receive the trust management transfer of secondary canals, they would be supposed to pay property tax. However, it is not their property, so they should not pay tax; unfortunately no results have been achieved yet.

There are also water abstraction taxes and environmental taxes. These are not levied at present.

Uzbekistan

The farms are supposed to pay the following taxes: pollution, VAT, profit tax, social tax, land tax and property tax. The farms do not have the capacity to pay these taxes. The state compensates for the non-payment of taxes by paying low prices for cotton and grain. The taxes do not seem to take into account the production capacity of the land; differentiated taxes for good and poor quality land are being suggested. It is also suggested to terminate the state orders, so that the farms will receive higher prices for the produce. Then irrigation systems can be improved and taxes paid.

Taxes payable by WUAs

Kyrgyzstan

The land users are supposed to pay land tax. In 1998 a presidential order declared that farmers are tax exempted for profit tax, road tax and emergency tax. Agricultural wholesale enterprises are not supposed to pay VAT. The individual is supposed to pay VAT.

In some areas with severe natural conditions the land tax is reduced by 50%.

The WUAs are supposed to pay local taxes like road tax.

Tajikistan

No additional taxes other than the above mentioned 20 types.

Uzbekistan

Social taxes, road taxes and environmental taxes are to be paid by the farms.

What happens if taxes are not paid?

Kyrgyzstan

Taxes have to be paid; local authorities will ensure the collection of taxes.

Tajikistan

There will be fines.

Kazakhstan

As above.

Uzbekistan

Taxes are included in the low state prices for cotton and grain.

Can assets be confiscated?

Kyrgyzstan

Not mentioned.

Tajikistan

If the WUA goes bankrupt, its assets could be sold

Kazakhstan

It is possible, if a court decides to do so.

Uzbekistan

Assets cannot be sold and are state owned.

Other financial duties

Kyrgyzstan

Repayment of loans.

Tajikistan

Credits and loan repayments. The WUAs are supposed to pay the debts inherited from the former state farms towards other state bodies and suppliers.

Kazakhstan

Payback of loans.

Uzbekistan

Payment of O&M and pay back of loans.

A.9 Financial Aspects

Who is supposed to pay for O&M?

Kyrgyzstan

O&M of on-farm systems are supposed to be paid by the water users. WUAs are also supposed to pay the bulk water supplier. There is no limit to what the WUAs can charge for their services. But generally the WUA O&M cost are 0.22 US\$/1000m³.

A water charge is set by the Government for the bulk water supplier, the WUA pays 0.67 US\$/1000m³.

Tajikistan

O&M of on-farm systems are supposed to be paid by the water users. WUAs are also supposed to pay the bulk water supplier.

The Government sets a water charge for the bulk water supplier.

Kazakhstan

O&M of on-farm systems are supposed to be paid by the water users. WUAs are also supposed to pay the bulk water supplier. There is a limit set by the anti monopoly committee on the level of charges that can be levied by the WUAs.

The Government sets a water charge for the bulk water supplier.

Uzbekistan

Not answered.

Can O&M be financed by a loan?

Kyrgyzstan

No

Tajikistan

No.

Kazakhstan

The ADB and WB projects in South Kazakhstan Oblast foresee a major rehabilitation, the level of investment is 800 US\$/ha. The farmers are supposed to pay back 70% of the investment, for the state it will comprise 30 percent over a period of 30 years.

Uzbekistan

No

Can major repairs be financed by a loan?**Kyrgyzstan**

The ongoing international projects (WB, ADB) provide a loan for rehabilitation. The level of investment varies between 100 and 300 US\$/ha. The Government aims at a payback of 25% of this over 7 years.

Tajikistan

The ongoing WB rehabilitation project is a loan. The ADB is considering a loan as well. The Government is supposed to pay back the loans. The level of investment is around 300 US\$/ha. The money is granted to the farms.

Kazakhstan

The ADB and WB projects in South Kazakhstan Oblast foresee a major rehabilitation, the level of investment is 1 000 US\$/ha. The farmers are supposed to pay back 70% of the investment over a period of 30 years.

Uzbekistan

There are rehabilitation projects going on in Uzbekistan. WB and ADB mainly provide these loans.

Does Government have a system of financial support towards O&M?**Kyrgyzstan**

Reduced electricity cost and reduction in land tax in backward/remote irrigation areas.

Tajikistan

No

Kazakhstan

No

Uzbekistan

In the case of reorganisation of state farms, the state provides a credit to farmers amounting to about 300 times the minimum salary – the credit can be paid back over 24 months.

Is there direct governmental financial support for individual farmers?**Kyrgyzstan**

Not mentioned

Tajikistan

No

Kazakhstan

Support is possible. In 2002 there was a very high disease pressure in South Kazakhstan. The government provided free pesticides and fertilisers to reduce the losses. Individual farmers can receive this assistance.

Uzbekistan

As above

Is O&M credit available to WUAs?

Kyrgyzstan

No

Tajikistan

Some, micro-credit for small and medium businesses is very much requested, but due to high interest rates and bureaucracy it is difficult to obtain.

Kazakhstan

No

Uzbekistan

Not answered.

A.10 Institutions for Irrigation and Drainage

List of institutions:

Kyrgyzstan

Ministry of Agriculture, Water Resources and Processing Industry. Design and Research Institutes.

Tajikistan

Ministry of Agriculture, Ministry of Reclamation and Water Facilities, Ministry of Environment, Ministry of Energy, Main Geological Department of Government, Committee of State Security Supervision in Industry and Mining, State Company Tajikkomunservice, Land Committee of Government, State farms, Agricultural Cooperatives, Farmers, other enterprises that have own irrigation structures and water supply systems but are insignificant.

Kazakhstan

The leading institutions related to irrigation and drainage at present are:

Kazakh Scientific Water Institute (Taraz, former Djambul). They are engaged in new technologies for irrigation, irrigation scheduling etc. They also supply consulting services for the state and private entities;

Aral Agroecological Institute (Kyzyl Orda). An agricultural research institute that works on the development of new varieties of crops. They also provide consulting services for the state and private enterprises;

Kagiprovodkhoz (Almaty). Design institute;

National Agricultural University (Almaty);

Azhkazvodproject (Shimkent) Design institute;

Zher-Ana Ltd (Shimkent) Design consultant.

Uzbekistan

Ministry of Agriculture and Water Resources.

Oblast and raion vodkhozes,

Uzvodmekspluatatsia

Most important functions:

Kyrgyzstan

Ministry of Agriculture, Water Resources and Processing Industry: Regulation of IMT, O&M of inter-farm systems and main infrastructure.

Design and Research Institutes: Their function is related to design and research in the agriculture and water sector.

Tajikistan

Land reclamation, operation of irrigation system, issues of regulation, use, security, assessment, estimation and approval of underground waters; regulation of use and security of thermal and mineral waters; water use for energy taking into account irrigation and other economic branches.

Kazakhstan

As above

Uzbekistan

Oblast vodkhoz: Water distribution among the raions

Raion vodkhoz: Water distribution within the raion

Uzvodmekspluatatsia: O&M of large canals and reservoirs

Institutions involved in privatisation of agriculture

Kyrgyzstan

Ministry of Agriculture, Water Resources and Processing Industry

Tajikistan

Ministry of Agriculture, Land Reform Committee of Government.

