WATER USERS ASSOCIATIONS AND INDIGENOUS INSTITUTIONS IN THE MANAGEMENT OF COMMUNITY-BASED IRRIGATION SCHEMES IN NORTHEASTERN GHANA

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Abstract

In northeastern Ghana as in many parts of the Developing World, external development agencies support the formation of Water Users Associations (WUAs) for the management of community-based irrigation schemes. Although WUAs are presumed to be the panacea to the myriad of management problems that bedevil irrigation schemes, this paper argues that they strongly draw on the supportive roles of indigenous institutions for discharging their management responsibilities more effectively. First, WUAs gain legitimacy, power and general acceptability to operate because they have the consent and support of Traditional Authorities (TAs). Secondly, WUAs resort to these traditional authorities for support in setting and enforcing rules relevant for the management and sustainability of irrigation schemes. Thirdly, WUAs manage conflicts but they resort to traditional authorities for resolving difficult conflicts arising from the management of the irrigation schemes. This paper therefore, asserts that the management of community-based irrigation schemes in northeastern Ghana mirrors an Endogenous Development (ED) approach to irrigation management. In this approach, WUAs and TAs complement each other in the roles they play and draw on local resources, power and authority for the management of community-based irrigation schemes.

Keywords: Water Users Associations, Traditional Authorities, Management, Community-Based Irrigation Schemes, Endogenous Development, Ghana

Introduction

The continuous search for workable models of development is ongoing – but what are gaining attention among academics and development practitioners, are the theories that enhance opportunities for genuine participation of communities and utilization of available local resources. This paper draws on one of such development models, Endogenous Development (ED) for analyzing the management of community-based irrigation schemes in northeastern Ghana. In contemporary times, community-based irrigation schemes are managed by Water Users Association(WUAs); but the roles of indigenous institutions in supporting WUAs behind the scene is crucial although largely an untold story. This paper therefore, sheds light on the contributions of Traditional Authorities (TAs) in the existing management arrangements of community-based irrigation schemes in northeastern Ghana. In northeastern Ghana, the provision of community-based irrigation schemes was often alongside the formation of Water Users Associations (WUAs) for the main purpose of managing the irrigation schemes. The formation of these WUAs was often facilitated by external agencies including the Ministry of Food and Agriculture (MoFA) and Non-Governmental Organizations (NGOs). Although the manner of operations and effectiveness of WUAs vary from community to community, this paper argues that their sustainability depends very much on the extend to which they are crafted on and supported by community-based indigenous institutions of governance.

The paper is structured in five section, aside this introduction section. The first section provides an overview on the concept of Endogenous Development (ED) and how it provides conceptual guidance for emprical analysis. The second section entails a description of the study area and methodology for the study. In the third section, the results are prsented and discussed. The paper is then concluded in section five.

Endogenous Development, Indigenous Knowledge Systems and Traditional Political Governance

Endogenous Development – An Overview

The paper therefore, draws on Endogenous Development(ED) as an appropriate theoretical framework for analytical guidance. Endogenous Development (ED) is an alternative approach to community development. It emphasizes genuine community participation, ownership and utilization of local resources, including local human resources and institutions for addressing local development problems. Endogenous Development(ED) essentially implies development driven mainly from ‘within’ communities themselves. Thus, it draws mainly on locally available resources, local knowledge, culture and leadership, and people’s cosmovision although it also allows for the inclusion of relevant outside

knowledge's and practices for development purposes (Haverkot et al., 2003). According to Millar (2005:93), this form of development is more akin to African systems of agricultural productivity than previous paradigms of development. He asserts that Endogenous Development (ED) patterns depend, but not exclusively, on locally available resources including land, water, vegetation, local knowledge, culture, leadership and local mechanisms of experimenting and learning.

Indigenous Knowledge (IK) plays an important role in Endogenous Development(ED). Given that ED is essentially development from within communities themselves (Harverkot, 2004:8), indigenous knowledge is central to the process of sustainable community development. Thus, ED rides on Indigenous Knowledge which is "…the unique, traditional, local knowledge existing within and developed around the specific conditions of women and men indigenous to a particular geographic area" (Nuffic and UNESCO, 1999:10). They stress that indigenous knowledge is embedded in the community and is unique to a given culture, location or society. For others, indigenous knowledge is the accumulated knowledge, skill and technology of the local people derived from systems of production and consumption. It is dynamic and responds to challenges through local adaptations, experimentation, and innovation under diverse and heterogeneous conditions. These successful adaptations are preserved and passed on from one generation to another through oral and /or experimental means (Aluma, 2004).

