



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

GHANA FEED THE FUTURE AGRICULTURE POLICY SUPPORT PROJECT (APSP)

**REVIEW OF THE NATIONAL IRRIGATION POLICY,
STRATEGIES AND REGULATORY MEASURES FOR THE
IRRIGATION SUB-SECTOR OF GHANA**

March 2017

Contract No. 641-C-14-0001



USAID
FROM THE AMERICAN PEOPLE

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ACRONYMS

| | |
|-----------------------|---|
| AAGDS | Accelerated Agricultural Growth and Development Strategy |
| AESD | Agricultural Engineering Services Directorate |
| AFDB | African Development Bank |
| AGSSIP | Agriculture Sector Services Improvement Project |
| - a/o - | among other things... |
| AWM | Agricultural Water Management |
| CAPEX | Capital Expenses |
| CBOs | Community Based Organizations |
| CIDA | Canadian International Development Agency |
| CSIR | Council for Scientific and Industrial Research |
| CU | Co-operative Union |
| CWSA | Community Water and Sanitation Agency |
| DA_s | District Assemblies |
| DCE | Deputy Chief Executive |
| EBITDA | Earnings Before Interest, Taxation, Depreciation and Amortization |
| EHA | Environmental Health Assessment |
| EIA | Environmental Impact Assessment |
| EPA | Environmental Protection Agency |
| FAO | Food and Agriculture Organization |
| FAPIM | Farmers' Participation in Irrigation Management |
| FAGE | Federation of Associations of Ghanaian Exporters |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| GIDA | Ghana Irrigation Development Authority |
| GOG | Government of Ghana |
| GPRS | Ghana/Growth Poverty Reduction Strategy |
| GSGDA | Ghana Shared Growth Development Agenda |
| GTZ | German Agency for Technical Co-operation |
| GWCL | Ghana Water Company Limited |
| HA | Hectares |
| HVH | High Value Horticulture |
| IFAD | International Fund for Agricultural Development |
| IMT | Irrigation Management Transfer |
| INDC | Independent Nationally Determined Contribution |
| IWMI | International Water Management Institute |
| IWRM | Integrated Water Resources Management |
| JICA | Japan International Cooperation Agency |
| KNUST | Kwame Nkrumah University of Science and Technology |
| LAC | Land Allocation Committee |
| LC | Lands Commission |
| LI | Legislative Instrument |
| LMC | Land Management Committee |
| MDAs | Ministries, Departments and Agencies |
| MLF | Ministry of Lands and Forestry |
| MLNR | Ministry of Lands and Natural Resources |
| MDAs | Ministries, Departments and Agencies |
| MMDAs | Metropolitan, Municipal and District Assemblies |
| MDGs | Millennium Development Goals |
| MLG&RD | Ministry of Local Government and Rural Development |
| MOE | Ministry of Education |
| MOFA | Ministry of Food and Agriculture |
| MESTI | Ministry of Environment, Science, Technology and Innovations |

| | |
|-------------------|--|
| MOFEP | Ministry of Finance and Economic Planning |
| MOH | Ministry of Health |
| MOTI | Ministry of Trade and Industry |
| MOWCA | Ministry of Women and Children Affairs |
| MWRW&H | Ministry of Water Resources, Works and Housing |
| NDPC | National Development Planning Commission |
| NEPAD | New Partnership for African Development |
| NGOs | Non-Governmental Organizations |
| NIDMAP | National Irrigation Development Master Plan |
| NLCD | National Liberation Council Decree |
| NWP | National Water Policy |
| OMR | Operations, Maintenance and Repairs |
| OPEX | Operating Expenses |
| PPP | Public Private Partnership |
| SADA | Savannah Accelerated Development Agency |
| SDG | Sustainable Development Goals |
| SEA | Strategic Environmental Assessment |
| SFIP | Small Farms Irrigation Project |
| SSIDP | Small Scale Irrigation Development Project |
| SMCD | Supreme Military Council Decree |
| UCC | University of Cape Coast |
| UG | University of Ghana |
| UDS | University for Development Studies |
| VRA | Volta River Authority |
| WHO | World Health organization |
| WIAD | Women in Agricultural Development (MOFA) |
| WRC | Water Resources Commission |
| WUA | Water Users Association |

CHAPTER I. POLICY DIAGNOSTICS

I.1 EXECUTIVE SUMMARY

This three chapters document presents the results of a study mobilized to revise Ghana's 2012 National Irrigation Policy¹ such that it addresses the new challenges and opportunities represented by a required shift to a domestic agriculture sector that reflects national commercialization objectives; Ghana's commitments to the Sustainable Development Goals and the Paris Agreement (on climate change); new regional and global market opportunities and the anticipated trade based concept for global water, food and nutrition security. In addition, the revised policy also includes specific clauses to define and legitimize sub-sector specific Public Private Partnerships.

The study was commissioned by Chemonics International under contract with USAID to implement the Feed the Future Ghana Agriculture Policy Support (APSP) in Accra, Ghana, a project which is intended to increase the capacity of the Government of Ghana, the private sector, and civil society organizations in evidence-based policy formation, implementation, research and advocacy, and in rigorous monitoring and evaluation of agricultural programs under the Medium Term Agriculture Sector Investment Plan (METASIP).

Against a background of agriculture sector commercialization, the Ghana Irrigation Development Authority (GIDA) is itself undergoing a comprehensive modernization process. As a result of this process, it became clear that GIDA's current operational policy, the National Irrigation Policy needed revision and expansion in order that irrigation service delivery in future, reflects and is suitable for a commercializing agriculture sector – and this includes full recurring cost recovery. The study set out below is intended to address this need and has been undertaken at GIDA's request.

It was undertaken by Consultants engaged specifically for the task. After preliminary discussions between the team and officials of GIDA and APSP's team, the Consultants' approach comprised a combination of:

- site visits
- stakeholder consultations within and outside of Accra
- regular consultations with representatives of both GIDA and Chemonics
- a review of selected baseline literature
- discussions between the three team members which consisted of a policy/sector strategy specialist (team leader); an institutional specialist and a legal and regulatory expert
- a consultative wrap-up workshop.

The report reflects the finalization mandate provided by participants at a wrap-up workshop convened in Accra on the 9th of February 2017.

As a result of all these steps, the team concluded that as currently encountered, Ghana's irrigation sub-sector is characterized by a range of challenges or constraints. These are as follows where bold text identifies issues already addressed in the current policy but remaining yet, unresolved:

- **Low rates of Agricultural Productivity and Sector Growth**
- Financial constraints
- **Poor Socio-economic Engagement with Land and Water Resources**
- Poor security of tenure and difficult access to land
- **The Need for Modernization of the Irrigation Support Services**
- No Public Private Partnerships and limited other forms of commercial investment in irrigation service delivery and production
- **Environmental Degradation Associated with Irrigated Production**

¹ Throughout this entire document, the terms "Irrigation" and "Agricultural Water Management" are interchangeable, and are used as best suits the context.

Against these issues, the team learned that stakeholders consider Ghana to have:

- A good investment climate enhanced by the country's political stability.
- Fairly good infrastructure – dams and water facilities, access roads.
- Proximity to air, sea ports and markets.
- Good weather for all year-round cultivation.
- Facilities for the training of the youth in modern agriculture.
- Vast, undeveloped land and water resources.

Accordingly, the team was able to “craft” a concept for an ideal future sub-sector that will be characterized by:

- commercialized, cost effective irrigation service delivery based on full recurring cost recovery;
- increasing levels of commercial sector participation in both production and service delivery, sometimes in the form of Public Private Partnerships;
- innovative financing and transaction models, included blended financing;
- high total factor productivity,
- livelihood creation and diversification accruing to diversified production and added value;
- drastic reductions in the state's exposure to scheme financing needs, including subsidies which will become time-bound and used to mitigate risk, not support production (but see text box).
- ongoing spatial expansion towards the country's full irrigation potential.

GIDA and Service Delivery

Despite the desirability of fully commercialized AWM service delivery, it is unlikely that every scheme will represent an attractive investment or transaction model for the private sector. In such cases, GIDA may have to continue providing support – but this should be on a full cost recovery basis. As such and effectively, GIDA would itself be a quasi-commercial service provider.

However, a shift from the current reality to such an ideal future requires a substantive revision of the current policy, based on a radical new typology for the sub-sector thus:

- **non-state funded schemes** producing staple crops,
- **non-state funded schemes** producing high value horticultural or industrial crops
- **purely state-funded schemes** producing staple crops
- **purely-state funded schemes** producing high value horticultural or industrial crops
- **blended finance schemes** producing staple crops
- **blended finance schemes** producing high value horticultural or industrial crops

Fortunately, this new typology is entirely consistent with GIDA's five business lines which are:

- individual micro and small-scale irrigation;
- community managed small to medium scale irrigation;
- large-scale irrigation system modernization and development;
- market-oriented irrigation on a Public Private Partnership basis; and
- enhanced water management in rain-fed agriculture

The revised policy itself is presented as a stand-alone draft in Chapter Two where the following sub-sector goal is proposed:

“Economic growth, socio-economic transformation and the sustainable use of natural resources accruing to the irrigation sub-sector as a result of commercialized and cost-effective irrigation services; productive irrigation schemes and blended financing”.

This goal's stakeholders will include: the Ghanaian economy; small scale farmers because of irrigation-led socio-economic transformation; workers in new livelihoods along agricultural input, value and market chains; and potential commercial investors who will benefit from improved GIDA facilitation and regulatory capacity and sub-sector specific PPP policy provisions.

Achievement of the sub-sector Goal will be supported by seven strategic thrusts/objectives as follows:

Increase Rates of Agricultural Productivity and Sector Growth which depend on how the productively the available infrastructure is used; while sub-sector growth depends both on that, and on how much infrastructure there is. The necessary initiatives will therefore need to address sector investment; awareness raising/capacity building; and innovations in the way that crop diversification can be financed.

Remove or Mitigate Financial Constraints because related to the first thrust, is the need to reduce the costs of agricultural production and to increase its returns in both the financial and economic sense, in order that both the producers and the state benefit respectively.

Improve Socio-Economic Engagement with Land and Water Resources because although some small farmers have already made the shift towards market oriented production, most have not. And none seem to have been provided with opportunities to participate in value chains that would i) reduce waste; ii) change small farmers from price takers to price makers; iii) increase their incomes and iv) create a demand for more, and diversified labor per unit of production. Hence sub-sector driven socio-economic transformation remains constrained. In addition, an increase in farmer managed irrigation would decrease state responsibility and costs in the sub-sector while increasing the self-determinacy of the farmers involved.

Improve Security of Tenure and Access to Land because despite its large undeveloped land resources, access to it remains mired in complex, often overlapping and sometimes conflicting legal definitions of ownership. And even where land is made available, users of it are not always convinced by the security of their tenure. This represents three significant additional constraints on sub-sector growth and productivity. Firstly, it limits expansion of irrigation or agricultural water management service. Secondly, it is a significant limitation on private sub-sector investment; and thirdly it limits producers' willingness to invest in long term improvements in land management and productivity raising technologies – both of which would increase returns on infrastructural sunk costs.

Modernize and Commercialize the Irrigation Support Services because any production oriented sub-sector should be able to pay for the recurring costs of production; and these include the costs of service delivery. But as well as being self-financed, service delivery must be thought of as something beyond scheme operation and maintenance, it also includes the need for reliable service delivery along the input chain and for a well enforced regulatory framework that maintains efficient resource use; producer equity and environmental sustainability.

Public Private Partnerships and Other Forms of Private Section Investment in Irrigation Service Delivery and Production because commercial agriculture and agribusiness makes money for its investors while contributing to job creation and economic growth in the host country. Ghana's potential for a major increase in commercial agriculture and agri-business remains largely untapped. But if it is to take advantage of its undeveloped resources, proximity to regional and global markets and general ease of doing business² Ghana must make its agriculture sector more competitive and attractive in the eyes of potential investors regardless of where their interest lies (i.e. infrastructure, production or service delivery).

² At the time of writing, Ghana is receiving the highest levels of Foreign Direct Investment in sub-Saharan Africa – but very little of it is going into agriculture.

Reverse Environmental Degradation Associated with Irrigated Production because there are several ways by which agricultural water management can compromise or even destroy essential environmental systems and services.

1.1.2 Background and Introduction

Chemonics International under contract with USAID is implementing the Feed the Future Ghana Agriculture Policy Support Project (APSP) in Accra, Ghana. The project is intended to increase the capacity of the Government of Ghana, the private sector, and civil society organizations in evidence-based policy formation, implementation, research and advocacy, and in rigorous monitoring and evaluation of agricultural programs under the Medium-Term Agriculture Sector Investment Plan (METASIP).

Against a background of agriculture sector commercialization, the Ghana Irrigation Development Authority (GIDA) is itself undergoing a comprehensive modernization process. As a result of this process, it has become clear that GIDA's current operational policy, the National Irrigation Policy, needed revision and expansion in order that irrigation (which throughout this document should be taken to mean all forms agricultural water management³) service delivery in future reflects and is suitable for a commercializing agriculture sector. The study set out below is intended to address this need and has been undertaken at the request of the Ghana Irrigation Development Authority.