Kazakhstan

All of the mentioned institutes have been involved in privatisation of agricultural land. The most important institution that has been involved in privatisation, and still is, is the MoA.

Uzbekistan

Governmental Land and Sanitation Commission.

Institutions involved in privatisation of irrigation and drainage infrastructure

Kyrgyzstan

MoA: The Department of Water Resources (DWR).

The main task of the DWR is to manage and operate all state owned water infrastructure as main canals and reservoirs. They control the yearly amount of water available for irrigation and set the extraction limits. They provide licences for water extraction. They implement the international water sharing agreements. In the DWR there will be a regulatory unit for WUAs where the central registration will be carried out. DWR is the national agency that implements the privatisation of on-farm water infrastructure. The water fees paid by water users fund about 50% of the annual budget and the other half is funded by the state budget.

Ministry of Environment and Emergencies: Agency of Environment and Mineral Resources:

The main task of this agency is the control of ground water resources and licensing.

Tajikistan

Ministry of Agriculture, Land Reform Committee of Government.

Kazakhstan

All of the above mentioned institutes have been involved in privatisation of water systems. Their function was to carry out research, design of rehabilitation works, planning of operation and maintenance, environmental monitoring and post harvest processing.

Uzbekistan

No privatisation at present.

Institutions involved in IMT

Kyrgyzstan

DWR

Tajikistan

Centre of Farm Privatisation Support of Government, Ministry of Reclamation and Water Facilities and other sub-bodies.

Kazakhstan

Same as above.

Uzbekistan

No privatisation at present.

A.11 Participation of Foreign Experts

Any foreign experts involved in organisation IMT

Kyrgyzstan

Organisation	Activity	Follow up
ADB (1995 – 1997)	Legal base of WUAs	No
WB/EU WARMAP project, (1998 - 1999)	Monitoring of performance of water use and agricultural production	Yes
WB/EU WARMAP – water saving methods, (1999-2001)	Water management and agricultural production	No
WB Soil and water resource management, (2000-2003)	Establishment of demonstration sites	Ongoing
USAID – Land reform project	Improvement of existing legislation, like water code	Ongoing
WB – IRP (1999-2009)	Rehabilitation of inter-farm irrigation infrastructure	Ongoing
WB – OIP (2001-2006)	On farm rehabilitation and WUA strengthening	Ongoing
EU – INCO- Copernicus (2000-2004)	Water and soil management	Ongoing
WB – SIMIS (2000-2002)	Development of water management software	Ongoing
Swiss Government	Legal support for rural population	Ongoing

Tajikistan

International consultants at the Centre of Farm Privatisation Support, FAO, Care, WB, ADB

Kazakhstan

Organisation	Activity	Follow up
WB – KIDIP project	System rehabilitation, Setting up of WUAs	Ongoing
USAID – Harvard Institute of International Development	Legal framework WUA, no new WUA law	No
WB – WRMLIP project	System rehabilitation, setting up of WUAs	Ongoing

Uzbekistan

WB, ADB, EU-Tacis have (had) projects in which pilot projects for WUAs have been set up. These were started with the help of foreign experts.

Was follow up given by international specialists?

Kyrgyzstan

Follow up after the projects finish is not given as such, in some cases there are follow up projects.

Tajikistan

Support given during project implementation. After projects finish, support stops, no follow up.

Kazakhstan

Support given only during project implementation.

Uzbekistan

When the project is finished, the technical assistance stops.

What follow up given by international specialists?

Kyrgyzstan

Follow up after the projects finish is not given as such, in some cases there are follow up projects.

Tajikistan

No follow up

Kazakhstan

Still ongoing

Uzbekistan

No follow up

A.12 Institutional Constraints

Environmental obligations that may constrain IMT:

Kyrgyzstan

Not mentioned

Tajikistan

All projects are analysed by the environmental departments, Environmental Impact Assessment (EIA) is made.

Kazakhstan

Not at the moment.

Uzbekistan

Not known

Constraints due to inter ministerial collaboration

Kyrgyzstan

Not mentioned

Tajikistan

All projects need to be approved by different ministerial departments

Kazakhstan

In principle the rules are defined, but in practice there is always some misunderstanding, but this is solved during project implementation.

Uzbekistan

Process still in the very beginning, so no experience.

Lack of communication between ministries, jeopardising IMT

Kyrgyzstan

Not mentioned

Tajikistan

Not mentioned

Kazakhstan

Same as above

Uzbekistan

Process still at the very beginning, so no experience.

A.13 What Other Factors Limit/Constrain the Implementation of an IMT Strategy

Kyrgyzstan

There are problems with the implementation of IMT, they are summarised as:

- Lack of coordination with the establishment of WUAs - watershed boundaries are not always respected;
- Lack of qualified staff to manage the WUAs, partly because farmers are only willing to pay low salaries to staff;
- The farmers are not trained as farmers, lack of agricultural knowledge and therefore profitability;
- Lack of short term credits for input supply;

-
- The very small farm units reduce profitability and sustainability of irrigated agriculture;
 - Lack of farm management skills;
 - The agricultural sector is without money – de-capitalised;
 - High taxes and inconsistent tax legislation;
 - Marketing of produce and agro-processing facilities is extremely difficult;
 - In rural areas there is a lack of alternative work, most of the people depend on agriculture.

Tajikistan

Not mentioned

Kazakhstan

Misunderstandings and unwillingness among departments, local authorities, agriculture, water agencies and the tax departments.

Uzbekistan

- No legislation
- No funds
- State orders and low product prices

A.14 Suggestions to Improve IMT

Kyrgyzstan

Agriculture is in a difficult situation. The farmers' qualifications need to be upgraded, access to short term credit improved, the farms should join into larger and more profitable units, establishment of the agricultural processing sector, improvement of product marketing, tax system should be clarified.

IMT will improve the water availability to the crops and a better yield should be obtained, but what to grow and where to sell the produce are questions that still need to be addressed. Agriculture cannot be profitable without saleable products.

Tajikistan

Training of farmers: Farm management, agronomy, finances, reclamation, and husbandry

Tax system reform: The existing system does not stimulate development

Rural banking system: There are banks in the rural areas

Credits: Affordable interest rates are needed

Kazakhstan

- Establishment of a specific legal framework.
- Development of a nation wide support programme for IMT with sufficient funding.
- Training of staff involved in the initiation and follow up of IMT.
- Use of foreign and local subject matter specialists to provide training.

Uzbekistan

- Due to the state orders for cotton and wheat, there is no money to pay for O&M. Need to free up the market or increase the prices. Need for privatisation of agriculture.
- Establishment of legislation.

Appendix B: Case Studies IMT (part B questionnaire)

B.1 What factors have caused IMT to take place

If and why irrigators caused IMT:

Kyrgyzstan

The privatisation of state farms and the elimination of the state farm management structures meant that there was a necessity to organise O&M of the infrastructure.

Tajikistan

The privatisation of state farms leaves no structure for O&M of the water systems and consequently there is no water regulation. To receive water timely and in sufficient quantity, it is necessary for farmers to join in a WUA.

