COMMENTS ON SUPPORT SYSTEMS TO ENSURE SUSTAINABILITY OF IRRIGATION SYSTEM TRANSFERS WITH SPECIFIC REFERENCE TO MEXICO'S PROGRAM

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INTRODUCTION

IIMI is in the midst of an investigation of the Mexico transfer program. This program has been the subject of numerous papers, visits by international groups and workshops.

At the request of IIMI, a brief analysis of readily available information was conducted for the purpose of formulating suggestions that may help IIMI better meet the objectives of its investigations. Specifically, it was asked that the analysis and suggestions should focus on the question of what constitutes 'support systems' sufficient and necessary for successful transfers. It was also requested to present a broader outline of a generic guide for formulating sustainable transfers building on the Mexico example and experiences elsewhere. (That guide is submitted separately.)

This report is based on information secured during a visit to Mexico, 10 -15 November 1996. Discussions were held with IIMI staff and other individuals in Mexico, framed in the context of experience in other countries. Various reports of IIMI's ongoing field investigations in Mexico, including "Performance of Two Transferred Modules in the Region Lagunera Irrigation District," G. Levine, D. Garcia, A. Cruz, C. Garces and S. Johnson, those of other sources, including the World Bank Report No. 292 "Irrigation Management in Mexico," were examined.

There are conflicts among the various documents and statements concerning Mexico's support system. Several items, some of which are noted in this report, warrant further investigation or formal clarification. There is a particular need to verify what institutional actions are presently under negotiation, what are contained in legal documents today and which of these are being fully implemented.

As a result. flaws caused by incomplete and misinterpreted information will be found in this report. However, it was judged that it would be most helpful to IIMI if the results of the review were set forth in clear terms. Indeed, several key issues concerning the support system in Mexico can be identified with the information in hand. These are believed sufficient for IIMI's use in defining some characteristics of successful 'support systems' and formulation of broader policies and procedures. And the material should be helpful when considering future research on this subject.

BACKGROUND

Gathering information relative to the question of what constitutes a support system sufficient to ensure sustainability is one of the primary objectives of the IIMI investigations underway in Mexico and elsewhere. Dr. Sam Johnson is directing the investigation of the situation in Mexico utilizing data being gathered on various projects under his direction there and in Colombia. The functioning of selected transferred modules (usually portions of larger systems) in Mexico are being examined by IIMI staff posted at several sites in the country coupled with visits by Dr. Johnson and other staff to these and additional sites.

The November visit to Mexico permitted an extensive discussion of the program and its current status. The information gained during these discussions and from reports on investigations completed to date was augmented during the visit by exchanges at a workshop on Mexico's water resources planning sponsored by the National Water Council (CNA), IIMI and others. The presentations and informal conversations in the workshop dealt with many of the country's institutions that bear directly on the transfer question.

EVALUATING A SUPPORT SYSTEM

Perhaps the most important question pertaining to the transfer of water service projects from government responsibility to customer responsibility is; what are the institutional, financial and environmental support systems that will allow the transferred service entities to be fully self-sustaining? Inherent in the question is the adequacy of the physical features of the undertaking. The support system question includes both the conditions that should exist before transfer efforts are launched, support during execution and the minimum conditions necessary for the customer-entity to continue providing reliable services on into the future in a cost-effective manner.

The assessment of the degree of achieving "sustainability" as defined by these terms requires observation over an extended period -- allowing time to effect the transition, assess the consequences of the entity's encounter with periods of drought and economic recessions and an extended period of operation and maintenance.

A complementary effort or second best choice for an evaluation early in the program, as is the case in Mexico, (and even before a transfer program is initiated), is to verify whether all conditions are in place that are found in those situations that have proven sustainable. This of course has risks, particularly where characteristics of the culture and institutions such as the tendency to political intervention; inadequate enforcement of laws and regulations; and significant graft may at any time affect critical components of the support system or the service entity directly. Nevertheless, even under the best institutional environment, there is a minimum set of components for a support system to be successful.

