International Water Management Institute

A HANDBOOK FOR

ESTABLISHING WATER USER ASSOCIATIONS IN PUMP-BASED IRRIGATION SCHEMES

IN MYANMAR

SANJIV DE SILVA, PETRA SCHMITTER, NYAN THIHA AND DIANA SUHARDIMAN

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CGIAR RESEARCH PROGRAM ON Water, Land and Ecosystems

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Front cover photograph: A newly elected Canal Representative operates a sluice gate to regulate water flow according to the irrigation schedule developed by farmers under the Water User Association in the Pyawt Ywar Pump Irrigation Scheme (*photo*: Sanjiv de Silva/IWMI).

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Project

This study was conducted as part of the *Implementation of Pyawt Ywar Pump Irrigation Project*.

Collaborators

The project is implemented by the Ministry of Agriculture, Livestock and Irrigation (MoALI), Myanmar, in collaboration with:

International Water Management Institute (IWMI)

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

National Engineering and Planning Services (NEPS), Myanmar

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Contents

Acronyms and Key Terms

ADS	Agriculture Development Strategy
BoD	Board of Directors
CF	Community Facilitator
CR	Canal Representative
DALMS	Department of Agricultural Land Management and Statistics
DoA	Department of Agriculture
Dy	Distributary
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GAD	General Administrative Department
GILIT	Gender in Irrigation Learning and Improvement Tool
IWMI	International Water Management Institute
IWUMD	Irrigation and Water Utilization Management Department
KII	Key Informant Interview
LIFT	Livelihoods and Food Security Fund
MB	Management Board
MEAL	Monitoring, Evaluation Accountability and Learning
MoALI	Ministry of Agriculture, Livestock and Irrigation
MB	Management board
NGO	Nongovernmental organization
O&M	Operation and Maintenance
PIM	Participatory Irrigation Management
PS	Pump Station
PSCC	Pump Station Coordination Committee
PYPIS	Pyawt Ywar Pump Irrigation Scheme
PYPIP	Pyawt Ywar Pump Irrigation Project
SG	Sub-group
SGR	Sub-group representative
VTA	Village Tract Administrator
WUA	Water User Association

*NOTE: This handbook uses **WUA** as a generic term, except when referring to the specific WUA that was established under the Pyawt Ywar Pump Irrigation Project. This scheme is presented to provide examples rather than a model to follow for other schemes.*

WUG	Water User Group

*NOTE: **Water users** can include farmers who cultivate their land, or those who cultivate land owned by others through a lease (depending on the lease arrangement and agreement/relationships between landowner and tenant), as well as other water users such as livestock keepers and even households close to the canals who are dependent on the canals for domestic water.*

Foreword

Irrigation systems are vital in supporting Myanmar's Agriculture Development Strategy (ADS) – from reducing poverty to improving food and nutrition security while boosting the agricultural economy. Furthermore, the Myanmar Sustainable Development Plan (2018-2030) recognizes sound water management as a foundation for food production.

An irrigation scheme can only function if its physical infrastructure is well maintained, and equipped with skilled human resources to manage water efficiently, providing equitable water for all farmers to sustain and improve their livelihoods. Therefore, for sustainable and inclusive irrigation scheme management, more is needed besides the good condition of physical irrigation infrastructure. A governance system promoting strong cooperation between all stakeholders involved in operation, management, and use of its water and land resources is critical. To strengthen the governance in irrigation schemes, towards more equal and sustainable water use and allocation, Participatory Irrigation Management (PIM) guidelines were developed by the Irrigation and Water Utilization Management Department (IWUMD). The guidelines aim at strengthening the institutional development of Water User Associations (WUA) to support strong farmers' involvement towards a systematic, effective and inclusive operation and maintenance of the scheme, in close collaboration with IWUMD.

Since the late 1970s, considerable efforts have been made, particularly in Asia, to develop and support WUAs. Learning from these successes and challenges, we have initiated several pilot projects in gravity- and pump-based irrigation schemes to help identify how to best strengthen irrigation governance in Myanmar. In December 2016, with financial support from the Livelihoods and Food Security Fund, IWUMD commissioned the rehabilitation of the *Pyawt Ywar pump irrigation scheme*. The project, led by the International Water Management Institute (IWMI), aimed at improving farmer livelihoods through the identification and implementation of best management practices in water governance and agricultural production.

The *"Handbook for Establishing Water User Associations in Pump-based Irrigation Schemes in Myanmar*" is a practical guideline on how sustainable WUAs can be established in pump-based irrigation schemes. It provides hands-on guidance in putting the PIM guideline of our country into practice, drawing upon lessons learned from the *Pyawt Ywar* project. This handbook focuses on pump-based irrigation schemes as the *Pyawt Ywar* project demonstrated additional considerations that needed addressing given the existence of pump stations. Nevertheless, sections of the handbook are also applicable to gravity-fed irrigation schemes.

Accordingly, I believe that the handbook is an important step in strengthening the over 300 pump-based irrigation schemes in Myanmar, given its unique social and physical nature. The Irrigation and Water Utilization Management Department under the Ministry of Agriculture, Livestock and Irrigation fully supports and endorses the use of this new Guidance Manual.

U Tin Maung Aye Htoo
Deputy Director General
Irrigation and Water Utilization Management Department
Ministry of Agriculture, Livestock and Irrigation

SECTION 1: Introduction, Principles and Context

About this Handbook

The purpose of this handbook is to support efforts to improve irrigation efficiency, and crop and water productivity to enhance farm incomes and livelihoods in pump-based irrigation schemes established and operated by the Irrigation and Water Utilization Management Department (IWUMD) under the Ministry of Agriculture, Livestock and Irrigation (MoALI) in Myanmar. Anticipated users of this handbook are government agencies, donors and nongovernmental organizations (NGOs) who are likely to implement the government's Participatory Irrigation Management (PIM) guidelines developed in 2017 for the establishment of Water User Associations (WUAs) in irrigation schemes. The PIM guideline was developed and tested in gravity-based irrigation schemes in Bago. Through the Pyawt Ywar Pump Irrigation Scheme (PYPIS) in Sagaing District, the PIM guideline has now also been applied in a pump-based irrigation scheme.

The government's PIM guideline represents an important step in its policy with regard to the management of irrigation schemes, by enabling farmers to actively participate in the operation and maintenance (O&M) of irrigation schemes in Myanmar. Globally, establishing WUAs has been the main way of putting into practice the idea of farmer participation in irrigation management, in support of sustainable, productive and equitable supply and use of water. The organizational functioning of WUAs continues to be mixed because their performance depends on many other things beyond farmers' willingness to participate and their capacity to do so. Therefore, institutional design of the WUA provides a venue for farmers to work with relevant government agencies together to develop and implement systematic irrigation management and maintenance. The recognition of WUAs as formal registered farmer-led institutions is hence a strong indication of a policy shift by the Myanmar government towards a more collaborative and systematic approach to irrigation management.

Recognizing there is limited experience with establishing WUAs in Myanmar, this handbook is intended to support the creation of these farmer-led institutions by suggesting principles and processes that can help and be adapted in the establishment of WUAs in the future. The focus of this handbook is mainly on irrigation schemes that rely on large-scale pumping from a river or other water source, which creates additional socio-technical characteristics for scheme operation and cost implications, in comparison to gravity-based irrigation schemes. Therefore, establishment of a WUA in a pump-based irrigation scheme requires adaptation of the PIM guideline to address some of the technical and operational differences between gravity-based and pump-based schemes, and the relevant institutional implications (e.g., the establishment of a pump station coordination committee [PSCC] as an additional governance layer). Furthermore, the energy costs of pumping water are likely to be significantly higher than the water fees collected from farmers. Therefore, in pump-based irrigation schemes, it is very unlikely that a WUA can fully recover costs, and it must be recognized that farmer participation in the WUA would not automatically result in full system cost recovery.

With over 300 pump-based irrigation schemes in Myanmar, this handbook could assist future initiatives to organize and enable farmers to work collectively towards improving their access to irrigation, and supporting scheme operation and maintenance. While this handbook focuses on pump-based irrigation schemes, much of the guidance – such as the basic institutional design

principles, processes for participatory stakeholder problem analysis and those linked to the creation of the various institutional layers – may be applicable to any canal-based irrigation scheme that serves a large number of farmers.

"When it comes to WUA formation and organizational strengthening, there is no 'one-size-fits-all' approach."

This handbook draws on several decades of experience from around the world in organizing farmers to participate in the creation, improvement and management of irrigation schemes. **A key conclusion from these experiences is that investing in the "software" component – training and institutional development – of irrigation is critical for the success of the entire scheme.** In other words, although ensuring that the physical irrigation infrastructure is in good condition is key to systems delivering reliable water allocation and more equal water distribution, simply investing in maintaining the "hardware" (i.e., canals and other physical infrastructure) is insufficient. Implementation of PIM worldwide has highlighted the criticality of farmer empowerment through institutional strengthening, in order to ensure successful implementation of the policy and improved irrigation scheme performance. Moreover, it is important to recognize the importance of contextual factors and the wider agrarian society in the overall institutional design of the WUA. When it comes to WUA formation and organizational strengthening, there is no 'one-size-fits-all' approach. It is in recognition of these lessons that this handbook focuses on a specific type of irrigation scheme in Myanmar, bringing together lessons from other countries and first-hand experience in establishing a WUA in a pump-based irrigation scheme (see a local example (1)).

A local example (1): The Pyawt Ywar Pump Irrigation Project.

This handbook focuses on how to set up suitable WUAs for pump-based irrigation schemes in Myanmar. It draws on the experience and lessons learned by the International Water Management Institute (IWMI) and its partners in the Pyawt Ywar Pump Irrigation Project (PYPIP), funded by the Livelihoods and Food Security Fund (LIFT). The project sought to improve scheme governance from January 2017 to March 2019. The scheme, constructed in 2004, was rehabilitated, resulting in a potential command area of 4,333 acres (1,753.5 hectares). Water is drawn from the Mu River through one primary and two secondary pump stations (PSs), irrigating a range of crops including paddy (monsoon and summer), green gram, chickpea, sesame, groundnut, wheat, maize and cotton.

For Whom is this Handbook Intended?

The anticipated users of this handbook are practitioners responsible for planning and implementing programs to create and operationalize WUAs in Myanmar, especially in pump-based irrigation schemes. Practitioners include managers of such irrigation schemes, government agricultural and irrigation officials, and private initiatives and NGOs that are involved in the creation and operationalization of WUAs. The handbook is also targeted at donor agencies that often fund WUA creation as part of new schemes or the rehabilitation or modernization of existing schemes.

Using the Handbook

The handbook is divided into four sections. Section 1 (this section) provides the principles and context for use of the approach laid out within. Section 2 provides a series of practical steps to be followed in order to successfully implement the recommended approach. It also presents examples from the Pyawt Ywar Pump Irrigation Project (see a local example (2)), not as a model to follow but to illustrate how these steps could be carried out in practice. Finally, references, additional reading and sample resources can be found in sections 3 and 4.

Key Principles Underpinning this Handbook

Clarity of Purpose

A WUA is generally established to improve irrigation and provide overall management to increase scheme productivity (food production), while reducing the financial burden of O&M on the government. Globally, and in Myanmar, WUA formation is often driven by a donor's development agenda and the national government's development policy. If it is to be successful, WUA formation should start with discussion about how farmers can benefit from WUAs, how they envision the WUA organization developing in relation to these benefits, and how they can contribute to the overall decision-making process throughout the procedure of formation and subsequent functioning.

"In the context of a pump-based irrigation scheme, WUA organizational development should not be linked with farmers' ability to pay irrigation fees to fully recover the pumping costs, as the latter would burden and reduce farm households' ability to improve their incomes and food security. It is key to recognize that farm households will only drive WUA organizational functioning if they can benefit from it through improved irrigation water supply, more reliable and equal water distribution, and moving towards increased agricultural productivity and farm income."

An Adaptive, Responsive Model

A WUA is in fact a concept that can only fully materialize through meaningful farmer participation and inclusive decision-making processes, rather than a fixed structure. It is the idea that farmer empowerment and greater involvement in irrigation scheme management would not only contribute towards better scheme performance, but also improve their livelihoods in terms of increased agricultural productivity (i.e., due to a more reliable water supply) and farm income. What institutional form a WUA should take will depend on the specific physical and social characteristics of each scheme, and how the different stakeholders within the local communities (villages) envision their role in overall scheme management. Converting the idea of a WUA into an actual organizational structure must be an adaptive, iterative process that responds to the specific needs of farmers and other key stakeholders living in each scheme.

A Complex and Time-consuming Undertaking

Establishing WUAs is a highly complex, intensive and time-consuming endeavor that might not always meet predefined milestones. Unlike building canals or other physical irrigation infrastructure (e.g., sluice gates, division structures, weirs, etc.), establishing WUAs implies introducing a new organizational structure into existing social, economic and political landscapes and power relations. To achieve effective functioning, the old and new need to be linked with each other to ensure synergy and strategic alliance. This requires comprehensive knowledge and understanding of existing sociopolitical structures and power dynamics. Ensuring such alignment calls for continuous adaptive management to understand and reconcile the needs and views of different stakeholders, address conflicts and vested interests, and fill often-significant gaps in capacity. This is especially the case in Myanmar where PIM represents a major cultural shift for both farmers and the government. Early withdrawal or reduction of support to the WUA may lead to its collapse or inability to achieve the planned potential productivity and profitability, or the restriction of the scheme and its benefits by a powerful minority. Therefore, **it is recommended that the process of WUA design, establishment and stabilization is planned across 5 years**, although the external support can normally be expected to gradually lessen no earlier than 2 years after the WUA is established. The

government needs to continuously support the process of WUA organizational development, and make it an integral part of the country's irrigation and rural development program and activities. The shift from a government-driven to a farmer-driven approach to managing irrigation schemes represents a major transition, which requires the government's commitment to support WUA organizational development as part of the country's long-term development vision.

"It is recommended that the process of WUA design, establishment and stabilization is planned across 5 years."

The Need for Diverse Skills and Experience

When planning a program to establish a WUA, the organization tasked with this activity should have the expertise and capacity needed to work with men and women farmers (including landless farmers who lease land in the scheme), other water users such as livestock keepers and even households seeking domestic water supplies, and a range of government agencies at several levels of authority. They will need to facilitate the establishment/strengthening of the WUAs, and design and implement appropriate experiential training exercises. In addition to these central social skills, knowledge of agricultural water management and agronomy will also be needed to relate institutional development and social mobilization to the physical realities of the scheme and improve agricultural productivity. If there is no such single organization, a consortium of two or three organizations with specialist knowledge may be an option, although this will require a clearly defined lead organization, strong management skills and significant time investments to ensure the consortium works as a cohesive unit.

What is a Water User Association?

"A WUA is intended to enable its members (the water users) to pool financial, material, technical and human resources for the operation and maintenance of the irrigation and drainage system within their jurisdiction for the benefit of all the members."

A "WUA" is an umbrella term for several different organizational forms such as Water User Organizations, Irrigation Water User Groups (WUGs), Irrigation Farmer Organizations and Irrigators' Associations (Meinzen-Dick 1997; Mwamakamba et al. 2017; Salman 1997). It is a non-profit organization comprising water users who share a common source of irrigation. Water users may require water for farming (agricultural or livestock) or domestic purposes. A WUA is meant to enable its members (the water users) to pool financial, material, technical and human resources for the operation and maintenance of the irrigation and drainage system within their jurisdiction for the benefit of all the members. A WUA may sometimes consist of a number of organizational layers, which will operate at various scales, depending on the size and complexity of the irrigation scheme.

A local example (2): Pyawt Ywar Pump Irrigation Project.

In the PYPIP, the WUA consisted of a 'nested' arrangement, with four institutional layers. This was based on an assessment of the coordination required for a scheme that has three pump stations, collectively serving almost 1,000 farmers in five villages and a command area of 4,333 acres (1,753.5 hectares).

Since the late 1970s, considerable efforts have been made to developing and supporting WUAs around the world. The idea of forming WUAs was a response to the perceived failings of state-managed irrigation systems, which took a top-down management approach that focused mainly on maintaining infrastructure, and less on providing good water services to farmers. WUAs were, therefore, intended to improve irrigation performance through increased farmer participation and involvement in irrigation scheme management, leading to more sustainable water use and more equitable sharing of the benefits. While the latter was not always achieved, given key structural and contextual challenges pertaining to large-scale irrigation scheme management (Box 1), many have highlighted the need to move beyond farmer ***participation and involvement***, and towards farmer ***empowerment*** (Vermillion 1999).

Box 1. Examples of structural and contextual challenges affecting WUA models.

- Technical top-down hierarchy in scheme management that does not correspond with WUA organizational development (WUA is based on a 'bottom-up' approach).
- The WUA is positioned or perceived as an extension of the government instead of farmer representatives.
- Elite capture; inequity of water allocation.
- Penalties that disproportionately affect certain social or ethnic groups.

Similarly, it was assumed that increased benefits will improve the payment of irrigation fees by farmers to cover the O&M costs, since their ability to make decisions and access better benefits would give them a stronger sense of ownership of the scheme. However, global experience shows

that unless farmers benefit significantly from the WUA, payment of irrigation fees is unlikely to be sufficient to cover the O&M costs of the scheme, or reduce the government's financial burden of scheme management. All this emphasizes the importance of gaining farmers' views on how they expect to benefit from WUA formation, from the very start of the process.

There are several possible incentives for farmers to participate in establishing and managing a WUA:

- Equitable water distribution among farmers regardless of the location, type or size of the farm.
- More reliable water supply that is more responsive to crop needs.
- Quick and rule-based dispute resolution at the local level, leading to improved social relations.
- Well-maintained canals (decreasing the time of irrigation due to less discharge fluctuations, reduced losses, etc.).
- Less water theft/stealing.
- Opportunity to contribute to the design of irrigation infrastructure, and selecting technologies that fit their financial and labor resources (for newly-constructed or rehabilitated schemes).
- Potential to gain access to other services besides water management, which improve income.
- Collective capacity to deal with external threats (e.g., climate change, competition for water from upstream users, changes in markets, etc.).

"It is recommended that any attempts to establish WUAs in Myanmar should look beyond cost recovery to other important development outcomes such as poverty reduction, food security and climate resilience."

While the general rationales for establishing WUAs are set out above, the expected results have proven elusive. Several broad studies of experiences with WUAs (Garces-Restrepo et al. 2007; Ghazouani et al. 2012; Mukherji et al. 2009; Senanayake et al. 2015; Aarnoudse et al. 2018) have attempted to identify why this is the case. Among the causes highlighted are poor implementation, including the lack of inclusive user participation, and unclear formulation of the roles and responsibilities of WUAs. Other studies questioned the assumptions behind the WUA concept itself and whether they are always the most appropriate institutional arrangement to improve irrigation performance. An important finding particularly relevant to pump-based irrigation schemes is that expectations on cost recovery have been unrealistic, which is also supported by IWMI's experience in the PYPIS. All reviews conclude that responding to the broader socio-technical and economic context in which WUAs are supposed to function is central to finding solutions for irrigation management. Thus, it is recommended that any attempts to establish WUAs in Myanmar should look beyond cost recovery to other important development outcomes such as poverty reduction, food security and climate resilience.

This handbook is mindful of these lessons from past experience with WUAs, and emphasizes the process by which a WUA is formed, and the principles that should inform this process. It is predicated on the understanding that trying to form WUAs rapidly, for example, by simply holding a meeting and 'electing' officers, does not work. Instead, there is a need to invest in a creative process to support men and women water users to form their own WUA that meets their needs and expectations (Box 2).