Kazakhstan

The privatisation of state farms and the elimination of the state farm management structures meant that there was a necessity to organise O&M of the infrastructure.

Uzbekistan

IMT has not taken place. There are a few pilot projects. There is a need to improve water management because of lack of co-ordination between managing entities.

If and why Government caused IMT:

Kyrgyzstan

The Government initiated farm privatisation as part of their policy to move to a market economy. Without farm management in place there was a need to establish new structures.

Tajikistan

Lack of finance to operate and maintain the water infrastructure.

Kazakhstan

In specific cases, like the WB rehabilitation project in South Kazakhstan, the government issued an order to allow trust management transfer of inter-farm canals. It is necessary to develop a nationwide programme to carry out this process. In this respect the role of the bulk water supplier needs to be clarified.

Uzbekistan

At the moment the Government is analysing and preparing for IMT. There is a need to improve water management.

If and why foreign agencies caused IMT:

Kyrgyzstan

Foreign agencies provide technical assistance and funding for the development of the economy. Privatisation is part of this. The transfer of irrigation management to the water users is a worldwide practice that has proven to improve the water delivery service and maintenance of the water systems.

Tajikistan

After privatisation of state farms, the foreign agencies promoted IMT as part of rehabilitation projects.

Kazakhstan

Foreign agencies provide technical assistance and funding for the development of the economy. Privatisation is part of this. The transfer of irrigation management to the water users is a worldwide practice that has proven to improve the water delivery service and maintenance of the water systems.

Uzbekistan

Foreign agencies are involved in providing guidance to the Government regarding IMT.

On the Gafur Gulam farm a WUA was created as part of a Tacis financed project. This was to demonstrate how IMT works.

B.2 Willingness and Roles of Stakeholders in IMT

Willingness of farmers

Kyrgyzstan

Farmers were willing to participate in IMT because the state organisations were not able to cope with the requirements of delivering water to individual small holders.

Tajikistan

The farmers are interested because they want to receive water on time.

Kazakhstan

Farmers are interested in receiving water on time and in the right quantity. This will increase their crop production.

Uzbekistan

State farm workers are interested in privatisation of agriculture. If that is catered for, IMT can follow. There needs to be economic stimulation to carry out more work. At the moment there is little stimulation for improvement of Irrigation Management, because it is difficult to foresee economic gain.

The Dekhan farmers and Shirkats are interested in IMT. At the moment their water supply (as well as other inputs) depends on the state farm structures.

In general there is little understanding of IMT, because of the lack of legislation and action plans.

Willingness of village councils

Kyrgyzstan

Initially the water infrastructure was temporarily handed over to the village councils. They were supposed to operate and maintain the water infrastructure. The village councils did not have the capacity to perform the tasks. Later WUA were established to take over the tasks.

Tajikistan

Village councils are collaborative.

Kazakhstan

The village councils collaborate with the farmers. They have an important role.

Uzbekistan

The village authorities approved the introduction of IMT on the Gafur Gulam farm.

Role of former state farm officials

Kyrgyzstan

The former state farm officials became farmers themselves after land distribution. They also saw the need for a new structure of organisation of water delivery and maintenance of the system. Nowadays many of the WUA staff consist of former engineers and hydro technicians of the state farms.

Tajikistan

After privatisation they will also be farmers. They should play an important role because they are qualified technicians.

Kazakhstan

The former state farm officials became farmers themselves after land distribution. They also saw the need for a new structure of organisation of water delivery and maintenance of the system. Nowadays many of the WUA staff consist of former engineers, hydro technicians and even directors of the state farms.

Uzbekistan

The pilot efforts are conducted on Shirkats. The former state farm officials are now mostly involved as the Shirkat officials. They are the same people. The Shirkats have bank accounts, so they have cash flow. Their view on the need for IMT varies greatly.

The director of the state farm did not approve IMT on the Gafur Gulam farm.

Role of local bulk water supplier

Kyrgyzstan

The bulk water suppliers depend to 50% of their budget on the water they deliver. Generally the bulk water suppliers are helpful towards the WUAs.

Tajikistan

No significant role

Kazakhstan

The bulk water supplier is not fully ready for IMT. This means that most of its personnel will lose their job, and no alternative plan is worked out for them. This creates friction and results in problems.

Uzbekistan

The bulk water supplier delivers the water up to the state farm and/or Shirkat. If IMT is to be implemented significant changes will have to be made.

With the Gafur Gulam WUA a water supply contract was made and a minimum charge was levied.

Role of government

Kyrgyzstan

The government established the nation wide strategy, of which IMT was part.

Tajikistan

The government started the process.

Kazakhstan

The government is the main initiator of IMT.

Uzbekistan

The government is currently preparing a two step strategy for IMT, as discussed previously.

Tacis and GoU financed some rehabilitation works at the Gafur Gulam farm.

Role of financing agencies

Kyrgyzstan

The financing agencies stimulate IMT. Funding and Technical Assistance are given to private entities.

Tajikistan

Through funding of infrastructure rehabilitation projects IMT is introduced to ensure long term sustainability.

Kazakhstan

Through funding of rehabilitation works, the financing agencies trigger IMT as part of rehabilitation.

Uzbekistan

The financing agencies are providing support for IMT.

Tacis and GoU financed some rehabilitation works at the Gafur Gulam farm.

Role of consulting assistance

Kyrgyzstan

Consulting services are fundamental for the transfer of know-how on how to prepare and implement IMT. After IMT, consulting assistance provides for training and assistance of existing WUAs to improve management and planning.

Tajikistan

Consulting services are important because there is no local experience of IMT.

Kazakhstan

IMT is a new process; therefore consulting agencies are part of the process.

Uzbekistan

Consultants provide guidance and financial resources to start up IMT.

Access to knowledge, training and experts

Kyrgyzstan

Access to knowledge, training and experts is insufficient in the rural areas. Initially training and expertise is provided but is then stopped. Continuous follow up to strengthen the WUA management capacity is fundamental to the long-term success and sustainability of IMT.

Tajikistan

Unfortunately access to knowledge is still limited.

Kazakhstan

Access to knowledge, training and experts is limited. It is mainly focused on specific projects. There is a need for nation wide distribution of qualified subject matter specialists.

Uzbekistan

Access to knowledge is limited. The Gafur Gulam IMT pilot included a number of training courses and documentation was provided.

Access to agricultural inputs

Kyrgyzstan

IMT does not foresee the improvement of access to agricultural inputs.

Tajikistan

Inputs are sometimes provided through projects.

Kazakhstan

It is suggested that IMT should address the access to inputs in the future.

Uzbekistan

Agricultural inputs are provided through the state farms. For Shirkats and Dekhan farms it might be difficult to have access to inputs because preference is given to state farms.

In the case of the Gafur Gulam project, the inputs were provided through the state farm.

Who have been the main supporters of IMT and what was the support?

Kyrgyzstan

Before implementation: All stake holders

During implementation: All stake holders. Through loan agreements from the international agencies, the state provides funds to rehabilitate infrastructure and stimulate capacity building.

Post implementation: Still in progress, but at present the nation wide WB funded OIP provides an institutional component to strengthen existing WUAs.

Tajikistan

Government and local administration are the main supporters of IMT.