1.1.3 The Study's Scope and Objectives

More specifically, the objectives of this study have been:

- to review the National Irrigation Policy
- revise it to align with the revised mandate for the restructured Ghana Irrigation Development Authority (GIDA);
- draft a sub-sector specific policy for Public Private Partnerships
- draft an institutional legal framework for GIDA, and Irrigation Management Protocols.
- Development of Irrigation/Agriculture Water Management (AWM) regulations
- Develop Corporate Law and Regulatory Frameworks for implementing the policies under GIDA's supervision and leadership
- Design of Irrigation Management Manual/Protocols
- Suggest an implementation plan for all the above.

1.1.4 Approach Adopted by the Consultants

After preliminary discussions between the team and officials of GIDA and the Contractor, the Consultant's team - in the company of an official of GIDA - undertook a 2-day field trip to Dawhenya, Kpong and Weija Irrigation scheme sites on 20th and 21st January 2017. The purpose was to interact with the officers and farmers/ members of the Water Users Associations (WUAs) and representatives of private sector operators to learn at first hand: i) their perceptions and experience of service delivery; ii) what their facilities comprise/what is available on the ground; iii) their views and perceptions about the new direction being charted for the irrigation sub-sector; and iv) the associated challenges and opportunities.

Following the field visits, the team visited a commercial irrigation farmer (Golden Exotics) on Monday 23rd January 2017 at its corporate offices in Accra. Thereafter, between 23rd and 31st January 2017 the Consultant began a limited review of the baseline literature and made further visits to key collaborating institutional stakeholders at the center as follows:

- The Honorable Minister of Agriculture
- Agricultural Development Bank
- Water Resources Commission
- Savanna Accelerated Development Authority

³ Including for instance: water harvesting for agricultural, drainage and recession agriculture etc.

- MoFA Agricultural Service Directorate
- MoFA Women in Agricultural Development Directorate
- Environmental Protection Agency
- Japan International Cooperation Agency
- Korean International Cooperation Agency
- International Food Policy Research Institute
- International Water Management Institute
- Ministry of Lands and Natural Resources
- Lands Commission
- Ghana Commercial Agriculture Project
- Ghana Incentive Risk Sharing for Agricultural Lending
- Ghana Investment Promotion Centre

The purpose of these visits was to ascertain: i) the roles and functions of these collaborating institutions in relation to GIDA; and ii) the implications of a revised GIDA policy and draft sub-sector specific PPP policy on their relationship with GIDA and the irrigation sub-sector generally.

Writing up then commenced and was undertaken largely at the Accra duty station.

1.2 ASSESSMENT OF THE EXISTING SITUATION AND THE RELEVANT ISSUES ARISING

The purpose of this section is simply to provide a synoptic baseline that captures the societal and economic challenges and opportunities in Ghana that could be addressed (in part) by a reinvigorated, expanded and heterogeneous irrigated sub-sector. The logic flow through the section is therefore:

- first to provide a simple overview of Ghana’s agriculture sector in general, but ending with a clear call for a renewed irrigation sub-sector.
- next is an assessment of current shortcomings in the irrigation sub-sector, the “*reality*” as it were.
- finally – noting that one of the purposes of policy is to legitimize the steps necessary to move from the “*real*” to the “*ideal*” - an ideal sub-sector is proposed as the basis for all which follows.

1.2.1 Agriculture in Ghana

According to the Ministry of Food and Agriculture’s Medium Term Agricultural Sector Investment Plan II⁴ agriculture remains a predominantly smallholder activity in Ghana. Some 90% of farm holdings are in fact 2 ha or less in size, although there are some relatively large farms and plantations, particularly for rubber, oil palm, coconut, and to a lesser extent, rice, maize and pineapples.

Farm mechanization is neither common, nor extensive with production remaining dominated by hoe and machete, albeit with some animal traction practiced here and there, especially in the North of the country. Farming systems and productivity varies with the amount and distribution of rainfall as well as soil factors; but notwithstanding such variations, most small farms with a subsistence focus or element tend towards intercropping, while larger scale commercial farms tend towards mono-cropping.

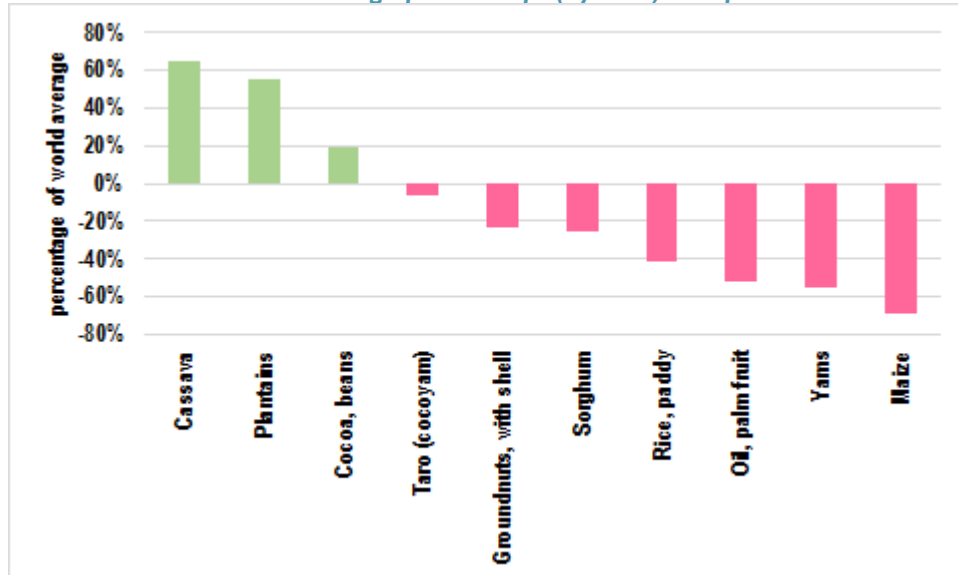
The agricultural sector is characterized moreover, by low use of inputs with typical small farmers being considered resource-poor and therefore with little access to inputs such as fertilizer, insecticides, high yielding varieties or irrigation-based cultivation. This obviously has an impact on yields.

FAOSTAT⁵ identifies some 44 crops that are grown in Ghana, and shows that of these, yields are below world average in 31 cases. Even so, as **Figure 1** shows, Ghana is very successful for some crops.

⁴ METASIP 2014-2017

⁵ <http://www.fao.org/faostat/en/#home>

Figure 1 Yields on Ghana's Most Significant Crops (by area) Compared with World Averages



Existing challenges in the agriculture sector have been greatly intensified in recent years by the emergence of a new paradigm suggested by the Sustainable Development Goals (SDGs) of which numbers 2.3, 2.4, part of 6.4 and part of strategy 6.b are most relevant as follows:

- “By 2030, **double the agricultural productivity and incomes of small-scale food producers**, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including **through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.**”
- “By 2030, ensure sustainable food production systems and implement resilient agricultural practices that **increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.**”
- By 2030, **substantially increase water-use efficiency**⁶ across all sectors and ensure sustainable withdrawals.
- Support and strengthen the participation of local communities in **improving water management**

Clearly these speak to the need for socio-economic transformation in the small-scale farming sector in the context of the needs for sustainable natural resource use; total factor productivity and climate change adaptation. And with specific reference to climate change, there is also the matter of mitigation. Although Ghana’s “Independent Nationally Determined Contribution” (INDC) does not include any agriculture sector specific measures, it does include measures that could be addressed by the sector.

For instance:

- The INDC calls for an increase in the use of renewable energy. In Ghana’s agriculture sector renewable could include hydropower, solar, wind, the use of crop residues and even bio-fuels.
- Pumped water use efficiencies could be improved by means of better on-farm water management and the re-use of drainage water (subject to quality considerations).
- Expanded use of pumped supplementary irrigation rather than full-on irrigation might also reduce the sector’s energy footprint.

⁶ Which in this context can be taken to mean economic as well as physical efficiency.

In addition, Ghana's own policy framework - as crystalized in the Ghana Shared Growth Development Agenda – calls for a structural decrease, or reform of Government's involvement in the sector and a more commercialized sector overall. This is consistent with both the socio-economic transformation suggested by the SDGs and the shift towards a more trade-based approach to global water, food and nutrition security that is now being discussed at a high level in both the world's water and food constituencies.

While on the subject of global trends, it is useful to note that the achievement of global food and nutrition security requires a noticeable increase in the area currently under irrigation. FAO has estimated the necessary increases in sub-Saharan Africa to be around 16%⁷. But this does not consider the amount of existing irrigation that is expected to be lost to sea level rise, salinization (see text box⁸) and irredeemable dilapidation.

Clearly this represents a major global challenge. But for Ghana, with its commercialization objectives for the agriculture sector and its plentiful water resources, a global shift towards trade based water, food and nutrition security is a genuine opportunity! Self-evidently however, this will require both an improvement and expansion of its irrigated area – the next sub-section refers⁹.

1.2.2 The Current State of the Irrigation Sub-Sector in Ghana

The total area equipped for irrigation in Ghana is unknown. This is largely because of: i) myriad undocumented small schemes that have been self-financed by their operators; and ii) because there is no data concerning recession AWM systems. Available data¹⁰ indicates however, that the total area under full and partial control of 30,900 ha of which 24,600 ha comprise surface systems and 6300, sprinkler. Of this total area 8,587 ha comprise public irrigation service distributed over 22 schemes.

Expressed differently, the same sources suggest that of the total known 30,900 ha:

- 27.8% comprise public schemes
- 33.7% comprise private schemes, and
- 38.5% comprise informal peri-urban schemes

On first consideration, this confirms that the sub-sector is satisfactorily heterogeneous in terms of both stakeholder and presumed current markets¹¹, while the preponderance of trade based production (on the private and peri-urban schemes) is consistent with the paradigm shifts outlined above. But when the total figure of 30,900 ha is compared with: i) an estimated 1.9 million ha of potential in the country¹²; and ii) Ghana's opportunity to contribute to the required expansion of the regional, indeed global irrigated area, then the current baseline is not satisfactory.

Against this background, the field trips provided at first hand an insight into the situation on the ground regarding the various irrigation schemes, their strengths and challenges. Of the strengths, the following are significant for investors in the sub-sector:

- The good investment climate enhanced by the country's political stability.
- Fairly good infrastructure – Dams and water facilities, access roads.
- Proximity to air, sea ports and markets.
- Good weather for all year-round cultivation.
- Facilities for the training of the youth in modern agriculture.

⁷ *Coping with Water Scarcity an Action Framework for Agriculture and Food Security*. Water Report N°38. (Available at: fao.org/docrep/016/i3015e/i3015e.pdf)

⁸ Source: Consultant's files

⁹ From here-on, this document uses terms "irrigation" and all forms of "agricultural water management (AWM)" - including drainage and recession agriculture - are interchangeable and are used as best suits the context.

¹⁰ From both Government and FAO

¹¹ Presumed on the reasonable assumption that peri-urban irrigation comprises HVH for the nearby urban centers.

¹² FAO's AQUASTAT

There are, however, significant constraints. These include:

- **High electricity tariffs.** These have adversely affected the operations and/or profitability of virtually all the schemes and farms visited. The Dawhenya project for example is virtually at a standstill because the farmers are unable to afford the high electricity tariffs and power to the scheme has been disconnected by the ECG.
- **Land tenure, security and land availability** for irrigated agriculture. Virtually all the schemes visited have constraints in this regard. Although the average size of the land allocated to each farmer on these schemes is about 1 hectare, this severely affects the ability and/or desire of the farmers to expand their holdings. The sizes of the schemes (Dawhenya 450 hectares, Weija 200 hectares) make them unattractive for foreign investors who might wish to invest in the sub-sector. Indications are that the required minimum is 1,000 hectares. These lands have been encroached upon or are threatened by encroachments. This is especially the case in the peri-urban areas (Dawhenya and Weija Schemes) where land for agriculture is competing with the requirement for housing and other developments. Indeed, the Dawhenya scheme is under such serious threat that there is an urgent need for government intervention to save the project from extinction.
- **Marketing, Sales and Credit for farmers:** A major constraint that was drummed home to the team was a perceived lack of markets for irrigation products. This perception may be divided broadly into two aspects, although inter related; foreign and local. Vegetable farmers have had their access to the European market blocked on account of non-compliance and/or inability on the part of the Ghanaian farmer to meet EU phytosanitary standards. At the local level, the rice farmers complained of their inability to sell their products, a situation occasioned, inter alia, by lower priced products from other jurisdictions and the penchant on the part of the Ghanaian for foreign goods.
- Related to the foregoing is **lack of capital** and highly limited access to affordable financial services (credits and insurance) for farmers in their ventures. This has resulted, inter alia, in low productivity as farmers cannot afford the necessary resources for inputs for their work. Further, as the Weija example shows, a lack of working capital forces farmers to borrow money from market queens in return for sale of their produce upon harvest. The effect is to reduce the returns from their toil as these women invariably and understandably, pay lower prices for the produce.
- **Institutional:** for instance, none of the farmers interviewed professed knowledge of the GIDA Act. Accordingly, no views were obtained on the Act and the necessary recommended changes in the light of the policy. There was however a split of opinions on LI 2230. Dawhenya Scheme farmers had heard of LI 2230 but had no idea as to its contents; and for that matter, its application to their operations. On the other hand, farmers in Kpong and Weija had adopted LI 2230 in their operations. The major concern was with how much the association could retain for its activities; and what they perceive as high service charges.