Transfers in several countries have been made in recent years or are in the process of execution at this time. Some have been cited as being successful, but time may be insufficient to warrant full confidence that they indeed are self-sustaining. Others, for various reasons, are not self-sustaining at this time or obviously cannot be in the future due to inadequacies in the support system or future changes inevitable in the physical situation. Some have already failed in the sense that they have reverted to government responsibility.

This does not mean that transfers cannot be sustainable, as ample examples exist where customers own and operate service entities -- some for well over one hundred or more years. It only emphasizes that there are a number of essential support conditions that must be in place -- none of which can be omitted or only partially fulfilled if a transfer is to be sustainable.

But again to repeat an important point, the sustainability of a transfer can only be assessed with confidence after the initiating actions have been in place for a period of years. Investigators working on recent transfer programs must be careful not to reach conclusions on their success prematurely due pressures from donors and other agencies.

And whenever findings are issued, the definition of "transfer" applied to the subject case should be defined in detail.

CHARACTERISTICS OF TRANSFERS IN MEXICO

Definition of Transfer Used in Mexico

Before going further, one should note the definition of "transfers" used in studies of Mexico's program. The responsibilities transferred from government to farmers under the current program fall short of the definition considered as full transfers. In Mexico the transfer to "water user associations" (WUA) entails delegating responsibility for limited aspects of the operation and maintenance (O&M) of infrastructure on irrigation projects previously conducted by the government (primarily CNA). The facilities include the irrigation channels, associated drainage systems and interior roads. (No information was found on O&M matters related to the last two activities. However, information in the Bank report indicates that 30% of the irrigated area suffers from drainage problems. That may include ground water control, storm drainage and management of poor quality return water. But the figure should be verified.)

The transferred operations responsibility entails delivery of water through the distribution canals, and presumably, any control works on the drainage collector system. The primary conveyance works have also been transferred to the farmers on slightly over 25% of the area through Limited Responsibility Societies (SRL) which will be described later.

The infrastructure maintenance responsibility transferred to the farmers is limited to routine work. The government will provide major rehabilitation and replacement on transferred facilities, however, financing remains uncertain.

The evaluation of water availability and its allocation among various projects within a basin and for areas transferred to user groups within such projects, and all O&M of storage facilities and retained primary conveyance works remain the responsibilities of CNA.

Ownership of Facilities

The government retains ownership of all facilities -- those transferred to WUAs as well as those remaining under government jurisdiction.

Service Charges

Farmers are to pay water delivery service charges, based on volume of water delivered, to cover the costs of routine O&M of the facilities transferred to the WUA plus the cost of O&M of the CNA retained portions. Rates are determined in collaboration with CNA with the appropriate portion of the funds collected by the WUA from the farmers passed directly to the CNA for O&M of the facilities under direct CNA jurisdiction.

However, significant salary and overhead costs of CNA incurred directly in routine O&M of the irrigation works are covered by the government's general budget and not passed on to the WUAs or farmers. Thus, the WUAs benefit from this additional subsidy while the adequacy of O&M of the bulk works will depend on government budget priorities from year to year.

The water delivery service charge is linked solely to a farmer's water deliveries -- no other services. There are no other mechanisms for assessing charges and neither CNA nor WUAs have powers of taxation.

All available information indicated a uniform rate for service charges for all customers receiving water from a common source. Surface deliveries and pumped deliveries may be charged differently, though data indicates that pumped service does benefit from cross-subsidies. Apparently, funds to pay for drainage and road O&M are extracted from the water delivery charges. No information was obtained on whether -- and if so how -- charge rates within a module or greater area reflect different priorities among uses, such as (a) villages served from secondary or even tertiary canals, or customers with additional services such as (b) users (villages or farmers) with wells within the service area, (c) areas that need drainage or (d) areas that are impacted by drainage conditions arising from users' actions elsewhere.