Before implementation: no support

During implementation: pilot farms

Post implementation: no support

Kazakhstan

Before implementation: The state took the initiative, but there used to be a lot of misunderstanding on the purpose of IMT by all stakeholders

During implementation: The state gives support, the international projects do as well. The main support consists of WUA development and strengthening.

Post implementation: After implementation normally the support stops, there is a need for continuation and follow up of WUA strengthening.

Uzbekistan

At the moment the state is preparing for IMT. GoU regulation n.º 8 (January 2002) indicates the need for a national support agency for the organisation of IMT. It also gives the future WUA the status as primary water user.

B.3 Resistance to IMT

Kyrgyzstan

Initially there has been resistance by most stakeholders, mainly due to not understanding the aims and objectives of IMT. By information, training, pilot projects it was demonstrated what the objectives are and how IMT can be successful. The OIP project also provides an almost nation wide network of Raion Support Units that provide assistance to WUAs, but also act as a catalyst in the process of collaboration between the different stakeholders. The support units, after the project finishes, will be integrated in the DWR, so that continuation is ensured.

Salary levels for the support units are slightly higher than for state employees, so it is expected that after the project finishes they will continue to work in the DWR, because the salary shock will be less.

Tajikistan

No resistance

Kazakhstan

As said before, because of misunderstandings of the purpose of IMT and the lack of guidance by the state, there has been and still is resistance to IMT. During the IMT implementation process, numerous meetings and seminars have been and are being held with all the stakeholders. In the case of the WRMLIP project, a WUA support team has been established that lives in the area. This team is providing continuous support on a variety of matters and their presence also results in better understanding between the stakeholders and so step-by-step, problems are being solved. The support team is being paid for by the project funds. It is expected that they will continue after the project finishes by levying consulting charges to the WUAs. Whether this will work is not certain at the moment, but they have been able to create a relationship built on trust and they are very much respected by the WUAs.

Uzbekistan

There will be resistance. Therefore it is extremely important, before the implementation of IMT, to develop a master plan in which the roles and functions of all stakeholders are defined. Most of the resistance in other countries is triggered by not knowing what is going to happen, people are afraid to lose their jobs, power and influence.

In Gafur Gulam IMT pilot the water users do not feel that they own the infrastructure. There is a lack of definition of duties and responsibilities of the stakeholders.

GoU regulation n.º 8 from January 2002 indicates the need for a national support agency for organisation of IMT. It also gives the future WUA the status as primary water user.

B.4 Has Political Support been a Significant Factor?

Kyrgyzstan

Political support has been and still is fundamental for the implementation of IMT. From politicians to village councils, support is given. Very often the village councils have an active role in the establishment of WUAs.

Tajikistan

The government established a legal framework. It also established the Centre for Farm Privatisation Support, which is involved in credit issues from foreign agencies.

Kazakhstan

Political support has been a significant factor. The government provided for privatisation of agricultural land and on-farm irrigation systems. In some specific cases the inter-farm water infrastructure has been given out under a trust management arrangement for 10 years.

Uzbekistan

At the moment the Government is preparing for IMT, so political support is important to bring the process further.

GoU regulation n.º 8 from January 2002 indicates the need for a national support agency for organisation of IMT. It also gives the future WUA the status as primary water user.

B.5 Effect of National Policies on Form of IMT

Has government provided a national policy?

Kyrgyzstan

The government established a legal framework to provide conditions to proceed with privatisation of agricultural land and on-farm water infrastructure.

Tajikistan

The Centre for Farm Privatisation Support carried out two projects: 'Farm Privatisation Support' and 'Project of Rural Infrastructure Improvement'. International organisations have provided technical assistance.

The policy is being implemented according to the government plan and WB conditions.

Kazakhstan

There is a policy for IMT. It is however focused on specific projects and is not a nation wide arrangement.

Uzbekistan

Currently under development. GoU regulation n.º 8 from January 2002 indicates the need for a national support agency for the organisation of IMT. It also gives the future WUA the status as primary water user.

Were these guidelines clear?

Kyrgyzstan

The guidelines for IMT were clear and pilot projects have been established.

Tajikistan

The guidelines are considered clear.

Kazakhstan

The guidelines are clear, but the problem is that the framework is not complete. There is no specific law, tax issues are not clear, and the implementation depends a lot on local authorities and bulk water suppliers, who due to lack of understanding and the absence of a master plan do not know what their future will be.

Uzbekistan

Currently under development, pilot projects should form the basis to develop the guidelines.

Has there been a possibility to adapt these guidelines to the local situation?

Kyrgyzstan

The initial law on WUAs has been changed and in March of 2002 a new law was adopted. Changes are being made to other legislation such as water and tax code.

Tajikistan

Not mentioned

Kazakhstan

There has been no modification of guidelines to date.

Uzbekistan

Not answered.

Are the needs of individual irrigators properly addressed?

Kyrgyzstan

Not answered.

Tajikistan

Not answered.

Kazakhstan

Not answered.

Uzbekistan

Not answered.

Are the needs of irrigators overall properly addressed?

Kyrgyzstan

The legal framework provides for most situations. In many cases it is not clear which taxes have to be paid.

Tajikistan

No reply

Kazakhstan

The possibility of establishment of WUAs (RCCs) allows the initiation IMT.

Uzbekistan

Not answered.

Are the needs of the bulk water supplier properly catered for?

Kyrgyzstan

The bulk water supplier underwent important changes, like severe budgetary cuts and reduction of staff. This resulted in reduced ability to operate and maintain the main water systems. Presently the process of change is still not finished; therefore the situation is still unstable.

Tajikistan

The bulk water supplier will continue to provide water to the hydraulic units.

Kazakhstan

No plan has been made available of what the function will be of the bulk water supplier. This results in adverse action like selling water directly to farmers that have direct access to the main canal, even if they are located on WUA territory.

Uzbekistan

This needs to be addressed in a masterplan.

B.6 Would IMT have been Possible without External Facilitators

Kyrgyzstan

IMT is a process that is new in Central Asia, the role of external facilitators has been and still is very important.

Tajikistan

No, external (foreign) support is needed and will be needed after IMT.

Kazakhstan

No, the process is new and external (foreign) facilitators are needed. It is also necessary to implement a nationwide support structure for WUAs.

Uzbekistan

At the moment foreign experts are working on the development of IMT. The Government has taken initiatives to develop a handbook on WUAs. This was done knowing the in-country situation. Also study tours to other countries were made.

GoU regulation n.º 8 from January 2002 indicates the need for a national support agency for organisation of IMT. It also gives the future WUA the status as primary water user.

There is a need for rehabilitation of the infrastructure, without this it is difficult to obtain positive results with IMT.

B.7 Training

What training was provided *before* IMT was introduced? Was this sufficient, what should have been done?

Kyrgyzstan

Before and mainly during IMT training has been provided on WUA Establishment and Development. Nowadays the WUA law foresees the separation between governance and implementation, based on the American model.

Tajikistan

A four-day seminar was organised at the Centre for Farm Privatisation Support. A training centre for farmers was established that is funded for five years by the WB loan. The topics were: i) WUA establishment and development ii) development of conditions for WUA establishment, iii) rehabilitation, land tenure, grants, and improvement of irrigation techniques.