SEA LEVEL RISE AND SALINITY

- Climate induced sea-level rise is likely to take some major traditional food producing areas out of production.
- For instance, a 1m sea-level rise could displace more than seven million residents of the Mekong delta, and a 2m sea-level rise could double that number, according to a study by the Columbia University Centre for International Earth Science Information Network in New York, the UN Refugee Agency (UNHCR), and other groups. Similarly, a 1.5 m rise in sea level would displace 17 million people and take around 22,000 km² out of productivity in Bangladesh, while the Intergovernmental Panel on Climate Change (IPCC) predicts that the Mediterranean will rise 30 cm to 1 meter this century, which is significant in the context of a 2007 World Bank study which concluded that a 1m sea level rise could displace 10% of the population and could submerge or saturate 10 to 12% of farmland in Egypt, already the world's largest wheat importer.
- Problems arising from sea level rise in food producing areas are not just limited to inundation. Saline intrusion into coastal reaches of rivers could compromise the quality of water used for irrigation of schemes that themselves will not actually be inundated. This is already happening in Vietnam's central provinces. In addition, saline intrusion into coastal aquifers as a result of sea level rise will mean that they can no longer be used for irrigating vast areas of coastal lowlands. This in fact is listed as a key climate change vulnerability of coastal zones below 10 m above sea level in the Caribbean region.
- Other traditional food producing areas moreover, will become increasingly unproductive due to salinity. It can be inferred from the FAO/UNESCO soil map of the world that some 34 million ha are already affected, this represents some 11% of the total equipped area currently equipped.

1.2.3 Ghana's Ideal Future Irrigation Sub-Sector

In theory, the ideal irrigation sub-sector in Ghana will be one in which all challenges have been overcome and all opportunities are being taken. In practice however, a more pragmatic and practical cascade of goals, objectives and targets need to be captured at policy level and aligned with meaningful, time bound milestones.

At the level of the economy at large for instance, irrigated agriculture in Ghana should catalyze and contribute to domestic economic growth and socio-economic transformation, along with global water, food and nutrition security, in a way that makes productive and sustainable use of the country's natural resources. Such a sub-sector will be characterized by:

- Commercialized, cost effective irrigation service delivery based on full recurring cost recovery;
- increasing levels of commercial sector participation in both production and service delivery, sometimes in the form of Public Private Partnerships;
- innovative financing and transaction models, included blended financing;
- high total factor productivity,
- livelihood creation and diversification accruing to diversified production and added value;
- drastic reductions in the state's exposure to scheme financing needs, including subsidies which will become time-bound and used to mitigate risk, not support production (but see text box).and hence
- ongoing spatial expansion towards the country's full irrigation potential.

GIDA and Service Delivery

Despite the desirability of full commercialized AWM service delivery, it is unlikely that every scheme will represent an attractive investment or transaction model for the private sector. In such cases, GIDA may have to continue providing support – but this should be on a full cost recovery basis. As such and effectively, GIDA would itself be a quasi -commercial service provider.

Benefitting from this will be four classes of stakeholder: i) the Ghanaian economy as a whole; ii) small scale irrigating farmers as a result of irrigation-led socio-economic transformation; iii) workers in new livelihoods along agricultural value and market chains; and iv) potential commercial investors who will benefit from improved GIDA facilitation and regulatory capacity; a sub-sector specific PPP policy and Ghana's already demonstrable advantages in terms of undeveloped land and water resources, stable politics, fully functional export infrastructure, increasingly vibrant regional markets, and convenient access to Europe and North America.

The policy level responses needed to establish this "ideal" sub-sector is summarized in the next section.

1.3 POLICY LEVEL RESPONSES TO THE CONSTRAINTS AND OPPORTUNITIES

1.3.1 Summary of the Challenges, Constraints and Opportunities

The analyses and consultations carried out during this study (and reported below in Annexes 4 and 5) identified ten **challenges** that need to be addressed in the revised policy. Of these, four are already addressed in the existing policy (bold text):

- **Low rates of Agricultural Productivity and Sector Growth**
- Financial constraints
- **Poor Socio-economic Engagement with Land and Water Resources**
- Poor security of tenure and difficult access to land
- **The Need for Modernization of the Irrigation Support Services**
- No Public Private Partnerships and limited other forms of commercial investment in irrigation service delivery and production
- **Environmental Degradation Associated with Irrigated Production**

1.3.2 Policy Recommendations

The study itself has identified a broad range of opportunities for addressing these challenges; removing the constraints that they represent; and redirecting the sub-sector towards socio-economic transformation, commercialization and economic growth. In addition to cross cutting issues (concerning gender, youth and the vulnerable; land; finance; sub-sector performance; and regulation) they fall into seven strategic clusters one addressing each of the problems listed above:

Increase Rates of Agricultural Productivity and Sector Growth which depend on how productively the available infrastructure is used; while sub-sector growth depends both on that, and on how much infrastructure there is. The necessary initiatives will therefore need to address sector investment; awareness raising/capacity building; and innovations in the way that crop diversification can be financed.

Remove or Mitigate Financial Constraints because related to the first thrust, is the need to reduce the costs of agricultural production and to increase its returns in both the financial and economic sense, in order that both the producers and the state benefit respectively.

Improve Socio-Economic Engagement with Land and Water Resources because although some small farmers have already made the shift towards market oriented production, most have not. And none seem to have been provided with opportunities to participate in value chains that would i) reduce waste; ii) change small farmers from price takers to price makers; iii) increase their incomes and iv) create a demand for more, and diversified labor per unit of production. Hence sub-sector driven socio-economic transformation remains constrained. In addition, an increase in farmer managed irrigation would decrease state responsibility and costs in the sub-sector while increasing the self-determinacy of the farmers involved.

Improve Security of Tenure and Access to Land because despite its large undeveloped land resources, access to it remains mired in complex, often overlapping and sometimes conflicting legal definitions of ownership. And even where land is made available, users of it are not always convinced by the security of their tenure. This represents three significant additional constraints on sub-sector growth and productivity. Firstly, it limits expansion of irrigation or agricultural water management service. Secondly, it is a significant limitation on private sub-sector investment; and thirdly it limits producers' willingness to invest in long term improvements in land management and productivity raising technologies – both of which would increase returns on infrastructural sunk costs.

Modernize and Commercialize the Irrigation Support Services¹³ because any production oriented sub-sector should be able to pay for the recurring costs of production; and these include the costs of service delivery. But as well as being self-financed, service delivery must be thought of as something beyond scheme operation and maintenance, it also includes the need for reliable service delivery along the input chain and for a well enforced regulatory framework that maintains efficient resource use, producer equity, and environmental sustainability.

Public Private Partnerships and Other Forms of Private Sector Investment in Irrigation Service Delivery and Production because commercial agriculture and agribusiness makes money for its investors while contributing to job creation and economic growth in the host country. Ghana's potential for a major increase in commercial agriculture and agri-business remains largely untapped. But if it is to take advantage of its undeveloped resources, proximity to regional and global markets and general ease of doing business¹⁴ Ghana must make its agriculture sector more competitive and attractive in the eyes of potential investors regardless of where their interest lies (i.e. infrastructure, production or service delivery).

¹³ In this context, "service delivery" is taken to mean both infrastructure and institutions that use it to deliver service, or to regulate those that do so.

¹⁴ At the time of writing, Ghana is receiving the highest levels of Foreign Direct Investment in sub-Saharan Africa – but very little of it is going into agriculture.

Reverse Environmental Degradation Associated with Irrigated Production because there are several ways by which agricultural water management can compromise or even destroy essential environmental systems and services.

These foci and their component measures/implementation strategies are explained, justified and articulated as policy components in the Draft Policy presented as Chapter 2. They are presented for convenience in **Table 1** below.

Table 1 Summary of the Proposed Policy Measures

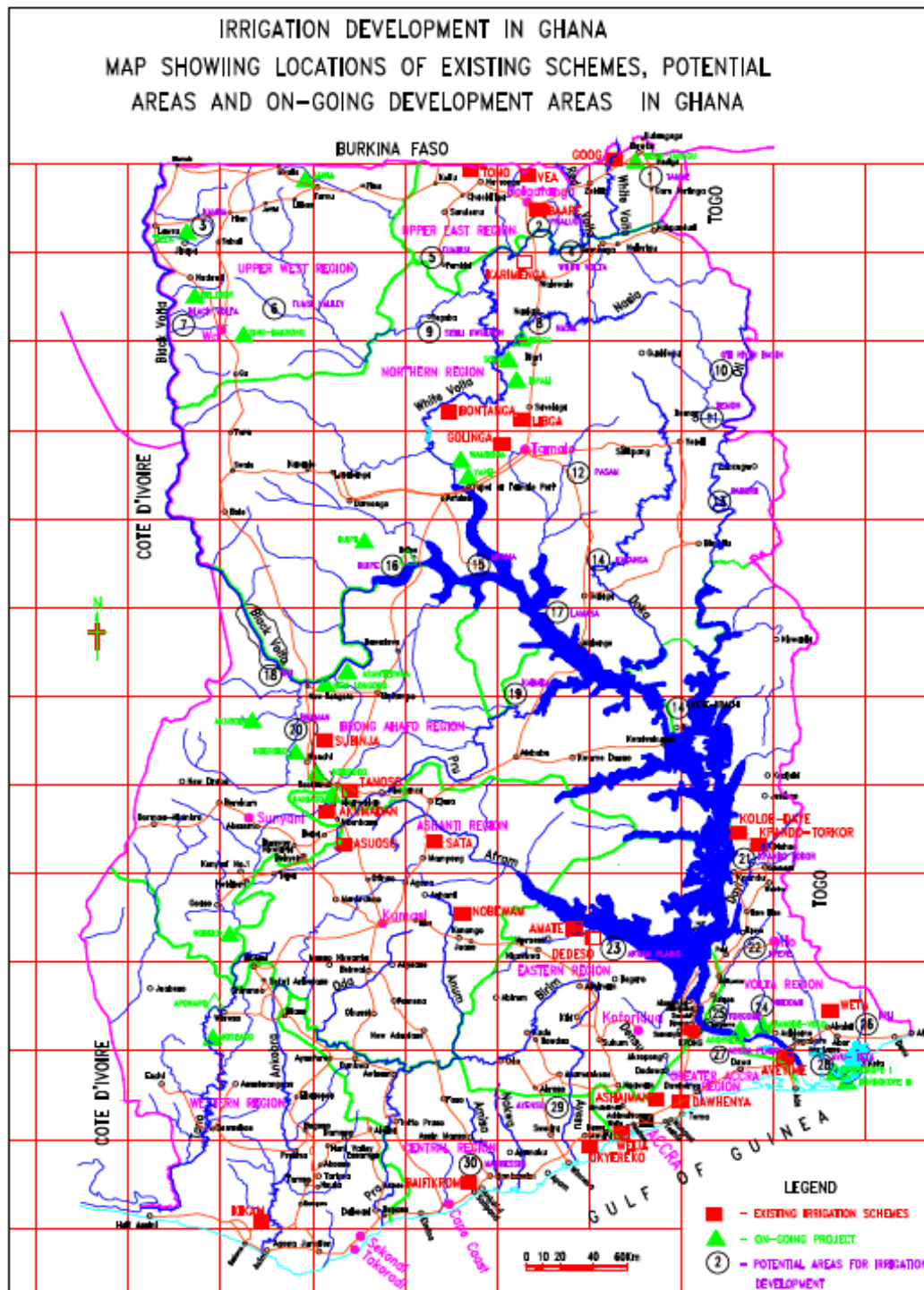
| FOCI | POLICY IMPLEMENTATION STRATEGY/MEASURES |
|--|---|
| TO INCREASE RATES OF AGRICULTURAL PRODUCTIVITY AND SECTOR GROWTH | |
| Increase the coverage of agricultural water management infrastructure | <ul style="list-style-type: none"> • A National Irrigation Development Master Plan (NIDMAP) will be formulated • The area under economically advantageous irrigated agriculture will be expanded • Land will be consolidated wherever practical and equitable • Improved drainage service delivery will be provided where needed across the sub-sector typology |
| Increase total factor productivity of the sub-sector | <ul style="list-style-type: none"> • Water delivery precision will be increased and sustained as a result of improved operation and maintenance and full recurring cost recovery • State of the art agricultural practices will be required on all irrigation schemes • Land levelling will be undertaken where needed in order to increase physical water use efficiency • Awareness and capacities will be raised with respect to ways, including value addition, by which total factor productivity can be maximized in irrigated agriculture • Collaboration will be improved with other sector ministries and agencies and the research and private sector (NGOs and Farmer Based Organizations) • A system of productivity based metrics, supported by adequate data resources, will be developed and maintained for sector monitoring purposes |
| Establish innovative financial instruments that promote diversification and investment in high input/high output farming systems | <ul style="list-style-type: none"> • Existing agricultural production subsidies will be replaced with stepped and time-bound subsidies that reduce the perceived risks of crop diversification and sector commercialization • The Ghana Incentive Risk Sharing program will be expanded to cover small farmers • Small farmers will be encouraged as assisted to adopt of high value farming systems and enabled to access better markets and participate in value addition |
| TO REMOVE FINANCIAL CONSTRAINTS | |
| Establish innovative financial instruments for improved agricultural production | <ul style="list-style-type: none"> • Collaborate with other sector ministries, agencies, the research and private sectors, credit sector and development partners for the purpose of identifying and evaluating innovative production financing instruments and collateral systems • Establish innovative production financing and collateral systems • Increase small farmer adoption of high value farming systems and enable them to access better markets and participate in value addition |
| Reduce costs and increase the profitability of agricultural production | <ul style="list-style-type: none"> • Raise awareness and capacities with respect to ways by which to reduce recurring and production costs in irrigated agriculture • The Ghana Incentive Risk Sharing program will be expanded to facilitate the development and promotion of risk mitigating instruments such as crop insurance and better market intelligence |
| Reduce the need for and scale of state financing to the sub-sector | <ul style="list-style-type: none"> • GIDA will study, assess and adopt financing options that allow it to become financially autonomous • Innovative financial instruments that facilitate self-financed irrigation infrastructure/equipment and small farmer participation in value chains will be identified, adapted and developed |
| TO INCREASE SOCIO-ECONOMIC ENGAGEMENT WITH LAND AND WATER RESOURCES | |
| Achieve socio-economic transformation in the sub-sector | <ul style="list-style-type: none"> • Increase small farmer adoption of high value farming systems and enable them to access better markets and participate in value addition • Government will facilitate the transition to higher value farming systems by sharing the perceived risks during the transition period • Collaboration will be improved with other sector ministries and agencies and the research and private to identify reliable markets for high value crops and potential value chains, preferably domestic value chains • Awareness and capacities will be raised with respect to ways, including value addition, by which total factor productivity can be maximized in irrigated agriculture |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Access to safer ground water or safer irrigation practices will be promoted in areas characterized by otherwise marginal-quality water is available. • The irrigated agriculture sector will be provided with support or leverage infrastructure such as roads, cold chains and public go-downs etc. |
| Reduce state responsibility for scheme operation and maintenance | <ul style="list-style-type: none"> • A holistic understanding of service delivery and capacity building will be strengthened across the board • Communities, including women, youth and the vulnerable, will be fully represented at all stages of an irrigation scheme development cycle, including leadership of WUAs • Water user capacity for irrigation management transfer will be strengthened • WUA capacity for estimating recurring costs and for setting and collecting service charges will be strengthened • WUA rules and regulations will be better enforced |
| Make the best use of farmer managed irrigation | <ul style="list-style-type: none"> • Management responsibilities will be transferred to WUAs/commercial service providers • Participatory rehabilitation/upgrading of existing schemes will be undertaken as part of IMT to WUAs |
| TO IMPROVE SECURITY OF TENURE AND ACCESS TO LAND | |
| Facilitate and expedite access to land for irrigation and other forms of agricultural water management | <ul style="list-style-type: none"> • The supply of land for irrigation development will be increased by a combination of several institutional measures including the establishment of a "land bank". • The land bank will be regularly updated for use with potential commercial investors • Irrigation schemes, across the sub-sector typology will be given a fast track with respect to land allocation |
| Increase security of tenure | <ul style="list-style-type: none"> • Leases and land rights will be better enforced |
| TO MODERNISE THE IRRIGATION SUPPORT SERVICES | |
| Improve the nature and scope of service delivery in the sub-sector | <ul style="list-style-type: none"> • A holistic understanding of service delivery and capacity building will be strengthened across the board • Linkages with MOFA will be strengthened, especially at the district level |
| Improve and better enforce the regulatory framework | <ul style="list-style-type: none"> • Service delivery will be regulated in terms of quality, timeliness, accountability, adaptability and value for money • Quality standards with respect to the provision of all services will be revised, strengthened and enforced • A transparent system of water rights and entitlements with rational durations will be established. • An evolving and adaptable regulatory framework will be applied across the typology as a component of service delivery • All commercial schemes, including PPPs will be subject to the same regulatory framework as any other irrigation scheme |
| Better define and finance GIDA's role in service provision | <ul style="list-style-type: none"> • The GIDA Board and its responsibilities will be revised to reflect a more commercialized modus operandi, more in line with a commercializing agriculture sector. • The revised GIDA mandate will be fully implemented • GIDA's future activities at scheme level will be included in the scheme's operational cost budget and remunerated directly from scheme finances on a cost-plus basis |
| TO ESTABLISH PUBLIC PRIVATE PARTNERSHIPS AND OTHER FORMS OF PRIVATE SECTOR INVESTMENT IN IRRIGATION SERVICE DELIVERY AND PRODUCTION | |
| Establish public private partnerships | <ul style="list-style-type: none"> • GIDA will be responsible for representing Government throughout a PPP's implementation and operational cycle as defined in Section 5.6 of this policy) • GIDA will be the Public equity holder in sub-sector PPPs and will share as such all associated risks and benefits in proportion to its equity • GIDA will establish and regularly update a dossier of PPP opportunities, including estimates of pre-appraisal performance indicators • GIDA will establish a dedicated PPP Unit within its Planning and Coordination Unit where it will maintain close and continuous liaison with the same unit's Irrigation Promotion Team • Stronger links will be established between the Ghana Investment Promotion Centre and GIDA's Irrigation Promotion Center • GIDA's PPP Unit will meet with representatives of the Ghana Investment Promotion Centre every time the dossier is updated to alter its staff to any new entries and to review progress (if any) with respect to prior entries. • GIDA's access to natural resources as a partner in a PPP will be subject to the same regulations as any private entity • As a cross- cutting measure smart incentives will be offered to potential investors in PPPs |
| Increase other commercial investments in irrigated production | <ul style="list-style-type: none"> • In association with the GIPC, GIDA will assist potential investors to identify, register, develop and implement their proposed ventures and will receive a fee for providing this service |