"…trying to form WUAs rapidly, for example, by simply holding a meeting and 'electing' officers, does not work. Instead, there is a need to invest in a creative process to support farmers to form their own WUA that meets their needs and expectations."

Box 2. *Ensuring the WUA and its development process is gender-sensitive.*

Ensuring gender equity[1] in irrigation is vital. According to FAO (2011), women can be as productive as men in the agriculture sector ***when they have access to the same quality and quantity of agricultural inputs***. Therefore, achieving gender equity in the irrigation sector has become an important development goal. However, research on gender and irrigation shows that formal irrigation schemes are generally dominated by men both in terms of access to and control over production and associated inputs, and also in terms of benefits received from irrigation (van Koppen 2002; FAO 2012). This indicates that a "gender blind"[2] irrigation scheme design and design process may unintentionally introduce or exacerbate existing gender disparities in social norms and practices, and even create gender inequalities and new barriers for women (Lefore et al. 2017a).

A gender-sensitive approach informed by gender analyses is, therefore, necessary from the outset. It will help the project (i) uncover underlying social issues around gender relations; (ii) identify men's and women's needs, preferences and resources that are relevant for irrigation management; and (iii) understand how WUA design and implementation can ensure that existing gender relations do not undermine women's ability to actively participate in and benefit from the WUA and the irrigation scheme. Such an analysis, which will need to be carried out early on in the process (in Phase 1 [*Contextual Diagnosis*] in this handbook), could also raise awareness among stakeholders about gender issues, and the ensuing dialogues could be used to identify, jointly with stakeholders, how key challenges can be addressed in WUA design and implementation.

One option for conducting a gender assessment is the Gender in Irrigation Learning and Improvement Tool (GILIT) (Lefore et al. 2017b). This tool brings together best practices identified through previous research, and existing tools and indicators, with the principles promoted through various regional and global strategies for addressing gender equity in irrigation. In addition to gaining insights into existing gender relations and their potential implications for WUA design and implementation, the GILIT provides the basis for gender equity indicators to assess and improve performance at scheme level. These indicators cover aspects related to land, water, technologies, inputs (e.g., labor, fertilizer, pesticides), and market information or marketing services, as well as membership in related organizations, opportunities to participate meaningfully in scheme governance, and to benefit from the scheme. As such, this tool can also support impact assessments of the irrigation scheme.

[1] Gender equity refers to "fairness of treatment for women and men, according to their respective needs and interests. This may include equal treatment or treatment that is different but considered equivalent in terms of rights, benefits, obligations and opportunities" (ILO 2007).

[2] 'Gender blind' refers to approaches to project design and implementation which have little or no gender analysis or consideration of local gender norms and relations. This contrasts with gender-sensitive and gender-responsive approaches that are informed by gender analysis.

How are WUAs in Myanmar Envisioned Under PIM Guidelines?

The PIM guidelines support the government's desire to increase agricultural production, for which the development of irrigation systems is an important strategy. These guidelines further recognize the need to repair and improve existing irrigation systems, and it explicitly recognizes the need to promote collaboration between farmers and the government to achieve this. Therefore, an important WUA role will be to facilitate farmer coordination and support scheme co-management where IWUMD and the WUA share distinct responsibilities (Box 3). It further acknowledges that effective and efficient utilization of water is an urgent need in Myanmar. Although there is a focus on rice production, the need to allocate water across a diversity of crops is also important. A very important feature in the guidelines is the responsibility placed on IWUMD officials to "*understand the institutions, to take an appropriate initiative and to transfer the knowledge and technology to the farmers through better communication*" (Government of Myanmar 2017, Chapter 2).

With these objectives in mind, the guidelines expect a WUA to perform a range of functions, such as:

- operating and maintaining the distributary (Dy) and minor canals;
- working with IWUMD staff to formulate the irrigation schedule;
- ensuring sufficient water is supplied to the scheme to distribute for irrigation;
- ensuring equal and efficient irrigation supply with minimal disputes and water theft; and
- ensuring the irrigation fees and other fees are collected from the water users, and the due amounts are transferred to the IWUMD.

Many of these WUA functions are also shared by the IWUMD according to the guidelines, in keeping with the idea of the WUA fostering a working partnership between farmers and the IWUMD. As such, the IWUMD is also to perform a range of activities, for example:

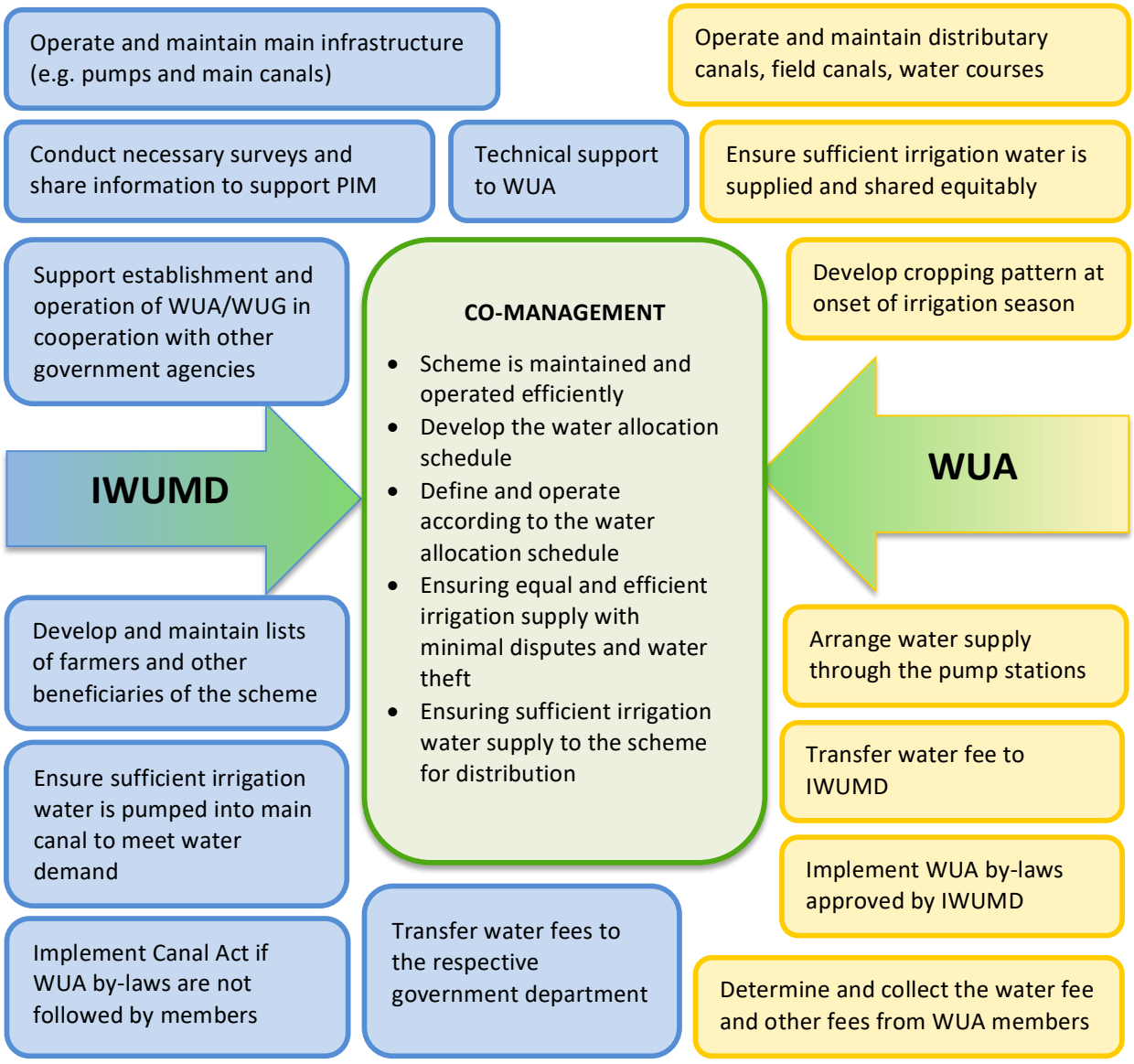
- conduct necessary surveys required for irrigation planning (e.g., topography, water demand, rainfall, water discharge);
- participate in creating the list of farmers within the WUA, creation of water allocation plans and water distribution, and O&M;
- support the establishment and operation of the WUA, including its sub-structure, in cooperation with related departments such as MoALI);
- facilitate integrated management of production by coordination; and
- share relevant information with farmers.

In keeping with global practices, the guidelines envisage a WUA in Myanmar to consist of sub-structures (e.g., Water User Groups or other groups/committees at different parts of the scheme that support coordination functions) nested under an apex body. The need for flexibility is recognized, specifically in terms of the levels of the scheme at which the institutions that constitute the sub-structure should be established.

Overall, the sub-structure is tasked with several core functions, which include:

- equitable distribution of water and addressing disputes related to this;
- maintenance of watercourses, minor or distributary canals, and related structures such as outlets;
- providing timely information about the irrigation schedule to farmers;
- communication across scales to ensure timely and equitable water supply; and
- payment of the irrigation fees and other fees on time.

Box 3. Summary of respective functions of IWUMD and WUA, and areas of co-management that promote a working partnership for PIM.



At each level of the sub-structure, the guidelines provide for leadership which is to be grounded in the farmer membership. At the apex level, two executive bodies are required for overall management: a Board of Directors (BoD) and a Management Board (MB), while all the farmers and other water users in the scheme make up the General Assembly (Figure 1). It makes clear that WUA membership must not discriminate based on gender, race, religion and place of birth, and should be open to all farmers in the scheme. The BoD is to consist of five members. While the General Assembly decides how many persons need to be in the MB, the MB does require five office bearers: Chairperson, Vice Chairperson, Secretary, Treasurer, and Auditor. Depending on the number of villages, the positions will need to be equally shared among the various villages to ensure inclusivity.

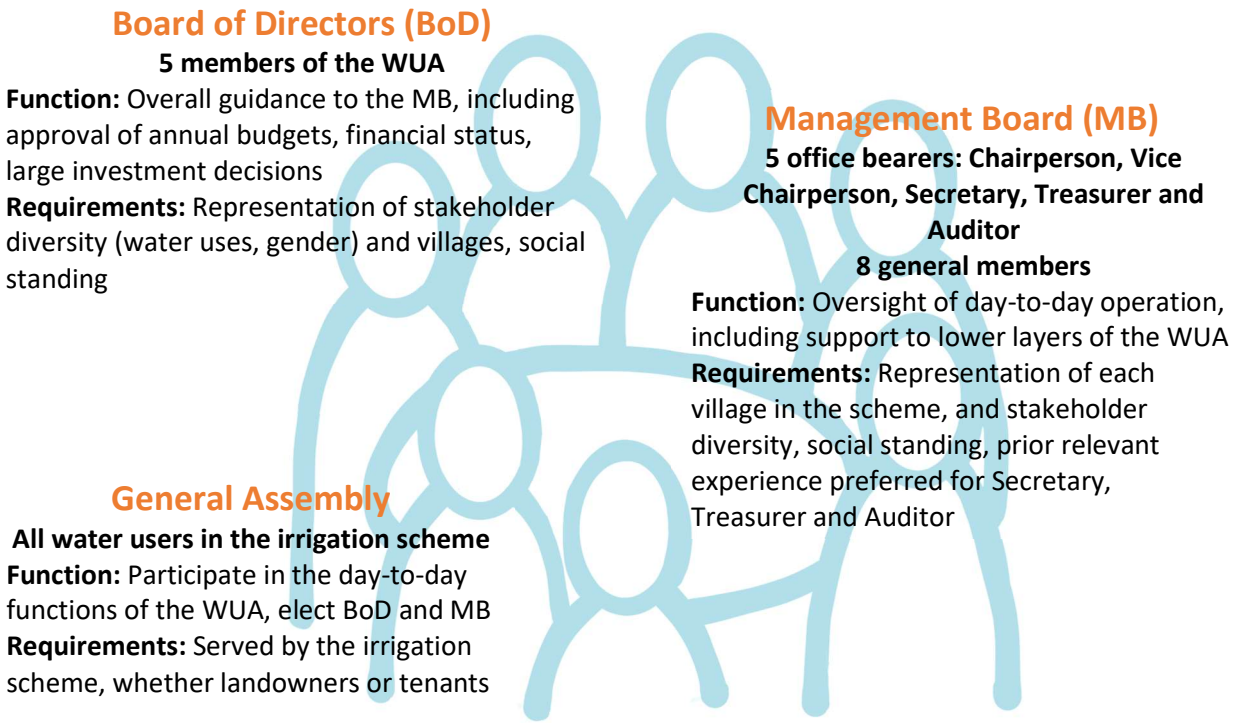


FIGURE 1. An inclusive approach to leadership and management of the WUA.

The guidelines also provide for the registration of the WUA (Box 4) and the creation of a Management Fund in its name to finance O&M and other costs that may be incurred.

Box 4. *Advantages of registering a WUA.*

The PIM Guidelines require WUAs to be registered. Registration results in a formal certificate of registration being assigned to the WUA that is valid for 5 years under current rules. There are several important advantages of registration, which include the following:

- As a legal organization, a registered WUA will be able to more easily open and operate its own bank account. This will enable many functions of the WUA linked to infrastructure maintenance. It will also help make the financial activities of the WUA more transparent to its members, since bank transactions are properly documented.
- A registered WUA will be given priority attention by IWUMD when major repairs to infrastructure are needed. This, again, can be critically important in a situation where state funds are limited.
- As a legal organization, a WUA will be in a stronger position to receive funding from other NGOs or even donors, and can also enter into contracts with private sector organizations, especially with respect to strengthening access to markets or access to new production technologies. This will be important for developing the financial stability of a WUA in the medium to long term.

SECTION 2: Steps to Establishing a WUA

Key Principles and Considerations

To be successful, an irrigation scheme must optimize the productivity of water and land resources as well as the profitability of production, while benefitting farmers in terms of livelihoods and income improvement. While the government seeks to increase overall food production in the country, the scheme must also ensure the benefits of production are distributed equitably among the farmers in the scheme, irrespective of where they are located, their gender, ethnicity, religion or political affiliations. As noted in the *Introduction*, PIM is seen as a means of realizing these goals by empowering and organizing farmers to participate in making critical decisions for scheme management, and take on key O&M functions – in other words, by setting in place arrangements for the good governance of the scheme. To this end, it is recommended that the guiding principles shown in Figure 2 be adopted when designing and establishing an appropriate WUA structure ***and*** the process by which this occurs.

"Whatever the quality of the WUA structure, the key determinant of success in the long term will be the extent to which stakeholders own and support it. This is as dependent on the process and approach taken, as it is on the structure adopted."

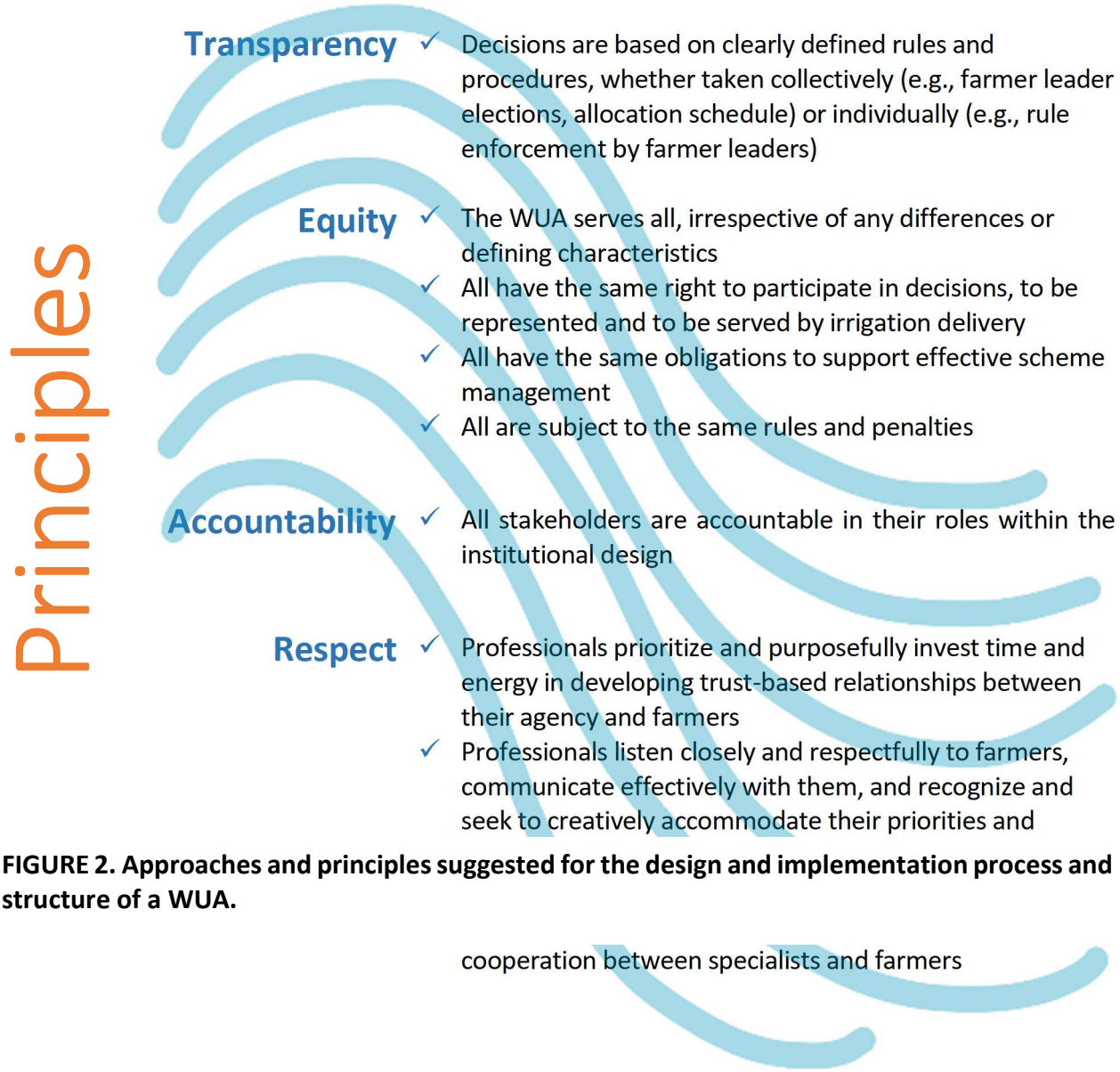


FIGURE 2. Approaches and principles suggested for the design and implementation process and structure of a WUA.

Implementing Stakeholder-driven Processes to Enhance Farmers' Organizational Strengths

This handbook promotes the principles set out above as a response to some of the past weaknesses identified with WUA creation as noted in Section 1. These include poor implementation processes that do not create ownership of the WUA among the stakeholders, who thus lack incentives to sustain the WUA once the external facilitators leave. Principles such as stakeholder participation, accountability and transparency framed in rules developed by the stakeholders (Ostrom 1993) are, therefore, aimed at addressing these shortcomings. Focussing on equity further helps ensure that no stakeholders are excluded.