In recent times, there has been increased recognition that indigenous knowledge or what others call local knowledge is a strategic resource and driver of innovations for sustainable development (Ramphele, 2004; Sillitoe, 2004). There are several domains of Indigenous Knowledge Systems (IKS) that are relevant for Endogenous Development(ED) at community levels. One of such important knowledge systems is the indigenous system of governance, commonly referred to as 'traditional political authority'. Given that ED emphasizes self-initiated development based on local knowledge, institutions and resources (Harverkot, 2004:8), the role of indigenous institutions in the development process is implicitly underscored.

Indigenous Knowledge and Traditional Political Governance in Ghana

In Ghana, particularly northeastern Ghana, traditional political authority and governance is structured around the complementary roles of two indigenous institutions - the chief and earth priest. These two indigenous institutions collectively provide the basic institutional framework for local governance at the community level.

The chieftaincy institution has long been a revered indigenous institution in northern Ghana. The chief as traditional political leader of his or her community is called differently among different ethnic groups in northern Ghana. The chief for instance is called *Naa* amongst the *Dagaaba*, *Kuoro* among the *Sissala*, *Naaba* among the *Frafra,Naab* among the *Kusasis* and *Mamprusi* and *Pee* among the *Kassena*. The chieftaincy institution is a predominantly male dominated institution. Most chiefs are males but there are also female chiefs – although rare in traditional circles. As a chief, power in the exercise of traditional authority is basically derived through "ascription" but the community must sanction inheritance and enthronement to the skin. For instance ascription to the skin requires that the paramount chief in collaboration with the earth priest, who is custodian of the land and spiritual leader, preside over the succession and enskinment processes. This once done, is a prerequisite and bases for the legal and social approval of the chief's authority to rule in the community. Irrespective of whether a chief is male or female, they generally hold equal power and authority except in cases where a female chief co-exist with a community chief. In such instances, the female chief derives her authority from the community chief who often enthrones her into office. According to Gyekye (1996), the authority of the chief usually derives, functionally, from the people so that there is often a close relationship between the ruler and the ruled in matters of the exercise of political power. Although the people do not often directly choose their rulers, many African sayings lend credence to their closeness to chiefs. The *Ndebele* of Zimbabwe have a popular saying that *"The king is the people. To respect the king is to respect oneself. He who despises our king despises us. He who praises our king, praises us"* (Gyekye, 1996:110).

The typical structure of traditional political systems in Northern Ghana is a decentralized structure that embodies and stipulates a hierarchical order of office holdings and responsibilities. At the apex of the structure is often the paramount chief who is supreme over all other chiefs in the area, considered a paramountcy, which in most cases coincide with what are known as traditional council areas in official circles. The second level of authority is the Divisional Chiefs, who have under them sectional heads/chiefs and household heads. Under this structure, chiefs and heads at lower levels of the hierarchy pay allegiance to chiefs at the next higher level. In playing their roles in decision-making and governance, chiefs are usually assisted by councils of elders in their respective areas of jurisdictions. The council members, at the highest levels (paramount and divisional levels) often comprise divisional and sectional chiefs in the case of a Paramountcy, and the sectional chiefs in the case of a Division. Even at the levels of sectional chiefs or heads, they often have their council of

elders who basically constitute the landlords of various homes or compounds. In the exercise of traditional authority, the chief in most literature on African traditional political systems represented the divine head of the people; observing festivals and performed rituals to appease the ancestors in an effort to make his society stable and progressive (Odetola and Ademola, 1985). However, in northern Ghana, this spiritual role is rather played by the earth priest. The chief plays more of political functions in leadership. Northern Ghana happens to have varied ethnic and cultural diversity, so that predominantly, although a common pattern on traditional political authority can be established on various issues, caution needs to be exercised in respect of particularization and uniqueness. Clearly, chiefs play multiple roles in community development. Some of these roles include the following:

- Decision making on matters relating to community development;
- Make and enforce rules in the community;
- Provide traditional judicial services;
- Conflict resolution and settlement of disputes;
- Call community meetings to discuss development issues;
- Supervise and monitor community development initiatives;
- Protect and maintain cultural norms and values – watchdogs on anti-social behaviors;
- Oversee mobilization of community resources for development.