| | |
|--|--|
| | <ul style="list-style-type: none"> • The irrigated agriculture sector will be provided with leverage and/or support infrastructure such as bulk water infrastructure or roads, cold chains and public go-downs respectively etc. • GIDA will establish and regularly update a dossier of investment opportunities, including estimates of pre-appraisal performance indicators • As a cross-cutting measure smart incentives will be offered to potential investors in irrigated production |
| Increase other commercial investments in sub-sector service delivery | <ul style="list-style-type: none"> • Government will welcome any form of well-regulated commercial irrigation service provision • Sub-sector service provision contracts can be given to commercial sector entities with respect to the operation and maintenance of publicly financed infrastructure • Private sector awareness will be created for private investors not only with respect to scheme operation and maintenance but also along supply and market chains • As a cross-cutting measure smart incentives will be offered to potential investors in sub-sector service delivery |
| TO REVERSE ENVIRONMENTAL DEGRADATION AND ESTABLISH IRRIGATED AGRICULTURE ON A SUSTAINABLE FOOTING | |
| Avoid or mitigate the risks of environmental degradation | <ul style="list-style-type: none"> • An evolving and adaptable suite of environmental regulations will be applied across the typology in terms of both production and service delivery • All commercial schemes, including PPPs, will be subject to the same regulatory framework as any other irrigation scheme • Engineering designs will be consistent with the need for efficient and sustainable natural resource use • Participatory catchment area protection will be introduced and required in vulnerable systems |

CHAPTER 2. DRAFT OF THE REVISED POLICY

Frontispiece



GHANA IRRIGATION SCHEMES

2.1 EXECUTIVE SUMMARY

Ghana's irrigation¹⁵ policy (and the strategy for its implementation) is designed to open up the investment space for intensified and diversified irrigated crop production on an increasingly commercialized basis in Ghana where there is clear comparative advantage. The policy is designed to accomplish this by addressing seven key 'problem' areas concerning the formal, informal and commercial irrigated sub-sectors that have been identified during an extensive consultative review.

These problems are:

- a. Low rates of agricultural productivity and sector growth
- b. Financial constraints
- c. Poor socio-economic engagement with land and water resources
- d. Poor security of tenure and difficult access to land
- e. The irrigation support services need modernizations and commercialization
- f. No Public Private Partnerships and limited other forms of commercialization
- g. Environmental degradation associated with irrigated production

Policy objectives or 'thrusts' are proposed to address each of these with the view to achieving accelerated and sustained irrigation and broader agricultural water management development in Ghana:

- **Policy Thrust 1:** increase the rates of agricultural productivity and sector growth
- **Policy Thrust 2:** remove or mitigate financial constraints
- **Policy Thrust 3:** improve socio-economic engagement with land and water resources
- **Policy Thrust 4:** improve security of tenure and access to land
- **Policy Thrust 5:** modernize and commercialize the irrigation support services
- **Policy Thrust 6:** public private partnerships and other forms of private sector investment in service delivery and production
- **Policy Thrust 7:** reduce Environmental Degradation Associated with Irrigated Production

These four objectives or thrusts are together targeted at the following sub-sector Goal:

“Economic growth, socio-economic transformation and the sustainable use of natural resources accruing to the irrigation sub-sector as a result of commercialized and cost-effective irrigation services; productive irrigation schemes and blended financing”.

This Goal is supported by eight subsidiary Targets as follows:

- National Food Security as result of increased production and off-farm livelihoods in the agriculture sector
- Intensified and diversified production and processing of agricultural commodities
- Increased irrigated sub-sector livelihood options both on and off-farm
- Economically efficient use of water in irrigated agriculture and value chains
- Minimized environmental foot print of irrigated agriculture including any value chains
- Expanded investment space and facilitation capacity for irrigated production
- Irrigated agriculture contributing to the achievement of the SDGs, especially SDGs 2.3, 2.4 and 6.4.
- Climate change resilience increased as a result of sustainable irrigation service delivery

The cross-cutting philosophy under-pinning the entire policy concept is the transformation of GIDA into a pro-active promoter of both public and private irrigation development with much more effective,

¹⁵ Taken throughout this document to mean all forms of agricultural water management (AWM) including, but not only: drainage and recession agriculture.

functional links within the agriculture sector. The key collaborating agencies outside the MoFA are WRC, EPA and local government but equally important are effective links with NGOs, private sector irrigation service providers and commercial investors in production and value addition. An essential component of this transformation is the establishment of revised regulatory provisions to clarify liabilities and responsibilities among public and private institutions in Ghana.

The Policy is predicated on a commitment to decentralization of irrigation services and private sector participation from individual farmers to commercial operators – across all GIDA’s “five business lines”. It is supported by a comprehensive *diagnostic assessment* of the current (2012) policy as summarized in its accompanying the report: “Review of The National Irrigation Policy, Strategies and Regulatory Measures for The Irrigation Sub-Sector of Ghana”.

Four classes of stakeholder will benefit from this revised policy. They are:

- the Ghanaian economy as a whole
- small scale farmers as a result of irrigation-led socio-economic transformation
- workers in new livelihoods along agricultural value and market chains
- potential commercial investors who will benefit from improved GIDA facilitation and regulatory capacity and a sub-sector specific PPP policy

However, the socio-economically predicated typology adopted for the policy, which this current iteration revises, has been supplanted by one which better reflects a greatly more commercial sub-sector going forward:

- **non-state funded schemes** producing staple crops,
- **non-state funded schemes** producing high value horticultural or industrial crops
- **purely state-funded schemes** producing staple crops
- **purely-state funded schemes** producing high value horticultural or industrial crops
- **blended finance schemes** producing staple crops
- **blended finance schemes** producing high value horticultural or industrial crops

2.2 THE NEED FOR AN IRRIGATION POLICY

2.2.1 Rationale for Policy Development - The Drivers of Change

Preparatory work on the current policy began in 2005, with the resulting instrument being finalized in 2010 and promulgated in 2012. Since then however, there have been several drivers of change that suggest the need for substantive revision of the current policy. These drivers of change fall into three categories.

The **first** category concerns the changes in cross-cutting policies that now call for a national economy that is characterized by far greater commercial sector participation, especially with respect to agriculture and including Public Private Partnerships¹⁶. The current irrigation policy, was intended - *among others* - to respond to the Ghana Poverty Reduction Strategy (GPRS), but since then the GPRS has been replaced by the Ghana Shared Growth Development Agenda (GSGDA) which contains at least 17 relevant clauses and 4 priority actions of relevance to a revised irrigation policy¹⁷.

The **second** category concerns Ghana’s global commitments to the Sustainable Development Goals and the Paris Agreement (on climate change). For instance:

¹⁶ For which the irrigated agriculture sub-sector has no specific policy as yet, despite a senior national pan-sectoral PPP policy which encourages specific sectors to develop their own.

¹⁷ Nonetheless, the relevant GSGDA clauses and actions between them capture and/or re-articulate much of the previous GPRS,

- SDG 2.3 for instance is all about the socio-economic transformation of small farming households by means that include better access to financial services, markets and value addition opportunities;
- SDG 2.4 refers to the need for resilient farming systems with higher productivity than is now the case typically;
- SDG 6.4 calls for sustainable and efficient water use (which in the context of SDG 2.3 means both economic and physical efficiencies);
- SDG strategy 6.b calls for more effective participatory management of water.

This is entirely consistent with Ghana’s objectives with respect to the agriculture sector and its stakeholders. And although Ghana’s Intended Nationally Determined Contribution (GINDC) has little to say about the role of agriculture in terms of climate change mitigation and adaptation, it must be understood that agriculture both causes and is a victim of climate change, while offering a range of solutions. In the context of this revised irrigation policy this has implications for all aspects of agricultural water use and management (AWM, which, as far as this policy is concerned, is assumed to be covered by the term “irrigation”).

The **third** category concerns the expected changes to the global agriculture sector, changes which anticipate trade based solutions to global food security to replace the protectionist policies which commonly prevail at the present time. In other words, as the world moves closer to peak population in the context of intensifying effects of climate change, it will be important that commodities are: i) grown where they have comparative productive advantage in terms of their suitability to a local resource endowment and ii) traded to where they cannot be.

The resulting market chains will of course provide the new and diversified livelihoods called for by SDG 2.3. Given an appropriate domestic policy framework, early responders to such opportunities will be well placed to take advantage to the new opportunities that will emerge as the expected changes to the global agriculture sector take place.