Financing major work

The government continues to fund all capital expenditures -- rehabilitation, replacement and expansion. The farmers are not paying for past or future capital investment nor do they pay into a reserve fund to cover rehabilitation or replacement of CNA facilities. The introduction of betterment charges is being discussed. However, this has not advanced to the point where its provisions are known or results can be evaluated. In only limited instances have WUAs attempted to create a reserve for their own use.

The World Bank, under a proposed project loan, intends to require farmers to pay 50% for all rehabilitation and modernization provided under the loan. The proposed period of repayment would be 40 years. The treatment of interest is unknown.

Nature of the Mexico transfer

The transfers in Mexico are most akin to a facilities rental agreement. It has many of the characteristics of the associated maintenance and long term sustainability of rented property and the services thereby provided -- as pertaining to both the renter and the owner. The Mexican transfers carry the additional risk of the uncertain rent subsidies presently provided by government.

Status of Transfers -- November 1996

As of November 1996, approximately 86% of government built irrigation projects (3.3 million hectares) have been "transferred." Most WUAs receiving the transfers have jurisdiction for "modules" of 8,000 to 20,000 hectares. Transfer activity on the remaining areas and of the primary conveyance works has diminished dramatically in the last two years for various reasons. Some small farmers appear reluctant to assume responsibilities for fear of loosing present subsidized services while some in CNA wish to retain a direct O&M role rather than risk additional loss of positions in the organization.

CURRENT GOVERNING INSTITUTIONS

The principle institutions that bear directly on water management affecting irrigation are evident and will be described briefly. Several comprise basic components of the "support system" affecting the sustainability of transfers.

Structure of Civil Government

Mexico has a federal form of civil government with states and municipios at the lower levels. However, the overwhelming concentration of power at Center has the effect of it functioning more as a unitary government than a federal system. Not only is the central bureaucracy the dominant force at even the lowest levels of water management, but central government political leaders are able to dictate actions usually delegated to lower levels in other countries. This has profound consequences for water development and management and for the sustainability of transferred systems.

The water resources are owned by the citizens of the country and administered on their behalf by Central government. Concessions for use are awarded and administered by a Central agency. Water resources planning and development are formulated at Center. Indeed, water resources planning, project development, allocation of water among projects and users, enforcement of water allocations, and operation and maintenance of the primary and some secondary works are not only held at Center, but assigned to the same agency -- the CNA.

The CNA service roles include bulk supply for irrigation, village and urban use and storm drainage/flood control except where municipios or metropolitan governments have the capacity. CNA is also in charge of the irrigation transfer program under discussion.

The National Water Resources Law

Important agency assignments in the Water Law, in addition to those of CNA already described, will be summarized in the following paragraphs. But the provisions regarding water "rights" are amplified as they are of immense importance to the adequacy of the "support system." The adequacy of the water rights system is of importance among the institutional arrangements equal to the degree to which the government's regulatory and line functions are separated.

Water rights and their administration As mentioned, water is owned by the nation and managed on behalf of its citizens by Central government. Permission to use water for any purpose is issued as a "concession" of limited duration -- 5 years minimum to 50 years maximum. It was stated that most transferred irrigation modules have 20 year concessions. All concessions issued within a hydrographic basin are defined loosely as having quantities sufficient to meet needs, though no explicit quantities are mentioned. (Values are indicated in the service fee document.) All concessionaires have equal rights to the water actually available regardless of the chronology of the issuance of the concessions.

Surface water concessions are issued to districts and other comparable entities. However, ground water rights are issued to individuals within a district or to entities utilizing wells as their source.

The reliability and intent of the rights in volumetric terms are further clouded by provisions of the law stating that the concessionaire has " -- firm rights to the quantity except in times of drought and in basins where concessions issued by the government exceed the water available." Among uses, the current law stipulates that domestic use (different from urban) and livestock have first priority in case of shortage, but is silent on other uses.