It is, however, often the reality that local stakeholders may lack the capabilities and prior experience needed to effectively shift to collective action models such as a WUA for managing common resources such as water. Consequently, while farmers and other local stakeholders should drive the decisions that lead to the design and implementation of a WUA, this may not be wholly realistic in practice. The ground conditions in rural Myanmar appear to be such a situation, with relatively low literacy and limited traditional natural resource management systems based on collective action. The challenge is exacerbated by the technical nature of irrigation, both with respect to the hardware and water-use efficiency. For these reasons, and based on the experience of establishing a WUA in the PYPIS, the facilitating organization will need to strike a careful balance between facilitating stakeholder-driven decision making, on the one hand, and the need to ensure that realistic and technically sound decisions are made in designing and operationalizing the WUA, on the other. This may be especially the case in the WUA design phase (Phase 2 in this handbook) where technical and social considerations need to be addressed if the WUA is to effectively manage irrigation, and avoid inefficiency and social conflict. The degree to which the project team should influence key decisions will vary from one scheme to another, depending on local context characteristics such as human capacities, existing social structures for cooperation and the scheme's technical complexity. This is, however, not the same as imposing a predefined WUA structure. It means that all efforts should be made to include all stakeholders in the entire process and allow them to identify the solutions (e.g., WUA design), while the facilitating organization provides technical backstopping to ensure that stakeholder decisions address the challenges of the scheme adequately.

Human Resources

We strongly recommend that the implementing agency contract an external organization, perhaps an NGO, with the experience and capacity needed to facilitate farmers and other water users to form and strengthen the capacity of their own WUA. This recommendation is based on decades of international experience in establishing WUAs which shows it to be a complex process. Lessons from past experience show that, for the WUA to be responsive to local conditions and sustainable, its development requires a creative and highly participatory approach. A team of facilitators will be needed to guide this highly multidisciplinary process. Therefore, the facilitating organization must bring together a range of skills, and ensure that individuals representing these skills work closely together to combine analysis across the irrigation engineering, agronomy and social science domains to build a multidimensional understanding of the scheme. These skills will be needed in all phases that follow from implementation and backstopping to monitoring and evaluation.

The facilitating team will need a ***project leader*** who will provide overall direction and coordination, while also acting as a technical lead (e.g., social science). Other technical leads may be needed to run other components (e.g., irrigation engineering, agronomy), given the broad range of skills needed. Aside from the project leader and technical leads, hiring the correct ***field coordinator*** will be critical. While most of the analytical functions may be assigned to the technical leads, implementation, backstopping, and monitoring and evaluation on the ground will revolve around the field coordinator and a team of community facilitators (CFs). The skill sets and personal orientation of the field coordinator must have two key facets:

1. Qualification in agronomy and affinity to irrigation.
2. An ability to work with people and win their respect and confidence.

While the first of these characteristics may be obvious, the second will prove to be invaluable, as lack of trust may emerge as one of the overarching problems to be overcome. Working in a trust-deficit environment and being an outside party unknown to both farmers and potentially government staff, building trust in the project and its staff, and trust between the stakeholders will be an essential condition of success. Given that the field coordinator is likely to have the most interaction with the full range of stakeholders during the life of the project, the project will depend heavily on him/her to meet this objective, and to manage the team of CFs. The CFs will be the primary resource for all field activities such as stakeholder identification, mobilization and continuous monitoring after the WUA structure is put in place. The field coordinator and CF positions must be filled by nationals. To ensure that the project empowers farmers to better manage water allocation according to crop water demand, it is important for the CFs to have a basic background in agriculture, and an interest in guiding farmers to adopt the best agricultural and water management practices.

As the project progresses, the facilitators should be able to reduce their role and become involved only to assist in solving new problems or managing conflicts.

Overview of Key Phases and Steps

The experience of establishing a WUA in the PYPIS suggests that the process can be divided into three phases:

Phase 1: Contextual diagnosis

To build an understanding of local and national contexts, scheme structure, institutional landscape and agricultural systems. To identify opportunities, key challenges and their root causes.

Pages 22-36

Phase 2: Design

To co-design the structure of the WUA based on contextual analysis, through inclusive and in-depth key stakeholder consultations, based on building a common understanding and joint visions on WUA formation and organizational development.

Pages 37-45

Phase 3: Implementation and support

To implement the co-designed WUA structure and support each of its components to become effective and sustainable.

Pages 46-54

Several months will be required for each of these phases, depending on the size and complexity of the scheme, experience of stakeholders in participatory management, experience of the facilitating organization, human resources and funds available. While it is difficult to provide strict guidelines on how much time should be spent on each phase, it is likely that Phase 1 will require between 5 and 8 months depending on the scale and complexity of the scheme, and given the consultative nature of the process, which requires diverse and several rounds of discussions. Phase 2 could require between 2 and 4 months, which again depends on complexity of the scheme, and how easy or difficult it is to achieve consensus among stakeholders. In Phase 3, establishing the institutional layers can take between 6 and 12 months, but could take even longer depending on how many layers are needed and how many of each layer needs to be created and operationalized (see a local example (3)).

A local example (3): Pyawt Ywar Pump Irrigation Project.
The sub-structure of the WUA in the PYPIS consisted of 53 sub-groups, 18 WUGs and three PSCCs, and required one Project Coordinator, five CFs and 12 months to establish. Less complex schemes will perhaps require fewer institutional layers and lower numbers of each layer.

It will be important for the implementation strategy to include several irrigated cultivation seasons where the full WUA will be in operation. It is only when the WUA commences operations that unforeseen deeper challenges may surface. In addition, since the WUA structure and the roles farmers, in particular, will be expected to play are unfamiliar, a transition period will be required while new roles and responsibilities are fully understood, and skills are developed to support their implementation. In the Myanmar context, it is recommended that full implementation of the WUA is monitored and supported for at least 2 years after implementation. This will allow for its effectiveness to be tested and refined over four irrigated cultivation seasons (summer and monsoon seasons in each year). The winter season, when less irrigation is needed, can be used for taking stock of progress through evaluation surveys and multi-stakeholder workshops. In addition to the duration of the process, several practical considerations to ensure the process facilitates stakeholder participation and buy-in are discussed in Box 5.

Where the project also involves introducing, rehabilitating or upgrading physical irrigation infrastructure, some additional steps might be required to strengthen the design of infrastructure and increase the likelihood it will meet farmers' needs.

Each phase is divided into a series of key steps as shown below. However, these steps are intended as a guide only. In reality, several steps may be proceeding concurrently.

Phase 1: Contextual diagnosis

1. Policy and legal framework
2. Physical system and stakeholder perspectives
3. Social landscape
4. Facilitate a multi-stakeholder dialogue
5. Objective meta-analysis

Phase 2: Design

1. Participatory design meetings
2. Final co-design and implementation plan

Phase 3: Implementation and support

1. Raise awareness of WUA design and implementation
2. Demarcate the operational level of the WUG
3. Meet to establish rules and regulations
4. Elect group representatives
5. Establish WUA governing bodies and by-laws
6. WUA registration

Box 5. *Laying and strengthening the foundations for an effective process.*

Repeat the purpose and process

The project team should make use of every opportunity to remind stakeholders of the objectives of the overall process. These opportunities include beginning each consultation with a stakeholder with a recap of the objectives. This should also be done at the first meeting of each new part of the WUA structure. Ensure that the following points are conveyed:

1. This is an organized and participatory effort in irrigation and drainage management.
2. Together we seek to establish co-management responsibilities and authority for farmers through the WUA.
3. Together we seek to enable greater equity in distribution of irrigation water.
4. The WUA facilitates more reliable water supply.
5. Through the WUA, there is better access to government and private sector facilities/inputs and other services as an organized group.
6. Self-governance.
7. Self-reliance.

Respectful logistics

Meeting dates, times and venues should be fixed in such a way that it is convenient for water users, including women. For example, some water users might prefer to hold meetings in the evening to prevent it affecting their routine work. Ensuring maximum attendance will lend greater validation to the process, and possibly allow more individual voices to be heard and a greater selection of candidates for election to leadership positions. If announcements are made in the village 2 to 3 days ahead of the meetings and written messages are sent to all water users, this would be extremely useful. It is also important to work through elected village administrators and other active village members. Use any gatherings or gathering points, such as the village monastery, and the monastery abbot to encourage participation. All messages and announcements should include the topic/purpose of the meeting. If the participation is less than the set criteria (about 50-60% of all water users), the selection meeting should be rescheduled. To increase the likelihood of sufficient farmer participation, farmers who are unable to attend could be allowed to send a representative, such as a household member or other relative, and this should be mentioned in all messages and announcements about the meeting.

Record keeping

All stakeholder discussions throughout this process must be recorded in detail. This documentation should capture the range of views and degree of support for WUAs (including statements of support, objections, suggestions and decisions); highlight whether the meeting was dominated by a few participants; and whether the participants really understood the discussions. One or more members of the project staff should be assigned and guided to perform this critical role.

How many note-takers are needed will depend on the size and organization of each dialogue. For example, the multi-stakeholder dialogues, which may consist of group work, will require several note-takers, while individual village meetings will probably require only a single documenter. This documentation process should also include recording of attendance at each meeting.

BOX 5 continues overleaf:

Public meetings will be only one of several ways of obtaining stakeholder experiences, needs, views and suggestions, and these could include more private or discrete methods such as household surveys, focus group discussions (FGDs) with small groups of specific stakeholders and in-depth interviews with individuals.

As each layer of the WUA structure is established, this documentation process should be transferred to the leader of each institution comprising a layer in the WUA structure (e.g., the leader of each WUG where these are created). These leaders will need to be initially supported in this function as they transition into their new role.

Contextual Diagnosis: Context, Challenges and Causes

"The CONTEXTUAL DIAGNOSIS phase consists of building an understanding of the local and national contexts, and the key challenges and their root causes, across the biophysical, social, economic and political landscapes. Through effective analysis, stakeholders will identify risks that can be mitigated or avoided, and opportunities that can be used to successfully establish a sustainable scheme."

To be successful, every WUA established must be responsive to the specific characteristics of the local context in which it is expected to operate. As an institution inserted into an existing biophysical, social, economic and political landscape, a WUA is especially at risk of failing to address these realities, unless the process leading to its design and operationalization makes the effort to understand specific contextual characteristics. This also means that replicating a WUA structure from another scheme will not be feasible. While similarities with other schemes can provide lessons and ideas, no two contexts are identical. Put simply, there are no short cuts to the process.

Building a sense of ownership among the different stakeholders is critical to successfully establishing a WUA that has their support, especially the farmers who will form and drive the WUA, and key government agencies that will need to work with the WUA. This begins with ensuring that all stakeholders (individuals and groups) are identified at the outset and are brought into the contextual diagnosis process (Box 6). The stakeholders themselves should undertake analysis, with the project playing the important role of a neutral facilitator. Providing a non-biased analysis after considering all aspects, including the various stakeholder experiences, interests, perceptions and quite often biases, will be a critical role for the project personnel.

This phase is likely to take several months and cannot be rushed. How long it should take will depend on several factors, such as the size and complexity of the scheme, diversity of stakeholders, local social and political context, range and severity of challenges that need to be understood, and the human resources available to the project.

The stakeholders to be involved are likely to include the following:

1. **The farmers** (including leaseholders) in the scheme (or proposed scheme). As the process may not be able to accommodate all farmers in all parts of the process, their interest in the scheme can be represented by one or more farmers elected by their communities. This should apply even to existing schemes where there may already be elected Canal Representatives (CRs)[3]. This is because, if the opportunity to represent farmer interests is only available to existing CRs, the analysis is at risk of being subject to existing power dynamics and vested interests that may represent the interests of some farmers but not others (Box 6). The fact that existing CRs have been elected does not always mean that they are impartial or have the approval of the majority of farmers. Those elected by communities to represent them could instead be village elders or others who work actively for the village.

[3] Originally, the 'Canal-officer' appointed to exercise control over a canal or any part thereof under the Canal Act of 1905.

2. **Other members of the villages** who may not be landowners or leaseholders. This applies especially to women who often play important roles in agriculture but are not identified as the lead farmer or lead irrigator in most households. Women may also manage home gardens which are important for household nutrition. This could include other water users such as those keeping livestock, and households that depend on the canal water for domestic use.
3. The **village administrator** from each village served by the scheme.
4. The **scheme manager and** his/her **staff** from IWUMD in the case of an existing scheme, or the IWUMD staff to be assigned to a new scheme, if they have been identified, as well as pump operation staff from the villages.
5. **Representatives of other important government agencies** such as the Department of Agriculture (DoA) and the Department of Agricultural Land Management and Statistics (DALMS).

The involvement of IWUMD staff in the scheme throughout this process is very important to ensure they are familiar with the process by which each WUA was formed, since it is these officers who need to work with the WUA as partners in scheme management. Given that these staff members will most often be engineers, familiarization (including training through participation) with participatory and consultative approaches to institution formation will help if they are transferred to another scheme where they are required to establish a WUA.

Box 6. ***Representing farmer diversity.***

Farmers are highly diverse. There are large and small/marginal farmers, and landless farmers who operate as leaseholders. Gender, religion and ethnicity are other factors that may differentiate farmers. A third and equally important factor is farmers' location within the scheme. Some will be close to the pump station while others will be downstream; some are served from the main canal while others are served by tertiary canals. Where there are/will be multiple pump stations (in larger schemes such as in the PYPIS), representation will need to cover each pump station. Age should also be considered to ensure youth are involved.

The project facilitators will need to be aware of these differences and actively encourage participation from across a diverse spectrum wherever appropriate. Awareness of diversity can be generated through a review of existing village-level data generally held by the village administrator, through a household survey, FGDs in each village, and informal discussions.

Policy and legal framework PHASE 1 STEP 1

It is essential to understand the overall policy, legal and administrative frameworks within which the scheme needs to be operated, including the design and operation of the WUA. The following actions are recommended to ensure understanding of the broader context within which the project is to work, and how this context may influence its work through rules to be followed and administrative systems to be engaged with. These activities will also identify some of the higher level stakeholders the project will need to link with from time to time, in order to provide progress updates, discuss key decisions and seek support in resolving issues that cannot be addressed at lower administrative scales.

The activities of this step include:

1. Review of any policies that relate to irrigation management at scheme level.
2. Familiarization with the Canal Act (or any future replacement) and key provisions related to scheme operation and management, including any roles assigned to farmers.
3. Knowledge of the PIM Guidelines (currently in final draft form)
    a) The functions assigned to a WUA.
    b) The governing structure required.
    c) Roles and powers assigned to farmers and other stakeholders.
    d) Documentation and process required for WUA registration.
4. The vertical administrative structure of IWUMD and DoA from Naypyidaw to scheme level, and key individuals the project will need to liaise with.
5. The horizontal administrative structure at ground level in terms of the government departments that will have a role in the scheme, and how these functions are carried out and coordinated.
6. Ensure meetings have taken place with the appropriate officer(s) from each of these agencies, so that the project and key project staff can be introduced, the roles and operating procedures of each agency can be clarified, and the views – and orientation towards the scheme – of these officers can be understood.

Physical system and stakeholder perspectives PHASE 1 STEP 2

Spend time with IWUMD staff to learn about the scale, structure and operation of the scheme (Box 7) using maps of the existing or planned scheme. These maps can be provided by IWUMD. There are three primary areas to cover, and participatory methodologies should be integrated to engage the community throughout the process.

Box 7. *Scale, structure and operation of the scheme.*

Scale of the scheme:

1. Area of farmland (total area, area irrigated by season and per canal).
2. Number of households depending on water from the scheme for irrigation, livestock watering or other uses.
3. Number of villages.
4. Number of pump stations and their capacities.

BOX 7 continues overleaf:

Structure of the scheme:

1. The source of water and any constraints for supplying water year round or as needed. These could include:
   - sufficiency and reliability of energy supply, its implications for irrigation in different seasons, and how shortfalls are managed;
   - Debris from upstream that clogs the intake pipes of the pumps, especially in the monsoon season, and how this is managed; and
   - Water quality, especially in the dry season.
2. The number, dimensions and layout of the canals, water gates/off-take points, pump stations and drainage network – main and distributary canals and watercourses, and irrigated area according to each off-take point.
   - Use Google maps overlaid with spatial layers containing information on canal structure and off-take points to assess the irrigable land area within the scheme boundaries (see a local example (4)).
3. The condition of irrigation infrastructure.
4. The number of water users and area coverage for each of these canals.

Operation of the scheme:

1. Pumping and irrigation schedules and how these are calculated.
2. Pump maintenance and associated costs.
3. Costs of pumping and efficiency of the scheme.
4. Time taken to supply water to different parts of the scheme.
5. The administrative structure supporting scheme operation:
   - Existing institutions for scheme operation (e.g., groups, committees, key positions) and their composition and functions (see a local example (5)).
   - IWUMD staff and their roles, including the key role of the pump operator(s).
   - How IWUMD staff interpret and apply the Canal Act, bearing in mind that implementation of some provisions may not always be feasible on the ground.
   - How farmers are currently organized/represented (for existing schemes). This will usually be through one or more elected CRs from each village, although there could already be some form of farmer group.
   - Key processes for developing the irrigation schedule, water allocation, fee collection and resolving problems.
   - Role played by other government or non-government actors, such as DoA and DALMS, which is required to verify the land areas and size of each field prior to each cropping season.
   - Any formal or informal coordination committees among government agencies, the functions of these and how these operate.
6. The experiences and perspectives of IWUMD staff about the scheme, past performance, its potential and key challenges to be overcome to reach the potential command area.

A local example (4): Using Google maps-based participatory resource mapping to understand biophysical and socioeconomic information.

Participatory resource mapping brings together diverse stakeholders to generate a rich understanding of their physical environment and how different stakeholders interact with it to meet particular needs. *A local example (4) continues overleaf:*

This method enables the development of a detailed map of the resources they depend on, which resources are used by whom, how they understand these resources and how these are managed. Quite often, these discussions also generate significant socioeconomic and other information by linking specific stakeholders with particular resources, and allowing for discussions around who is involved in accessing and managing resources and participating in other local decision-making platforms. This can be especially useful as a first filter to understand those who are marginalized and their positions regarding resource access and management, including women and those who belong to different ethnic, religious or wealth categories. This process can also help understand how regulatory frameworks impact resource use, how climatic variation and other external drivers impact resource availability and quality, and how stakeholders individually and collectively adapt to these factors.

This approach is useful for the project to further multiple objectives. In addition to gathering information that can be cross-referenced across different stakeholders, it helps build knowledge of the project objectives among stakeholders, and familiarity between project staff and stakeholders. It can, however, be a time-consuming process for the project, depending on how comprehensive an assessment is desired, with more in-depth processes involving multiple steps and discussions. Methodologically, separate meetings with particular (and especially marginalized) stakeholders as well as validation meetings are recommended. This should include separate mapping exercises with men and women. Ideally men and women could be further divided into groups of younger and older women/younger and older men (GILIT in Box 2 is one approach).

In the PYPIS, participatory mapping was used mainly to overcome the fact that the cadastral maps were out-dated, and more up-to-date data on land area and landownership were needed to verify which farmers owned or cultivated land serviced at the various off-take points along the secondary canal.

Participatory mapping with men and women water users (*photo:* Myo Min Than).

Participatory mapping was, therefore, used to gather information on the following:

- The land area serviced by each off-take point.
- Who cultivated each plot, recognizing it could be the landowner or a leaseholder.
- Types of crops cultivated.
- Extent of cultivation. If the entire plot is not cultivated, reasons why this is the case.