2.2.2 The Institutional and Regulatory Framework

Implementing any policy reform requires strong, well-focused institutions. At the time of this policy revision, GIDA is undergoing a process of institutional modernization. This however, does not go far enough given the new calls for agriculture sector commercialization and the particular challenges (institutional, socio-economic, technical and economic) that commercialization represents for irrigated agriculture.

A more focused institutional framework needed to deliver devolved, self-financing irrigation service in a commercialized agriculture sector is therefore proposed as part of this policy.

2.2.3 The Structure of the Irrigation Sub-Sector in Ghana

Before proceeding, it is necessary to stress once again that in the context of this policy, “irrigation” is assumed to mean all kinds of agricultural water management including for instance water harvesting for agriculture, drainage and recession agriculture.

Against that assumption, the current policy is predicated on a sub-sector delineated along socio-economic lines and as such recognizes three principle categories of irrigation, each with their own challenges and opportunities: informal (smallholder irrigation); formal irrigation; and, large scale commercial irrigation.

But various factors, when taken together, break down the borders between scheme size and business model:

GIDA’S FIVE BUSINESS LINES

- Individual micro and small-scale irrigation;
- Community managed small to medium scale irrigation;
- Large-scale irrigation system modernization and development;
- Market-oriented irrigation on a public private partnership basis; and
- Enhanced water management in rain-fed agriculture

- Ghana’s shift to a more commercialized concept
- the five business lines which it is intended to include (see text box);
- SDG 2.3’s call for a transformation of small holder agriculture; and,
- The anticipated trade based restructuring of the global agriculture sector.

Accordingly, it has been decided to establish a new sub-sector typology that defines an irrigation scheme first in terms of its funding modalities and secondly the type of farming systems. There are three kinds of funding: non-state, purely state and blended (see text box); and two kinds of farming system: staple crops and high value horticulture and industrial crops.

BLENDING FINANCING

“the strategic use of development finance and philanthropic funds to mobilize private capital flows to emerging and frontier markets”

This binary delineation of farming systems is valid because Government wishes to ensure the supply of affordable basic foods for the increasing urban populations while generating exportable surpluses that take advantage of increasingly trade based global food security solutions. At the same time, and not least in accordance with SDG 2.3, Government also wishes to facilitate the transformation of irrigated smallholder agriculture towards high value and added value farming systems.

The sub-sector scheme typology adopted for this revised policy is therefore as follows:

- **non-state funded schemes** producing staple crops,
- **non-state funded schemes** producing high value horticultural or industrial crops
- **purely state-funded schemes** producing staple crops
- **purely-state funded schemes** producing high value horticultural or industrial crops
- **blended finance schemes** producing staple crops
- **blended finance schemes** producing high value horticultural or industrial crops

The following matrix provides an indication of what kind of scheme is likely to include which of GIDA’s

| FUNDING MODALITY | FARMING SYSTEM TYPE | RELEVANT GIDA BUSINESS LINE(S) |
|------------------|---|--|
| non-state | staple crops | individual micro and small-scale irrigation; |
| | | community managed small to medium scale irrigation; |
| | | enhanced water management in rain-fed agriculture |
| | High Value Horticultural (HVH) and Industrial crops | individual micro and small-scale irrigation; |
| | | community managed small to medium scale irrigation; |
| | | enhanced water management in rain-fed agriculture |
| purely state | staple crops | community managed small to medium scale irrigation; |
| | | large-scale irrigation system modernization and development; |
| | | enhanced water management in rain-fed agriculture |
| | HVH and Industrial crops | community managed small to medium scale irrigation; |
| | | large-scale irrigation system modernization and development; |
| | | enhanced water management in rain-fed agriculture |
| Blended | staple crops | individual micro and small-scale irrigation; |
| | | community managed small to medium scale irrigation; |
| | | large-scale irrigation system modernization and development; |
| | | market-oriented irrigation on a Public Private Partnership basis |
| | | enhanced water management in rain-fed agriculture |
| | HVH and Industrial crops | individual micro and small-scale irrigation; |

| | |
|--|--|
| | community managed small to medium scale irrigation; |
| | large-scale irrigation system modernization and development; |
| | market-oriented irrigation on a Public Private Partnership basis |

2.3 SPECIFIC PROBLEMS ADDRESSED BY THE POLICY

The various “structural” factors which suggest the need for a new irrigation sub-sector policy were outlined in the previous section; but in addition, there are specific problems that this revised policy is also intended to address. In fact, a wide range of constraints on the operation and expansion of productive, sustainable irrigation was identified during the various stakeholder consultations undertaken in the course of preparing this document¹⁸.

2.3.1 Low Rates of Agricultural Productivity and Sector Growth

The persistent combination of large undeveloped areas and generally low yields for all but a few crops, constrains the contribution to broader economic growth that Ghana’s agricultural sector could and should be making. In addition to these factors, limited awareness on the part of farmers and potential investors in value chains regarding Ghana’s great potential for commercialized agriculture represents an additional constraint on job creation and socio-economic transformation and economic growth. Investments in sustainable agricultural water management will address these challenges by opening up areas where simple rainfed production is not possible for climatic reasons, and more generally such investments would guarantee the produce quantities and qualities that market and value chain players would expect before making any investments of their own.

2.3.2 Financial Constraints

Farmers, both large and small, complain about the high costs of agricultural production in Ghana. These high costs largely concern credits, labor and energy and they frustrate not only production, but also scheme recurring cost recovery. Even where social benefits are the principle objective of a publicly funded scheme, it should be able to covers its operational costs.

The costs of credit are dictated by the availability of funds from the lending institutions. Although it is possible to identify alternative mechanisms, these generally lend from Cedis deposits, the owners of which expect a certain level of interest. Clearly banks must lend at rates higher than the interest they themselves must pay out. Limited agricultural credit risk assessment is also cited as a problem, as are limited collateral instruments given Ghana’s problematic land ownership and tenure system.

Labor costs are of course a product of supply and demand, and while farming systems remain focused on low value crops with limited added value potential and less labor requirements, demand for agricultural labor will remain limited. But with higher value, more labor-intensive farming systems and value chains, that will change. In addition to high value crops, opportunities to reduce the water consumption and increase yields of rice are available in the form of the System of Rice Intensification and the Sustainable Sugar Initiative. Although these are also labor intensive, the increased yields, better quality and where pumping is concerned, the reduced energy costs taken together are likely to outweigh the increased labor costs.

The lack of sub-sector specific stepped tariffs means that irrigators are forced to pay prohibitive energy tariffs, and in the case of small producers, to abandon irrigation. Yet closer attention shows that pumped water is typically not re-cycled thereby increasing energy demand unnecessarily. Also, renewable energy options, including crop residues, remain largely unknown. Government is reportedly considering a stepped tariff; but it should be noted that increased use of renewables may be more appropriate under Ghana's climate change mitigation efforts.

¹⁸ See the report “Review of the National Irrigation Policy, Strategies and Regulatory Measures for the Irrigation Sub-Sector of Ghana” which - a/o - presents the results of the stakeholder consultations and field visits undertaken as part of the existing policy revision.

The lack of sub-sector specific stepped tariffs renders moreover, the investment climate inhibiting rather than enabling in the eyes of potential investors in both production and value addition.

2.3.3 Poor Socio-Economic Engagement with Land and Water Resources

Some 90% of Ghana's agriculture, most of which remains rainfed, takes place on small farms and is characterized by a high level of subsistence production. Perpetuation of this situation is incompatible with Ghana's wish to modernize and commercialize its agricultural sector, while achievement of SDGs 2.3, 2.4 and 6.4 will remain an elusive dream.

Yet despite the contribution that a more diverse and commercializing agriculture sector could place in a growing and diversifying economy, demand for transformation opportunities will remain limited in the absence of awareness regarding what those opportunities are. Opportunities actually abound in terms of: farming systems; the productive use of crop residues; added value; markets and possibly carbon credits. But to realize these opportunities, investments – both public and private – will be needed in agricultural water management schemes and service provision; not least to attract the investments in market and value chains needed to realize the significant socio-economic transformation potential of the sub-sector.

2.3.4 Poor Security of Tenure and Difficult Access to Land

Small farmers using state financed irrigation schemes report significant anxiety about encroachment and their security of tenure as well as being a possible constraint on expansion, it may also be a constraint on seasonal investments in higher input/higher output farming systems. However, some smallholders also felt that wholesale public withdrawal from the sub-sector, may compromise security of tenure on land provided by GIDA.

Uncertainty over land access is regularly cited as a constraint on investment also by the private. This is regrettable given Ghana's large, undeveloped land resources that could be developed for a wide range of production and agribusiness lines, for the domestic, regional and global markets.

2.3.5 The Irrigation Support Services Need Modernization and Commercialization

Although members of WUAs on state financed irrigation schemes to an overwhelming extent agree that GIDA's service is of good value, the way that such services are currently provided is incompatible with the need for full recurring cost recovery and sub-sector commercialization in line with Ghana's broader economic objectives.

In addition, there is a significant - but so far under-addressed - opportunity for GIDA to provide a one-stop shop for potential investors, and an equally significant opportunity for GIDA to play a pivotal role in the establishment of and participation in sub-sector PPPs in for production and service delivery. Also, a strengthened regulatory role for GIDA will benefit all types of irrigators in terms not only of the sustainable achievement of service delivery standards, but also in terms of: conflict resolutions: the sustainable, productive use of natural resources by the sub-sector and the importance of regulations in the context of the enabling environment for private sector investments.

2.3.6 No Public Private Partnerships and Limited Other Forms of Private Section Investment in Irrigation Service Delivery and Production

Ghana has a lot to offer potential investors, and despite its huge success in attracting foreign direct investments in other sectors, investment – both domestic and foreign – in agriculture and agribusiness remains highly constrained. In order to make these sectors more attractive or competitive in the eyes of investors, Ghana needs to streamline the procedures by which potential investors can be introduced to and participate in the sub-sector. "External" constraints such as high costs of production and land issues have already been mentioned above. But the "internal" constraints – which are largely of an institutional nature – need also to be addressed by means of restructuring and capacity building.

In addition, Ghana is encouraging Public Private Partnerships across the board. In the irrigation/agricultural water management sub-sector the PPP opportunities concern infrastructure,

production and service delivery. GIDA is the obvious entity for holding Government equity in PPP schemes, but needs a legitimizing policy and well-defined orders of business in this regard.

And as mentioned already, investors in value chains will need to be assured of produce quantity and quality from their suppliers. Irrigation and other forms of agricultural water management help with this. Investors on production on the other hand, may expect to see so-called “leverage” infrastructure in place, before any investment decision is made.

GIDA needs to have better access therefore to the National Infrastructure Development Facility – whether for leverage infrastructure, or to finance its participation in a PPP.

2.3.7 Environmental degradation associated with irrigated production

Sustainable, and remunerative irrigated production depends on sustainable land and water resources, while at the same time, unsustainable use of natural resources by agriculture can constrain both societal interests and use by other economic sectors. This can be expected to become an increasingly important as demand for water intensifies and/or drainage water recycling increases - which although desirable from water allocation and energy saving perspectives, also has an embedded water quality risk.

In addition, soil loss accruing to poor land management practices can cause sedimentation of irrigation (and other sectors’) infrastructure – which in turn has an economic cost.

2.4 PROPOSED NEW POLICY

2.4.1 Structure of the Policy

The structure of this revised policy comprises a single sub-sector Goal supported by five strategic thrusts or objectives. It has eight specific targets which, together, is intended to benefit four classes of beneficiary. The relationship between the Thrusts/Objectives, Targets and Beneficiaries is explored below in sub-section 2.4.3 while detailed implementation measures and strategies are set out in Section 2.6.

(a) The Goal

The irrigation sub-sector goal is:

“Economic growth, socio-economic transformation and the sustainable use of natural resources accruing to the irrigation sub-sector as a result of commercialized and cost-effective irrigation services; productive irrigation schemes and blended financing”.

(b) The Strategic Thrusts/Objectives

In addition to cross cutting measures – see text box - seven strategic thrusts/objectives are needed to achieve the sub-sector goal as follows:

- Increase Rates of Agricultural Productivity and Sector Growth
- Remove or Mitigate Financial Constraints
- Improve Socio-Economic Engagement with Land and Water Resources
- Improve Security of Tenure and Access to Land
- Modernize and commercialize the Irrigation Support Services
- Public Private Partnerships and Limited Other Forms of Private Section Investment in Irrigation Service Delivery and Production
- Reduce environmental degradation associated with irrigated production

(c) Targets

The eight specific targets of the policy are as follows:

- National Food Security as result of increased production and off-farm livelihoods in the agriculture sector
- Intensified and diversified production and processing of agricultural commodities
- Increased irrigated sub-sector livelihood options both on and off-farm
- Economically efficient use of water in irrigated agriculture and value chains
- Minimized environmental foot print of irrigated agriculture including any value chains
- Expanded investment space and facilitation capacity for irrigated production
- Irrigated agriculture contributing to the achievement of the SDGs, especially SDGs 2.3, 2.4 and 6.4.
- Climate change resilience increased as a result of sustainable irrigation service delivery

(d) Beneficiaries

The four classes of beneficiary expected to benefit from this revised policy, as follows:

- the Ghanaian economy as a whole;
- small scale farmers as a result of irrigation-led socio-economic transformation;
- workers in new livelihoods along agricultural value and market chains; and
- potential commercial investors who will benefit from improved GIDA facilitation and regulatory capacity and a sub-sector specific PPP policy

CROSS CUTTING ISSUES

- Certain of the measures requiring action or definition at policy level have cross-cutting significance hence are not specific to one or more Thrusts/Objectives. They fall into four clusters: gender, youth and the vulnerable; land; finance; sub-sector performance; and regulation.
- The need to ensure that gender, youth and vulnerability are not constraints on participation and the sharing of benefits is of paramount importance to Government which will make sure that their interests are fully addressed and captured at all stages of a scheme development cycle, not least be representation as appropriate in Water User Association leadership:
- With respect to land, Government will increase its availability and apply mechanisms that secure tenure for both public and private investment in irrigated agriculture, this policy requires that:
- At the cross cutting level, high costs of finance and energy constrain the productivity and/or profitability of irrigated agriculture, both public and private. They also act as a counter-incentive against investments in labor intensive value chains and high productivity/high value farming systems. This policy therefore requires that Government identifies as a priority smart subsidy and other options for decreasing production costs and de-risking loan portfolios.
- With respect to sub-sector performance Government notes the need for productivity based metrics and for widespread awareness raising with respect to options for increasing total factor productivity in both production and value addition.
- Finally, in terms of cross cutting issues, Government acknowledges the need for a sound, well enforced regulatory framework that protects equitability and the sustainability of natural resource utilization in the sub-sector.