The earth priest commonly referred to as the *Tindaana* or *Tigatuu* among the *Grune* and *Kassem* speaking people of northeastern Ghana respectively, is very often the custodian of communal land. This institution is probably one of the oldest traditional institutions in northern Ghana that lends relevance to local governance prior to colonial rule. The earth priest is the spiritual leader of the community who holds the most important economic asset, land, in trust for the people. Prior to the institution of chiefs in most communities of northern Ghana by the colonial authorities, the earth priest or *Tindaana* existed. This institution provided both spiritual and organizational leadership for most communities. The earth priest *plays* multiple roles in community development. Some of these include the following:

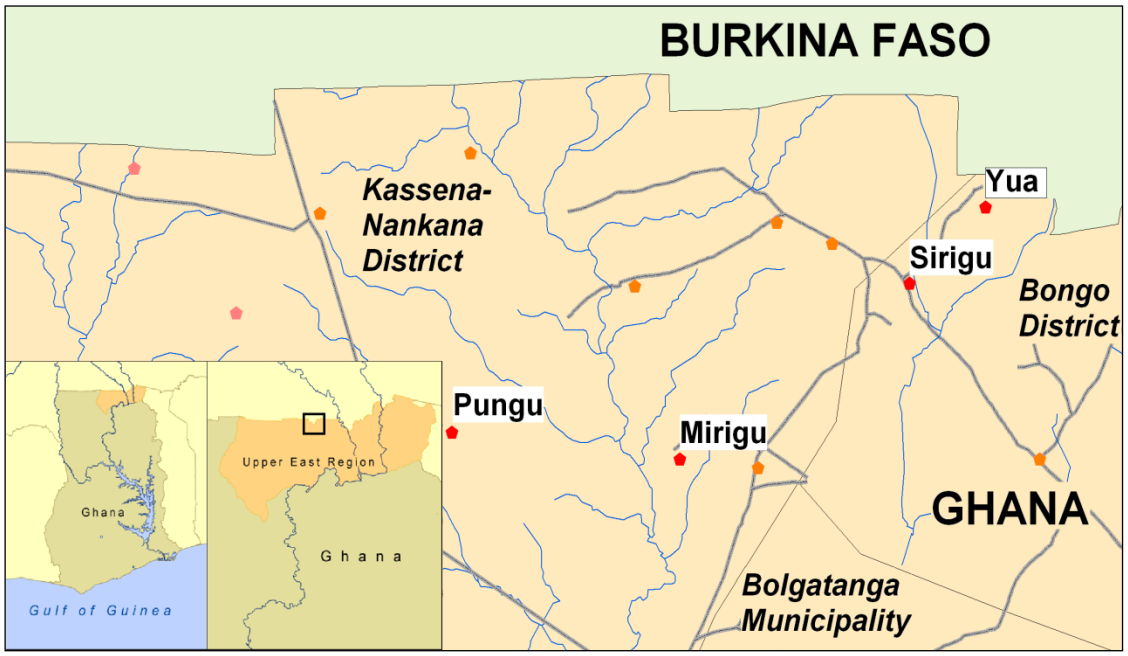
- Provide traditional spiritual leadership for the community;
- Perform sacrifices for spiritual protection, good health and progress of the community;
- Serve as the custodian of communal land and land resources;
- Oversee and protect traditional land tenure systems;
- Protect sacred sites and perform funerals of burnt sacred groves.
- Resolve protracting conflicts, particularly those arising from land disputes.

From the overview, it is clear that traditional authorities, particularly, the chief and earth priest, are important actors in community development in Ghana, particularly northern Ghana. This paper therefore, draws on the roles of these two indigenous institutions in community development from an ED perspective as conceptual guidance for empirical analysis. Clearly, these two institutions will be central to any ED process because of their strategic importance to the process of initiating and mobilization local resources for community development.

The Study Area and Methodology

This paper draws on a larger study that was conducted in the Upper East and Upper West regions of Ghana on the socio-economic dimensions of small-reservoir management and food security. This paper draws on findings pertaining to two study communities, namely *Gumbrungu* in the Bongo District and *Nangalkinia* in the *Kassena-Nankana* East District - all located in the Upper East Region (UER). Thus, Northeastern Ghana is used in this paper to refer to the UER (Figure 1).

Figure 1: Upper East Region in the National Context



Source: Derbile (2010:6).

The paper draws on a larger study conducted in 2009 and drawing on a mixed methodology, qualitative and quantitative research designs. However, this paper draws on only qualitative data from that study pertaining to two sample communities - *Gumbrungu* and *Nangalkinia*. The people of *Gumbrungu* are *Nankane* speaking people while those of *Nangalkinia* are *Kassem* speaking, linguistically classified as *Grusi* and *Nankansi*, respectively. These study communities were sampled through simple random sampling from

a list of six purposively sampled communities. The availability of a community-based irrigation scheme informed the purposive sampling of the six communities but this was balanced against the need for ethnic spread of the sample.