There are no procedures set out for the; (a) evaluation and assignment of concessions upon their expiration, including the relative position of current holders and (b) compensation when additional concessions are granted in basins already fully allotted. However, it does state that auctions may be held to determine the successful concessionaire when conflicting requests are made for a concession. Thus, it would appear that the highest bidder may over-ride national or regional environmental, social, internal security or economic goals that cannot be met by less capable bidders -- certainly over-riding the financial means of most modules already transferred.

National Water Council (CNA) The most consequential responsibilities of CNA have been noted. Board Members of the Council are designated in the law and consist entirely of Central government agencies. The principal office is located in Mexico City with regional offices established throughout the country. Previously existing state offices dealing with water have been abolished. The deconcentrated CNA offices manage aspects of their programs within the regions and render technical support to states and municipios. But it is important to note that the CNA regional offices do not constitute decentralization of authority over programs or provide local representation.

Water User Associations (WUA) have been created to assume responsibility for the O&M of the individual modules when transferred. Their function was described in earlier sections. The entity's Board of Directors, elected every three years from the membership, has power to set policy, approve annual operations, hire and fire staff and assess service charges and disburse revenues from service charges.

Limited Responsibility Societies (SRL) An SRL comprising several WUAs may be created to assume O&M responsibility for portions of the primary conveyance facilities. They function as a federation of WUAs with powers at that level comparable to an individual WUA. These have been established on slightly more than 25% of the government's area.

Basin Committees (BC) The law provides for BCs to assume loosely defined responsibilities in basin management. However, the particulars have not been resolved. It appears that this level of entity is still under debate including composition, powers and their creation. Some participants at the workshop indicated that BCs may be based on the model of the French Basin Authorities. (An assessment of the virtues of the French entities will not be offered here.) Current provisions call for the CNA to serve as president and secretary of BCs and the majority of the committee is to consist of Central government officials together with state officials. The possible participation of non-government organizations -- villages, WUAs, community leaders is not resolved.

Hydraulic Committees (HC) An HC exists in each CNA district and in most basins. These set the annual allocation of water to the concessionaires and water storage carry-over within the system for the next year and determine the number of irrigations. Chaired by the CNA, all user entities have representatives on the HA. No formal mechanism was found for allocating water among municipios and modules under the different hydrological conditions that will be encountered in a given basin.

CHARACTERISTICS OF THE CURRENT SUPPORT SYSTEM

An assessment is offered of Mexico's support system for the institutional, financial and environmental sustainability of WSEs, as well as, the physical conditions that may affect their viability. As stated, this assessment reflects the information gleaned

during the visit and an evaluation of the Mexico situation in the context of experience gained from a great number of other countries.

Based on the limited field data collected for a two year period, it appears that water delivery within the modules are fair and reasonable. But the referenced data indicated an above average water availability in the two years evaluated after the transfer as compared to the annual precipitation in the years immediately preceding the transfer. Revenue available to WUAs for O&M would also reflect the above average deliveries. Some areas suffered from drought and reverted to CNA control for financial, allocation and operations reasons. CNA judged that it could better ensure efficient use of the limited supply. Maintenance expenditures after transfer, particularly for sediment removal, were cited as positive in the reports.

However, the support system now in place exhibits serious deficiencies. The likelihood of sustainability of many transfers under today's conditions (and in the future) is uncertain at best. The enthusiasm expressed in numerous reports by various investigators may best be dampened and further analysis over a longer period is urged before the Mexico experience is set out as the example for the world to adopt. As recommended in the opening paragraphs, further details on Mexico's institutions should be obtained.

Deficiencies that are judged of greatest consequence in negatively affecting the sustainability of the transfers include:

Water delivery administration

1. It was reported, and data collected by IIMI indicate, that water deliveries are equitable and provided as scheduled. However, others stated that a few ditch riders remained only six months and bribery was a problem within some transferred modules. The compliance with allocation plans for deliveries among projects and modules along a river is unknown nor is the extent to which river masters are active in monitoring diversions.