2.4.2 Increase Rates of Agricultural Productivity and Sector Growth

The productivity of the irrigation or broader agricultural water management sub-sector depends on how the productively the infrastructure is used; while sub-sector growth depends both on that, and on how much infrastructure there is. It is also necessary to understand that productivity needs to be understood and monitored in terms of all the factors of production: land, labor, water and finance.

The necessary initiatives will therefore need to address sector investment; awareness raising/capacity building; and innovations in the way that crop diversification can be financed.

Specific Sub-objectives are:

- (a) To increase the coverage of agricultural water management infrastructure.
- (b) To increase the total factor productivity of the sub-sector.
- (c) To establish innovative financial instruments that promote diversification and investment in high input/high output farming system.

2.4.3 Remove or Mitigate Financial Constraints

Related to the previous thrust is the need to reduce the costs of agricultural production and to increase its returns in both the financial and economic sense, in order that both the producers and the state benefit respectively.

Specific Sub-objectives are:

- (a) To establish innovative financial instruments for improved agricultural production
- (b) To reduce costs and increase the profitability of agricultural production
- (c) To reduce the need for and scale of state financing to the sub-sector

2.4.4 Improve Socio-Economic Engagement with Land and Water Resources

Although some small farmers have already made the shift towards market oriented production, most have not. And none have been provided with opportunities to participate in value chains that would i) reduce waste; ii) change small farmers from price takers to price makers; iii) increase their incomes and iv) create a demand for more, and diversified labor per unit of production. Hence sub-sector driven socio-economic transformation remains constrained. In addition, an increase in farmer managed irrigation would decrease state responsibility and costs in the sub-sector while increasing the self-determinacy of the farmers involved.

Specific Sub-objectives are:

- (a) To achieve socio-economic transformation in the sub-sector
- (b) To reduce state responsibility for operation and maintenance
- (c) To make the best use of farmer managed irrigation

2.4.5 Improve Security of Tenure and Access to land

Despite its large undeveloped land resources, access to it remains mired in complex, often overlapping and sometimes conflicting legal definitions of ownership. And even where land is made available, users of it are not always convinced by the security of their tenure. This represents three significant additional constraints on sub-sector growth and productivity. Firstly, it limits expansion of irrigation or agricultural water management service. Secondly, it is a significant limitation on private sub-sector investment; and thirdly it limits producers' willingness to invest in long term improvements in land management and productivity raising technologies – both of which would increase returns on the infrastructural sunk costs.

Specific Sub-objectives are:

- (a) To facilitate and expedite access to land for irrigation and other forms of agricultural water management
- (b) To increase security of tenure

2.4.6 Modernize and Commercialize the Irrigation Support Services

Any production oriented sub-sector should be able to pay for the recurring costs of production; and these include the costs of service delivery. But as well as being self-financed, service delivery must be thought of something beyond scheme operation and maintenance, it also includes the need for reliable service delivery along the input chain and for a well enforced regulatory framework that maintains efficient resource use; producer equity and environmental sustainability.

Specific Sub-objectives are:

- (a) To improve the nature and scope of service delivery in the sub-sector
- (b) To improve and better enforce the regulatory framework
- (c) To better define and finance GIDA's role in service provision

2.4.7 Public Private Partnerships and Other Forms of Private Section Investment in Irrigation Service Delivery and Production

Commercial agriculture and agribusiness make money for its investors while contributing to job creation and economic growth in the host country. There are many successful examples in sub-Saharan Africa, and some of them are in Ghana. Notwithstanding that Ghana's potential for a major increase in commercial agriculture and agri-business remains largely untapped, so does that of most other countries in the region - but investment resources are small in comparison to opportunity. If Ghana is to take advantage of its undeveloped resources, proximity to regional and global markets and general ease of doing business¹⁹ it needs to make its agriculture sector more competitive and attractive in the eyes of potential investors regardless of where their interest lies (i.e. infrastructure, production or service delivery).

Specific Sub-objectives are:

- (a) Public Private Partnerships
- (b) Increased other²⁰ commercial investments in irrigated production
- (c) Increased other commercial investments in sub-sector service delivery

2.4.8 Reduce Environmental Degradation Associated with Irrigated Production

There are several ways by which agricultural water management can compromise or even destroy essential environmental systems and services. These include: disruption of annual hydrographs; unsustainable groundwater abstractions; soil erosion and sedimentation; landslides; pollution and habitat loss.

The single Specific Sub-objectives is:

- (a) To avoid or mitigate the risks of environmental degradation

2.5 GUIDING PRINCIPLES

The guiding principles assumed by this policy are as follows:

2.5.1 Performance and Sustainability

Irrigation development planning should pay due regard to the need for sustainability in terms of operation, maintenance, recurring cost recovery, competing needs, conservation and productive, equitable use of natural resources.

2.5.2 Ownership

The "ownership" benefits accruing to full capital cost recovery are acknowledged; but until smallholder agriculture is transformed as per SDG 2.3, capital cost recovery in the irrigation sub-sector is therefore likely to remain partial during this policy's short and medium term (see Appendix 2a). Accordingly, levels will be: i) set pragmatically and in accordance with the prevailing macro-economic policy guidelines; and ii) reviewed on a regular basis, especially in the context of future updates and revision to this policy

2.5.3 The Rights and Participation of Women, Youth, and Vulnerable Communities

In acknowledgement of their central role in the provision, management and safeguarding of water, women along with the youth and vulnerable communities should enjoy equitable access to the benefits of irrigation services while participating fully in the activities and leadership of Water Users Associations.

2.5.4 Awareness and Sensitization

¹⁹ At the time of writing, Ghana is receiving the highest levels of Foreign Direct Investment in sub-Saharan Africa – but very little of it is going into agriculture.

²⁰ i.e. not under PPP modalities.

Government understands the relationship between extensive public sensitization/awareness creation, and the demand for irrigation infrastructure/service delivery. Government also understands that sustainable irrigation demands that beneficiaries are also aware not only of the benefits of irrigation and of their obligations as users of public sector infrastructure and the value of a well enforced regulatory framework. Resources will accordingly be committed by Government in support of a comprehensive, but well focused awareness raising campaign.

2.5.5 Decentralization and Subsidiarity

Government remains committed to an ongoing decentralization process across the board, including Ministries, Departments and Agencies (MDAs) and Metropolitan, Municipal and District Assemblies (MMDAs). Equally, irrigation sub-sector institutions need to adhere to the principle of subsidiarity, with management responsibilities of public infrastructure devolved to users to the greatest practical extent, with public participation in decision making at all levels.

The irrigation/AWM sub-sector is not in isolation as far as the government's decentralization policy currently under implementation is concerned. GIDA under the modernization program, expects to devolve the operation and management of its public irrigation/AWM facilities to WUAs and other private sector operators while retaining nonetheless its regulatory and oversight responsibilities. The subsidiarity principle of agricultural water resources management suggests that water management and scheme operation and maintenance should take place at the lowest appropriate governance level for the primary reasons that:

- The governance level can be reduced to reflect local environmental and social characteristics, that would otherwise cross administrative boundaries;
- Decentralization promotes community and stakeholder engagement when decision-making is localized;
- Inefficiencies are reduced by eliminating reliance on central government bureaucracies and budgetary constraints;
- Decisions are made as close as possible to those that would be affected by them; and
- Laws, by-laws and institutions can be adapted to reflect localized conditions.
- The successful implementation of any decentralization strategy is heavily dependent on dedicated financial resources and human resource capacity. Although this policy is intended – in part - to result GIDA's financial autonomy, the government is nonetheless obliged to resource GIDA adequately during the transition. A financially sustainable GIDA, with a wealth of human capital would be able to satisfy the basic conditions required to implement the partial or complete devolution of the O&M responsibilities of its schemes to the private sector.
- Equally, other key institutions like the Water Resources Commission (WRC), Environmental Protection Agency (EPA), Metropolitan, Municipal and District Assemblies (MMDAs), Ministry of Food and Agriculture (MOFA) and the Ministry of Finance (MoF) should contribute, via their operational relationships with GIDA, towards its ongoing modernization.

2.6 POLICY IMPLEMENTATION STRATEGY

Preamble

This section sets out the component measures needed to achieve the seven sub-sector thrusts/objectives.

2.6.1 Increase Rates of Agricultural Productivity and Sector Growth

2.6.1.1 To increase the coverage of agricultural water management infrastructure

- (a) A National Irrigation Development Master Plan (NIDMAP) will be formulated
- (b) The area under economically advantageous irrigated agriculture will be expanded
- (c) Land will be consolidated wherever practical and equitable
- (d) Improved drainage service delivery will be provided where needed across the sub-sector typology

2.6.1.2 To increase total factor productivity of the sub-sector

- (a) Water delivery precision will be increased and sustained as a result of improved operation and maintenance and full recurring cost recovery
- (b) State of the art agricultural practices will be required on all irrigation schemes
- (c) Land levelling will be undertaken where needed in order to increase physical water use efficiency
- (d) Awareness and capacities will be raised with respect to ways, including value addition, by which total factor productivity can be maximized in irrigated agriculture
- (e) Collaboration will be improved with other sector ministries and agencies and the research and private sector (NGOs and Farmer Based Organizations)
- (f) A system of productivity based metrics, supported by adequate data resources, will be developed and maintained for sub-sector monitoring purposes

2.6.1.3 To establish innovative financial instruments that promote diversification and investment in high input/high output farming systems

- (a) Existing agricultural production subsidies will be replaced with stepped and time-bound subsidies that reduce the perceived risks of crop diversification and sub-sector commercialization
- (b) The Ghana Incentive Risk Sharing program will be expanded to cover small farmers
- (c) Small farmers will be encouraged as assisted to adopt of high value farming systems and enabled to access better markets and participate in value addition

2.6.2 Remove or Mitigate Financial Constraints

2.6.2.1 To establish innovative financial instruments for improved agricultural production

- (a) Collaborate with other sector ministries, agencies, the research and private sectors, credit sector and development partners for the purpose of identifying and evaluating innovative production financing instruments and collateral systems
- (b) Establish innovative production financing and collateral systems
- (c) Increase small farmer adoption of high value farming systems and enable them to access better markets and participate in value addition

2.6.2.2 To reduce costs and increase the profitability of agricultural production

- (a) Raise awareness and capacities with respect to ways by which to reduce recurring and production costs in irrigated agriculture
- (b) The Ghana Incentive Risk Sharing program will be expanded to facilitate the development and promotion of risk mitigating instruments such as crop insurance and better market intelligence

2.6.2.3 To reduce the need for and scale of state financing to the sub-sector

- (a) GIDA will study, assess and adopt financing options that allow it to become financially autonomous
- (b) Innovative financial instruments that facilitate self-financed irrigation infrastructure/equipment and small farmer participation in value chains will be identified, adapted and developed

2.6.3 Improve Socio-economic Engagement with Land and Water Resources

2.6.3.1 To achieve socio-economic transformation in the sub-sector

- (a) Increase small farmer adoption of high value farming systems and enable them to access better markets and participate in value addition
- (b) Government will facilitate the transition to higher value farming systems by sharing the perceived risks during the transition period

- (c) Collaboration will be improved with other sector ministries and agencies and the research and private to identify reliable markets for high value crops and potential value chains, preferably domestic value chains
- (d) Awareness and capacities will be raised with respect to ways, including value addition, by which total factor productivity can be maximized in irrigated agriculture
- (e) Access to safer ground water or safer irrigation practices will be promoted in areas characterized by otherwise marginal-quality water is available.
- (f) The irrigated agriculture sub-sector will be provided with support or leverage infrastructure such as roads, cold chains and public go-downs etc.