The methods of data collection include in-depth interviews and group interviews. In-depth interviews were conducted among eight (8) purposively sampled key informants including chiefs, earth priests and chairmen of WUAs. These informants were sampled because of their knowledge and connection with the management of community –based irrigation schemes. To this end, in-depth interviews were conducted among two (2) chiefs; two (2) earth priests; two (2) WUA chairmen and two (2) female opinion leaders with the aid of an interview guide. In addition, four (4) group interviews were conducted among WUA executives and members. For each community, two group interviews were conducted. One was conducted among WUA executives (5 members), and the other, ordinary members (5 members) in each community. The sex compositions of the groups were fairly balanced. These group interviews were also conducted with the aid of an interview guide.

The data was also analyzed through combination methods. These include systematic description, quotations, paraphrasing, and the use of boxes and tabulation.

Results and Discussion

The results are presented around three themes. These include: (1) traditional authorities and the legitimacy and power of Water Users Associations; (2) participation of traditional authorities in project operations and; (3) setting and enforcement of rules and conflict resolution. Thereafter, discussion on the subject of indigenization of community-based irrigation schemes follows.

Traditional Authorities and the Legitimacy and Power of Water Users Associations

The executive structures of Water Users Associations (WUAs) gain legitimacy and derive power to operate in communities because they have the consent and support of traditional authorities, mainly the *Naaba or Pee* (Chief), and *Tindaana* or *Tiga-Tuu* (earth priest). This is a benefit of indigenization, a process by which traditional authorities genuinely accept and support the establishment of WUAs as community -based organizations (CBOs). In *Gumbrungu*, the process of indigenization of WUAs in the management of their small scale irrigation project started with the genuine involvement of traditional authorities in their formation. In the Upper East Region (UER), the Ministry of Agriculture is generally credited for the promotion of WUAs in the management of small scale irrigation dams under the LACOSREP programme. Thus, it is within this context of 'external development support' that the findings reveal the roles of traditional authorities. For instance, in the formation of

the current WUA executives of *Gumbrungu* five years ago, the former chairman of the WUA informed the chief of the need for change. The chief then convened a meeting of all adults from the seven smaller villages that comprise *Gumbrungu.* The invitations were extended through his sub-chiefs. At that meeting, 13 people comprising representatives from all the villages were elected into various executive positions to form the current WUA executives for the community. Thus, although all sub-chiefs and their people nominated suitable candidates, they had to be elected into various executive positions presided over by the Paramount Chief of *Gumbrungu*. These representatives, both men (9) and women (4) were elected into different positions to perform differing and sometimes similar functions (Table 1).

Table 1. Some WUA Executives and their Roles (indigenization of WUA)

Name	**Description**	**Role**
Chairman	A male who is an experienced and committed farmer	Convenes meetings; monitors dam for maintenance purposes; offer advise to farmers
Assistant Chair Person	A knowledgeable and committed female farmer	Assist chairman in his functions
Care-Taker	A male who lives close to the dam	Prevents children from fishing, swimming or washing in the reservoir;
Care -Taker	A female who lives close to the dam	Controls water use; lets water into canals by opening valves for irrigation purposes and also closing the valves.
Care-Taker	A male farmer who lives close to the dam	Prevents children from fishing, swimming or washing in the reservoir
Extension Agent	An experienced farmer with experience in irrigation	Oversees farming activities at the irrigation sites. He offers peer based extension services
Secretary	A male and a teacher	Minutes of meeting and official correspondences
Assistant Secretary	A male and a teacher	Performs the role of the secretary in his absence
Extension Agent	A male farmer and an enlightened person	Advises on farming practices and education on financial contribution for dam maintenance

Source: Field Survey, 2009.

What is unique about some positions (Table 1), is the introduction of different executive positions and sometimes similar positions which vary from the typical executive structure of community based organizations. Positions are created to reflect human resource endowments and for addressing the needs of the community in irrigation management. For instance, in a typical executive structure of community based organizations such as this one; one can expect a chairman, secretary, organizer and treasurer positions. However, in the wisdom of the traditional authorities and WUA, care taker positions and agriculture extension agents have been created to support the effective functioning of WUAs in providing support

services to farmers. Care taker positions were given to people who lived close to the dam in order that they can utilize their proximity to the dam to serve the larger community interest of preserving the dam. In the case of the Agriculture Extension Agents, the positions were created in order to utilize the knowledge of two experienced community based farmers who had knowledge and experience in irrigation. In this way, many other farmers could benefit from their knowledge and experiences in irrigation.

