Local Institutions for Irrigated Agriculture in Cambodia
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Problems in operation and maintenance are often cited as the reason for failure to capitalize on investments in AWM in Cambodia. Participatory irrigation management (PIM) through farmer water user committees has in general not delivered the promised solutions. The success of AWM depends as much on enabling farmers to make productive use of water as it does on providing access to water. A range of different approaches for supporting AWM interventions and providing support to farmers more broadly are emerging in Cambodia, from private sector entrepreneurs to broad-based farmer cooperatives. What are the relative strengths, weaknesses and risks involved in these different approaches?

PIMD and FWUCs

Over the past two decades, agriculture supported by large-scale irrigation schemes has featured prominently in Cambodian government development policies, and many such schemes have been constructed or rehabilitated. This process was accompanied by the formal adoption of a Participatory Irrigation Management and Development (PIMD) program in 1999, whereby Farmer Water User Communities (FWUCs) were established and expected to take part of the responsibility for irrigation scheme operation and management (secondary and tertiary canals), and primary responsibility for in-scheme water allocation planning and implementation. This arrangement was expected to lead to effective and sustainable irrigation management, food security, and economic growth, building local capacities to manage irrigation and easing the fiscal burden on government (Chou 2010).

Overall, the PIMD experiment has not lived up to these expectations. A decade after PIMD was adopted, CEDAC (2009) found that only 230 out of 2,525 irrigation schemes even had a FWUC, and of those, only four were classified as functioning well, while the majority (62%) were not functional. The assumption that farmers would raise funds for operation and management (O&M) through Irrigation Service Fees (ISF) has been unrealistic. Most of the schemes have failed to deliver benefits that justify charging an ISF large enough to cover O&M costs, and FWUCs are thus unable to maintain, let alone improve, irrigation infrastructure (MOWRAM Undated).

This has caused a chain reaction of infrastructure deterioration, inequitable water delivery, and an inability to avoid and resolve conflicts through participatory planning, especially during times of water scarcity, delegitimizing many FWUCs and leaving them unable to provide the leadership expected of them.
There are two important areas that current FWUCs are not structured or empowered to deal with. First, FWUCs operate solely within the domain of water access; they do not address any of the other factors that constrain the success of irrigated agriculture. International experience emphasizes the importance of both technological and institutional support in the three key components of access, distribution, and productive use (including market chains) for irrigation to be effective (Burney and Naylor 2011).

Secondly, FWUCs operate within individual schemes and are responsible only for agricultural water use. Competition for water between upstream and downstream communities during the dry season has been described a one of the most critical issues afflicting FWUC performance (Chem and Someth 2011). Often, decisions to rehabilitate existing irrigation systems are made without adequate assessment of available water resources. Competing demands from other sectors (hydropower, fisheries, etc.) are likely to intensify (Chem et al. 2011). An institutional mechanism at basin scale is needed to address these overarching constraints by overseeing strategies for overall water allocation. While the most logical way to resolve these issues may be through the Provincial Departments of Water Resources (PDoWRAMs), this would require an increase in both resources and capacity of the departments to handle these additional responsibilities. As full implementation of the Deconcentration and Decentralisation (D&D) strategy takes place over the next few years, the provincial departments will be required to play a larger role in both the planning and management of irrigation schemes.

Is continued investment in FWUCs the best option? Where are FWUCs functioning well? What factors contribute to these successes? What do they tell us about the potential for improving FWUCs that do not work well? Will this be possible in all cases or will it lead to flexibility and new thinking in the approach to developing institutions for local irrigation water management?

Matching institutions to changing modes of irrigation

The current PIMD approach using FWUCs has evolved largely in the context of formal medium- to large-scale gravity-fed systems, using either storage or river diversion/pumping. A more inclusive assessment of irrigation indicates that a broader range of supply options are possible, bringing into play the conjunctive use of groundwater resources, as well as other more flexible modes (e.g. pumping) of surface water delivery. To optimize Cambodia’s water resources for agriculture, both the sources of water and methods of irrigation will vary from one region to another, depending on availability and local conditions. This implies large formal systems where they make hydrological sense, smaller scale strategies where groundwater is more viable, or combinations of supply options. Consequently, local institutions for irrigation water management will need to reflect and be responsive to the challenges posed by these different supply mechanisms, representing a shift away from the one-size-fits-all FWUC approach to a broader suite of organizational forms.
If irrigation strategies become more diverse to fit different hydrological and agricultural contexts, what kinds of management institutions will be needed?