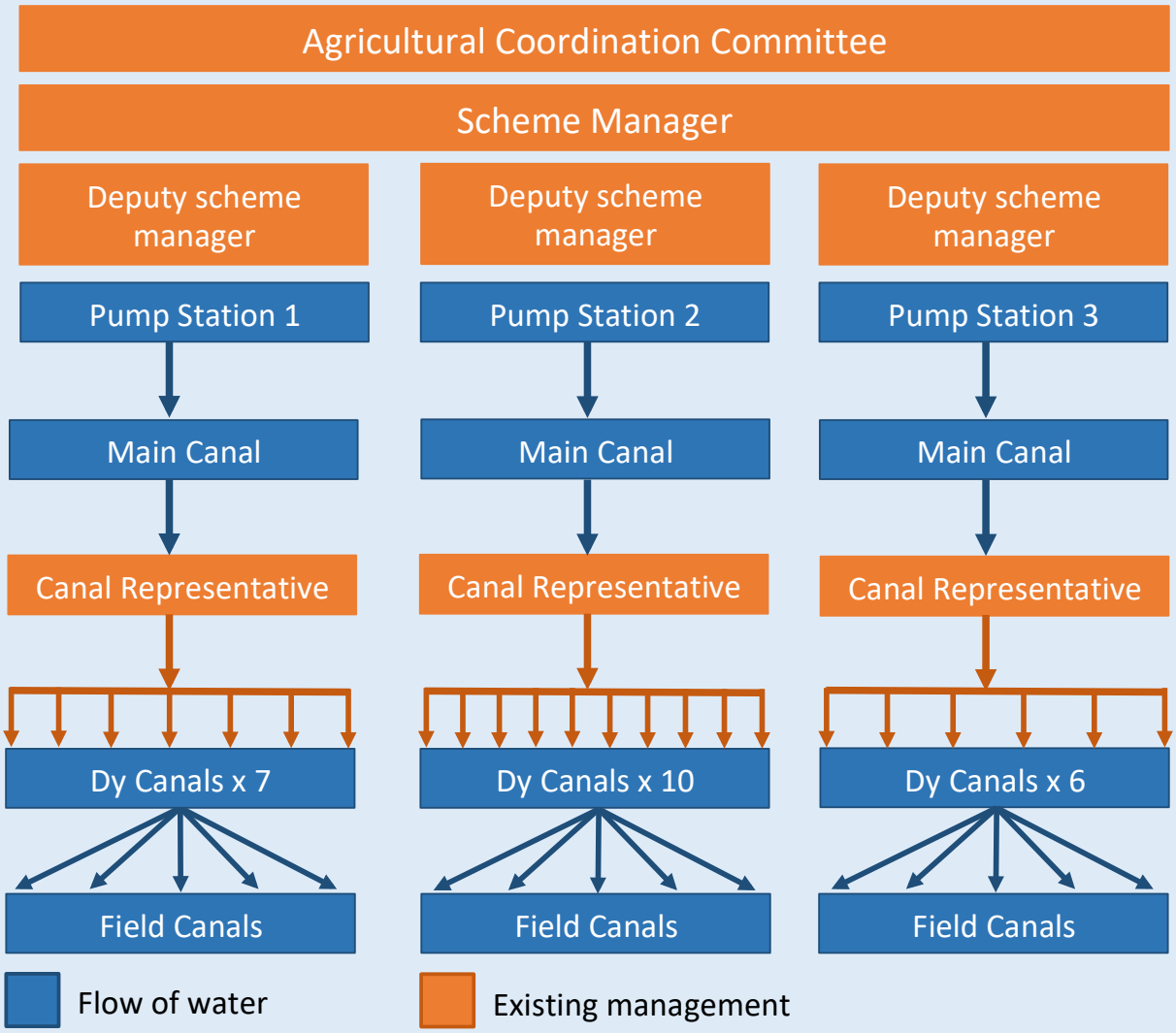
Small groups of farmers (8-10) receiving water from one to three sub-groups were invited to discuss the landholding and ownership/lease arrangements using a high resolution Google Earth map depicting the canal infrastructure and the field boundaries. Farmers were first asked to identify the owner of the field closest to the off-take points and then continue until they reached the tail end of their command area. During this exercise, it is important to orient the map and help farmers identify key locations (e.g., canal infrastructure, row of trees, road crossing, etc.).

A local example (4) continues overleaf:

In addition to the above information, this process helps to identify the locations of water sources, and the relationships between factors such as the condition of canals, soil types and farmers' cropping decisions.

While the focus of this exercise in this example was to overcome out-dated cadastral maps, participatory mapping can also be used to identify and understand other water uses and users, and gender dimensions of multiple water use. As such, it could be used in conjunction with an approach such as GILIT (Box 2).

A local example (5): Schematic of the pre-existing institutional structure for scheme management developed through contextual analysis in the PYPIS.



The approach taken to analyze the scheme in the example above demonstrates the value of integrating community engagement throughout the contextual diagnosis phase.

Social landscape PHASE 1 STEP 3

The purpose of community engagement is to understand the social, cultural, political and administrative landscapes, and identify stakeholder diversity and perspectives. An irrigation system is far more than simply infrastructure bringing water to fields to support the production of crops. Even with the best infrastructure, the success of a scheme is rooted in the social and institutional structures necessary to effectively and equitably operate the system and maintain the infrastructure. While the key government stakeholders have been identified under steps 1 and 2, this stage will be key not only to understanding the diversity of stakeholders within the scheme's population, but also the sociopolitical dynamics that will provide critical insights into how the WUA should be structured. To ensure inclusive discussion and decision-making processes throughout WUA formation and organizational development processes, it is key that farm households' diverse characteristics in relation to their socioeconomic assets and farming strategies are well captured in the overall contextual diagnosis. A baseline socioeconomic survey and local institutional analysis can be used as a starting point to design the community engagement through a series of FGDs, focusing on particular groups of farmers (e.g., by farm size, access to land, position in the irrigation scheme, etc.) to ensure that each group can convey openly their views on WUA formation and organizational development. Particular attention to gender is important, given the importance of irrigation to overall human development, and the often-uneven roles played by men and women in irrigation that inhibits productivity and the opportunities for women to benefit from the irrigation scheme (Box 2). Gender analyses at the outset are an essential component of a gender-sensitive approach, helping to avoid gender blindness and bias in the design and implementation phases.

"Even with the best infrastructure, the success of a scheme is rooted in the social and institutional structures necessary to effectively and equitably operate the system and maintain the infrastructure."

To this end, each village should be profiled through a range of informal meetings and dialogues (Box 8). This could be commenced through a briefing of the project objectives and an introduction to WUAs by the Project Coordinator in each village, allowing time for questions, clarifications and comments from the villagers. Afterwards, the CFs can meet people informally to establish relationships and get a feel of the local dynamics. Other structured dialogues could be conducted with smaller groups, e.g., farmers served by each watercourse, small-marginal farmers, the landless, women, youth who are farmers and non-farmers, ethno-religious minorities. Key informant interviews (KIIs) could be conducted with key individuals such as village administrators, and in-depth interviews with some of the participants from the small group discussions. A baseline survey can be part of this process to collect data on livelihoods, productivity and equity. This will enable credible assessments of the impact of the WUA at the end of the project.

These engagements should also be used to introduce the project and key project staff, and to introduce the concept of a WUA, its objectives and its benefits. The CFs and other project staff attending these discussions must make it clear that they are ready to answer any questions the participants may have at the outset or as the discussions progress.

Box 8. *Checklist of discussion points for informal meetings/dialogues.*

Aspects discussed should include the following:

1. Households and population by gender, age, ethnicity and any other social denominations (data from village administrator). It should also include landless households that may be leasing land or using water for other purposes.
2. Ethnic and religious composition (data from village administrator), and how this influences social relations in the village.
3. Gender roles, especially regarding who carries out farming activities, but also how decisions around farming are made within households (household survey, FGDs and KIIs).
4. Landownership, landlessness and the extent of leaseholdings (census data from village administrator, prior records with IWUMD scheme staff and DALMS, household surveys). With the participation of villagers, Google Earth™ and other geospatial software can be used to map their irrigable land according to the various off-take points and canal structure (see a local example (4)).
5. Cropping calendar and cropping pattern across seasons (from village meetings).
6. Need for irrigation during each season (from village meetings).
7. All surface water and groundwater sources (from village meetings and transect walks):
   - How they are accessed and used for irrigation, and other productive and domestic purposes,
   - What this means for water allocation from the canals (e.g., whether the canal water will need to support some degree of non-irrigation uses such as livestock watering holes, domestic uses).
8. The position of each village in the geography of the scheme, and how this affects access to irrigation water from the canals and relations with the other villages (from scheme maps, village meetings and KIIs, if necessary):
   - If the village receives water first from the pump station, it may be able to dominate water use for irrigation.
   - If the village receives water after another village (i.e., is downstream), farmers in this village may suffer from a lack of access to irrigation water (quantity, timing, quality), and this could be a root cause for inter-village conflict.
9. Whether farmers are familiar with the provisions of the Canal Act (or its future replacement) and the PIM Guidelines, and their views on these (from village meetings).
10. The level of experience farmers have with irrigating different crops and irrigation management overall. This helps understand the training farmers will need (from village meetings).
11. The roles and powers of key individuals, especially the village administrator and CRs, if they exist (from village meetings and KIIs).
12. History of collective action: formal or informal groups, their roles, membership, operation and relevance to farming and irrigation management in particular (from village meetings).
13. Perspectives of the various stakeholders (from village meetings, FGDs, KIIs, in-depth interviews):
    - Their experiences with the scheme (for existing schemes).
    - Their aspirations for the scheme in the future (whether an existing or new scheme).
    - Key issues, root causes and how they think these can be resolved, including what kinds of institutions and processes these will require, and what role they could play.

Through the first three steps, the project developed an understanding of the scheme structure and operations, and identified and characterized all stakeholders at the various scales. These dialogues have also helped introduce the project and its objectives to all stakeholders, and to explain the process by which it hopes to work with them to establish an institutional structure for effective and equitable PIM. The project is now ready to bring together representatives of the stakeholders for the first of a number of multi-stakeholder dialogues. At this stage, the objective will be to reach a consensus among the stakeholders about the following:

1. Key challenges or weaknesses (in existing schemes), and their root causes.
2. Options for solving each issue and what roles stakeholders/stakeholder groups can play to support these solutions.

The first three steps engaged with stakeholders through a range of discussions at various levels (village, smaller stakeholder groups, KIIs). It is likely that there will be several views of the existing problems and opinions about how these should be resolved. This step (workshop) is the first time that representatives of all stakeholder groups – within and related to the scheme – are facilitated by the project to come together. Most importantly, this workshop is a self-assessment where the stakeholders themselves are the analysts of their own experiences and will broadly determine a collective vision for scheme performance in the future, and the key changes needed to realize this vision.

How the workshop is structured will depend on the specific needs and stakeholders involved, but should include both plenary and group work components. What is discussed in the plenary and group sessions, and how stakeholders are distributed in the groups is again subjective. However, what is necessary, overall, is that a consensus is reached on the workshop objectives. Whether this can be achieved through one workshop or several will depend on the complexity of the situation (Box 9). It is, however, recommended that each workshop lasts no more than 2 days.

The project staff will facilitate the process to ensure that all stakeholders are represented (farmers, landless, women, ethnic groups from all the villages, officers from key government agencies - IWUMD scheme staff, DoA, DALMS, General Administrative Department [GAD]), and that they are all provided opportunities to present their needs, views and suggestions, and to respond to those of others. An important part of facilitating this meeting should be the introduction of the core principles set out in this section at the outset of the workshop, as guidance for the duration of this workshop and all the other activities in the process. Posters of the core principles can be placed on the venue walls for constant reference by participants and project staff. Staff will take detailed notes of all discussions, being sure to indicate what was said and by whom. The project may also structure the workshop agenda to help participants recognize the interactions between scale, physical structure and social landscape in defining the control-dependency relationships that will be central to WUA design in Phase 2.

The output of this step should be a workshop report that documents the objectives, diversity of views and ideas expressed in the discussions attributed to specific individuals/groups, consensus on problems, vision and ways forward, roles various stakeholders need to play as part of the solutions, and the participant attendance sheet.

Box 9. *Stakeholder self-assessment workshop on scheme governance.*

General objectives of the workshop are as follows:

1. Help the project understand the different perspectives of each stakeholder and stakeholder group regarding the core issues in the scheme, and their underlying causes.
2. By discussing perspectives openly, ensure that stakeholders are better able to understand the views of each other, as a first step to building bridges between seemingly incompatible positions.
3. Take a first step towards identifying solutions to each of the core problems and their drivers, including the roles various stakeholders need to play, and the external support required.
4. Begin to generate the all-important sense of **participation**, **empowerment** and **ownership** of the process of designing institutional arrangements, which the stakeholders believe can help them collectively manage the scheme successfully.

To obtain a holistic picture, it is important to invite a wide array of farmer and government representatives. **Farmer representatives** may include individual farmers, any existing canal representatives and village administrators. **Other stakeholders** are government officers such as IWUMD staff from the scheme (scheme manager, deputy managers and other technical staff); Township officers from DoA, Agricultural Mechanization Department and DALMS; and the Township Member of Parliament. Key project staff will facilitate the workshop and be in charge of taking notes and reporting.

Depending on the complexity and the audience, the workshop can take up to a full day and be organized around the following key topics:

- Problem tree analysis through group work.
- Plenary session where the results of the problem tree analysis are presented and discussed.
- Solution matrix through group work.
- Plenary session where the results of the solution matrix are presented and discussed.

Depending on the type of stakeholders present and their roles in the scheme, the group is split into smaller groups for the “Problem Tree Analysis” where each group represents a uniform stakeholder “type”:

1. Farmers (ideally men and women farmers in separate groups).
2. Canal Representatives.
3. Scheme managers/staff.
4. Village administrators.
5. Other government stakeholders who are indirectly involved.

Before commencing the group work, explain how a problem tree analysis should be carried out and walk them through the steps of an example. The project’s facilitators are assigned to each group table to provide further guidance during the process, but with strict instructions not to influence the discussion. They can, however, create space and prompts for group members who are less active to speak, especially women from the farmer communities. Provide the necessary supporting materials (stationery, reference documents such as the Canal Act) to each table.

BOX 9 continues overleaf:

Each group is tasked with agreeing on a core problem, and then identifying the primary and secondary causes. The groups then move to identifying the primary and secondary impacts of the core problem and its causes.

An example of a problem tree analysis of a Farmer Group:

Core problem: Lack of access to sufficient water in a timely fashion

Possible causes:

1. Poor canal quality.
2. Water taken from other canals and villages illegally (water being stolen), gates not closed, water cannot flow to designated places.
3. Unstable and insufficient electricity supply. When electricity is frequently cut off, water delivery is distorted and delayed (pumping has to be restarted).
4. Canal maintenance is not properly completed.
5. Late access to water due to poor irrigation scheduling.
6. Canals are broken through human and natural actions, such as tree roots destroying canals.

Possible impacts:

1. Competing for access to water creates conflicts between farmers within the same villages and with different villages.
2. Lack of access to sufficient water leads to late fertilization, eventually causing low crop yields and productivity.
3. Water is only accessible late at night in some villages, and farmers could be at risk of getting bitten by snakes.
4. Since crop productivity is low, farmers always struggle with a vicious debt cycle.
5. Household food consumption is insecure due to low productivity of crops.
6. Children cannot go to school since parents struggle with financial crises, ultimately resulting in a big loss for the country's new generation.
7. Farmers' families have a lower standard of living (social, economic, health and education sectors).
8. Farmers are stressed and suffer chronic depression due to this economic crisis often leading to family health problems.

Placing similar stakeholders in the same group means that the perceptions of each stakeholder of the core problems and underlying drivers are clearly brought out. At the same time, the group discussions reveal important intra-group differences that highlight a greater diversity of views than simply between groups of similar stakeholders.

Presentation of each group's problem tree in the plenary session allows stakeholders to comment on the analysis of each group. This can help bring to light alternate perspectives on specific core issues or their causes, while moving towards a consensus on what the core issues and their underlying causes are.

Once a consensus is reached, move to the step of the solution matrix. Match the groups from the problem tree session to the different levels in the scheme:

1. watercourse level
2. distributary canal level
3. pump station level
4. scheme level

BOX 9 continues overleaf:

Each group is required to identify possible solutions in response to the core issues and their causes using a matrix:

- Core issue
- Causes
- Opportunities
- What should be done?
- Existing resources
- Who should implement?
- Indicators of success

Results are presented in the plenary session followed by discussion. By focusing on what is needed to address the identified core issues, the discussion helps further break down the analysis of challenges in the scheme, providing a finer shared understanding of the problem tree, and where in the scheme the solutions would need to focus.

The workshop ends with a recap of why it was held and its activities; a synthesis of what was discussed and agreed upon through the problem tree analysis and solution matrix; and an evaluation of the workshop by the stakeholders.

Objective meta-analysis PHASE 1 STEP 5

A key role of the facilitating organization is to provide objectivity and facilitate a neutral platform. Almost by definition, most, if not all, stakeholders are likely to knowingly or unknowingly hold biases and interests that will be reflected in their interactions with each other, and views on what is going wrong and how these should be fixed. Without the project acting as the gatekeeper in terms of what is best for the scheme overall, and how the scheme can be operated to ensure all stakeholders are heard and benefited, these biases and interests may infiltrate the WUA structure, and undermine its ability to address existing weaknesses. Furthermore, as discussed earlier in this section, limited stakeholder capacities in the face of a complex undertaking will require the project to actively participate to assist in arriving at effective and realistic solutions. This begins with guiding the problem analysis to ensure that stakeholders identify all aspects of scheme management and current strengths and weaknesses, and that these are brought together in a coherent analysis which the project, as a neutral actor with both technical and social science skills, is well positioned to do.

The project team now combines the findings from the various dialogues conducted under steps 1 to 4 of Phase 1 into an objective analysis, guided by the core principles set out earlier in this section. This analysis is likely to be a refinement of the consensus reached among stakeholders in Step 4, with particular attention given to points of conflict among stakeholders and the role of the scale and complexity of the scheme, local stakeholder histories, attitudes and capacities, and government sector attitudes and capacities in shaping conflicts (see a local example (6)). Such an independent assessment will lead to a clear picture of the particular needs and expectations of different stakeholders, the key weaknesses currently affecting the scheme, and which of these can be realistically addressed by establishing a WUA. Such an analysis is also likely to result in a preliminary idea within the facilitating organization of what type of institutional layers and processes could be

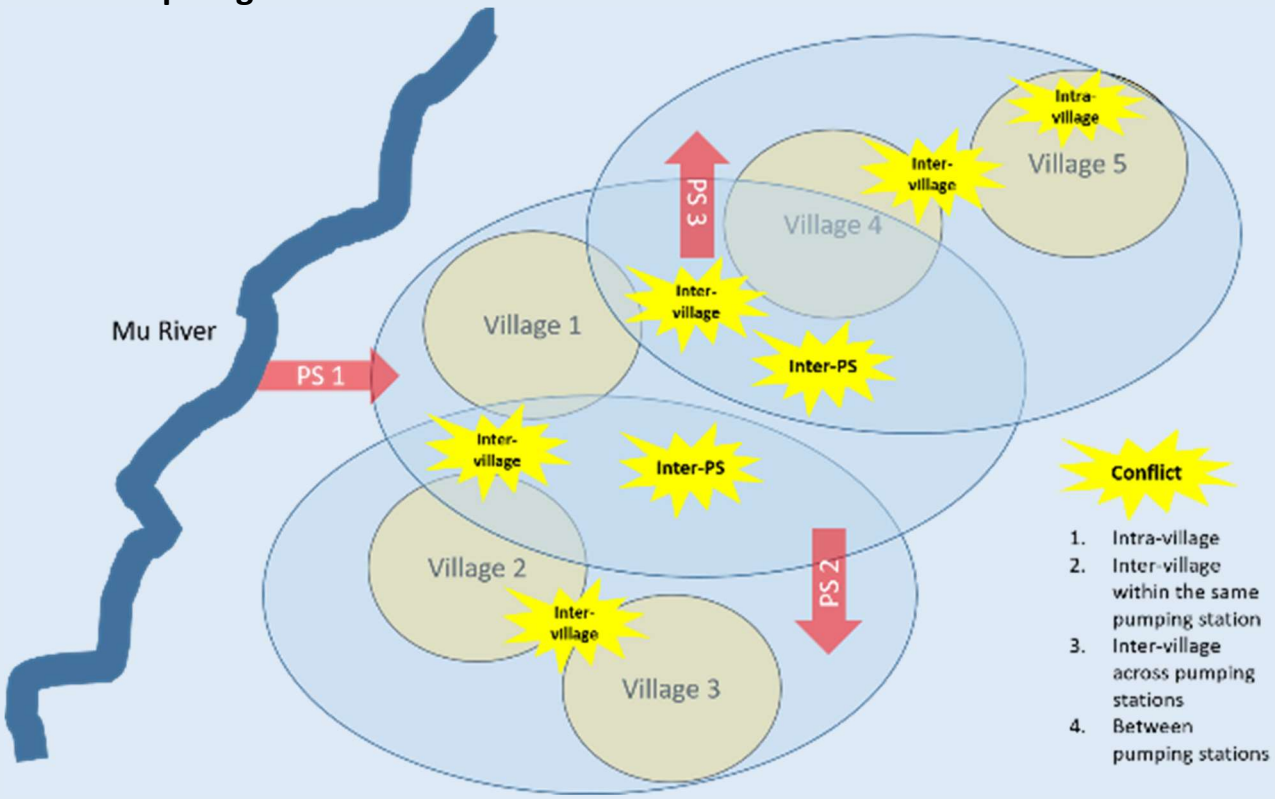
needed at different levels of the scheme (e.g., sub-distributary canal, distributary canal, pump station, overall scheme) to address key weaknesses and ensure smooth operation of the scheme. This is not to suggest that this design will be presented to the stakeholders, but used by the organization to guard against unrealistic or insufficient design components arising in the stakeholder design Phase 2 (WUA design).