In *Nangalkinia,* close to *Navrongo,* the dam used for community irrigation is called *"Goo"*, a 'River God' of the community. Here, the *Tigatuu*, the custodian of communal land and traditional authority in land matters can be visibly seen to play strategic roles in support of the functioning of WUA executives. Reportedly, there are two families who own the land on which the dam and irrigation fields are sited, and the *Tigatuu* comes from one of these families. These two land owning families as represented by the *Tigatuu* consented to and supported the formation of WUA for the management of the community irrigation scheme in *Nangalkinia* under LACOSREP, MoFA. For instance, in an interview, the *Tigatuu* said:

> *My elders and I have been part of the formation of the WUA right from the beginning. We convened the initial meetings when staff from MoFA approached us on the idea. We thought it was a good concept because then we can engage a larger segment of the community in the management of the project. We also thought that it will help the youth to be responsible, earn incomes and provide food for their families. We are old and have to depend on WUA to do a lot more of what we did in the past to manage the dam project. They have since had my support and will always have my support. Beyond this support to WUA, I also make religious offerings to 'Goo', the river god before and after planting seasons in support of the operations of WUA.* (*Interview, Tigatuu, 24.04.09, Nangalkinia).*

This assertion of the *Tigatuu* was corroborated by the WUA executives in a group interview (Box 1).

Box 1: The *Tigatuu* and the support for WUA in *Nangalkinia*

The *Tigatuu* and the two land owning families have been supportive of the formation of the WUA. Before the formation of WUA under LACOSREP, the *Tigatuu* together with elders of the community set rules and enforced them for the preservation of the dam. Women and children were not involved in the formation of rules or management of the dam. The *Tigatuu* and elders together managed the dam successfully because they were seen as senior citizens and respected as such. People obeyed what they said without questioning. With the formation of WUA and election of executives, the elders ceded many managerial functions to the WUA. However, they continue to support and complement the roles of WUA in the management of the irrigation resources. People are aware that the WUA executives have the support of the traditional authorities and as such respect and cooperate with the WUA executives in the discharge of their duties. When there are serious difficulties or problems, such as conflicts or land related problems, WUA executives resort to the traditional authorities for resolution of the problems.

Source: Group Interview, WUA Executives, Nangalkinia(May, 2009).

Thus, the empirical evidence suggests that although the formation of WUAs was supported by external development agencies, indigenization of the WUAs have been central to their operations at the community levels. By the consent and active support of traditional authorities, particularly the *Naaba* and *Tigatuu*, WUA executives gain legitimacy and derive authority to play their roles much more effectively in the management of community irrigation projects. In addition, management structures and roles are created to suit the needs of the community but also based on local resource availability, especially expertise and comparative advantages at the community level.

Participation of Traditional Authorities in Project Operations

The findings also show that traditional authorities are directly involved in certain operational and management functions of the community irrigation projects in support of the functioning of WUAs. These management roles include participation in land allocation at irrigation sites, monitoring and management of water use from reservoirs, mobilization of resources for maintaining irrigation infrastructure and conservation of the reservoir and irrigation infrastructure.

In *Gumbrungu* for instance, the *Naaba* participates in the allocation of plots to individual farmers at the onset of the irrigation season. Together with the chairman of WUA, the *Naaba* oversees the allocation of land to individual farmers with the technical assistance of an Agriculture Extension Agent (AEA) for the area. The *Naaba* participates in the land allocation process with his elders both as an allocating authority and in a supervisory role. According to the *Naaba*, his participation is often to ensure fairness in the land allocation process and to prevent infighting among farmers. The *Naaba* further interprets fairness to include the allocation of land to all interested farmers from all seven small villages (7) that comprise *Gumbrungu.* In addition, the *Naaba* is also involved in the monitoring and management of water use especially when water levels in the reservoirs reduce to very low levels. In *Gumbrungu*, water from the reservoir is rationed on different days for different farmers by a care taker. Hence, farmers often have access to water within a seven days cycle and the care taker over sees this. However, when there are signs of water shortage from the reservoirs, there is often concern to balance the need for water for irrigation against the need for watering livestock which is another important source of livelihood to many farmers. Thus, such times call for strict enforcement of rules or creating and enforcing new rules for water management. To ensure this, the keys for opening the valves that let water into the canals for irrigation purposes are kept by the *Naaba* at his Palace for closer monitoring and supervision

of water use. In extreme cases the *Naaba* personally supervises the rationing of water for irrigation during such times at the dam site (Box 2).