The challenges of governing groundwater

If future irrigation strategies rely more on groundwater, what regulatory challenges will this pose? Groundwater use can provide the flexibility, timeliness, and affordability often lacking in existing large irrigation schemes. However, groundwater is a notoriously difficult resource to manage, and the different attributes of groundwater systems mean that different governance systems are needed (Theesfeld 2010). A precautionary approach is important, because recharge systems and rates, as well as connections between surface and groundwater, are not well understood, and there can be considerable time lags before excessive extraction or pollution become evident.

Because there are a large number of individual users, and attributing pollution or over-extraction to particular pumpers or polluters is difficult, enforcement of command-and-control approaches (e.g. licensing and metering) is impractical. Other less direct approaches exist, through economic instruments that use financial incentives and disincentives such as groundwater pricing, trading water rights or pollution permits, and subsidies and taxes. Another option is the introduction of voluntary policies, whereby users (often collectively) establish and enforce their own rules. Theesfeld (2010) argues that voluntary compliance is the most practical approach since costs for monitoring and enforcing national legislation may become prohibitively high. Involving a wide network of actors, ranging from the private to the public sector, could lead to more effective and legitimate forms of groundwater governance (Lopez-Gunn 2009).

What regulatory and institutional structures are most appropriate for the challenges of managing groundwater use? What can be learned about emerging challenges from current groundwater use for agriculture already occurring in some provinces?

Looking beyond irrigation

The success of AWM depends as much on enabling farmers to make productive use of water as it does on providing access to water. Irrigation fits within a context of production and post-production conditions that determine overall returns to farmers. These include supply chains for affordable quality inputs (e.g. seeds and fertilizer), access to markets, adaptable technologies, extension services, agro-processing facilities, and rural financial structures. Farmers are not able to effectively address these issues individually so institutions that support collective action by smallholders are needed to help farmers bargain effectively with external actors (Chanrith 2008).
A range of different modes for providing support to farmers are emerging in Cambodia, from private sector entrepreneurs, public-private partnerships, to agriculture cooperatives. Can these structures also support AWM, either directly or by providing models for new approaches? It may be possible to link with and learn from approaches that leverage small-scale private entrepreneurship and broker public-private partnerships to support farmers. Some examples are briefly described below.

**Agriculture Cooperatives (ACs)**

Broad based ACs are being promoted to provide an integrated approach to agricultural development, and are gaining support from both government and donors as an alternative to FWUCs. ACs are involved in a wide range of production and post-harvest processes. For example, they supply inputs (seeds and fertilizer) at cheaper prices through bulk orders directly from manufacturers, provide extension advice, establish savings groups, and negotiate market prices for produce on behalf of their members.

ACs distribute 60% of their annual profits amongst members based on shares held and so could, at least in theory, provide the incentive for collective action and local investments that FWUCs appear unable to generate (de Silva and Senaratna-Sellamuttu unpublished). The government hopes that they will also spark new investments in horizontal and vertical integration (e.g. seed production, drying and storage, and other agri-business activities), making farmers less dependent on external actors.

The logic and organizational structure of ACs is appealing in its potential to overcome some of the key challenges and structural weaknesses faced by FWUCs. An estimated 288 cooperatives are in various stages of registration and operation, with more being formed, but they are still currently experimental. A detailed in-context study of ACs is needed to ensure the mistake of FWUC mass replication is not repeated.
Development of private sector rural water supply providers

A number of small-scale private enterprises provide domestic water services to rural villages throughout Cambodia. These include well drillers and pump installers, manufacturers and sellers of rainwater jars and water filters, individuals who collect and transport water for sale, and small companies that pipe water directly to individual households. These enterprises and their customers have invested in this rapidly expanding water market using a variety of financing arrangements with little external assistance from the public sector. They are able to leverage funds, offer good quality services and products, and maintain accountability for any problems or issues that arise. This has led to high customer satisfaction and increasing sustainability (WSP 2004).