Kazakhstan

International agencies have given seminars on IMT.

Awareness seminars for local stakeholders were given in the project areas.

During implementation in some project areas intensive training was and is still given.

Uzbekistan

The pilot projects were started using foreign staff. Training of stakeholders was given as preparation.

What training was provided *after* IMT was introduced? Was this sufficient, what should have been done?

Kyrgyzstan

Through the OIP during and after IMT training is being provided to WUAs. The training focuses on WUA strengthening, the development of O&M plans and budgets and financial management.

Tajikistan

The training programme is five years.

Kazakhstan

After IMT on a project basis the support stopped. Continuous support is needed to follow up and strengthen the WUAs.

In the case of the ongoing WRMLIP project, it is expected that the Support Team will be funded through the WUAs or their federations.

Uzbekistan

Training was provided during the functioning of the pilot projects. After the project finished the training stopped as well.

For how long after IMT introduction should training be provided?

Kyrgyzstan

There should be continuous support to WUAs. A national regulatory body was recently established; maybe one of its future tasks will be the continuation of support to the WUAs.

Tajikistan

After five years the training centre should be self-financing, the farmers will have to pay for the training.

Kazakhstan

The support needs to be continuous.

Uzbekistan

There needs to be continuous support because it is a new process and follow up needs to be provided.

B.8 Elements of Experience to Date

Positive experience:

Kyrgyzstan

There are a lot of different opinions about the experience of IMT and privatisation in general. There are real problems like what to grow and where to sell it. The success of IMT depends on the region, in areas where cotton, tobacco and rice can be grown; IMT works better than in areas where less cash crops are grown, so fundamental are the markets for the produce. In places where experience is positive people will admit that, in other places, where experience is not that positive, the people will say that they would prefer to go back to the Soviet era. Another condition for positive experience is the need for co-operation. In the south, without water, nothing will grow, in the north even with much less water, crops can be grown to a certain extent, so there is much less need for co-operation. This year there has been a lot of rain in spring in the northern regions, much less water for irrigation has been required, therefore the need for co-operation is also reduced.

Tajikistan

Planned and effective water distribution between farms, O&M of on-farm networks, service fee collection.

Kazakhstan

It is considered that operation, maintenance and water delivery service improved after IMT.

Uzbekistan

Not answered.

Negative experience:

Kyrgyzstan

Negative experience is mainly present in remote areas with weakly developed markets and less requirements for irrigation.

Tajikistan

17 types of taxes to be paid by WUAs. There is no full support by the local authorities in WUA establishment.

Kazakhstan

High taxes, difficult relations with local authorities, bureaucracy. The farmers agree on the budgets of WUAs. The state anti-monopoly committee also sets limits to the level of ISF. The result is under funding of the WUA internal budget. The WUA staff are therefore working with limited budgets and their salaries are low. In the WRMLIP area the average time the WUA accountants stay on is between 6 and 8 months. They revert to farming or other more profitable activities. This also means that there is alternative economic activity, which is a good sign, but does not help the sustainability of the WUAs.

Uzbekistan

The Gafur Gulam experience is not seen as positive. The WUAs needed to be given a legal status, which is now provided for in GoU regulation n.º 8, January 2002. This gives WUAs the status of primary water user. The weak points mentioned are the inadequate constituency documents and charters and bye-laws that do not cater for the rights and duties of the members of the organisation.

Suggestions for other ways to improve water delivery service:

Kyrgyzstan

The following amendments are proposed for the current process:

- Amendment and clarification of tax code to reduce tax burdens for WUAs
- Separation of governance and executive director within the WUA structure.
- Realistic costing of O&M.
- Cost recovery of fixed O&M costs independently from the amount of water delivered – so a fixed payment per hectare to recover fixed cost and a variable rate depending on the cost of water delivery.
- Better planning and staffing of WUAs.
- Elimination of payment in kind, change to cash economy.

Tajikistan

Intensify the WUA establishment process. Accelerate transfer of land and water use rights to the water users.

Kazakhstan

Continuation of WUA establishment and development.

Uzbekistan

For IMT the following is needed

- Legal framework
- Legal status WUA
- Transfer of O&M to the water users
- Masterplan of stakeholder status, involvement, rights and responsibilities
- Standard charters
- Training
- Economic benefit of improved water supply for the ‘farmers’ or state farm employees
- Rehabilitation of infrastructure

B.9 Extent of Involvement of IMT Participants in Development of IMT Structure at Local and National Levels

Kyrgyzstan

The feedback from the ongoing process provided the justification for the application of a new WUA law. Also because of this feedback a new water code is under preparation. The negative experience of earlier attempts provided a base for further investment in the sector and especially the intensification of technical support and training (OIP).

Tajikistan

The initiatives are still very recent.

Kazakhstan

Most of the IMT initiatives have failed due to the lack of follow up, this still needs to be addressed on a national level. Lessons and conclusions need to be recognised and corrective measures should be implemented.

Uzbekistan

The lessons learned from the pilot projects should provide the base for drafting the master plan. Necessary preconditions to avoid the same mistakes and problems should be put in place before starting new initiatives.

B.10 What Would You do to Improve Water Delivery Service

Kyrgyzstan

Mentioned before.

Tajikistan

Training of farmers and WUAs in agronomy, legal issues, technical upgrades, financial issues.

Kazakhstan

- Intensive farmer training
- Intensive WUA training: watering plan, Operation and Maintenance, rehabilitation plans

Within rehabilitation projects this training is provided, on a national level this is not provided for.

Uzbekistan

Water delivery service is important. But also very important is the general condition of agriculture in the republic. The interests of individuals need to be catered for, there need to be economic benefits for the individual, otherwise IMT in itself will not have the expected results.

B.11 Has the Physical Layout of the Systems Helped or Hindered IMT?

Kyrgyzstan

The physical on-farm layout was designed to deliver water to larger blocks (25 – 40 ha). The average farm is much smaller than that. Very small farms cannot be mechanised either. This has helped the establishment of

United Peasant farms, so in reality the farming blocks are larger than the individual farms. In this way it is possible to cope with the existing system layout.

Tajikistan

There is enough flexibility in the water systems not to hinder IMT.

Kazakhstan

The layout of the systems is not considered a limiting factor for IMT.

Uzbekistan

The pilot projects have provided the rehabilitation of existing structures. From these points onwards, the water users organised the water distribution amongst their fields. It is not economically viable to provide each small plot of land with its own turnout.