Box 2: Participation of *Naaba* in Water Management

When the tomatoes planting season is over, the women and men compete for water for watering potatoes. There are many female gardeners and so they compete for water for watering potatoes. They water their potatoes with plenty water so that they can produce leafy vines for trading and propagation purposes when the rainy season starts. In the process, there is misuse of water from the dam. So, if I allow this to go on, the water will finish and we will not have water for the livestock. In such instances, I become concern that the other communities will blame me for allowing mismanagement of water if they fail to access water for watering their animals. This will lead to some problems. This year, I first warned the farmers but they did not pay heed to my warning and so I took delivery of the key from the WUA Care Taker. This was meant to help me closely supervise and monitor water use in order to prevent misuse of the water for irrigating potatoes. By this measure, I was able to ensure that WUA provided water for watering the potatoes within a seven days cycle. Any farmer who failed to water his or her potatoes on the day of irrigation will have to wait for seven more days (i.e. 14 days) before he/she can access water to irrigate his/her potatoes. In fact, I go to the dam site myself to supervise opening of valves that let in water into the canals and the locking of the valves thereafter. If I ask somebody to do it on my behalf, conflicts can easily arise because farmers are often in an intense competition for water. So, I go to the dam site myself, supervise water rationing and thereafter, supervise locking of the water outlet valves and then I take my keys back to the palace for keep.

Source: Interview, *Gumbrungu.Naaba (April, 21 2009)*

The findings also reveal that traditional authorities support resource mobilization for supporting maintenance initiatives of WUA executives. For instance, in 2008 the *Naaba* of *Gumbrungu* mobilized labour for the rehabilitation of the irrigation infrastructure at the instance of WUA executives. In total, 280 people were mobilized by the *Naaba* from all seven villages of *Gumbrungu* with the assistance of his sub-chiefs. Ten (10) women and five (5) men were mobilized from each of the seven small villages which comprise the *Gumbrungu* traditional area while the rest came from *Gumbrungu* itself. This mobilization was facilitated by the sub-chiefs from the seven smaller villages. An indigenous music and dancing group, *"lo mwireba"*, provided entertaining music to motivate the working force in support of the rehabilitation process. The songs they sang encouraged hard work and were mostly praise songs and a positive evaluation of the irrigation project.

In *Nangalkinia*, close to *Navrongo*, two land owning families who live close to the dam site, play crucial roles in the conservation of the reservoir and the management of water use. Although they are not executive members of WUA, they complement the role of the WUA in water resources management in the project. In addition, elders from these two land owning families exert power and exercise this authority by supporting WUA executives to enforce certain rules governing resource utilization in the project. For instance, these land owning families draw on both their proximity to the dam site and power as land owners to prevent misuse of water from the reservoir including preventing brick molding, car washing, etc. Among the functions of WUA executives in *Nangalkinia* is to liaise with the *Tigatuu* to

halt encroachment activities in the immediate catchment of the reservoirs that can lead to siltation. Although WUA executives monitor and report encroachment activities, they are mainly addressed by the *Tigatuu* and or elders from the two land owning families of the *Nangalkinia* irrigation site.

The empirical evidence show that traditional authorities participate in different domains of community-based irrigation management in support of the functions of WUA executives. These roles include participation in land allocation, monitoring and management of water use, mobilization of resources, especially labour for maintaining irrigation infrastructure and conservation of the reservoir and irrigation infrastructure.

Traditional Authorities, Rule Enforcement and Conflict Resolution

Another area in which traditional authorities support the work of WUAs is in the area of setting rules, enforcing rules and conflict resolution. First, rules and their enforcement are particularly central to management of community based irrigation projects and traditional authorities play a part in this process. The findings show that in *Gumbrungu*, the chief participates in setting and enforcing rules in the management of the irrigation project. In practice, meetings for setting rules are often organized by WUA and convened by the *Gumbrungu Naaba*. He chairs and presides over deliberations. When the rules are agreed upon at the executive meeting of WUA, the chief then convenes a meeting of all farmers during which all the rules are disseminated to the farmers. There are many rules that have been made through this process but I will cite a few examples which are the outcome of such a process: that all families that have their farmlands on irrigation fields cede the right of cultivation during the dry season to allow for land allocations for irrigation purposes; that all irrigation farmers must ensure an early harvest to enable farm land owners prepare their lands for cultivation in the rainy season; and that all farmers should pay an annual dam maintenance levy after harvest.