A meta-analysis by the project team could be achieved through a 1-2 day in-house workshop. It is important that all key project staff participate in such a workshop to ensure the analysis combines the understanding of the physical, hydrological, ecological, economic, social and political features of the scheme. This knowledge is likely to be distributed among different members of the project team. Through analysis that brings together knowledge of the scheme across its physical, social and institutional domains, the project team will be in a better position to make an objective assessment of the stakeholder-driven ideas for an appropriate WUA structure, which will be developed in the institutional design phase that follows. Ensuring a balance between a stakeholder-driven participatory process and the need to ensure that the WUA design that emerges from that process appropriately addresses the challenges identified in the diagnostic phase is a key function of the project team.

The output of this step should be a comprehensive picture of the scheme, key weaknesses and their root causes, options for addressing these weaknesses and potential roles the various stakeholders could play in resolving these issues. Central to this analysis should be how the various stakeholders are (or will be) able or unable to influence water allocation decisions and ensure they receive their allocations as planned. This aspect of influence is likely to be significantly shaped by where different groups of stakeholders are physically located within the scheme. Overall, inequalities in influence are likely to occur at several levels or scales in the scheme, leading to multiple points of conflict that will need to be addressed by the WUA (e.g., a local example (6)). Further considerations to take into account for WUA design are given under Phase 2.

Where rehabilitation/modernization of the scheme is involved, the participatory and other principles adopted in this handbook must also be applied (Box 10).

A local example (6): Scheme complexity, power inequality and conflict in Pyawt Ywar Pump Irrigation Scheme.



Map showing conflicts in the existing scheme

The various stakeholder engagements brought to light several control-dependency relationships revealing differences in power between individuals, groups or communities. These relationships stemmed from the ability of Pump Station 1, which pumps water into the scheme from a river, to control how much water flows to Pump Stations 2 and 3. Such relationships also existed between the five villages in the areas supplied by each of the three pump stations, since upstream and downstream villages lie in each command area. The third point of power dynamics was at the intra-village level between a few CRs and the farmers who elected them. Not only were there too few CRs to effectively perform their functions, but they also accumulated significant power expressed through unequal water distribution. This role had become an opportunity to accumulate personal wealth by competing with each other to serve more farmers, each of whom paid their CR a service fee at the end of each cultivation season. Each of these power asymmetries gave rise to conflicts between the pump stations, the villages, the CRs and among farmers who were forced to compete with each other as the supply of irrigation water was erratic.

These relationships were also understood as being linked partly to the physical layout of the irrigation scheme, where Pump Station 1 and some villages received water before others. This created upstream-downstream relationships between pump stations and the villages in each area, as well as at smaller scales such as distributary canals and watercourses.

The control-dependency relationships created here had to be addressed through the WUA structure.

Box 10. ***Rehabilitation/modernization of existing infrastructure of the irrigation scheme.***

The participatory and other principles adopted in this handbook must also be applied to the process of designing and implementing any rehabilitation/modernization of irrigation infrastructure. Not only must farmers and other local water users in the scheme feel that the engineering interventions reflect their needs, but how infrastructure improvements are conceived and implemented can influence the governability of the scheme. Hence, a mutual understanding of infrastructure design, O&M of the scheme and investment decisions should be created between the engineers, village stakeholders and IWUMD staff. In the absence of an established formal or informal WUA and as a precursor to WUA formation, small informal groups that would represent the collective interest of the communities in the scheme can be formed, e.g., at village level, to participate in the design dialogues.

It will also be required to hold discussions with the scheme's water users (farmers, livestock owners and women as both cultivators and domestic users of water) to ensure their needs are reflected in the design, sequencing of the engineering works and linked to budget allocation. These discussions could occur after the self-assessment workshop on scheme governance, since some governance issues may be linked to infrastructure deficiencies. They could be in the form of meetings at the village and/or pumping scheme levels, depending on the size of the scheme and the importance attached to understanding cross-village or cross-scale management. In such a follow-up dialogue, the local stakeholders in the scheme should be allowed to first explain existing needs and shortcomings based on their experiences and aspirations for future cultivation and other production systems (e.g., livestock). Since men tend to dominate public dialogues, the facilitating organization must ensure female irrigators/water users are allocated time to speak. This will help the engineers better understand the multiple uses of canal water.

The engineers and IWUMD scheme staff could respond to these local needs either in the same discussion or in a follow-up discussion a few days later after due consideration. In such a discussion, they can clearly explain the design options and their respective advantages and disadvantages, considering also the available budget, operational costs and the level of engagement required by the WUA and IWUMD staff to manage and maintain the scheme. Providing opportunities for representatives of farmers and other local stakeholders to give feedback at this stage will increase the likelihood that the physical structures will be practical and sustainable, while meeting the needs of the local stakeholders.

Designing the WUA and its Implementation Strategy

"DESIGN draws on the analysis of Phase 1 to create the structure for the WUA institution. The design and the strategy for implementing the WUA must be driven by all stakeholders."

In this phase, the analysis carried out in Phase 1 will be converted into the design of the WUA structure and associated processes that will link the various parts of its structure. It will also take the process to the point of WUA implementation by developing an implementation plan. The project team will guide stakeholders through this process via a series of stakeholder visioning and planning activities to co-create a preliminary outline of the WUA design and implementation plan, both of which will be finalized during a second multi-stakeholder workshop to agree on the WUA structure and the implementation plan.

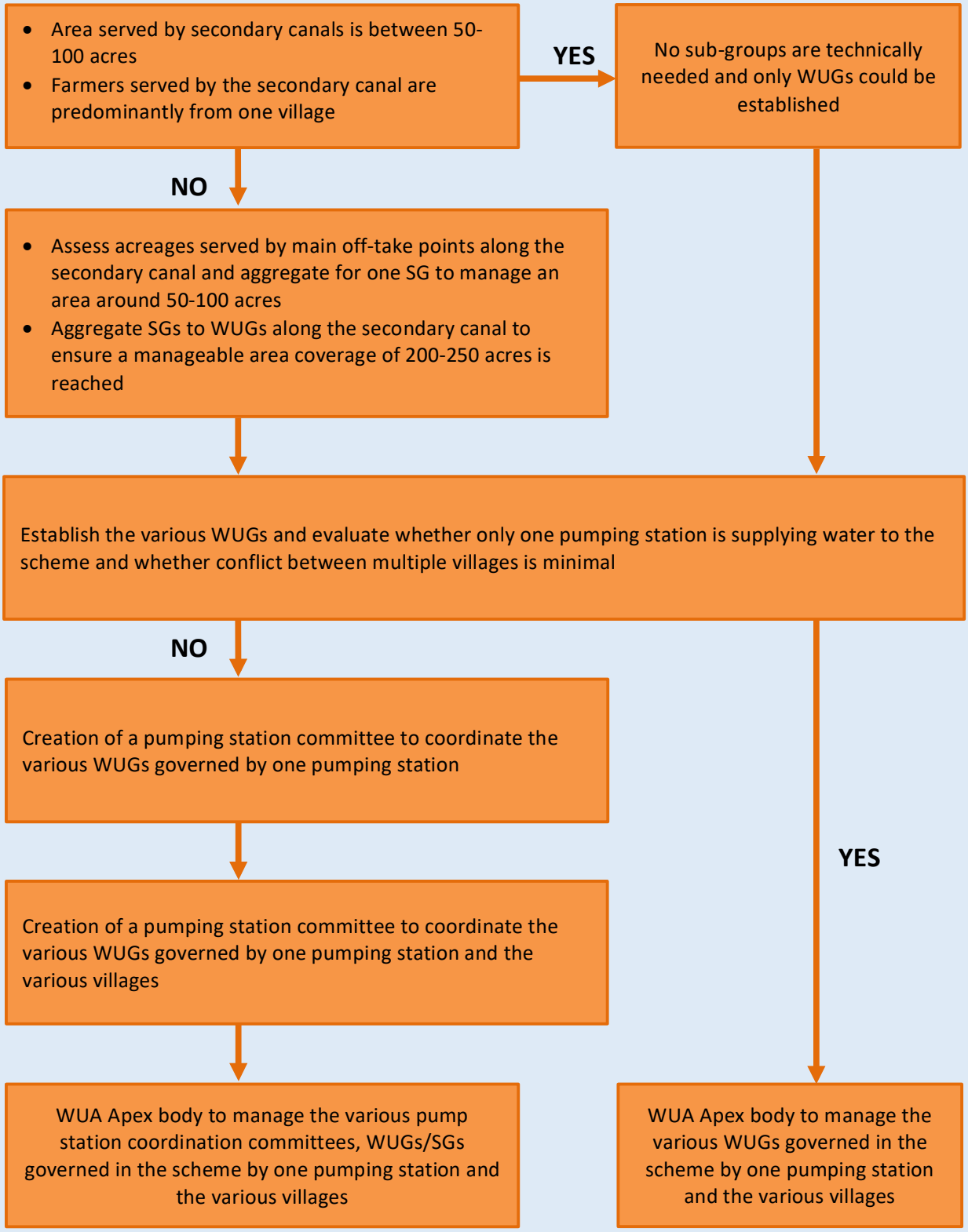
The WUA structure to emerge from this process must target the root causes of problems, keeping in mind the core principles set out earlier in this section. In the case of the PYPIS, an overarching weakness was the absence of platforms for collective action among farmers, and for coordination within and across scales (see a local example (5)*).* It was realized that introducing additional institutional levels under the WUA could avoid the escalation of conflicts between farmers at watercourse, village and pump station levels, and between farmers and IWUMD staff through better planning and early identification and resolution of problems. Therefore, filling these institutional gaps was a key objective in shaping the WUA structure in this scheme (see a local example (7))*.*

Importantly, establishing a WUA may not mean the complete overhauling of any existing institutions for scheme management. Any features of existing institutions that are either required by government rules (e.g., Canal Act or a future replacement) or useful to retain should be incorporated into the WUA design. However, modifications to these existing institutions may be necessary, or where these consist of individuals, their repositioning and reelection (if these are elected positions) within the new WUA structure. This was the case with the existing CRs in the PYPIS; the position was found to be a focus for accumulation of power and a source of disharmony among farmers (see a local example (6))*.*

An important aspect in determining the number of institutional layers will be the area of land to be served, and whether this is feasible through WUGs alone or through sub-groups that enable large land areas to be managed in smaller parcels. Delineation of the WUGs depends on the area served by a distributary canal (i.e., main off-take point from the main canal). If the area served by one distributary canal is larger than 50-100 acres (20-40 hectares), decisions can be made with the stakeholders to divide the WUGs into sub-groups (SGs). It is important to discuss with the stakeholders the minimum structural operational level required, based on the ability of one individual to govern and manage irrigators. The discussion should address the challenges prevailing at that level, the number of irrigators and irrigated areas, and the diversity of the stakeholders. In cases where irrigators from multiple villages are dependent on the same off-take points, different additional groups may be required. For this step, participatory mapping results, cadastre information from the DALMS (if up-to-date) or farmer lists from IWUMD (if up-to-date) can all be used. Farmers are assigned to the various groups based on plot ownership.

During the stakeholder discussions, participants are asked to justify and stipulate the functions of each institutional layer of the WUA they propose, along with the stakeholders it will represent, how it reflects the core design principles and the key weaknesses it will address. Once each layer is defined in this way, it will be necessary to detail how it links to other layers, to provide the cross-scale coordination needed to solve weaknesses that arise from poor coordination across specific scales in the scheme (e.g., between different distributary canals, villages or pump stations).

A local example (7): Decision tree developed with stakeholders to determine the number of institutional layers needed in a WUA to support scheme governance.



Participatory design meetings PHASE 2 STEP 1

These meetings mark the beginning of the WUA design process. To ensure stakeholder buy-in, the process needs to begin at grassroots level and involve all stakeholders within the village as well as IWUMD and other stakeholders. Having these meetings at village level is suggested because most local water users would identify with a village. Ensuring all stakeholders (all water users, men, women, young and old, different ethnicities, etc.) are present and allowed to actively voice their opinions and suggestions is a key goal (Box 11). It is suggested that separate meetings are conducted with each stakeholder group in the village, IWUMD and other government institutions, followed by a multi-stakeholder meeting in each village to develop a consensus on the WUA design proposed by each village (Box 12).

"Examples of stakeholders to be included are large farmers, small farmers, the landless, women cultivators, women non-cultivators and livestock keepers. Ensuring all stakeholders are allowed to actively voice their opinions and suggestions is key."

Box 11. *Stakeholder-specific dialogues.*

The following agenda could be followed for conducting these dialogues:

1. Present the outcomes of the first multi-stakeholder workshop where the strengths and weaknesses of the scheme were analyzed, and provide the opportunity for any additional observations to be made by stakeholders. These may bring out more detailed perspectives of specific stakeholders that did not surface at the multi-stakeholder workshop.
2. Seek stakeholder views on how the WUA should be designed to effectively address key challenges and realize the vision they have for a well-functioning irrigation scheme. This will involve conducting separate dialogues with the various stakeholder groups, including women-only groups wherever possible. Significant facilitation by the project team is envisaged here. While recognizing that each stakeholder group may have somewhat different visions of the design of a well-functioning irrigation scheme based on their own needs, it will be useful to focus attention on the analysis of power dynamics (see a local example (6)) to avoid a repetition of past problems. Using a large printed copy of the scheme's structure and details of farm area, farmers, other water users, etc., the project team should guide each group to think about how water can be conveyed across the scheme most effectively to avoid irrigation delays and resulting social conflicts between and across various scales.
   These discussions should be facilitated as a creative process where stakeholders use their in-depth knowledge of their societies and the scheme to come up with options. However, given the potential gap between stakeholder capacities and the complex socio-technical nature of irrigation management, the project team may need to draw on its own internal analysis at the end of Phase 1 to ensure that emerging ideas are realistic in the light of the problem analysis and technical realities of the scheme. In such situations, the facilitating organization must explain why a particular suggestion may not be feasible, and the groups should be encouraged to come up with alternatives.
   A diagrammatic presentation of the emerging WUA design should be developed along with the discussions, with functions and membership of each level of the WUA clearly laid out (see a local example (8)). The relationships between the various layers need to be detailed specifically to ensure that layers make sense collectively, and no gaps remain.

BOX 11 continues overleaf:

3. Seek stakeholder views on how the WUA should be implemented and other stakeholders' roles in this process. This could also include identifying the role played by the facilitating organization. The proposed plan must fit in with the available time and resources. One option that could be explored is a phased approach, especially in the case of larger more complex schemes with multiple pump stations. While this may be more time consuming, it does provide opportunities to learn and improve the implementation process.

The implementation plan should include a Monitoring, Evaluation, Accountability and Learning (MEAL) framework. This should be a combination of indicators required by the project team to monitor progress, learning and accountability of all stakeholders involved. Indicators should be easy-to-use so they can be monitored by the WUA when the project is over. Identifying the indicators should be a collaborative effort between the stakeholders and the project team. In cases where a baseline survey was conducted, the indicators should link back to this survey to support documentation of impacts and lessons learned throughout the project.

Some options could include indicators around the following:

- Stakeholder perceptions on the adequacy, reliability and equity of water supply between farmers and other water users at various scales (watercourse, distributary canals, villages, pump stations).
- Stakeholder participation in each level of the WUA (using attendance sheets), including women and ethnic/religious minorities.
- Topics discussed at each level of the WUA (through a standard meeting minutes format) to understand whether, for example, farmers are highlighting issues and whether these are being resolved and documented.
- Conflict management: Type and number of conflicts raised and solved, and raised but unsolved, at the various levels of the WUA.
- Livelihood and productivity-related impacts.
- Stakeholder perceptions on the sustainability and manageability of the WUA and O&M of the scheme, including remaining key challenges.
- Financial viability and effectiveness of the WUA.

Box 12. ***Multi-stakeholder meeting at village level to develop a consensus on what each village suggests as an appropriate WUA design.***

Following the separate meetings held with different stakeholder groups in each village, a final village-level meeting with all stakeholders will be needed to harmonize the multiple WUA designs resulting from each group. The project team will facilitate decisions towards a composite structure and implementation plan that will almost certainly require compromises between groups. The final output from each village should be a WUA design and implementation plan, which enjoys consensus among the stakeholders.

BOX 12 continues overleaf:

The project team should also promote the attendance of one or more IWUMD staff from the scheme as active participants at the final village meetings. While the focus of this process is on irrigators and other local water users as the future WUA members, cooperation with IWUMD staff will remain a fundamental factor for successful scheme operation as they will retain control over the pump stations, and the government-allocated operation and maintenance budget. Moreover, as noted in the government's PIM Guidelines, several key functions such as irrigation scheduling and maintenance will require the WUA and IWUMD staff to work together. Therefore, IWUMD's technical expertise during these final village meetings will facilitate the implementation of the emerging WUA design and underpinning logic.

Final co-design and implementation plan PHASE 2 STEP 2

A multi-stakeholder workshop is recommended to develop a final composite design, implementation plan and MEAL framework, with representation similar to that conducted under Phase 1 Step 4. In fact, this second workshop is the logical continuation of the first one, which focused on collective problem analysis and provided the starting point for WUA design. At this second workshop, the objective is to harmonize the multiple WUA designs, implementation plans and MEAL frameworks arising from the villages in the scheme, resulting in a single final version of these. The workshop may require 2 days depending on the complexity of the scheme and the number of stakeholders. Beforehand, the project team should work with village administrators to announce the workshop and its objectives widely, using posters and local networks. Ensuring all stakeholder groups are represented from each of the villages is central to the success of this workshop. Government stakeholders are important as well as other stakeholders who were invited for the workshop in Phase 1.