2.6.3.2 To reduce state responsibility for scheme operation and maintenance

- (a) A holistic understanding of service delivery and capacity building will be strengthened across the board
- (b) Communities, including women, youth and the vulnerable, will be fully represented at all stages of an irrigation scheme development cycle, including leadership of WUAs
- (c) Water user capacity for irrigation management transfer will be strengthened
- (d) WUA capacity for estimating recurring costs and for setting and collecting service charges will be strengthened
- (e) WUA roles and regulations will be better enforced

2.6.3.3 To make the best use of farmer managed irrigation

- (a) Management responsibilities will be transferred to WUAs/commercial service providers
- (b) Participatory rehabilitation/upgrading of existing schemes will be undertaken as part of IMT to WUAs

2.6.4 Improve Security of Tenure and Access to Land

2.6.4.1 To facilitate and expedite access to land for irrigation and other forms of agricultural water management

- (a) The supply of land for irrigation development will be increased by a combination of several institutional measures including the establishment of a "land bank".
- (b) The land bank will be regularly updated for use with potential commercial investors
- (c) Irrigation schemes, across the sub-sector typology will be given a fast track with respect to land allocation

2.6.4.2 To increase security of tenure

- (a) Leases and land rights will be better enforced

2.6.5 Modernize and Commercialize the Irrigation Support Services

2.6.5.1 To improve the nature and scope of service delivery in the sub-sector

- (a) A holistic understanding of service delivery and capacity building will be strengthened across the board
- (b) Linkages with MoFA will be strengthened, especially at the district level

2.6.5.2 To improve and better enforce the regulatory framework

- (a) Service delivery will be regulated in terms of quality, timeliness, accountability, adaptability and value for money
- (b) Quality standards with respect to the provision of all services will be revised, strengthened and enforced
- (c) A transparent system of water rights and entitlements with rational durations will be established.
- (d) An evolving and adaptable regulatory framework will be applied across the typology as a component of service delivery
- (e) All commercial schemes, including PPPs will be subject to the same regulatory framework as any other irrigation scheme

2.6.5.3 To better define and finance GIDA's role in service provision

- (a) The GIDA Board and its responsibilities will be revised to reflect a more commercialized modus operandi, more in line with a commercializing agriculture sector.
- (b) The revised GIDA mandate will be fully implemented
- (c) GIDA's future activities at scheme level will be included in the scheme's operational cost budget and remunerated directly from scheme finances on a cost-plus basis
- (d) Prepare and promulgate a Legislative Instrument to define the nature and scope of the services to be provided by GIDA's along with its mode of performance and the scale of fees/charges for such services

2.6.6 No Public Private Partnerships and Limited Other Forms of Private Section Investment in Irrigation Service Delivery

2.6.6.1 Public private partnerships

- (a) GIDA will be responsible for representing Government throughout a PPP's implementation and operational cycle as defined below
- (b) GIDA will be the Public equity holder in sub-sector PPPs and will share as such all associated risks and benefits in proportion to its equity
- (c) GIDA will establish and regularly update a dossier of PPP opportunities, including estimates of pre-appraisal performance indicators
- (d) GIDA will establish a dedicated PPP Unit within its Planning and Coordination Unit where it will maintain close and continuous liaison with the same unit's Irrigation Promotion Team
- (e) Stronger links will be established between the Ghana Investment Promotion Centre and GIDA's Irrigation Promotion Center
- (f) GIDA's PPP Unit will meet with representatives of the Ghana Investment Promotion Centre every time the dossier is updated to alter its staff to any new entries and to review progress (if any) with respect to prior entries.
- (g) GIDA's access to natural resources as a partner in a PPP will be subject to the same regulations as any private entity
- (h) As a cross-cutting measure smart incentives will be offered to potential investors in PPPs

With respect, as to how a PPP is put in place, this policy is predicated on the assumption that the evolution, establishment and operation of a sub-sector PPP in Ghana will require eight distinct steps (see Figure 2).

Figure 2 Financial Steps in the Evolution of a PPP

| STAGE | STAKEHOLDER TRANSACTIONS | | | |
|---|---------------------------------------|------------------------------|--|--------------------|
| | GIDA | Investor | External Financier (if necessary) | the venture itself |
| 1 Scheme identification, PPP conceptualization and allocation of equity. | financed by either or both as decided | | | |
| 2 Prefeasibility study including EIA/SIA | financed according to equity | financed according to equity | | |
| 3 Sourcing of external funds (if necessary) | financed according to equity | financed according to equity | Agree financing needs and transaction model for capex and opex | |
| 4 Pre-investment appraisal/due diligence assessment | financed according to equity | financed according to equity | "in-house" cost | |
| 5 Design | financed according to equity | financed according to equity | financed to whatever extents was agreed at Stage 3 | |

| | | | | | |
|----------|----------------------------------|--|--|---|--|
| 6 | Implementation | financed according to equity | financed according to equity | financed to whatever extents was agreed at Stage 3 | |
| 7 | Operation and Maintenance | financed according to equity if outsourced, or as a reimbursable expense if GIDA provides service | financed according to equity | Working capital financed in line with arrangements agreed during Stage 3 (possibly subject to revision) | eventually to be entirely paid from revenues |
| 8 | Allocation of revenues | | | | |
| | interest | | | received by external financier | Covered directly by the PPP's revenues |
| | amortization | paid according to equity | paid according to equity | received by external financier | |
| | depreciation | sinking fund provision provided according to equity | investor's share of depreciation is written off against tax, sinking fund provision provided according to equity | | sinking fund provision for eventual major repairs etc. retained by the venture |
| | tax | GIDA would not pay tax, as all its revenues will be used to finance its broader service delivery and regulatory duties | tax on pre-tax profits paid to Government | | |
| | profits ex-tax | | receives a dividend | receives a dividend if required by the agreed transaction model | re-invested according to need and/or opportunity |

- For Stage 1, there are no hard and fast rules with respect to who pays – it is simply a matter of who is promoting the venture²¹. Clearly, financing the preparation of any such venture for inclusion in GIDA's dossier of opportunities will be GIDA's responsibility. But it is also possible that a potential investor might see an attractive opportunity that is not in the dossier and proceed to develop it with or without GIDA's initial support.
- By the start of Stage 2, the proposed PPP will have been formulated in outline and equity arrangements agreed. Hence the costs of Stage 2 will be shared by GIDA and the commercial partner in proportion to their equity holdings.
- Stage 3 will also be financed by GIDA and the commercial partner in proportion to their equity unless the needs for an external financier is anticipated, in which case it will be necessary to identify potential sources of finance and agree credit levels and transaction models with them - and this may apply to operating as well as investment capital. As a policy principle, priority will be given to the identification and mobilization of a suitable blended financing option.
- For Stage 4, once again the same arrangements will apply as for Stage 2, except that it has assumed that some or all any external financier's due diligence costs will be covered by themselves "in-house" – although in some cases a small fee may be payable.
- Costs for Stages 5 and 6 will be covered by each party to the PPP as per Stage 2, while external finance will be utilized according to agreements established at Stage 3 and confirmed during Stage 4.
- Financing of Stage 7 will be an evolving process whereby the venture will be expected to become self-financing sooner rather than later. However, given the realistic assumption that some working capital will be required in the venture's early years, this will be provided by the parties to the PPP according to the pre-agreed equity arrangements, plus any external support according to Stage 3 agreements and any revisions thereto. In addition, if GIDA is engaged to assist with any aspect of operation and maintenance, it will do so based on a reimbursable expense.

²¹ The term "venture" is used advisedly, because as already mentioned, a PPP need not involve investment in a physical scheme.

- Stage 8 - the allocation of revenues - has five components:
 - Financing costs, if any (interest and amortization) will be paid directly to the external financier directly by the PPP as an operating cost
 - Depreciation will be estimated according to prevailing norms and in the case of the investor offset against tax as per normal business practice, but in addition, it may be decided to retain a sinking cost provision on the venture's books and held in reserve against major future repair and replacement costs.
 - Tax will then be paid on the pre-tax profits accruing to the investor's share of the venture – but this will not apply to GIDA as its share of the profits will go towards the costs of its broader service delivery and regulators roles.
 - Finally, both GIDA and the investor will receive a dividend as dictated by the PPP's board. In addition, any external financier will also receive a dividend if provided for the in the transaction model²². Finally, it may be decided by the partnership to reinvest a portion of profits in scheme expansion, diversification, or indeed a new and separate venture.

2.6.6.2 Increased other commercial investments in irrigated production

- (a) In association with the GIPC, GIDA will assist potential investors to identify, register, develop and implement their proposed ventures and will receive a fee for providing this service
- (b) The irrigated agriculture sub-sector will be provided with leverage and/or support infrastructure such as bulk water infrastructure or roads, cold chains and public go-downs respectively etc.
- (c) GIDA will establish and regularly update a dossier of investment opportunities, including estimates of pre-appraisal performance indicators
- (d) As a cross-cutting measure smart incentives will be offered to potential investors in irrigated production

2.6.6.3 Increased other commercial investments in sub-sector service delivery

- (a) Government will welcome any form of well-regulated commercial irrigation service provision
- (b) Sub-sector service provision contracts can be given to commercial sector entities with respect to the operation and maintenance of publicly financed infrastructure
- (c) Private sector awareness will be created for private investors not only with respect to scheme operation and maintenance but also along supply and market chains
- (d) As a cross-cutting measure smart incentives will be offered to potential investors in sub-sector service delivery.

2.6.7 Environmental Degradation Associated with Irrigated Production

2.6.7.1 To avoid or mitigate the risks of environmental degradation

- (a) An evolving and adaptable suite of environmental regulations will be applied across the typology in terms of both production and service delivery
- (b) All commercial schemes, including PPPs, will be subject to the same regulatory framework as any other irrigation scheme
- (c) Engineering designs will be consistent with the need for efficient and sustainable natural resource use
- (d) Participatory catchment area protection will be introduced and required in vulnerable systems

2.7 INSTITUTIONAL FRAMEWORK FOR POLICY IMPLEMENTATION

GIDA's future role and mandate in Ghana's changing irrigation sub-sector is largely defined by a World Bank financed modernization and restructuring program²³. Although substantive, this program

²² Such as perhaps an equity buy-back instrument and noting that an external financier's tax liabilities are not the PPPs responsibility, and accordingly are not addressed here.

²³ In progress at the time of writing.

acknowledges an ongoing need for a national institutional framework responsible for planning and implementation of irrigation/AWM schemes. And because of Ghana's overwhelming predominance of smallholder farming, even the "new" GIDA must retain its focus on the smallholder production for at least the short and medium terms²⁴, and most likely into the long term.

Essentially and simply stated therefore, GIDA's role should be that of the irrigation sub-sector's policy implementing agency. As such and as a focal point and public-sector policy implementation agency, GIDA will undertake activities that would include **sector** regulation and facilitation, and the planning and implementation of state financed and PPP **schemes** (the sub-sector typology refers in sub-section 1.3) while providing advice and supervision as required. In other words, therefore, GIDA will provide services to and exercise oversight of the irrigation sub-sector and its stakeholders, whether such schemes are managed directly by the GIDA or by some other body or persons.

2.7.1 GIDA's Mandate

GIDA is a Ghanaian public-sector organization set up to promote agricultural growth through the provision of irrigation infrastructure and other agricultural water management technologies and services. The current modernization exercise is intended to transform it into an organization:

- providing a cost-effective service delivery to and participating in an agricultural water management sub-sector, comprising both public and private sector stakeholders; and,
- refocusing its operations from small scale subsistence oriented farming systems towards high-value added commercial agriculture that contributes to national economic growth.

The process also includes the introduction of a more demand driven, service oriented approach and increased financial and operational autonomy, which along with a new mandate transforms GIDA into an autonomous, flexible, proactive, sub-sector planner, regulator, advisor, supervisor, facilitator, service provider and investor.

The four main objectives driving the modernization process are:

- the need for an enabling environment (including modernized institutional design and mandate for GIDA);
- AWM service delivery on a full recurring cost recovery basis;
- Improved financial sustainability of GIDA; and
- On-going state investments in infrastructure, including leverage infrastructure.

2.7.2 Key features of GIDA's Proposed Structure

Based on the new vision, mission and core values of the new GIDA along with the application of the principles of organizational design, a revised structure that adds value to the previous structures have been proposed. The new organogram captures the following:

- the Board of Directors;
- corporate planning, regulation, monitoring and evaluation department;
- a regulatory function²⁵; and
- a management information systems unit.

In addition, innovations introduced to engender flexibility and allow GIDA better to respond potential environmental challenges that were added on include:

- an Information Resource Centre;
- an Irrigation Promotion Centre;
- 2 sub-organograms in response to Construction Supervision and Scheme Management; and,

²⁴ See Appendix 2a.

²⁵ Not included in the original modernization concept, but included here at GIDA's request.

- An Enhanced Human Resource Management and Administration Department.

Further key details of the GIDA structure as **currently** proposed in the modernization plan require:

- A compact 7-member Board of Directors at the apex of the structure. The board is served by a Solicitor Secretary who heads the Legal Services unit and oversee the operations of the Estate Unit as well.
- The Solicitor Secretary works through the Chief Executive Officer (CEO) because of added functions such as the preparation of Scheme Management Entities (SMEs) contracts and the supervision of estates.
- The second layer is made up of the CEO and two deputies. The CEO will be supported by a small Management Information Unit as well as an Information Resource Centre.
- An Internal Audit Unit as well as a new Human Resource Management and Administration department complete the offices under the CEO.
- The two main divisions, namely Engineering and Oversight of Scheme Management, are to be headed by two Deputy Chief Executive Officers (DCEOs).

The terms “hard” and “soft” can be used in the context of both institutions and infrastructure – in this context:

In the institutional sense,

- “hard” institutions are organizational in nature and include public sector institutions in the form of relevant official stakeholders at every level of the civil administrative hierarchy, plus where water is managed on a basin basis, at every level of the hydrocracy. They will also include farmer organizations and private sector service providers and investors in service infrastructure.

and

- “soft” institutions are the policies, laws, regulations and incentives that ensure the smooth and equitable running of a sector, attract new players into it and guarantee the sustainability of the natural resource base on which it depends.