The involvement of the *Naaba* in setting management rules enhances legitimacy of the rules and the authority of WUA to enforce these rules. According to the WUA chairman:

> *Farmers generally obey these rules and I believe that general acceptability of the rules is due to the support WUA have from the Gumbrungu Naaba in the rule setting process.*

However, in exceptional cases, people break the rules requiring some special intervention. When one breaks the rule the first time, an apology may be accepted. In addition, the culprit will be warned by the WUA chairman and or executives. If the culprit breaks the rule the second time, he or she is reported to the *Naaba* for a second warning. If

the culprit breaks the rule the third time, he or she is again reported to the *Naaba* and this time the chief will sanction withdrawal from the project. Then the WUA executives will proceed with the withdrawal of the culprit from participating in the project. Similarly, the *Tigatuu* of *Nangalkinia* plays an important role in enforcing rules set by the WUA as evidenced in his assertion that:

> *I am usually part of meetings for the setting of rules for WUA. Hence, the Executives of WUA report violations of rules to me. I then call the culprits to advise them to be of hood behavior. In most cases, people obey and comply when I advise them. Otherwise, I take other measures to enforce the rules. The worst punishment is withdrawal from the project if one persistently violates the rules.*

Secondly, although WUAs generally manage common conflicts, they resort to traditional authorities in resolving difficult conflicts arising from the management of irrigation resources. The *Gumbrungu Naaba* and his council of elders support executives of WUAs in conflict resolution and management. Conflicts are common in the day to day management of community-based irrigation schemes and arise mostly out of competition for resources, especially water and land and non-compliance to 'rules of the game'. The findings suggest that in many instances, WUAs represent the first line of authority for resolving these conflicts. Thus, in general, most conflicts are resolved by the executives of WUAs. However, a minority of conflicts, protracted and most difficult to resolve are reported to either the *Naaba* or the *Tigatuu* for resolution as the second and in many cases the final line of authority for conflict resolution. The *GumbrunguNaaba* had this to say about conflict resolution:

> *Most conflicts arise out of competition for water for irrigation purposes. In general, executives of WUA resolve most conflicts, especially if they are petty and can be handled at that level. Sometimes, some elders in the community may intervene to resolve some of these conflicts too if they are petty. I sit on more difficult and protracted conflicts that have a potential of degenerating into serious problems that can affect management of the project. I do not sit alone on cases. I usually invite the parties in the conflict to present their cases before me and my council of elders. Thereafter, my council will deliberate over the issues and take a decision. I then invite the two parties and pronounce judgment and if necessary apply sanctions. Where WUA executives report cases, they have mostly worn because they relate mostly to non-compliance of rules and this is easy to deal with.*

Similarly, the *Tigatuu* of *Nangalkinia* plays an important role in resolving conflicts. Similar to the pattern in *Gumbrungu*, the WUA executives generally resolve most conflicts within their power and means. However, they report persistent violations of rules and serious conflicts to the *Tigatuu* for resolution. The *Tigatuu* corroborated this assertion in an interview:

> *Conflicts do occur at the project site. In most cases, very serious conflicts arise out of problems related to water access. We rarely have serious conflicts arising from the land allocation process although there are problems in the process too. Most conflicts generally arise as a result of persistent violation of simple rules. When it happens this way, the conflict is usually between the WUA executives and the farmer in question. The WUA executives will normally report the case to me. As a first line of action, I invite the farmer in question and advise him or her to be of good behaviour. In most cases, they listen and comply with project rules. If they refuse, I find other ways of addressing the conflict and the worst punishment is withdrawal from the project. We rarely reach this point except in one case few years ago.*

As the findings suggest, traditional authorities also support the functioning of WUAs by their participation in setting and enforcing rules, but also in resolving difficult conflicts in the management of community-based irrigation projects. Their involvement in rule setting in particular legitimizes the rules and this is probably the main reason rules have general acceptability among communities. Additionally, the willingness and participation of traditional authorities, thus, the *Naaba* and *Tigatuu* in enforcing rules and resolving conflicts are crucial for managing project resources, especially access to water and land – which are central to the sustainability of community based irrigation projects.

Indigenization of Community-Based Irrigation Management

The indigenization of any kind of development intervention is important to an Endogenous Development approach. Although the formation of WUAs in northeastern Ghana were largely facilitated by external development agencies, an indigenization strategy 'grafted' them unto indigenous institutions of communities, particularly traditional authorities as represented by the *Naaba* and *Tigatuu*. This set in motion the evolution of an endogenous approach to community-based irrigation management in northeastern Ghana, drawing on the genuine participation of traditional authorities and local expertise for the formation and management of the irrigation schemes. As the findings show, this approach saw the indigenization of WUAs for the management of community-based irrigation schemes in different facets:

- In the formation of WUAs, the consent, support and commitment of traditional authorities gave legitimacy and authority to WUAs to operate and to function in the community as the legitimate bodies for the management of the irrigation schemes;
- The communities and for that matter, WUAs have adapted conventional management structures and roles in a manner suited to their project management needs based on their own analysis and understanding;
- The composition of WUA executives is comprised of local expertise and traditional authorities provide the platforms for identifying and electing these people into office to support the management of the irrigation schemes;
- In extreme cases, traditional authorities also directly get involved in project operations such as land allocation and water resource management to ensure fairness but also when it is critical to implement austerity measures in water management during scarcity;
- The WUA executives generally manage most conflicts arising from competition for project resources and the legitimacy and power they derive from traditional authorities gives them the leverage to play this role;
- Finally, more difficult or protracted conflicts arising from the irrigation projects are resolved by the traditional authorities themselves within the overall framework of community governance.