At the workshop, the project team will introduce the objectives of the workshop and summarize the process up to this point. The many meetings with government staff and village stakeholders should be emphasized along with the first multi-stakeholder meeting, which formed the foundation for the proposed WUA structure. This is extremely important if stakeholders are to recognize their considerable contributions to the final WUA design and its implementation and monitoring.

A representative from each village can then present the WUA design, along with underlying rationales and the weaknesses of the current system that are addressed through their design. Presentations can be supported by displaying large diagrams of each of the village WUA designs for closer reference. Time for clarifications should be available after each village presentation. This will be followed by the development of a single final WUA design. While this could be achieved through another plenary session, it is recommended that the plenary is preceded by group work. The groups can represent a specific stakeholder group, and their task is to develop their own final design using the proposed designs by the villages. Each group must propose a design which they think will be effective, fully accepted by most people and will help them improve water management in the scheme. There are likely to be some challenges that the establishment of a WUA cannot solve (e.g., unreliable energy supply), and these must be made clear together with recommendations on who can solve them. Sufficient time should be provided in the agenda for this stage of the meeting to be completed comprehensively, including time for extended questions and discussion.

Presentations of the group work and subsequent discussions in the plenary session should lead to a final consolidated WUA design and operations. If there are key issues where consensus cannot be reached, a follow-up workshop in a week or two could be an option, with smaller working groups set up in the interim to propose solutions to be discussed at the follow-up workshop. Where such outstanding issues do not occur, the project team must ensure that all participants clearly understand that the revised WUA structure is the final version that will be implemented.

Once a WUA design is agreed among the stakeholders, the workshop can develop an overall implementation plan and MEAL framework. In this session, the implementation plan and MEAL framework are presented to plenary by each village, followed by group work and then a final plenary where these two components are finalized.

An important final step at this workshop is to request that all participants brief the stakeholders they represent and share the workshop outcomes. This should include the final WUA structure, how it is expected to function and help the respective stakeholders, and how the structure will be rolled out in the scheme. This step should be followed up by the project team, the CFs at village level, and more senior staff with government institutions. Further activities to effectively communicate the WUA structure and underpinning logic should include brochures, using mainly graphics, and possibly videos. These will be followed up by illustrated presentations and discussions in each village with opportunities for stakeholders to gain clarifications in the implementation phase described in Phase 3 below. At least a month, if not more, should therefore be allocated between the end of this workshop and WUA implementation.

While the multi-stakeholder workshop is key to further the process of WUA formation and organizational development, it should not be treated as an institutional means or process-based mechanism to rubber-stamp key stakeholders' agreements. On the contrary, if farmers and other key stakeholders cannot reach an immediate agreement on specific issues, follow-up mechanisms need to be developed to facilitate this process, while ensuring that the workshop is characterized by - and functions as - an inclusive discussion forum to provide stronger organizational roots, and consensus building for the formation and development of the WUA.

A local example (8): Additional institutional layers leading to a final WUA structure

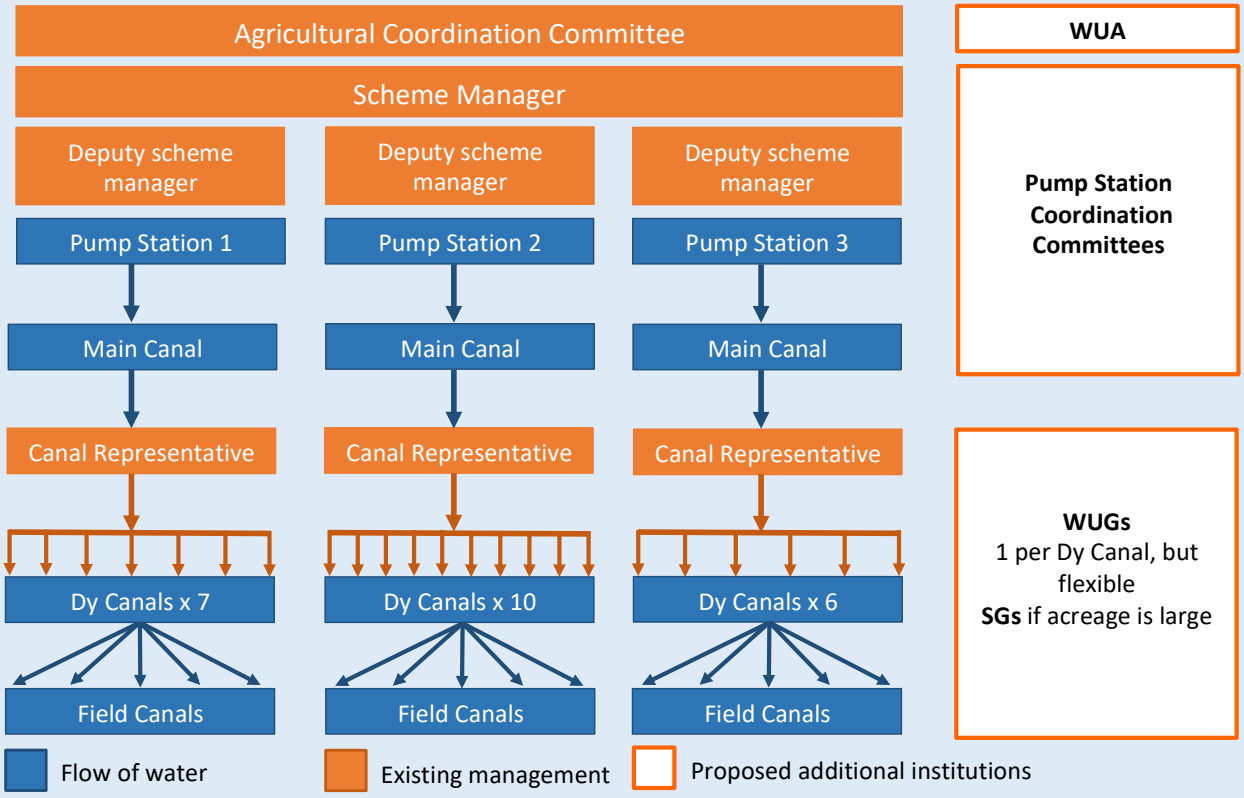
The table below shows the layers and functions required for the WUA design. The boxes on the right in the first diagram (after this table) represent the additional institutional layers identified for the PYPIS under the PYPIP. By combining these with the existing institutional arrangements, the final WUA structure was created, as depicted in the second diagram.

Additional institutional layers leading to a final WUA structure for the PYPIS:

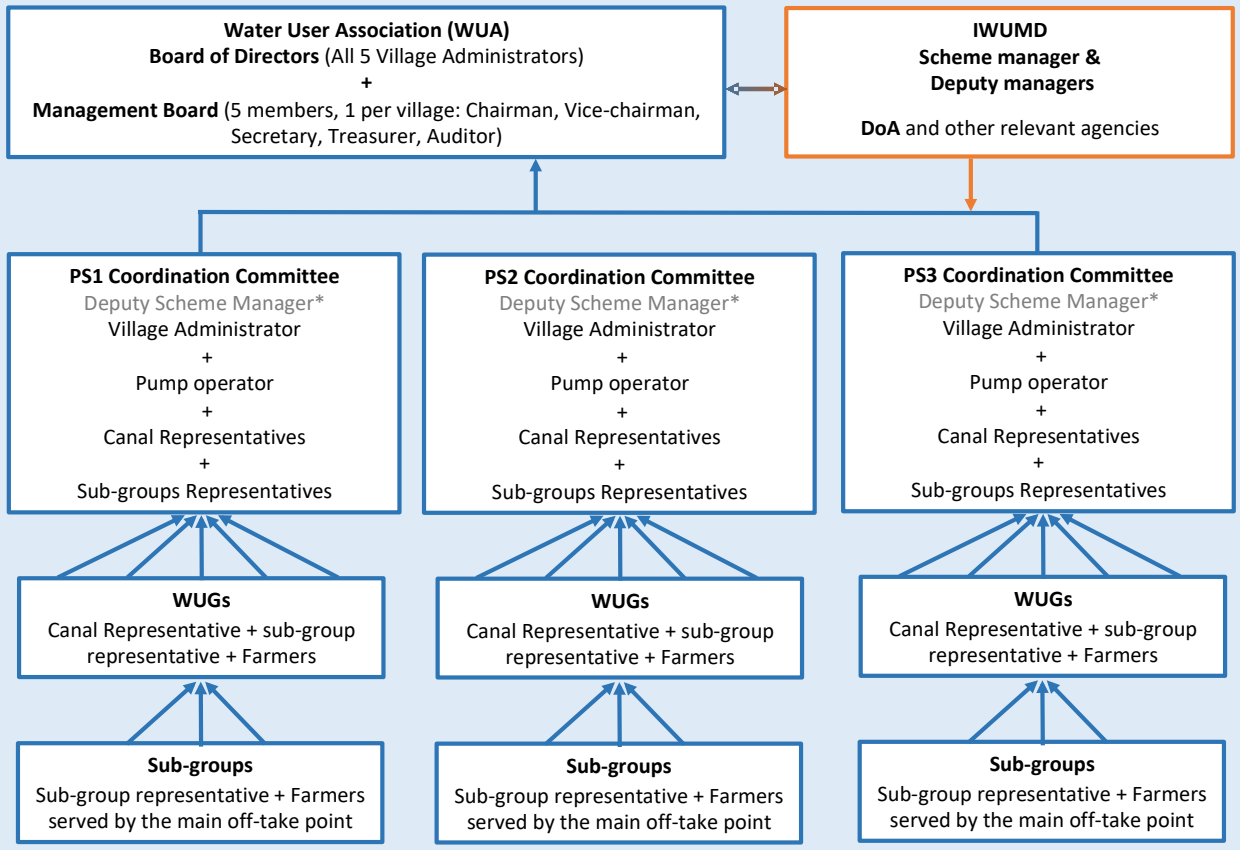
Layer	Scale	Membership	Key functions
WUA General Assembly and governing bodies	Entire scheme	All farmers served by the scheme	• Develops the irrigation schedule and coordinates allocations between the three pump stations. • Addresses disputes that cannot be addressed at PSCC level. • Makes decisions regarding overall scheme operation and management, together with IWUMD staff, including allocation of O&M budget.
Pump Station Coordination Committees (PSCCs)	Command area of each pump station (aggregation of WUGs served by the pump station)	Sub-group Representatives (SGRs), CRs, Village Administrators and Deputy Scheme Manager assigned to that pump station	• Facilitate data collection to support development of the irrigation schedule for the scheme. • Ensure sufficient water is available for the needs of WUGs served by the pump station, as per the irrigation schedule. • Ensure equitable and transparent allocation occurs between WUGs supplied by the same pump station. • Addressing issues that cannot be managed at SG/WUG levels.
Water User Groups (WUGs)	Distributary canal (aggregation of SGs served by a specific distributary canal)	Farmers in all SGs served by one distributary canal (led by a CR)	• Coordination with the pump operator at the pump station to ensure the required water is received by the distributary canal as per the irrigation schedule. • Coordination between the SGs served by the distributary canal as per the irrigation schedule. • Ensure maintenance of the distributary canal.
Sub-groups (SGs)	Water off-take point linked to a distributary canal	All farmers (landowners and leaseholders) served by the off-take point (led by an elected SGR)	• Collection of data to support development of the irrigation schedule. • Coordination between farmers to maintain/adjust the irrigation schedule to ensure timely, sufficient and equitable water allocation, with minimal conflict. • Maintaining watercourses, off-take points and the distributary canal.

A local example (8) continues overleaf:

Additional layers identified for the PYPIS:



Final WUA and structure for the PYPIS:



*The deputy scheme manager is not a member of the WUA but sits in the PSCC.

Implementation and Support

"IMPLEMENTATION of the validated WUA design is not complete without continuous SUPPORT, until each of the WUA's institutional layers are well-established. The project team must therefore also have capacity building and exit strategy plans in view from the beginning."

How this phase is structured will depend on the design of the WUA that emerges from Phases 1 and 2. Despite variations in structure among schemes, several similarities will exist because of the common need to build ground-up representative and participatory processes. It is, therefore, presumed that, while the steps detailed below may not be an exact match, many of these steps will be needed whenever a WUA is to be implemented, even if it is in a modified form. Moreover, many of the tools such as participatory mapping and other approaches for collective planning and implementation will be relevant whatever the WUA structure.

Raise awareness of WUA design and implementation PHASE 3 STEP 1

Prior to commencing WUA implementation, hold meetings to update each village on the final WUA structure and process that led to its finalization by their respective representatives. The meetings are to ensure that all water users are fully aware of – and understand – the finalized WUA design and implementation plan (Box 13). Participation at these meetings should be promoted by announcing it in areas where people gather and through other local communication means. CFs should ensure that all stakeholders know that there is a meeting about the final WUA design and its implementation, where and when the meetings will be held. The meetings should be held at a time that the CFs can verify as being convenient for women as well as men. The meeting length should be limited to 60-90 minutes.

Box 13. ***Meeting agenda for all water users.***

Each meeting should consist of the following activities:

1. Explain the purpose of the meeting.
2. Refer to the overall objective of establishing a WUA to improve operation of the scheme.
3. Recount the main steps taken up to this point in terms of stakeholder consultation.
4. Present the WUA structure and explain that this reflects the discussions held at village level (and/or other scales), and the second multi-stakeholder workshop where representatives of farmers and other water users from each of the villages finalized the WUA design.
   This step is important because most stakeholder representatives who attended the second multi-stakeholder workshop may not have explained the outcomes of this workshop at all or in full. It also demonstrates how the WUA structure has been co-designed by the farmers and other stakeholders with support from the project team.
5. Explain the purpose of each layer of the WUA structure, and how these contribute to achieving the overall objectives of establishing a WUA, and specifically how these can benefit farmers and other water users.

Demarcate the operational level of the WUG PHASE 3 STEP 2

If an operational level lower than WUGs (e.g., sub-groups or their equivalent) are part of the WUA design, the team will need to go through steps 2 to 4 twice: first developing the sub-group and electing the representatives and then establishing the WUG and electing the representatives (see a local example (9)). Where only WUGs are part of the WUA structure, the project team will only need to go through steps 2 to 4 once. The following steps are suggested during the village-level meetings when implementing the operational WUGs (and if needed the SGs):

1. Demarcate the operational groups covering the scheme area (i.e., WUG or SG).
   - Use a large map of the scheme (e.g., Google maps overlaid with the canal structure).
   - Reiterate the criteria developed in Phase 2 to decide on how to delineate the groups.

2. Invite farmers to comment on the groups and be open to modifications. Where modifications are suggested, work with farmers to identify any problems these could pose to the overall allocation of groups and how these could be solved.

3. Once agreement is reached, set a date for the first meeting of each group, and agree on an agenda for that meeting (Box 14).

Box 14. *Meeting agenda for WUGs.*

The meeting agenda should include the following:

1. A further introduction to the overall institutional design and clarification of the functions the WUG is expected to perform.
2. Wherever possible, an address by the Scheme Manager to demonstrate that this process has government support, and to ensure the key government stakeholder at scheme level is part of the process, as buy-in is necessary by all stakeholders.
3. Drafting the rules and sanctions applicable to farmers and representatives as well as the criteria for electing the representative, including farmer agreement on the conditions for re-election in the case of any perceived misbehavior or misconduct before the end of the WUA term of office. This bolsters the institutional mechanisms for farmers to convey their voices and for the WUA to strengthen its representation, constituency and accountability.

Meet to establish rules and regulations PHASE 3 STEP 3

These meetings will allow farmers to meet for the first time as a group and develop the rules and sanctions applicable to themselves and their group representative, and the criteria for electing their representative.

Use similar methods as explained in Phase 3 Step 1 to ensure that many farmers from each group attend this meeting, adopting any modifications in communication pathways that were made after reflecting on their effectiveness in Step 1. Wherever possible, the project team should encourage the Scheme Manager to address the farmers to highlight that this process had his/her support.

Start each group meeting with an introduction to the overall institutional design and clarification of the functions the group is expected to perform. Invite the Scheme Manager to speak, if s/he is in

attendance. The CFs and other project staff should then facilitate the group to systematically develop the rules and sanctions by considering the roles played by farmers and representatives to enable the group to perform its functions under the WUA. Rule development should be followed by developing steps to be taken to hold themselves and their representatives accountable, such as sanctions for rule breaking, or non-performance of the representatives' roles. Among the other decisions a group will need to take include the fees to be paid to the representative for services rendered. In the case of the PYPIS, these fees are shared equally among the representatives irrespective of the area they serve, to avoid competition between groups based on the area they serve.

At the end of this step, the members of each group should be requested to reconvene of their own accord to either identify volunteer candidates or to nominate one or more candidates for the representative position, after considering the criteria they have just developed. A separate group meeting should be held at a later agreed date to hold the election. Allow each group to determine the regularity with which it will meet, on the assumption that the representative is best placed to determine this in relation to the functions they are to perform. Leave the original rules and regulations with the sub-group and take a copy.

A local example (9): Development of the SG and WUG layers.

The project followed steps 1 to 4 to establish the SG and then reiterated a lighter version of steps 1 to 4 to form the WUG. The project team first held separate meetings at each SG to create awareness of the WUA, and guided farmers in designing the first set of rules and regulations for WUA members and the SGRs, and to define a set of criteria for electing the SGR. A second meeting was held in each SG to elect the representative (see a local example (10)).

The WUG was established by aggregating the sub-groups at key off-take points along the distributary canal. Election of the representatives (in Pyawt Ywar called Canal Representatives (CRs)) involved a one-day workshop with all group members, IWUMD staff and relevant village administrators. The workshops were structured as follows:

- Project team repeated activities listed under Step 1 to further build awareness of the WUA.
- Consolidation of SGs was discussed and the number of WUGs to be formed was finalized.
- Presentation by a farmer of the rules applicable to farmers in the SG, and sanctions for failing to abide by these rules.
- Presentation by the SG representatives of their roles and responsibilities, and sanctions for failing to carry out the duties.
- Development of criteria for the selection of candidates for the CR position.
- Election of the representative based on the criteria.

The representatives elected at this level are expected to work with the representatives of the smallest operational level they oversee as well as with their peers served by the same pump station. They nominated one CR to liaise with the pump operator to convey the water requirements of farmers in the PS command area. The newly elected representatives received the farmer list with land area (acreage) and were asked to countercheck their members and validate the land area served.

Elect group representatives PHASE 3 STEP 4

Now that each group has developed criteria for electing its representative, voting can commence either through a show of hands or a secret ballot (see a local example (10)). Distribute the farmer list with land area (acreage) to the newly elected representative and ask the person to countercheck the members and validate the land area served.

A local example (10): Election of SGRs and CRs.

Several key aspects must be considered in these elections. The process is more straightforward in the case of SGRs given the finite number of SGs and the need for a representative in each SG. Here, the main questions will be around defining the characteristics that make an individual suitable for this position, in the light of the roles and responsibilities defined for an SGR. The same will apply for CRs in relation to their roles and responsibilities. Facilitating the farmers to develop these criteria was the first step towards seeking suitable candidates for these positions.

In this scheme, the SGRs were elected first. Farmers decided to elect the CRs from among the SGRs to limit the number of people between whom the service fee is to be distributed. The service fee is the fee each farmer paid to the CR under the original system, and is meant to compensate the CR for the time they invested in serving the farmers, assuming that this investment negatively impacts the CR's own cultivation.

In fact, in the past, the CR role had been a lucrative position as only a few CRs served a large number of farmers. Now, with the need to share this fee with the SGRs, it was recognized that the amount each SGR and CR received will need to provide sufficient incentive for individuals to want to take up these roles. Since a consensus appeared to exist over these pragmatic financial considerations, the original plan of electing separate CRs was changed.