B.12 Ownership of Infrastructure

	Water source (river / dam / basin)	Main canal	Secondary canal	Tertiary canal	Lower level canal
Ownership arrangements					
Owner ship, Kyrgyzstan	MOWR	Oblast	Raion	WUA, farmers	WUA, farmers
Owner ship, Tajikistan	MOWR	Oblast	Raion	WUA, farmers	WUA, farmers
Owner ship, Kazakhstan	MOWR	Oblast	Raion	WUA, farmers	WUA, farmers
Owner ship, Uzbekistan	MOWR	Oblast	Raion	State farms	State farms
Who is responsible for Operation and Maintenance					
Operation & Maintenance, Kyrgyzstan	Oblast	Oblast	Raion	WUA, farmers	WUA, farmers
Operation & Maintenance, Tajikistan	Oblast	Oblast	Raion	WUA, farmers	WUA, farmers
Operation & Maintenance Kazakhstan	Oblast	Oblast	Raion	WUA, farmers	WUA, farmers
Operation & Maintenance, Uzbekistan	MOWR	Oblast	Raion	State farms	State farms
In the case of reconstruction projects, provide the following information					
Who takes financing, Kyrgyzstan	MOF	MOF	MOF	MOF	MOF
Who takes financing, Tajikistan	MOWR	MOWR	MOWR	WUA, farmers	WUA, farmers
Who takes financing, Kazakhstan	MOWR	MOWR	MOWR	MOWR	MOWR
Who takes financing, Uzbekistan	MOWR	MOWR	Raion	Raion	Water users
Who re-pays loan, Kyrgyzstan	MoF	MoF	WUA, farmers	WUA, farmers	WUA, farmers
Who re-pays loan, Tajikistan	MOWR	WUA, farmers	WUA, farmers	WUA, farmers	WUA, farmers
Who re-pays loan, Kazakhstan	MOWR	WUA, farmers	WUA, farmers	WUA, farmers	WUA, farmers
Who re-pays loan, Uzbekistan	MOWR	MOWR	Raion	Raion	Water users

Water charges						
Charges levied, Kyrgyzstan	No	Yes	Yes	Yes	Yes	Yes
Charges levied, Tajikistan	No	Yes	Yes	Yes	Yes	Yes
Charges levied, Kazakhstan	No	Yes	Yes	Yes	Yes	Yes
Charges levied, Uzbekistan	No	Yes	Yes	Yes	Yes	Yes
Type of charges, Kyrgyzstan	-	ISF	ISF	ISF	ISF	ISF
Type of charges, Tajikistan			ISF	ISF	ISF	ISF
Type of charges, Kazakhstan	Water Abstraction			Water Abstraction	Water Abstraction	Water Abstraction
Type of charges, Uzbekistan		ISF	ISF	ISF	ISF	ISF
Volumetric water pricing US\$/1000 m ³ , Kyrgyzstan	-	0.67	0.67 + O&M WUA (0.22)	0.67 + O&M WUA (0.22)	0.67 + O&M WUA (0.22)	0.67 + O&M WUA (0.22)
Volumetric water pricing US\$/1000 m ³ , Tajikistan	0.45	0.45	0.45plus O&M	0.45plus O&M	0.45plus O&M	0.45plus O&M
Volumetric water pricing US\$/1000 m ³ , Kazakhstan	-	1.0	1.0	1 + O&M WUA (0.25)	1 + O&M WUA (0.25)	1 + O&M WUA (0.25)
Volumetric water pricing US\$/1000 m ³ , Uzbekistan	No	No	No	No	No	No
Payment per unit of area, Kyrgyzstan	No	No	No	No	No	No
Payment per unit of area, Tajikistan	No	No	No	No	No	No
Payment per unit of area, Kazakhstan	No	No	No	No	No	No
Payment per unit of area, Uzbekistan	No	No	No	No	No	No
Payment related to crop type (yes / no), Kyrgyzstan	No	No	No	No	No	No
Payment related to crop type (yes / no), Tajikistan	No	No	No	No	No	No
Payment related to crop type (yes / no), Kazakhstan	No	No	No	No	No	No
Payment related to crop type (yes / no), Uzbekistan	No	No	No	No	No	No

Water charges					
Total payment for ha (US\$/ha/year), Kyrgyzstan	-	2.5	2.5 + 1.0	2.5 + 1.0	2.5 + 1.0
Total payment for ha (US\$/ha/year), Tajikistan			3.0 plus O&M	3.0 plus O&M	3.0 plus O&M
Total payment for ha (US\$/ha/year), Kazakhstan		8.0	8.0 + 2.5	8.0 + 2.5	8.0 + 2.5
Total payment for ha (US\$/ha/year), Uzbekistan	No	No	No	No	No

Irrigation Management Transfer					
To whom are canals transferred, Kyrgyzstan	MOA	Oblast	Raion	WUA, farmers	WUA, farmers
To whom are canals transferred, Tajikistan	MOWR	Oblast	Raion	WUA, farmer	WUA, farmer
To whom are canals transferred, Kazakhstan	MOWR	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
To whom are canals transferred, Uzbekistan	-	-	-	-	-
Who pays for operation after transfer, Kyrgyzstan	MOA	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for operation after transfer, Tajikistan	MOWR	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for operation after transfer, Kazakhstan	MOWR	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for operation after transfer, Uzbekistan	-	-	-	-	-
Who pays for maintenance after transfer, Kyrgyzstan	MOA	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for maintenance after transfer, Tajikistan	MOWR	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for maintenance after transfer, Kazakhstan	MOWR	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for maintenance after transfer, Uzbekistan	-	-	-	-	-
Who pays for rehabilitation cost after transfer, Kyrgyzstan	MOA	WUA, farmer (partly)	WUA, farmer (partly)	WUA, farmer (partly)	WUA, farmer (partly)
Who pays for rehabilitation cost after transfer, Tajikistan	MOWR	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for rehabilitation cost after transfer, Kazakhstan	MOWR	WUA, farmer	WUA, farmer	WUA, farmer	WUA, farmer
Who pays for rehabilitation cost after transfer, Uzbekistan	-	-	-	-	-

B.13 Typical WUA

	Kyrgyzstan	Tajikistan	Kazakhstan	Uzbekistan
Date of establishment	1997	December 1999	January 2001	-
Command area	3509	997 ha	1430 ha	-
n.° of water users	175	300	160	-
n.° of water users member WUA	175	285	160	-
km of canal in command area		45.750	22.85	-
km of canal O&M WUA	21.4 km (excl field canals)	22.700	11.85	-
km of canal by water users	21.4 km (excl field canals)	22.700	-	-
Differential ISF (members and non members)	No	No	No	-
Crops	Wheat (1545 ha), Tobacco (100 ha), Maize (200 ha), Cotton (500 ha), vegetables (205 ha), silage (228 ha)	Vegetables, melon	Cotton	-
Yield trends last 15 years	-		Changed from 10 field rotation (6 cotton, 3 forage, 1 vegetables) into cotton monoculture	-
Land privatised	Yes	Yes, life time right of use	Right of use for 49 years	-
Can land be sold	No	No	No	-
Land distribution honest	-	Requires clearness	Yeas	-

				Kyrgyzstan	Tajikistan	Kazakhstan	Uzbekistan
Functions and organisms	WUA	staff	and	Manager (1)	Exec. director, paid by project, in cash	President, paid by WUA	-
				Accountant (1)		Bookkeeper, paid by WUA	
				Hydro technician (1)	Hydro-technician, paid by project, in cash	Hydro technicians, paid by WUA	
				Tractor driver (1)	Bookkeeper, paid by project, in cash	Ditch riders, paid by WUA, part time	
				Driver (1)			
				Ditch riders (10)	Field technicians, paid by project, in cash		
Is the WUA chairman also manager and executive director				No	Yes	Yes	-

B.14 Knowledge of Any Cases where IMT Failed

Kyrgyzstan

There are cases where IMT failed and other WUAs are on the verge of collapse. The main reasons for this are related to: management, financial management, taxes. It also depends very much on the leadership and motivation of the support staff.