Inadequate water rights system

2. The undefined, unreliable quantity assigned under a concession does not constitute rights sufficient for prudent investments by the WUAs or the customers. Mexico's population growth, urbanization and industrialization will increasingly reduce many irrigation supplies now implied in the transferred concessions. It was reported that concessions issued within several basins already exceed supply by a factor of two. Likely, the farmers do not understand the uncertainty of the basic service.

3. The short duration of a concession (20 years) for irrigation and like water services is inadequate to justify investments in major rehabilitation or additional works -- or major on-farm improvements. This condition and its consequences are likely not understood by the WUA members.

4. All concessions are of equal force independent of the chronological order of award and investment. The general procedure for allocating among concessions when water concessions consistently exceed available normal supply is to curtail all proportionately. There is no provision for compensating those concessionaires who loose their earlier stipulated quantity.

5. There is no criteria nor procedures for reissuing concessions for water held by concessionaires when the existing concession reaches the end of the licensed period. Does the original concessionaire have preference when use is still judged valuable to society? Is there compensation for a loosing concessionaire's investments? The law indicates that auctions may be used when there are more that one applicant for a concession. The farmers likely do not understand this feature of their transfer.

6. CNA has inadequate monitoring, and likely inadequate historical data, to properly enforce concessions. It was reported that some concessions are already being violated.

Inadequate institutional arrangements (in addition to deficiencies in rights)

7. The institutional arrangements for WUA and SRL, their legal structure and the formation procedures may contain flaws. There are no means other than water charges for O&M on drainage and interior roads as assigned to the entities under the transfer program. Apparently, the charters do not provide adequately for other classes of customers, particularly villages. There seems to be no obvious accommodation of those disproportionately affected by drainage and related non-irrigation issues within a module.

8. The regulatory functions pertaining to quantity (rights evaluation and administration including river and ditch masters and well licensing, monitoring and enforcement) and quality (pollution and treatment standards and enforcement) appear to be inadequate. Laws and concessions without enforcement are misleading at best and render resources management marginal. Water quality management appears even to be behind quantity management For example, quality management is often most effective when the continuance of a discharger's supply concession is dependent on the discharger's adherence to quality standards for its waste water.

9. The assignment of the development, operations and regulatory responsibilities within the same entity (CNA in the case of Mexico) has uniformly lead to over development of a country's resources. Until this most basic conflict is truly remedied, the sustainability of all basin concessions will be at risk, but particularly irrigation. The assignment of responsibilities to CNA reflects a much broader list of institutional deficiencies that place the sustainability of the transfers in question.

10. Perhaps the most serious deficiency in Mexico's resources management is the most fundamental; the extent of Central control of water management. and inaction to decentralize key responsibilities to the states and local entities; powers that are at the heart of the sustainability question. Center, through the country's judicial procedures, should make a definitive, permanent allocation of the water resources among the riparian states within a basin . It should delegate the powers of water allocation, issuance of rights and water quality management and their administration to the states, subject only to broad Central oversight for compliance with national goals and objectives.

This is wise, indeed, essential for several reasons. Most obvious is the underlying goal of sound land use mangement and administration - including the location of urbanization, mix and type of industry and amount of land to be retained in irrigated agriculture within a given basin. Land use management is a local function by necessity, found in all countries that exhibit some degree of successful water management; the mechanisms being public participation in controversial decisions --called politics. After all, land use determines water allocation, its specific use and pollution potential --- and the distribution of economic and social benefits. In many countries, Central control perpetuates the political abuse which will worsen as the resources become more valuable.

The basin committees now under discussion, should be under state guidance, not central government, though Center should participate in Committees responsible for inter-state basins. Of course provisions must ensure that the activities and actions of all local entities are truly transparent and open to the public.

11. There are no basin plans and there is no independent enforcement of basin plans to guide water and land resources management or protect existing investments. Water is already over committed in most basins and there is no water set aside for the future. States together with local entities can provide the focus for formulating practical solutions to these difficult issues.

12. The WUAs and SRLs have no taxation power to raise funds for sustaining operations during droughts, major repairs or loans for any other purpose. They cannot utilize property taxes for funding road and drainage system maintenance -- the most common and acceptable financing mechanism for these purposes.