Allow each operational level to determine the regularity with which it will meet, on the assumption that the representative is best placed to determine this in relation to the functions the second level is to perform.

Depending on the complexity of the scheme and the number of villages and stakeholders involved, Phase 3 steps 1 to 4 can be repeated to form a third layer and so on. In the case of Pyawt Ywar, three PSCCs were developed as a third layer to represent the needs of each pump station (see a local example (11)) in the apex institutional layer. While this is not a pre-described requirement, the development of a PSCC can provide neutral ground for villages to discuss their water needs, as the representatives chosen at group level are often representing a particular village.

A local example (11): Establishing the Pump Station Coordination Committee.

In this scheme, the three Pump Station Coordination Committees (PSCCs) were a critical layer in the WUA design to ensure that:

- an institutional layer harmonized activities across all the WUGs within the command area of each pump station; and

A local example (11) continues overleaf:

- challenges that could not be solved at the WUG level were dealt with, and the needs of farmers served by each pump station in the apex level of the WUA could be represented to ensure there is equity between the areas served by each pump station.

Where PSCCs are needed, each PSCC can be established through an inaugural meeting to introduce all stakeholders, explain and reiterate the purpose of the PSCC within the overall WUA structure, and clarify roles and regulations of the PSCC. In the PYPIS, the stakeholders in the PSCC were the SGRs and CRs from the pump station's command area, village administrators from the villages in the command area, the Deputy Scheme Manager assigned to the pump station, and the Pump Operator.

The project team can facilitate the inaugural PSCC meeting and development of logistical arrangements regarding its operation, such as how often it meets, who will maintain meeting minutes, and how any costs associated with these meetings can be covered (e.g., transport costs).

Allow each sub-group to determine the regularity with which it will meet, on the assumption that its members are best placed to determine this in relation to the functions an SGR is to perform. Its members will take turns to coordinate these meetings.

Establish WUA governing bodies and by-laws PHASE 3 STEP 5

The apex institutional layer will meet once the various operational layers are in place. In the PYPIS, this group initially consisted of all the SGRs, CRs, village administrators, the scheme manager and deputy scheme managers. This group was used to coordinate overall scheme management, and to make decisions on how the executive bodies of the WUA (a BoD and an MB) should be established according to the Draft PIM Guidelines (a local example (12)). Key functions of this apex level will include the following:

1. Putting in place overall needs for irrigation management, including verification of farmer lists, crop choices and cropping areas for each cropping season.
2. Finalizing the overall water allocation schedule and its modification as needed.
3. Coordinating the operation of pump stations and managing the impacts of power supply interruptions.
4. Supporting the consolidation of rules and regulations across the scheme into one set of rules and regulations.
5. Harmonizing the various fees paid by farmers (irrigation fee to the government, service fee to the representatives, WUA membership fee and other fees).

These functions will be carried out in close consultation with IWUMD staff who will most likely retain overall authority over the scheme, and will operate the pumps and maintain the main and secondary canals. This apex level is also where links with other government agencies and non-government actors can be developed. The DoA and DALMS are critical, given DoA's central role in supporting cultivation, and DALM's role in validating the farmer lists and landownership upon which the water fees are based. Non-government actors could include input suppliers or buyers with whom, for example, supply/purchase contracts could be created at preferential rates. NGOs could also provide specific training.

At the first meeting, the project team should present the requirements under the PIM Guidelines, so that all participants are aware of what the WUA management structure should look like (the BoD and MB in particular), and what will be necessary to register the WUA with the government. This can be followed by a more detailed discussion of the roles of the BoD and MB. A consensus could then be reached on how the governing bodies will be populated among the different villages and whether they are filled by WUA members or by some of the representatives. As part of the project team's facilitative role, its staff should bear in mind the importance of equity in representation among the villages and pump stations (where more than one exists). While the scheme consists of multiple layers, it is likely that, for farmers too, the village unit will be the most relevant for representation in the WUA's governing bodies. Where the number of villages corresponds to the number of seats on the BoD and executive positions of the MB, ensuring equal representation will be easier (a local example (12)). Where this is not the case, the project team, together with the farmer representatives in the WUA, will need to work out a solution whereby all villages feel they have equal opportunity to participate in the WUA's management. This may require holding discussions at village level between the village administrator, farmer leaders and others. These discussions could be held both before and/or after a consensus approach is reached at the apex level of the WUA. In other words, village-level consultation could both feed into consensus building and validate the final arrangements agreed at the apex level.

A local example (12): Populating the Board of Directors and Management Board.

It was decided at the WUA meeting that the BoD should consist of the village administrators from each of the five villages. This was partly possible because the number of BoD members stipulated in the PIM Guidelines was also five. However, it clearly indicated the importance the farmers placed on equal representation among the villages. Similarly, the five executive positions in the MB were filled by selecting one individual from each village. Only three of these individuals were group representatives, while the other two were farmers who were identified by the BoD as qualified to perform the roles of the Secretary and Treasurer.

During subsequent meetings (depending on the complexity of the scheme and layers), the project team should support the WUA's MB to consolidate the rules and regulations (by-laws) developed under each of the WUA's layers, including the development of by-laws that will govern the WUA's apex bodies (see Section 4 for the by-laws developed under the PYPIS). This should also include a final harmonization of the rules and regulations applicable to all the sub-layers. The freedom of each group to create its own rules and sanctions must be balanced against the need for these rules and sanctions to be harmonized across the scheme to avoid confusion. The project team can facilitate a discussion around whether members of each sub-layer agree with the existing rules. Any deviations or additional rules and sanctions will need to be recorded by the project team to support a final harmonization process. The same applies to the criteria for electing group leaders. Once harmonized, these rules, along with other by-laws of the WUA, should be clearly displayed in each village (see a local example (13)[4]).

[4] The by-laws and other material can be downloaded at http://www.iwmi.cgiar.org/2019/04/people-power/

A local example (13): Village signboard with WUA membership rules in words and graphics (note official signatures from government representatives).

These by-laws should be understood as being dynamic and changeable by the WUA as necessary, to adapt to prevailing conditions and needs. The consolidated by-laws should be clearly displayed in all villages, together with all contact information of the respective CRs (and SGRs, if SGs are created). By enabling farmers and farmer representatives to refer to what is required of themselves and each other, this measure furthers transparency and mutual accountability between farmers and their elected representatives. The display board should also include the signature of the scheme manager and relevant village administrator to indicate their support. To account for varying levels of literacy, the contents of these boards could be announced in the villages through megaphones/loudspeakers.

Setting up the WUA apex body includes trainings and meetings about bookkeeping and record keeping, and collecting the fees/imposing the sanctions agreed in Phase 3 Step 3. While it is important to establish the apex body, it is even more important to empower the WUA to enforce the rules and regulations and ensure equitable water management. Once the WUA is established and roles and responsibilities are well defined, this implementation phase should focus around empowering the WUA to develop water allocation schedules between the pump stations through a constant dialogue with IWUMD. This can begin by facilitating an introductory meeting between the WUA (MB, BoD, CRs and SGRs), IWUMD staff responsible for all pump stations (scheme manager, deputy scheme manager and pump operators), DoA and other government stakeholders. At the end of the meeting, the MB/BoD should be asked to develop an overview of the area irrigated during the irrigation season per pump station for the upcoming meeting. A follow-up meeting will use those lists to explain the basic principles of water allocation and co-design a water allocation schedule with the WUA and IWUMD. This process will probably require several iterations depending on the complexity of the scheme and the feedback of representatives on propagating the water allocation through the PSCC – WUGs/SG level.

WUA Registration PHASE 3 STEP 6

The registration process consists of several stages and can take (at the time of writing) a year or more to complete. However, the WUA can be operational in the meantime. Preparations for submitting the registration application is likely to involve the following activities:

- Sourcing the application forms from the township level General Administration Department (GAD).
- Discussing the application forms with the WUA's MB and BoD to be clear on all registration criteria and required information.
- Sourcing examples of existing applications from other schemes that have been registered successfully.
- Agreeing the name and logo of the WUA.
- Identifying with IWUMD staff where the WUA's office can be located.
- Making arrangements for a temporary bank account (because the WUA cannot open an account in its own name until it is registered), and developing a ledger and accounting process.
- Developing a list of WUA members, and a list and personal details of the BoD and MB (including a color passport photograph and a copy of the National Registration Card).
- Maintaining all meeting minutes to indicate the WUA is operational.
- Developing the by-laws and WUA profile.
- Obtaining a letter of support for the WUA from (i) the Scheme Manager on behalf of the IWUMD, (ii) the Village Tract Administrator, and (iii) the local police station.

The project team will need to support the WUA to make these preparations.

Capacity Building to Support Effective and Sustained WUA Operations

Ensuring a newly established WUA has the capacity to effectively carry out its numerous tasks as an independent, self-managing, autonomous organization is arguably the most challenging aspect of this process. While careful design and continuous stakeholder engagement will help make the WUA structure relevant to the context in which it must operate, ensuring the various actors who will constitute the WUA structure and carry out its functions have the requisite interest and capacities will be central to long-term success.

Backstopping these nascent institutions may require as much or more time than that allocated for WUA design and creation. While these phases should be carried out prior to any major investments in the physical structure, a large part of capacity building will need to happen once the cultivation in the scheme begins. This is when many of the key functions of the WUA – such as developing and implementing the water allocation schedule, conflict management and fee collection – will be tested, and when pivotal individuals such as the elected representatives will be challenged to carry out their duties, many of which may be new to them. While transitioning from a history of following directions provided by the state to taking responsibility for developing their own rules and electing their own leaders might be a steep learning curve for farmers and WUA members. Key to excelling in the learning process is the central positioning of collective action and how that is embedded in local institutional arrangements. Support must be available to farmer leaders for several irrigation cycles to help them to find ways of enforcing rules within their socio-political-cultural realities, and thereby gain acceptance and authority among farmers.

It is recommended that the project team adopt a mix of formal training and development of informal communication lines between key stakeholders and the key project team. This should include the mentoring of key stakeholders such as CRs (and SGRs where SGs are created) through regular but less formal dialogues to identify challenges and explore solutions.

Formal Training

Formal training at every level is necessary to impart basic skills to key actors in line with their functions. Likely topics for formal training include simple concepts on water allocation, monitoring, preparing and implementing maintenance plans, leadership incorporating conflict resolution and negotiation skills, bookkeeping, holding meetings and maintaining meeting minutes, and basic understanding of water allocation according to land area (acreage) served (i.e., aligned with water availability at the off-take points). The exact inventory of needs can be developed through discussions with farmers and their representatives in the WUGs and other levels of the WUA. Under the PYPIS, at each institutional level, farmer representatives have been trained in record keeping, which includes: attendance lists of meetings, maintaining meeting minutes using a standard template, cropping area cultivated, water allocated on a daily basis, etc. These records will support the various institutional levels at collecting the water fees, tracking the number of resolved conflicts, etc. Additionally, they will provide transparency between farmers, villages and IWUMD staff. Developing a set of basic training modules by the project team will be a good investment.

Additional training can also be identified and channelled through the WUA structure to support other important aspects of crop production, including appropriate land and crop management practices, seed selection, input application and post-harvest methods. While these may not directly

contribute to institutional performance, ensuring farmers improve their production and income will certainly contribute to their buy-in to the WUA as the mechanism that brings these services and benefits.

Informal Backstopping

This can include listening, problem analysis, advice, mentoring and joint efforts to resolve issues. Informal dialogues with key stakeholders and actors will help fill important information gaps left by more formal dialogues, such as the SG, WUG, PSCC and WUA meetings. Formal meetings will only allow the project team to partially assess the strengths and weaknesses of individual actors and the challenges they face, because not all stakeholders communicate effectively in the same way. In fact, it is typical for some group members to dominate discussions, while the majority remain mostly silent. Similarly, while some farmer leaders may be quite vocal, others may be less so by nature. Informal and confidential one-on-one conversations held privately (e.g., in the person's home) can bring to light problems that do not surface in formal forums. Knowing that the project team is at hand to help and guide them will potentially prevent elected representatives underperforming or giving up their positions altogether.

These dialogues can also be a powerful tool to understand the challenges faced by the farmer leaders, why this is the case, and how they could be addressed. Where commonly shared issues are identified, they can be brought to the higher level formal decision-making forums (WUGs, PSCC or WUA), where a common solution and support from others can be obtained. These conversations will also help the project team profile each actor in terms of their attitudes towards their roles, their capacities and resourcefulness, and their networks and those of others. For example, in the PYPIS, this was an important source for identifying relationships among actors, and between actors and other influential people such as local politicians. Such individuals would be key targets for the project team to win over as supporters of the WUA.

While the field coordinator and senior project team have important roles to play in these often one-on-one discussions, the CFs can also play an important role by continuously checking whether allocation schedules are followed at all layers; explaining rules and procedures; and highlighting conflicts or challenges facing the farmer leaders and project team. To do this well, the CFs will first need to be trained on how allocation should be monitored, and conflict scenarios be understood and reported in an impartial way.

Exposure and Exchange Visits

An effective way to build the confidence of water users to take on the O&M responsibilities is to show them an irrigation system successfully managed by a WUA. During such visits, the WUA representatives will be briefed about how that WUA is managing its system, as well as about organizational matters, rules, by-laws, fund-raising and irrigation service fee assessment, collection and use. This will help to build WUA confidence as "seeing is believing".

Exchange visits to the project scheme by senior IWUMD staff are also important to enable them to verify in-situ progress made, and to understand the complexity of problems from the stakeholders and project team, how these are being addressed, and what they can do to facilitate solutions as higher level IWUMD managers. Such visits may also motivate farmers by demonstrating the importance placed by the government on this initiative. Facilitating access to such senior IWUMD staff may be appreciated by farmers, who would rarely have such opportunities.

Developing the Exit Strategy

The exit strategy should be developed as part of the implementation strategy. During the various steps of implementation, the project team needs to reiterate and remind the various levels that the project will come to an end. Developing an exit strategy should include the following:

1. Phasing out the level of engagement of the CFs on site over the various seasons:
   - Field engagement: In the first season after the WUA is established, the CFs will need to be present in the scheme on a daily basis. How long this needs to continue should be assessed on a case-by-case basis. In some cases, the involvement of CFs should continue for several more cultivation seasons, where transition to the new institutional structure and responsibilities is particularly challenging. When the time is right to reduce the field presence of the CFs, a gradual reduction could take the form of visiting every 2-3 days, then once or twice a week (depending on peak water supply and activities) and finally once or twice a month.
   - Facilitation of meetings: The CFs may need to facilitate the first 3-4 meetings in season 1, and should then be able to handover to the respective farmer leaders. The CFs can still be present at the meetings as backstopping, but will no longer actively lead the discussions.

2. Phasing out the level of engagement of the key project team involved in the following:
   - Developing a water allocation schedule: Project-driven joint planning in season 1, facilitation in season 2 where the WUA takes the lead, and observation in the following seasons with strategic support as needed.
   - Developing cropping pattern: Project-driven joint planning in season 1, facilitation in season 2 where the WUA takes the lead, and observation in the following seasons with strategic support as needed.
   - Communication between WUA and IWUMD: Project-driven in season 1 where the project team initiates and facilitates dialogues, facilitation in season 2 where the WUA takes the lead, and observation in the following seasons with strategic support as needed.
   - Financial support and bookkeeping of WUA: Project-driven joint planning in season 1 where relevant WUA members are trained, facilitation in season 2 where the WUA members take the lead, and observation in the following seasons with strategic support as needed.

The number of seasons given above for transition from project-driven activities to WUA-led activities is a suggestion only. In practice, the time that the project team will need to provide substantial support will depend on how quickly the WUA picks up these roles and other factors such as the level of coordination between the WUA and IWUMD staff.

3. Strengthening IWUMD support to the WUA: Relationship building between IWUMD staff and the WUA begins at the beginning of this process, where IWUMD is a key stakeholder involved in the contextual diagnosis of Phase 1, and in reviewing the WUA institutional design in Phase 2. The IWUMD should, therefore, be familiar with the WUA structure, its underlying logic, and how its various layers are expected to function and link with its staff. Since the IWUMD is clearly required to provide continued support to the WUA under the Draft PIM Guidelines, affording IWUMD scheme management staff the opportunity to participate in the steps in Phase 3 will maintain the continued engagement needed to strengthen acceptance of the WUA and build interpersonal relationships between IWUMD and WUA leaders. Once functional, the WUA and

IWUMD staff will be required to work together on several key activities, including developing and implementing the water allocation schedule while the project team step back.

It is also advisable for the project team to facilitate discussions between the BoD/MD of the WUA and IWUMD scheme staff regarding future support to the WUA, and discuss the level of support that should be provided. This is important as it may require adjustments in the annual budget submitted by the Scheme Manager to the higher levels of IWUMD. It must be recognized that the actual budget the IWUMD receives for scheme management (including supporting the WUA) may be less than the amount requested. Nevertheless, not all support to the WUA may require finance, e.g., support that involves drawing on the engineering skills of senior IWUMD scheme staff. Another strategy for the IWUMD could be to link the WUA with other actors such as other government departments and NGOs for provision of specific support.

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Annex. WUA by-laws Established Under PYPIS

Five Villages Bless Water User Association

(Pyawt Ywar Pump Irrigation Project)

Myinmu Township, Sagaing Region

(By-laws)

CONTENTS

6. Sub-group Meetings

Chapter 1: Title, Location and Objectives

1. This water user association shall be called “Five Village Blessing Water User Association”. It was established on June 6, 2018. Its address (temporary) is the residence of the chairman of the Management Board of the WUA, No. 4 Pyawt Ywar, Myinmu Township, Sagaing Region, Myanmar (the WUA will move to the contractor building in PS2, which has been kindly donated by IWUMD after completion of minor rehabilitation work by WUA).
2. Objectives of the WUA are as follows:

- Ensure sustainability of the Pyawt Ywar Pump irrigation scheme.
- Provide equal water allocation to all members.
- Collaborate with IWUMD.
- Support agricultural production of members in the scheme area.
- Help members find high-yielding varieties.
- Modernize agricultural production (e.g., agricultural mechanization) in the scheme.
- Ensure members follow the rules and regulations.

Chapter 2: Membership of WUA

1. Membership of WUA shall be available to all members who are owners or tenants of the land, use canal water and are directly engaged in the cultivation of land within the area of the irrigation system.
2. At the time of application for membership, he or she must be 18 years of age or above.
3. Applicant becomes a member upon payment of membership fee to WUA.

Chapter 3: Duties and Rights of Members of WUA

1. Rights of Members

- Everybody will get equal access to water.
- Everybody can discuss issues related to the scheme in respective WUA meetings (e.g., SG, WUG, PSCC and General Assembly).
- Everybody can grow whatever they want in agreement with neighboring members.
- Everybody can vote for the sub-group representative and canal representative of the respective sub-group and water users group in which their plots are located (one vote per member per sub-group and per water users group).
- Everybody has the right to know the financial status of the WUA.
- Everybody has the right to submit a request or complaint in writing to the WUA.