Tajikistan

No

Kazakhstan

Most IMT initiatives failed. This is due to the lack of support during and after establishment of WUAs. This needs to be addressed on a nation wide scale and arrangements need to be made for the future.

These are:

- Nation wide support teams to ensure continuous support.
- Training of trainers.
- Training of WUA staff.
- Specific WUA law.
- Amendments to other laws, civil and water code.
- Review tax system.

Uzbekistan

See above.

B.15 Does IMT Contribute Towards Improvement of Irrigation System Efficiency?

Kyrgyzstan

No reply.

Tajikistan

IMT should improve efficiency as well as the operational status of the infrastructure.

Kazakhstan

In cases where international funded projects are operational, IMT contributes to improvements. After the projects finish, the IMT development process stalls.

Uzbekistan

No reply.

B.16 Do You Think that IMT Contributes to Improved Water Use?

Kyrgyzstan

No reply.

Tajikistan

IMT guarantees equitable water distribution between water users.

Kazakhstan

As said before, it can do, as long as support is given.

Uzbekistan

No reply.

Appendix C: Sample Questionnaire

Part A National Framework

Part A A series of questions aimed at defining the development, policy, socio-economic and geographical situation of each country where such factors may be influential in the success or otherwise of irrigation management transfer and privatisation of irrigation management.

Where regions in a country experience substantially different circumstances these should be recorded separately

1. Current national institutional and policy framework

Does legislation exist for:

- 1.1. Privatisation of agricultural land
 - 1.1.1. Has land privatisation been implemented under this legislation
- 1.2. Establishment of Water User Organisations
 - 1.2.1. Have WUO been established under this legislation
- 1.3. Establishment of other rural or village based associations
 - 1.3.1. What functions does this legislation allow
 - 1.3.2. Have water related rural organisations been set up under this legislation

2. Physical characteristics of the country and the irrigated areas

- 2.1. Total area of country
- 2.2. Total area of agricultural land
- 2.3. Total area of irrigated land

3. Physical characteristics of the irrigation and drainage systems

- 3.1. Command area of largest system
- 3.2. Command area of smallest system
- 3.3. Command area of typical system
- 3.4. % of area that is under pumped irrigation
- 3.5. In the case of pumped irrigation, what is the typical difference in height between the water source and the irrigated land

4. Historical perspective and factors of change over the last 15 year

- 4.1. National economy, *briefly describe the development of the national economy as a whole. Think of products, markets, what have been the most important changes affecting agriculture, etc.*
- 4.2. Development of the irrigated areas, *think of area development as well as the operational condition of the infrastructure*
- 4.3. Social structures, *Think of schools, medical services, pensions, etc.*
- 4.4. Organisation of agricultural enterprises
- 4.5. Key institutions, *research, development of new products*
- 4.6. Policy framework,
- 4.7. Water resources

5. Policy on irrigation management transfer

- 5.1. Transfer of governance or privatisation, *describe the national policy on the transfer of governance of the irrigation and drainage systems from state organisations to other organisations*
- 5.2. National and regional objectives, *describe the objectives to be reached with the IMT*
- 5.3. Status of implementation, *how far is the implementation of the policy underway*

6. Experience in irrigation management transfer: national level perspective

- 6.1. Extent of experience, *List the IMT initiatives implemented and indicate where, name, command area and predominant agricultural crops*
- 6.2. Identification of potential case studies, *out of the previous mentioned initiatives list some which are considered as (good or bad) examples on IMT that should be highlighted in this study*

7. Classification of achievements: national level perspective

Perceptions of status and successes, this means some initiatives have been a success and others have not. To be able to judge if an initiative has been successful or not, rules are needed for evaluation. These rules are composed of measurable performance indicators.

- 7.1. Identification of indicators, *list some of the most important indicators to judge if an initiative has been a success, moderate success or not a success. 6 indicators are identified on the table on the next page, complete with other (max. 6) indicators you consider necessary*
- 7.2. Quantification of success, *from the list in point 6.2, take up to max. 10 cases and classify these according the indicators from point 7.1*

8. Legal situation

- 8.1. Summarise the legislation that applies to irrigation water use
- 8.2. What is the legal status of Water User Organisations
- 8.3. What is the legal status of bulk water suppliers (Oblast and Rayon Vodkhoz)

9. Taxes

- 9.1. The following type of taxes can be identified: water abstraction, pollution, value added tax, profit tax, social tax, land tax, property tax. Are the WUO supposed to pay for these taxes and to whom the payments will need to be made
- 9.2. Are there any other taxes the WUO are supposed to pay and to whom the payments will need to be made
- 9.3. What happens if a WUO does not pay the taxes
- 9.4. Can assets be sold to recover unpaid taxes
- 9.5. Beside the taxes, are there any other financial duties that the WUO have to provide for

10. Financial aspects

- 10.1. Describe who is supposed to pay for the cost of i) system operation, ii) management and iii) maintenance
- 10.2. Is O&M sometimes financed by a loan, from who? What are the conditions of such loan?
- 10.3. Are major repairs sometimes financed by a loan, from who? What are the conditions of such loan?
- 10.4. Does the government have a system of financial support towards the cost of O&M of irrigation and drainage infrastructure (ex: subsidising electricity cost for a pumped irrigation system, etc.), please describe
- 10.5. Is there any direct financial support for individual farmers coming from the government, and if yes in which conditions do these apply
- 10.6. Is credit available for the Operation, Maintenance and management of WUO

11. Institution for irrigation and drainage

- 11.1. List the institutions involved in the agriculture and water sectors, and indicate under which ministry they fall (ex: research, credit, design, environmental monitoring, etc.)
- 11.2. Describe the most important functions of the institutions

11.3. Which of the institutions have been involved in privatisation of agriculture, what was their function

11.4. Which of the institutions have been involved in the privatisation of irrigation and drainage infrastructure, what was their function

11.5. Which of the institution have been involved in Irrigation Management Transfer, and what was their function

12. Participation of foreign experts, NGOs and consultancy organisations in IMT

12.1. Are any of the mentioned entities involved in IMT and if yes describe their function

12.2. In the case that the above-mentioned entities have been involved in IMT, is follow up being given.

12.3. In the case that follow up has been given, explain what this follow up is or has been and is that still ongoing or not

13. Institutional constraints for IMT

13.1. Are there any environmental obligations that might put constraints at the implementation of IMT

13.2. Are there any inter-ministerial or departmental collaboration constraints that jeopardise the implementation of IMT

13.3. Is the lack of dissemination of information between government agencies and ministries an issue that counteracts the implementation of IMT

14. Describe what other factors constrain/limit adoption or implementation of an IMT policy

15. Do you have suggestions on how IMT can be improved?

Date: _____

Filled by: _____

Signature: _____

Part B Specific experience with IMT

Part B Questions investigating case studies where some form of irrigation privatisation or transfer has been attempted. So this concerns an area where IMT is underway or has taken place.