However, it appears that a suitable institutional mechanism for administering a tax is in place. Apparently, most people pay a property tax to each level of government; the municipio, state and Central. The municipios collects these taxes on behalf of all jurisdictions and forward the appropriate amount to each. Thus, there is an effective entity to serve as collectors on behalf of local water service entities if they were granted taxation powers. This removes the costs and inefficiencies and minimizes the distortions of such mechanisms enacted in isolation.

Inadequate means for conjunctive water resources management

13. The responsibilities assigned respectively to CNA and WUAs precludes effective short-term and long-term conjunctive management of ground water and surface water concessions, particularly to provide drought carry over supply. As the ground water tables recede, pumped irrigators will demand a greater share of the surface water within their module. Further aggravating the situation, as consumptive use of surface water by irrigators and non-irrigators increase there will be even less recharge of the ground water.

Inadequacy of basin supply

14. Today's implied adequacy of supply, even surplus, underpinning many concessions that in fact is caused by ground water overdraft, present surface water concessions not fully exploited and extensive recharge by surface irrigation, likely misleads the investors -- including the WUA farmers that are obligating themselves to transfers. (The rate of overdraft in the Lerma is an example and the enthusiasm found in the Lerma modules may rapidly reverse within a few years.) And this is under today's situation -- the future priority demands for the growing village, urban and industrial users aren't even acknowledged.

Inadequate attention to drainage and interior roads

15. The stated drainage problems indicate that the present arrangements and emphasis places the sustainability of present agriculture on 30% of the transferred lands at risk -- a problem likely to expand as the quantity and quality of supplies deteriorate and pollution increases . A collapsed drainage function and poor farm to market roads will preclude sustainability.

######### These last few concerns again brings out a broader issue. IIMI should expand its vision of water management to support agriculture and associated rural population beyond just irrigation -- a view that has been promoted through the years in several reports and papers. They uses and the systems supporting the uses are physically interdependent. Conditions similar to the drainage conditions in Mexico exist on the Colombian projects discussed in recent IIMI publications, yet were not dealt with in the analysis of sustainability, institutions, financing or overall success of the current arrangements on those projects. Pakistan, India and China offer more extensive examples. And Indonesia exemplifies the wet tropics where water control entails year around management for drainage and subsurface irrigation. Such water control (drainage and irrigation combined) is of immense importance to agricultural production on millions of hectares. And these systems encounter the exact same management, administration, operation, maintenance and financing problems and will be subject to transfers programs too.

It is urged that IIMI once again consider this matter -- inclusion of drainage as well as village supply and local flood control that cannot be isolated from irrigation in most areas today and are physically, institutionally and managerially interlinked with irrigation. It should review program objectives, the components of the existing research programs and instructions to IIMI's researchers. #######

Maintenance deficiencies

16. Ownership of facilities remains with CNA. Hence, there is no sense of responsibility in WUAs for prudent O&M sufficient to sustain the works on into the future. Farmers have no incentive to fund maintenance other than that which most constrains their immediate deliveries. This is aggravated by the ease with which national politicians -- where all subsidy funds originate -- can force or withhold CNA rehabilitation, expansion and repair in exchange for votes

17. The adequacy of maintenance of the transferred systems is difficult to ascertain at this early stage. Much more detailed information is required such as the long term changes in; system hydraulics -- capacity and control, channel (delivery and drainage) conditions, condition and functioning of structures, weed control (within and outside of channels), sedimentation, roads (canal inspection and internal area network), right-of-way lands, buildings, heavy and transport equipment and communications.

######### Judgment of the quality of maintenance will have to be based on conditions over a period of years prior to turnover; the receiving entity's annual, five and fifteen year maintenance plans; their budget allocations and actual expenditures; and realistic assessments of future revenues vs. budget needs. A few years' records can be very misleading.