2. Responsibilities of Members

i. Members must follow the rules established by the WUA.
ii. If the person fails to attend the meeting at the time of developing rules, he/she will need to follow the established WUA rules and cannot object to the newly established rules (see [i] above).
iii. Constructing field canals and installation of off-take pipes must be carried out in coordination with CRs, SGRs and IWUMD (scheme engineer).
iv. Members must collaborate with CR and SGR at the time of creating the water allocation schedule. Water will be allocated according to the confirmed water allocation schedule.
v. Members must collaborate with each other in the same sub-group and along the same canal (this is within one WUG or between different WUGs).
vi. If field canals or off-take pipes are broken, members must work together with their SGR and CR to repair them.
vii. If water allocation is needed, a member must inform the SGR in advance.
viii. In the case of issues or disputes, members must inform the SGR in time.
ix. Members must pay the water fee, service fees, seasonal saving fees and membership fees in time to the SGR.
x. Members must grow the same crop and variety (same growing length) in the respective sub-group.

xi. Members must participate in the cleaning or maintaining of field canals and off-take pipes in the respective sub-group.
xii. Members must use the water carefully and as required, and not store extra water.
xiii. Members must not destroy field canals.
xiv. Cattle or other livestock grazing should not be allowed close to the canals.
xv. Members who take water from the canal using their own pumps (for any crop) still need to pay water, service, seasonal saving and membership fees.
xvi. In the case of newly established or amended regulations by the WUA, members must follow the updated rules.

Chapter 4: Suspension, Dissolution and Removal of member

1. Members of the WUA may be suspended or dissolved based on the following:

i. The member does not use irrigation water for 3 years or more.
ii. The member who does not pay water, service and seasonal saving fees (first, failure to pay will translate into suspension and removal from the WUA).
iii. The member who breaches the WUA rules more than three times (the first two times will result in a warning being given by the BoD and MB).
iv. The member who has not officially requested water from the WUA for over 2 years.
v. The member who destroys existing field canal and does not allow negotiating for the construction of a new field canal.

Chapter 5: Membership Fee, Taxes and Fund

1. Membership Fee

Membership fee is MMK 1,000 (one thousand Kyats) per person or per household to be paid to the WUA.

2. Seasonal Saving

The seasonal saving is MMK 200 (two hundred Kyats) per acre according to the cultivated area for each cultivation season to be paid to the WUA.

3. Service Fee

Service fee for SGRs and CRs is MMK 2,000 (two thousands Kyats) per acre according to the cultivated area for each cultivation season to be paid to the WUA.

4. Water Fee

The water fee to be paid for paddy and other crops follows the rates of IWUMD, which is, at present, MMK 3,000 per acre for other crops, MMK 6,000 per acre for monsoon paddy and MMK 9,000 per acre for summer paddy. IWUMD has the right to adjust the water fee based on national policies.

5. Fund

A fund can be created using donations by members or others, through revenue earned from taking part in business activities or other ways that are in accordance with national laws.

Chapter 6: Boards of WUA

1. Board of Directors

Members of the Board of Directors are village administrators from each village.

1.1 Duties and Authority of Board of Directors

- Approve annual budgets of WUA (general management and operations).
- Approve financial status.
- Advice Management Board.
- Approve decisions on any expenditure above MMK 500,000.
- Approve operations by the Management Board.

1.2 Eligibility Requirements to be a Member of the Board of Directors
Members of the Board of Directors must be active village administrators.

1.3 Suspension, Dissolution and Removal of Members of the Board of Directors
Members of the BOD are village administrators. So, a member shall be removed from the Board of Directors automatically when he or she is no longer a village administrator.

If a BOD member decides he/she can no longer carry out this function, he/she must assign another person from that village administration group to replace him/her.

2. Management Board
Members of the Management Board shall be elected by all SGRs and CRs in the WUA. The Chairman, Vice Chairman and Secretary shall be elected from appointed SGRs and CRs. The elected Treasurer and Auditor can be any one of the WUA members. Each village can only occupy one seat in the MB. MB shall comprise of the following office bearers:

(a) Chairman
(b) Vice Chairman
(c) Secretary
(d) Treasurer
(e) Auditor

2.1 Duties and Authority of Management Board

- Manage the annual budgets.
- Carry out operation and maintenance within the approved annual budgets, as well as any budget available from IWUMD from annual government allocations.
- Request approval from BOD for operation or maintenance expenditure above MMK 500,000.
- Liaise with IWUMD to gain approval for the construction of new or rehabilitation of existing main canals, distributary canals and minor canals, and off-take points.
- Approves new off-take points in consensus with IWUMD.
- If a conflict cannot be solved by the WUA, the secretary writes an official letter signed by BOD (relevant Village Tract Administrator (VTA)) to the Scheme Manager, followed by IWUMD district office or GAD.

2.2 Eligibility Requirements to be a member of Management Board
Members of the Management Board (except treasurer and auditor) shall be CR or SGR. For the treasurer and auditor positions, the persons shall have basic knowledge of accounting and bookkeeping**.**

2.3 Suspension, Dissolution and Removal of Members of the Management Board
Members of the Management Board may be suspended or dissolved for the following reasons:

i. The member misuses the fund.
ii. The member does not want to continue carrying out his/her duties.
iii. If the member does not attend three meetings in a row and has not sent any representative to contribute to decision-making (if the member is removed more than three times, suspend the person).
iv. The member takes a bribe or engages in any other form of corruption, and there is a witness for such activity.
v. The member does not conduct his duties properly (warning for the first two times and suspension on the third encounter).

3. Canal Representatives
3.1 Duties and Authority of a Canal Representative

i. CRs must conduct a field visit at least twice in a day to their respective water user group area (morning, noon/evening).

ii. CRs must ensure to get sufficient water for the respective land area, according to acreage, soil types and crop varieties.
iii. CRs must participate in PSCC and WUA meetings at the time of creating the water allocation schedule, and perform allocation of water according to the schedule.
iv. CRs must solve the issues that cannot be solved by SGRs as soon as possible.
v. CRs must take action against the SGRs who do not take action against undisciplined members at WUG level.
vi. CRs must inform the SGRs about allocation date in advance and check whether allocation is carried out according to the water allocation schedule or not.
vii. CRs must check respective sub-groups' outlets.
viii. CRs must collaborate with IWUMD deputy scheme manager in their respective pump station, pump operator and SGRs.
ix. CRs must inform IWUMD, if main, distributary and minor canals, and off-take pipes are broken.
x. CRs must inform the SGRs about the date to collect water, service, seasonal saving and membership fees in advance, and check whether the water fee is paid for correct cultivated area or not.
xi. CRs must ensure that the sub-groups to be united.
xii. CRs must lead the water user group meeting.
xiii. CRs must inform IWUMD when there is illegal settlement and illegal cultivation activity in the canal area.
xiv. CRs must participate in the meetings and trainings related to water development and management, and share updates and knowledge to SGRs in the respective WUG.
xv. CRs shall not be biased in the way they carry out their responsibilities.
xvi. CRs must handover membership, seasonal saving, water and service fee and fines to the treasurer of the WUA.
xvii. CRs must maintain meeting minutes of all WUG meetings conducted.

3.2 Eligibility Requirements to be a Canal Representative

i. CR must be respected by most of the members.
ii. CR must be in good health.
iii. CR must own plots in the land area of the WUG.
iv. CR should be brave enough to enforce the rules.
v. CR should be 18 years or older.
vi. CR should know the area of the WUG very well.
vii. CR must be interested and active in performing the role of a CR.
viii. CR must be able to decide fairly what is correct and what is not.
ix. CR must have the ability to negotiate between members and the scheme management.
x. CR should have sufficient time to carry out the functions of a CR.
xi. CR should have experience in maintaining accounts, and have sufficient capacity to be able to maintain records and meeting minutes of the WUG.
xii. CR may need to travel using a motorbike.
xiii. CR shall be able to work at night time.
xiv. CR shall be able to conduct and join meetings and trainings.
xv. CR should be a person that is a permanent resident in the village, and should not be someone who migrates.
xvi. CR should be a person who can fulfil the relevant duties.

3.3 Suspension, Dissolution and Removal of the Canal Representative

A canal representative may be suspended or dissolved for the following reasons:

i. If the person misuses the fund.
ii. The person is not able to conduct their duties properly, as confirmed by 75% of the members from his group.
iii. The person is unable to ethically solve a water conflict in his group and takes a bribe (with witness).
iv. The health of the person does not allow him/her to carry out his/her duties.

v. The person does not want to continue his/her duties.

4. Sub-group Representatives

4.1 Duties and Authority of a Sub-group Representative

i. SGRs must allocate water according to soil type, crop type and cultivation areas (categorized by crop variety) of the total land area in their respective sub-group.
ii. SGRs must collect the list of cultivatable areas (in acres) before the cultivation season starts.
iii. SGRs must inform the members in their respective sub-groups about the water allocation schedule and other information about the scheme in advance.
iv. SGRs must arrange the time of irrigation to different members' plots depending on soil type and crop variety.
v. SGRs must check whether water is needed or not in the plots in their respective sub-group area, and check to ensure that everyone receives water during the allocation time (priority should be given to the members who need water the most).
vi. SGRs must check the canals to ensure there is no water being wasted in the sub-group area.
vii. SGRs must inform the CR when water is needed in their sub-group.
viii. SGRs must conduct the regular meetings for members in respective sub-group and maintain meeting minutes.
ix. SGRs must solve the issues that arise among members in their sub-groups in collaboration with the CR.
x. If members do not obey the rules, SGRs must take action according to the rules and punishments identified by everyone.
xi. SGRs must prompt the members to clean field canals and off-take pipes.
xii. If canals and off-take pipes are broken, SGRs must organize the sub-group members to repair them in a timely manner.
xiii. SGRs must work with the CR to collect water, service, seasonal saving and membership fees after the harvest in each season and handover the money collected to the CR.
xiv. SGRs must attend water-related trainings and transfer the information gained to sub-group members.
xv. SGRs must discuss and coordinate activities among each other when it is necessary.
xvi. SGRs shall not be biased in the way they perform their responsibilities.
xvii. SGRs must participate in the meeting for creating the water allocation schedule at PSCC level, and arrange water allocation according to the schedule.
xviii. SGRs must collaborate with respective responsible persons to get accurate data when the survey is conducted to identify land area.
xix. SGRs must discuss and coordinate among each other the regular updating of rules and regulations.
xx. SGRs must visit the off-take points in their sub-group at least twice a day.

4.2 Eligibility Requirements to be a Sub-group Representative

i. The SGR must be respected by most of the members.
ii. The SGR must be in good health.
iii. SGR must own plots in the land area of the SG.
iv. SGR should be brave enough to enforce the rules.
v. SGR should be 18 years or older.
vi. SGR should know the area of the SG very well.
vii. SGR must be interested and active in performing the role of a SGR.
viii. SGR must be able to decide fairly what is correct and what is not.
ix. SGR must have the ability to negotiate between members and the scheme management.
x. SGR should have sufficient time to carry out the functions of a SGR.
xi. SGR should have experience in maintaining accounts, and have sufficient capacity to be able to maintain records and meeting minutes of SG.
xii. SGR may need to travel using a motorbike.
xiii. SGR shall be able to work at night time.
xiv. SGR shall be able to conduct and join meetings and trainings.

xv. SGR should be a person that is a permanent resident in the village, and should not be someone who migrates.
xvi. SGR should be a person who can fulfil the relevant duties.
xvii. SGRs must have knowledge of soil types and cultivable areas (categorized by crop variety) of total land area in their respective sub-group.

4.3 Suspension, Dissolution and Removal of Sub-group representative

A sub-group representative may be suspended or dissolved for the following reasons:

i. If the person misuses the fund.
ii. The person is not able to conduct his duties properly, as confirmed by 75% of the members from his sub-group.
iii. The person is unable to ethically solve a water conflict in his group and takes a bribe (with witness).
iv. The health of the person does not allow him/her to carry out his/her duties.
v. The person does not want to continue his/her duties.

5. Tenure of Executive Members, SGRs and CRs

The tenure of members of Board of Directors is ended when he/she is no longer a village administrator, since all members of the Board of Directors are village administrators.
The tenure of members of the Management Board is 5 years (with the first year starting in 2018).
The tenure of CR is 3 years (with the first election in 2021).
The tenure of SGR is 3 years (with the first election in 2020).

Chapter 7: Penalties

In the case of sanctions being collected, 20% will go to the WUA, 50% to the savings account of the respective WUG/SG and 30% will be the finder's fee.

1. Penalties for Members

i. If a member does not follow the instructions of SGR, fines will be charged as follows: MMK 8,000 (first time), MMK 16,000 (second time), MMK 32,000 (third time) and water suspension for one season (Fourth time).
ii. If a member does not participate in the meetings for creating the water allocation schedule, he/she must follow the schedule established by everyone who participated in the related meeting.
iii. If a member does not collaborate with SGR when a canal is broken, fines will be charged as follows: MMK 8,000 (first time), MMK 16,000 (second time), MMK 32,000 (third time) and water suspension for one season (fourth time).
iv. If water, service, seasonal saving and membership fees are not paid in time, water allocation for the next season will be suspended.
v. If a member does not plant the same crop at the same time with other members in respective sub-group, he/she may have to take responsibility for their actions.
vi. If a member does not take water according to the water allocation schedule, fines will be charged as follows: MMK 8,000 (first time), MMK 16,000 (second time), MMK 32,000 (third time) and water suspension for one season (fourth time).
vii. If a member does not act in a responsible manner to not waste water, fines will be charged as follows: MMK 8,000 (first time), MMK 16,000 (second time), MMK 32,000 (third time) and water suspension for one season (fourth time).
viii. Members who take water from the canal using their own pumps still need to pay the water, service, seasonal saving and membership fees. If not, action will be taken in accordance with the irrigation canal act.
ix. If a member causes damage to the canal during water allocation, action will be taken in accordance with the irrigation canal act.
x. Installation of off-take pipes must be carried out as instructed by an authorized engineer of IWUMD. If not, water allocation will be suspended.

xi. Inform the SGR when issues arise, if not members must take responsibility for solving problems by themselves.
xii. If a member does not close the gate after irrigation, fines will be charged as follows: MMK 8,000 (first time), MMK 16,000 (second time), MMK 32,000 (third time) and water suspension for one season (fourth time).
xiii. If cattle or other livestock (buffalo, sheep and goat) grazing takes place close to the canal, fines will be charged as follows: one cow or one buffalo (MMK 10,000) and one sheep or goat (MMK 2,000).

2. Penalties for Sub-group Representatives

i. If a SGR neglects to carry out the relevant duties, action will be taken as follows: warning (first time), warning (second time), and dismissal from SGR position (third time) (service fees for previous activity will not be paid).
ii. If a SGR neglects to take action on undisciplined members, action will be taken as follows: warning (first time), warning (second time), dismissal from SGR position (third time) (service fees for previous activity as a SGR will not be paid).
iii. If a SGR allocates water for SG without informing the CR, action will be taken as follows: fines MMK 16,000 (first time), MMK 32,000 (second time), MMK 64,000 (third time) and dismissal from SGR position (fourth time) (service fees for previous activity as a SGR will not be paid).
iv. If a SGR does not follow the water allocation schedule for the sub-group, action will be taken as follows: fines MMK 16,000 (first time), MMK 32,000 (second time), MMK 64,000 (third time) and dismissal from SGR position (fourth time) (service fees for previous activity as a SGR will not be paid).
v. As SGRs are also members in the sub-groups, they have to follow the rules and regulations applicable to members. If not, action will be taken in accordance with rules and regulations for members.

3. Penalties for the Canal Representatives

i. If a CR neglects to conduct the meeting, action will be taken as follows: warning (first time), warning (second time), and dismissal from CR position (third time) (service fees for previous activity as a CR will not be paid).
ii. If a CR neglects to inform the WUA and IWUMD when a main canal, distributary gate leaf or distributary canals is damaged, action will be taken as follows: warning (first time), warning (second time), and dismissal from CR position (third time) (service fees for previous activity will not be paid).
iii. If a CR neglects to take action against undisciplined members and SGRs, action will be taken as follows: warning (first time), warning (second time), and dismissal from CR position (third time) (service fees for previous activity as a CR will not be paid).
iv. If a CR does not follow the water allocation schedule for sub-groups, action will be taken as follows: fines MMK 16,000 (first time), MMK 32,000 (second time), MMK 64,000 (third time) and dismissal from CR position (fourth time) (service fees for previous activity as a CR will not be paid).
v. As CRs are also members in the sub-groups, they have to follow the rules and regulations applicable to members. If not, action will be taken in accordance with rules and regulations for members.
vi. If a CR neglects to request water allocation for respective WUG, action will be taken as follows: fines MMK 16,000 (first time), MMK 32,000 (second time), MMK 64,000 (third time) and dismissal from CR position (fourth time) (service fees for previous activity as a CR will not be paid).
vii. If a CR neglects to solve the issues that SGRs cannot solve, action will be taken as follows: fines MMK 16,000 (first time), MMK 32,000 (second time), MMK 64,000 (third time) and dismissal from CR position (fourth time) (service fees for previous activity as a CR will not be paid).

Chapter 8: Meetings of WUA

1. General Assembly

a. General Assembly will be held three times per year.

i. At the beginning of the monsoon season.

ii. At the end of the monsoon season.

iii. At the start of every financial year (January of every year).

b. General Assembly will decide the seasonal activities and financial plan for the following season. Achievements and problems in the previous season will also be discussed.
Members in the General Assembly are BOD, MB and CRs (mandatory). WUA members may participate to discuss relevant matters in the General Assembly. Secretary of MB will inform the members 7 days in advance of WUA meeting. At the end of every meeting, the date of the next meeting will be announced.

2. Emergency Meeting

An emergency meeting will be held if there are some problems or difficulty in allocation management. Every member of the MB and BOD needs to participate in this meeting to find a solution. Secretary of MB will inform the members of emergency meeting. At the end of every meeting, the date of the next meeting (if one is needed) will be announced.

3. Water User Association Management Meeting

The WUA management meeting will be held as and when needed to discuss water allocation management and resolve related conflicts throughout each season among the PSCC. At each WUA meeting, all CRs and village administrators in the respective PS must participate in the meeting. The SGRs are welcome to participate. The CR is responsible for communicating the water allocation in the PSCC meeting and ensure that water allocation is followed. The WUA will need to inform the SGRs, CRs and village administrators one day before the meeting. At the end of every meeting, the date of the next meeting will be announced. Within the season, the WUA has the right to convene more frequently if needed.

4. Pump Station Coordination Committee Meeting

PSCC will be held every 2 weeks to discuss water allocation management and resolve related conflicts throughout each season. At each PSCC meeting, all CRs, SGRs and village administrators in the respective PS must participate in the meeting. The CR responsible for communicating member water needs to the pump operator will inform members one day before the meeting. At the end of every meeting, the date of the next meeting will be announced.

5. Water User Group Meetings

WUG meeting will be held once a month. In the WUG meeting, the CR will lead the meeting to discuss water allocation with SGs within their WUG, will solve some problems that the SGR cannot solve and will discuss allocation with SGs according to the crops and land area of SGs. At the WUG meeting, respective CRs and SGRs must participate. CR will inform the members one day before the meeting. At the end of every meeting, the date of the next meeting will be announced.

6. Sub-group Meetings

SG meeting will be held twice a month within irrigation seasons and once a month outside of the irrigation season. SG meeting will be led by SGR, where water allocation within their SG is discussed. SGR will discuss crop performance and other agricultural production activities in their SG. At the SG meeting, all members in the SG must participate. SGR will inform the members one day before the meeting. At the end of every meeting, the date of the next meeting will be announced.

The International Water Management Institute (IWMI) is a non-profit, research-for-development organization that works with governments, civil society and the private sector to solve water problems in developing countries and scale up solutions. Through partnership, IWMI combines research on the sustainable use of water and land resources, knowledge services and products with capacity strengthening, dialogue and policy analysis to support implementation of water management solutions for agriculture, ecosystems, climate change and inclusive economic growth. Headquartered in Colombo, Sri Lanka, IWMI is a CGIAR Research Center and leads the CGIAR Research Program on Water, Land and Ecosystems (WLE).

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