1 What factors have caused IMT to take place?

- 1.1 Irrigators, Explain if and why irrigators have caused IMT
- 1.2 Government, Explain if and why the government has caused IMT
- 1.3 Foreign financing agencies, Explain if and why foreign financing agencies have caused IMT

2 What factors have enabled IMT to be introduced and what was their role?

Explain the role of the following stakeholders and topics in the process of introducing IMT. Have they provided active participation or not, why have they been providing their input

3 Willingness and roles of of stakeholders in IMT

- 3.1 Willingness of farmers
- 3.2 Willingness of village councils
- 3.3 Role of former Sovkhoze and Kolkhoze officials
- 3.4 Role of local bulk water supplier
- 3.5 Role of Government
- 3.6 Role of financing agencies
- 3.7 Role of Consulting Assistance
- 3.8 Ease of access to knowledge, training and experts
- 3.9 Ease of access to appropriate inputs
 - 3.9.1 Technology
 - 3.9.2 Seed
 - 3.9.3 Fertiliser
 - 3.9.4 Credit
 - 3.9.5 Other
 - 3.9.6 Who have been the main supporters of IMT and how has this support been provided:

-
- 3.10 Prior to implementation
 - 3.11 During and immediately following implementation
 - 3.12 Post implementation

4 What resistance has there been to IMT. What form has this taken and how effective has this resistance been:

- 4.1 Prior to implementation
- 4.2 During and immediately following implementation
- 4.3 Post implementation

5 To what extent has political support been a significant factor in either the success, or form of the IMT

Describe if political support, from, national, oblast, rayon and village level has been important during the implementation of IMT and explain the results of the political support has been (or still is)

6 To what extent have national policies affected the form of IMT

- 6.1 Has the government provided a national policy
- 6.2 Was this policy clear
- 6.3 Has the policy been changed during the process of IMT
- 6.4 Does the policy support IMT,
 - 6.4.1 if yes in what way
 - 6.4.2 if no, what should be changed, if anything
- 6.5 Has the government provided concrete guidelines (tasks) for implementation of IMT
- 6.6 Were these guidelines clear and adequate
- 6.7 Has there been the possibility to adapt the guidelines to the local situation
- 6.8 Are the needs of individual irrigators properly addressed
- 6.9 Are the needs of irrigators overall (in aggregate) properly addressed
- 6.10 Are the needs of the bulk water supplier properly catered for

7 Participation in IMT processes

- 7.1 Under the current IMT arrangements, are the WUO able to express their opinion
- 7.2 Is the WUO opinion accepted by others
- 7.3 Have discussions taken place
- 7.4 Do others changed their views because of WUO recommendations
- 7.5 Have the WUO changed opinion after the discussions with others

8 Would it have been possible for the irrigators to successful associate without an external facilitator to develop a scheme for IMT that could subsequently be implemented

Explain if the role of an external advisor has been essential for the IMT transfer. Do you think the farmers would have been able to implement IMT with the same amount of success (failure) without the facilitator.

9 Training

- 9.1 Summarise what training was provided before IMT was introduced. Was this sufficient? If not what should have been done?
- 9.2 Summarise what training was provided after IMT was introduced. Was this sufficient? If not what should have been done?
- 9.3 For how long after IMT introduction training should be provided? What form should this take?

10 What elements of experience to date:

- 10.1 Positive experience
 - 10.1.1 Explain why IMT is considered as positive, or
- 10.2 Negative experience
 - 10.2.1 Describe circumstances where IMT should not be adopted
- 10.3 Give suggestions for other ways how water delivery service can be improved

11 To what extent have the main participants in the day-to-day implementation of IMT been involved in developing the arrangements and overall structure for IMT at local and national levels

12 Looking at the situation described above, describe what you would do if you have the task to improve the water delivery service. Improving the water delivery service in this context means to deliver water in time, at the right quantity and for an acceptable cost.

13 Do you think the physical canal layout and system of control structures and offtakes has helped or hindered the success of IMT ?

13.1 In what way has it made IMT possible?

13.2 In what way has it made IMT difficult to implement?

13.3 If IMT has been hindered by the physical canal layout and system of control structures and offtakes, what needs to change to make IMT more easy?

13.4 Do you think the canal system allows the distribution of water with sufficient flexibility (Yes/no). Please explain.

14 Infrastructure and ownership situation

Please fill in the following table

	Water source (river / dam / basin)	Main canal	Secondary canal	Tertiary canal	Lower level canal
Ownership arrangements					
Owner (note 1)					
Who is responsible for Operation and Maintenance					
Operation (note 1)					
Maintenance (note 1)					
In the case of reconstruction projects, provide the following information					
Who takes financing (Note 1)					
Who re-pays loan (note 1)					
Water charges					
Charges levied (Yes / No)					
Type of charges (see note 2)					
Payment per volume measured (yes, how much/no)					
Payment per unit of area (yes, how much/no)					
Payment related to crop type (yes / no)					

Total payment for ha (US\$/ha/year)					
Irrigation Management Transfer					
To whom are canals transferred (note 1)					
Who pays for Operation after transfer (note 1)					
Who pays for maintenance after transfer (note 1)					
Who pays for rehabilitation cost after transfer (note 1)					

Note 1:

1. Ministry of water
2. Ministry of Agriculture
3. Other Ministry
4. Oblast (state) water organisation
5. Rayon (state) water organisation
6. System (state) water organisation
7. State farm water organisation (Brigade)
8. Water User Organisation (private)
9. Farmer group
10. Individual farmer
11. PMK (state)
12. PMK (private)

Note 2: Type of charges levied:

1. Water abstraction charge, water paid as a resource
2. Irrigation service fee
3. Drainage service fee
4. Infrastructure charges
5. Pollution charges

15 Data on WUO staff, responsibilities and salaries of a typical WUO

The following table is to be filled in for a typical WUO. It can be data related to one that is representative for the majority of the WUO.

Data on specific area	Oblast, Rayon, System(s), WUO(s)
Date of establishment	
Command area	
N.º of water users in command area	
N.º of water users member of WUO	
Km of canal in command area: O&M by WUO O&M by water users	
Km of drains in command area O&M by WUO O&M by water users	
Price difference between water service charges between members and non members	
Data on Agriculture	
Predominant crop	
Most important cash crop	
Describe the trends in crop area and yield over the last 15 years	
Data on privatisation	
Is land privatised	
Can land be sold, if yes what is a typical price US\$/ha	
Is land distributed honest	

WUO organisation	
Draw WUO organisational structure	

	WUO organism and staff function	Do they receive a salary or other financial compensation	Is this in cash or in kind
Describe the functions of WUO organisms and staff and state if they are paid or not			
Is the WUO chairman also the manager and Executive director			

List the assets of WUO (ex: buildings, car, office, canals,....				
WUO budget (US\$)	Staff	Operation	Maintenance	Other

16 Do you know of any case that IMT has failed, can you describe the reasons for the failure. (think of lack of: internal communication, conflict resolution, no trust, conflicts with government institutions, local administration, etc.)

17 Do you think that IMT contributes towards the improvement of irrigation system efficiency. Has the system efficiency been raised in practice and explain why

18 Do you think that IMT contributes to improved agricultural water use. Has the agricultural water use been improved in practice and explain why.

Date: _____

Filled in by: _____

Signature: _____