There is a risk when drawing early conclusions on the adequacy of a WUAs' maintenance program. When a person plans to sell a car at some time in the future, (as CNA did with their system), they will likely not spend more money to replace old tires, fan belts or even engine components in serious condition. Yet, if one contacts the new owner, one likely will learn that he has remedied the most serious deficiencies so he has adequate transport. But that in itself doesn't confirm a new trend in maintenance of the car -- after all it did perform before the sale and was fully adequate for some period of time. People often buy an older house, but spend a long time upgrading it. That doesn't either indicate a neglect of maintenance in the early years. It has to do with the income and the seriousness of deficiencies.

To extend the example, the evaluation of the level of maintenance and the need for repair of a car is best done by an old mechanic; not a highly trained mechanical engineer or by a variety of people interpreting conditions using a guide or check list. (The recently issued O&M check list and methodology for its application, shared by Ian during the Mexico visit, would appear to exhibit some of these short-comings.)

The same approach is best for evaluating the adequacy of water facilities O&M. The extent and urgency of maintenance and an estimate of its costs requires a solid technical background and long experience in the field. The assessment is partially subjective which cannot be replaced by checklists. The services of people experienced (twenty-five years in field maintenance) with irrigation and drainage facilities would yield findings with a far greater level of confidence. Two such individuals with a few weeks visit could provide a sound assessment of system O&M conditions and the entity's maintenance program and budget.

It is believed that this approach would also strengthen IIMI's standing with client countries (important to their support for IIMI's longer term country program objectives). Senior experienced officials in charge of a country's O&M will be skeptical of maintenance evaluations by any other means. They are by nature suspicious of recommendations that appear academic or conducted by individuals lacking hands on experience.

It is again recommended that IIMI place an experienced O&M specialist on its staff or at the least have one as a Senior Associate. Likewise, based on conversations and reviews of system performance reports, IIMI would benefit from occasional services of an irrigation agronomist. Some of conclusions in IIMI reports seem to minimize the consequences of plant varieties, plant population densities and other cultural practices on production and hence "performance." Likewise, the consequences of markets, availability of production credit and tax policies bear on performance, yet aren't assessed in many evaluations. Without adequately treating these non-water aspects, some approaches and methodologies applied in determining performance are incomplete -- and perhaps invalid. #########

Deficiencies in financing

18. WUAs levy water charges for services they provide within the module and for payment of the CNA bulk service. This is the sole means for financing their activities. As mentioned there is no power of taxation. However, it is difficult to envision a mechanism other than property taxes to provide the funds for the long term sustainability of these entities. Entities will need this source to survive economic and water supply emergencies as well as to fund any major rehabilitation or replacement if/when government subsidies are removed.

19. The availability of financing varies greatly among farmers within modules. Larger farmers have more assets, greater access to lending sources and can contract production with US entities. Many small farmers can only get production credit from private sources at high rates -- there is no government source. Thus, small farmers do not have the financial means or access to the produce market sufficient to finance a shift in crops to meet current markets. Recent "rental " of water by small farmers to larger farmers have been forced largely by these conditions -- returns on land and water would be higher if they could respond to the produce markets. The water exchanges appears to be more a forced sale rather than a free market.

20. With the uncertainty of income and supply of water, WUAs whose membership is dominated by small farmers will be at even greater risk, particularly under difficult economic or drought conditions. This was largely what caused failure of the private investor-owned irrigation projects of the late 1800s in the US that didn't have taxation powers and gave impetus to the 1906 Reclamation Act.

21. Another obstacle to financial sustainability of the areas transferred to small farmers is their reluctance to accept ownership of land for fear of loosing other subsidies. Property taxes of course cannot be levied by a WUA on those lands still held in government ownership (a majority of all agricultural land in Mexico remains in government ownership).

22. The government has privatized agriculture extension services. Again the small farmers have limited access to new technology and production methods and supplies and this will further squeeze them.