iDE’s Farm Business Advisors (FBAs)

iDE trains independent private micro-entrepreneurs who provide high-quality agricultural products, technical advice, and market information to smallholder farmers. FBAs are franchisees linked to a central franchisor (currently iDE) that provides training and business support. FBAs travel within a six- to ten-village circuit helping farmers improve, intensify, or expand market-oriented agricultural production. They are currently working in Prey Veng, Svay Rieng, Siem Reap, Banteay Meanchey, and Otdar Meanchey provinces, and will start work in Kampot, Takeo, and Kandal in 2013. FBAs analyze individual farm enterprises and match any constraints or missed opportunities they identify with the products and services in their “toolkit,” which include irrigation equipment, good quality seeds, fertilizer, pest control, plastic mulch, plastic fencing, and trellising (IDE 2009). FBAs sell products and services at a profit—often on credit with payment due at harvest—and provide technical advice as an embedded service. On average, each FBA serves about 90 clients and earns gross profits averaging US$53 per month, with highest earnings reaching US$105 (IDE 2013). Farmer clients are estimated to earn an additional net income averaging US$110 per year after receiving FBA support for one year, with strong evidence that female farmers have been able to access and benefit from the products and information provided by FBAs (IDE 2010). It is also claimed that FBA services have been reaching low-income households; based on standard government poverty classifications (IDPoor), 52% of FBA clients are either ‘poor’ or ‘very poor’ (IDE 2010).

The Cambodia Agricultural Value Chain Program (CAVAC)

CAVAC aims to increase farmer incomes in rice-based farming systems by accelerating growth in the value of agricultural production, by linking suppliers to farmers and farmers to consumers in Kampot, Takeo, and Kampong Thom provinces. This approach reaches distant and disconnected rural areas where populations are spread out, infrastructure is poor, and resources and information are scarce. It is particularly useful for poor households where both farmers and service providers struggle to reach each other, transaction costs are high, and efficiency is low.
CAVAC identifies innovations that can overcome these inefficiencies, enabling farmers and public and private ‘support providers’ to access, communicate, and engage with one another in new ways. These include low-cost irrigation schemes managed locally, supporting progressive farmers to serve as change agents in their villages, encouraging input suppliers to use their retail networks to provide advice to farmers (as well as providing appropriate fertilizer and pesticides), and building networks between model farmers, government agencies, and the private sector (Hitchins et al. 2012).

Of particular interest are links brokered between the FWUC and private service providers, such as private irrigation water suppliers. Here, farmers pay the ISF to the private supplier who in turn provides a part of the ISF to the FWUC for maintaining the main canal. The arrangement also includes an undertaking by the private supplier to maintain the tertiary canal (Phallika, personal communication).

Contract Farming

Rice marketing companies can contract farmers to produce for the company while providing seeds and inputs, technical advice, and buying the crop at a set price. For example, Angkor Kasekam Roonroeueng Co Ltd (AKR) establishes commune associations tightly linked to the company that provide basic technical advice to its members, advises them not to use chemical fertilizers, and helps them grow other crops after the harvesting season (Cai et al. 2008). A less formal system of contract farming is found in the southern provinces, where Vietnamese traders provide inputs and buy the harvested crop. Contract farming brings a number of benefits to smallholder farmers including stable market access, credit, extension services, infrastructure, and other benefits that promote agricultural development. However, it also has drawbacks such as limiting farmers’ flexibility in choosing farming practices, increasing risks, and reducing farmers’ bargaining power. In the case of
AKR, Cai et al. (2008) found that contract farming reaches remote areas where organizational capacity in the public sector is weakest, but they note that contract farmers have on average larger rice fields (1.71 hectares), much larger than the <1.0ha of a poor small-holder, suggesting that contract farming by AKR is not inclusive of the poorest farmers.

**Outcomes**

The power to stimulate local entrepreneurship, and the resulting creativity in overcoming obstacles demonstrated by these examples, reveals the significant potential offered by small-scale private sector service delivery models to overcome a range of current constraints. They suggest a need to recognize the comparative advantages and limitations of what public institutions and private market systems can deliver, so that the best of both approaches can be better coordinated in order to deliver the services needed by smallholder farmers.

*Should the government focus on information generation while the private actors deliver other services to end-users? What potential exists for improving the performance of FWUC’s by better linking them with these private sector service providers? What should be the role of provincial and district administrations in facilitating such cooperation? How can the various state agencies be brought together to do this?*
Questions for further research

1. Not all FWUCs are failing. Why do some succeed and what can we learn from these examples that may offer ways of making others work better?

2. As the nature of irrigation changes and becomes more diverse, what institutional models are relevant for different contexts? Are there existing structures in agricultural support and extension that could be adapted to the water sector?

3. What potential do the small-scale private service delivery models offer for a) helping FWUCs and other irrigation management institutions and b) enhancing productivity in the agriculture sector overall?

4. What should be the role of provincial and district administrations in facilitating water management initiatives and investments at the local scale? How can the various state agencies be brought together to do this? How will full implementation of D&D (including devolution of finances) support this?
References