The analysis so far points to a pivotal role of traditional authorities in the evolution of an endogenous approach to the management of community-based irrigation schemes in the context of northern Ghana. However, this is not unique to *Gumbrungu* and *Nangalkinia.* Drawing on experiences from *Kalbeo*, a community in northeastern Ghana, Bonye and Millar (2004) underscore that working with traditional authorities and institutions can be an entry point for ED. Similarly, working through traditional authorities and collaborating with Traditional Birth Attendants (TBAs), the Ministry of Health improved the quality of traditional midwifery, hygienic and clinical practices in child delivery services and expanded the roles of TBAs in public health management in the Upper West Region of Ghana (Derbile, 2007). This suggest that given the opportunity as in genuine participatory development, local people and communities offer their human resource capabilities, knowledge and other local resources in community development. Chambers (1999) stress the successes of farmers and local people as the sources of local solutions in the search for sustainable livelihoods. He identifies three areas for which the contributions of local farmers are key to finding solutions – their analytical capabilities, time horizon and own knowledge. Since indigenous knowledge

is closely, related to survival and subsistence, it provides a suitable basis for local-level decision-making on issues relating to food security and natural resource management (Nuffic and UNESCO, 1999:10-11). This seems to be the motivation for interest of traditional authorities in supporting WUAs in irrigation management. The role of traditional authorities and institutions in community development spans collaboration in activities of public and nongovernmental organizations. However, the forms of engagement have varied from non-participation, informing and consultation and to genuine participation implying partnership, delegation, and citizen control and empowerment (Arnstein, 1969). Thus, the engendering of genuine community participation of traditional authorities in the management roles of WUAs in community irrigation is consistent with the principles of ED and reflects the current discourse on development. Such an approach to community-irrigation management is a social learning process for all actors (Rist, 2004).

On a much broader scale, the endogenous approach to management of community-based irrigation schemes in northeastern Ghana mirrors the broader discourse on development. According to Chambers (1999), in an era of change unprecedented by speed and unpredictability, there is an evolving consensus on the moving frontiers of development thinking and practice. This new development thinking and practice values indigenous technology, farmers' participation in research and development, sustainability, and an enabling and empowering of rural people to gain for themselves much of what they want and need. In the search for sustainable livelihoods, there have been successes that point to rural people and farmers as the source of solution. In presenting the findings, I show how communities have adapted management structures and roles of WUAs in a manner suited to their unique local conditions. The discussions also underscore how in the process, roles were created for knowledgeable local farmers to play management roles in the irrigation projects as a means to sharing their knowledge and experiences with less endowed farmers. This was only possible and indeed, occurred in the context of a paradigm shift in development. This paradigm shift in theory and practice of rural development represents from among others a move from a technocratic and exclusive - to a participatory and inclusive approach to development management; from resource control by big organizations to local resource management, often with strong common property aspects (Shepherd, 1998:10). This is the context in which there is widespread recognition of the validity and usefulness of indigenous knowledge in sustainable development (Chambers, 1999; Sillitoe, 2004). Traditional authorities and institutions are a major part of Indigenous Knowledge Systems (IKS) and thus, relevant for Endogenous Development.

Conclusion

Drawing on empirical evidence, this paper asserts that an endogenous approach to managing community-based irrigation systems evolved alongside the provision of community-based irrigation schemes in northeastern Ghana. This has given meaning to the concept of Endogenous Development(ED) which requires genuine community involvement and utilization of local resources. In this approach, external development agencies have facilitated the formation of Water Users Associations (WUAs) for the management of community-based irrigation schemes. However, these Water Users Associations (WUAs) draw on the strengths and resourcefulness of indigenous institutions, particularly traditional authorities. First, WUAs derive legitimacy and power to function from these traditional authorities at the community levels. Secondly, the traditional authorities support the functioning of the WUAs by directly participating in operational and management functions such as land allocation, water resource management and mobilization of labour for project maintenance activities. Finally, traditional authorities also support the functioning of WUAs by direct participation in setting and enforcing project rules and resolving difficult conflicts.

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