23. Many important ground water basins receive a major portion if not a majority of their total recharge from surface irrigation. (The impact of reduced recharge from surface irrigation was noted earlier.) The WUAs do not appear to have power to assess any direct service charge against individual pumpers for the associated O&M of the facilities to import the recharge water. They cannot either reflect in such charges, the greater reliability of supply available to the pumpers. These considerations would allow more equitable cost recovery.

24. Information secured concerning financing capital works is inconsistent. It was indicated that CNA would contribute 50% to future expenditures by the entities. However, the government hasn't had the budget to match farmers' contributions. The future is uncertain.

25. Water markets and auctions are lightly discussed in Mexico's legislation, but without details. The commonly applied criteria adopted by international entities of "land for land" when farmers loose land in reservoirs for some reason, has not been rationalized yielding a similar criteria of "water for water" when farmers loose their water. In many situations they are equally scarce. (Apparently farmers cannot manage money received from land sales but can from water sales!?!)

Agencies are in fear of dealing with this topic, though it has been discussed at length in several internal documents. There is no relevant mechanism or procedure enunciated in Mexico either; except utilizing the auction provisions of current law. Political movements complicate this situation and they are particularly forceful in countries like Mexico. It would be well if farmers knew the policy and procedure before they commit to a transfer.

26. The long term viability of any organization will depend on regular, rigorous, independent audits. Either private certified accountants or government regulatory bodies are commonly used. It was stated that annual audits are being made, however, the degree of independence and thoroughness is unknown. (It was understood that some are carried out by internal committees.) If WUAs and SRLs are to be acceptable borrowers of any consequential amounts from private banks, the government will have to establish a "utility commission" type of unit or certify private sector auditors to conduct, not only the financial but also audits of facilities maintenance and service performance. This is not being done.

Environmental sustainability

There does not appear to be any direct affects of transfers on the environment. The present irrigation uses being transferred already exist. The political decisions to expand or contract use or whether to deal with pollution will be little affected by who has responsibility for facilities O&M.

However, several provisions of the Water Law will aggravate or at least not improve the environmental condition of the water resources. The provisions, assignment and enforcement of rights; the enforcement of water quality standards and management actions; and the means for accommodating all economic, social and instream demands can only be considered as rather loose at this time and will be even more difficult in the future.

27. No documents were obtained on the impact of urban and industrial effluent on present and future water use. The direct affects of poor quality water on irrigated crops and the indirect affects on availability of supply by allocating water for diluting wastes is growing. For example, it was reported that the effluent from Mexico City is creating serious consequences for established agriculture and the farmers' personal health. They are in effect losing their concession. The same will likely be found near all urbanizing areas, particularly during low flow seasons and in times of drought. The owners of transferred concessions will likely not have the powers to seek remedies from upstream water quality violators held by customers who can apply political pressures directly on government water supply agencies.

SUMMARY OF FINDINGS IN MEXICO

Caution should be exercised when examining irrigation system performance and the adequacy of support systems in any country under the conditions described. This is particular important for IIMI, as IIMI is viewed as a leading authority on irrigation management and very much seen to be in the fore of the transfer/"privatization" efforts so popular today. The situation with regard to all aspects must be verified before proclamations on sustainability are rendered. Personnel with long experience in successful system O&M, irrigation agronomists and individuals who know the practical and political realities of institutions should be engaged in the examinations together with irrigation engineers, economists, sociologists and gender specialists.

In summary, some key features of support systems underlying successful transfers that are found deficient in the Mexican program are listed;

a. Conflicting assignment of responsibilities for water planning, development, operations and regulatory functions,

b. Lack of firm inter-provincial allocations and regional and basin water resources plans together with their enforcement,

c. Insufficient decentralization of all aspects of water resources management,

d. Split government and user ownership of service facilities and responsibilities for functions to provide the services,

e. Inadequate water rights -- surface and ground water -- and their administration,

f. Over-commitment of available water,

g. Lack of conjunctive surface/ground water management,

h. Inadequacies in mechanisms to finance capital investments,

i Inadequacies in service pricing procedures and ability to finance O&M

(hdf 12/12/96)