In the infrastructural sense,

- “hard” infrastructure self-evidently comprises the physical works needed to conserve and manage water and deliver it wherever needed in an agricultural value chain from seed to spoon. Such infrastructure can be either “built” or “natural”

and

- “soft” infrastructure comprises all the hard institutions which are required to maintain the functionality of the water and food sectors and include institutions concerned with the environment; water resource management, development and conservation; economics; socio-cultural issues; agricultural extension; trade; the financial system; governance and the enforcement of regulations

However, as will be seen in Appendix 2a, further revisions are recommended with respect to GIDA’s defining legal concepts and constructs.

A consolidated²⁶ organogram is presented below as **Figure 3**. It has been developed in consultation with GIDA and differs somewhat from that provided in the “Draft Final Report: Consulting Services to Provide a Range of Human Resource Technical Services in View of Modernization of Ghana Irrigation Development Authority”²⁷, which did not for instance, include a provision for regulatory services. This is now included as a placeholder in the figure²⁸, as have the proposed Land Management Committee and units dedicated to PPPs, research and development and training and manpower. The organogram identifies these new units by means of bolder borders.

2.7.3 Irrigation Development Path

As per the preamble to section 3, this revised policy is predicated on a suite of four thrusts/objectives that between them are expected to reinvigorate and commercialize the irrigation sub-sector which itself has implications for both the hard and soft institutions involved – see text box for definitions.

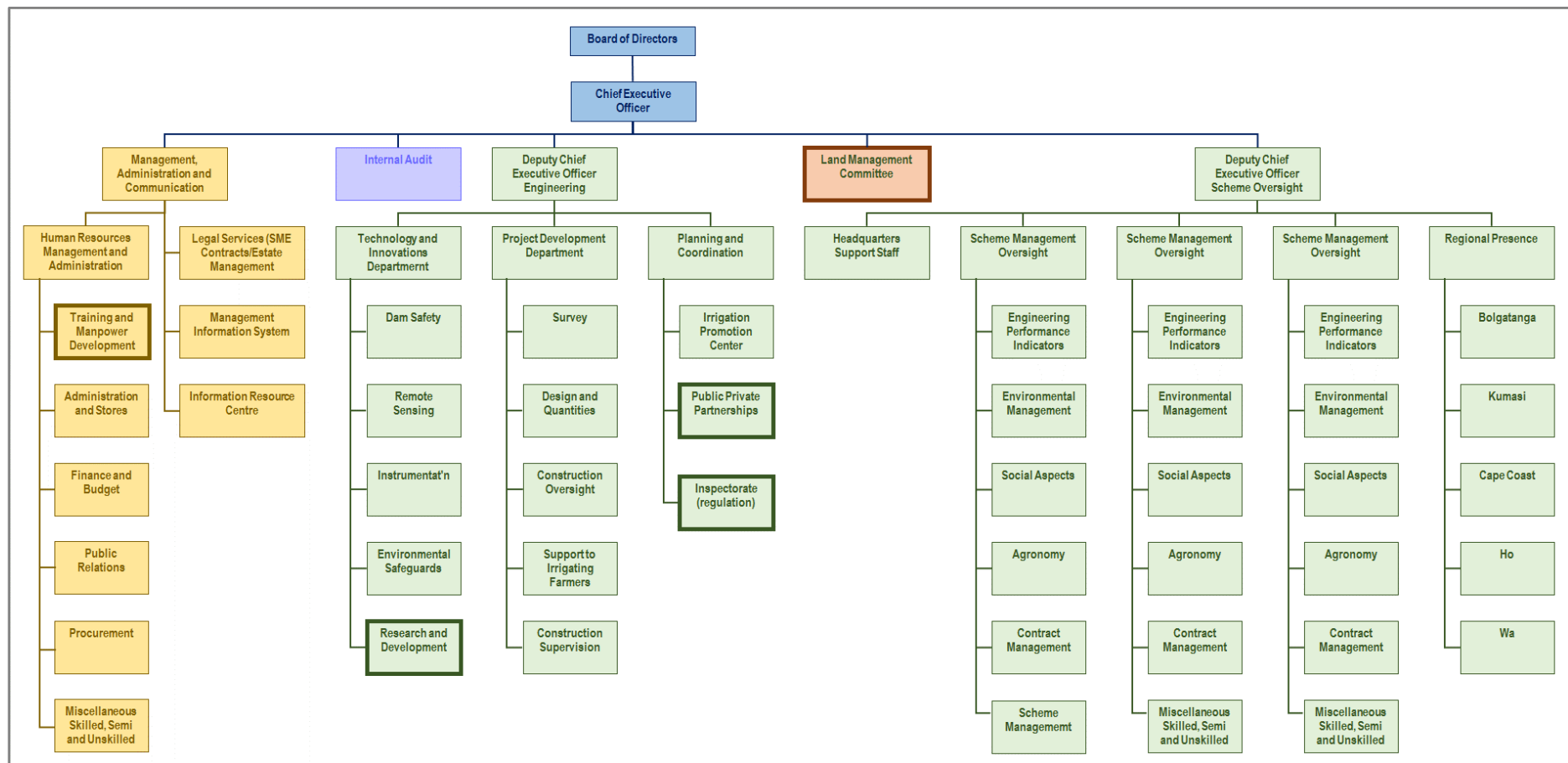
Although detailed implementation planning is beyond the scope of policy, which in any case must be ratified and promulgated -a/o- as the basis for such planning, an indicative “Road Map” suggesting possible programmatic foci for the achievement of the thrust/objectives is presented in Appendix 3 where each is linked to one or more time frames.

²⁶ Consolidated because it aligns the current organogram with the new ideas emerging from this study.

²⁷ GIMPA 2015

²⁸ At GIDA’s request.

Figure 3 Consolidated GIDA Organogram



There are three-time frames and they assume that policy implementation begins in 2018 as follows:

- **Short Term (years 1 to 3)** In order for Ghana to position itself better with respect to both investor interest and new market opportunities while avoiding an all but impossible step-change, the short-term focus should be a “smooth transition” in with respect to all hard and soft institutional changes prescribed by this revised policy and should be accomplished within 3 years
- **Medium Term (years 4 to 13)** is focused on the achievement of the relevant SDGs and assumes that the necessary institutional changes are initiated in 2018 and completed by the end of 2020, whereupon and taking advantages of the changes, the medium term takes the sub-sector to 2030 which currently is the SDG final deadline
- **Long Term (years 14 to 33)** which takes the sub-sector to 2050. This, although largely speculative, is widely assumed to coincide (+-) with global “peak population”, by which time the architecture of the global agriculture sector is expected to be significantly more trade based (with respect to commodities/virtual water), with current trade barriers dismantled allowing agricultural commodities to be grown in areas with productive comparable advantage. By this time, Ghana should be supplying global markets with raw and processed staple, high value and industrial crops.

The road map itself has five, non-sequential pathways, which between capture and strategically repackage this policy’s five thrusts/objectives:

- **Path 1: The Institutional Framework**, which includes both hard and soft institutions, both of which have elements requiring reform, reformulation or reconfigurations in order to the enabling environment for the other paths.
- **Path 2: Service Provision and Irrigation Management Transfer**, which includes the rehabilitation and (where necessary) upgrading of existing state funded schemes, capacity building and the crafting of full recurring cost recovery mechanisms and maximized capital cost recovery.
- **Path 3: Socio-economic Transformation**, which is focused on the achievement of agriculture sector SDGs
- **Path 4: Infrastructure**, across the typology and hence financed by non-state, state and blended capital resources according to availability and aptness.
- **Path 5: Economically Advantageous Agriculture**, which includes both increased trade and value addition and is intended to facilitate increased returns in domestic markets and the realization of Ghana’s potential as a major international trader of both raw and processed agricultural commodities.

CHAPTER 3. THE PROPOSED DRAFT BILL & THE REVIEW OF THE NATIONAL IRRIGATION POLICY, STRATEGIES AND REGULATORY MEASURES FOR THE IRRIGATION SUB-SECTOR OF GHANA

PART I. PROPOSED DRAFT GIDA BILL

The major piece of legislation is the Irrigation Development Authority Act, 1977 (SMCD 85) as amended by SMCDs 89, 127. The law shall be amended and designated **Ghana Irrigation Development Authority Act** (hereafter, GIDA Act).

3.1 THE PROPOSED GIDA ACT

Section 1—Establishment of GIDA

GIDA is established as a body corporate with perpetual succession and a common seal and may sue and be sued in its corporate name. Capable of acquiring movable and immovable property. Property may be acquired for and on behalf of GIDA by Government and cost defrayed by GIDA.

Section 2 - Functions of GIDA

- a. To formulate plans for the development of irrigation, including, but not limited to individual micro and small irrigation; community-managed small-to-medium scale irrigation; large-scale irrigation system modernization and development; market-oriented irrigation on a Public Private Partnership (PPP) basis; and enhanced management in rain-fed agriculture.
- b. To develop the water resources of the country for irrigated farming, livestock improvement and fish farming.
- c. To execute comprehensive programs for the effective use of irrigated lands in co-operation with other agencies involved in providing extension services to farmers;
- d. To carry out land-use planning in areas earmarked for development in order to conserve the soil and water resources in those areas;
- e. To layout the environs of each project area for housing purposes and for the provision of other social amenities within the framework of the public, private partnership arrangements.
- f. To co-operate with other agencies for safeguarding the health and safety of all people living within and around irrigation project areas;
- g. (i) To regulate the activities of both public and private stakeholders in the irrigation sub-sector, including but not limited to: design, operation and maintenance of schemes, monitoring, supervision and evaluation, and ensuring good agricultural practices and sanitation at scheme sites.
- h. (ii) Applications for water to be used for irrigation purposes shall be lodged first with GIDA. If GIDA is satisfied with the application, it may then submit same to the WRC for approval.
- i. (iii) In collaboration with relevant agencies/stakeholders, promote and facilitate PPP policies in irrigated agriculture.
- j. To undertake such other activities as are incidental or conducive to the discharge of its functions under this Act.

Section 3—The Board

9- member Board which is the governing body. It shall comprise:

- A chairperson appointed by GoG
- CEO of GIDA
- A representative each from:
 - Ministry of Lands and Forestry (Lands Commission)
 - WRC
 - MLGRD (District Assemblies)
- Ministry of Finance
- 2 Commercial Irrigation farmers (Representing the Northern and Southern sectors)

- 1 small scale farmers' representative
- 1 woman engaged in irrigation farming or irrigation value chain.

Section 4—Tenure of Office of Members of the Board

The Chairman and other members of the Board other than the CEO shall be appointed for 4 years; subject to re-appointment for a further term of 4 years only.

Section 5—Qualifications for Appointment as Members

- (1) No person shall be qualified to be appointed or continue to be a member of the Board if: declared insolvent, of unsound mind, guilty of serious misconduct in relation to duties, or a convicted felon.
- (2) A member shall be a person knowledgeable and/or experienced in areas relevant to the work of GIDA, including, but not limited to, finance, agriculture, law, business management and engineering.

Section 6—Chief Executive Officer and Deputy Chief Executive Officers

- (1) The Chief Executive Officer shall be appointed by the President pursuant to Article 195 of the Constitution for a five-year term, subject to an extension for an additional term of 5 years only. Shall be designated; "Chief Executive Officer" in consonance with current practice. He or She should have:
 - a recognized university degree in Engineering/Agricultural Economics/Business Management or related fields; and
 - at least a master's degree in management-related area (e.g. Business/Public Administration) and Social Sciences, etc.
 - ideally, corporate membership of a recognized professional body; and
 - a minimum of fifteen (15) years in irrigation or operational environment with five (5) years at top management position.
- (2) The Chief Executive Officer shall be charged with the direction of the business of the Authority, its administration and organization and control of employees of the Authority.
- (3) The CEO shall be assisted by two deputies – an engineer and an agriculturalist appointed by the President pursuant to Article 195 of the Constitution.
- (4) The Deputy Chief Executive Officer (Engineering) should have:
 - a recognized university degree in Engineering (e.g. Civil/ Mechanical / Electrical / Chemical, Irrigation) or related field; and
 - at least a master's degree in management related area (e.g. Business/Public Administration) and Social Sciences, etc.
 - ideally, corporate membership of a recognized professional; and
 - a minimum of twelve (12) years in irrigation or operational environment with three (3) years at top management position.
- (5) The Deputy Chief Executive Officer (agriculture/Scheme Management) should have
 - a recognized university degree in Agricultural Science, Agronomy or related fields; and
 - at least a master's degree in management related area (e.g. Business/Public Administration) and Social Sciences, etc.
 - ideally, corporate membership of a recognized professional body; and
 - a minimum of twelve (12) years in irrigation or operational environment with three (3) years at top management position.

Section 7—Meetings of the Board

- (1) The Board shall hold meetings at such places and times as the Chairman may determine, so however that the Board shall meet at least once in every three months.

- (2) The Chairman shall preside at meetings. In his absence, a person elected by the members of the Board present from amongst themselves shall preside.
- (3) The quorum at any meeting of the Authority shall be five.
- (4) The decisions at meetings of the Board shall be adopted by a simple majority of the votes of members present and in the case of equality of votes, the Chairman or the person presiding shall have a second or casting vote.
- (5) The members of the Board shall be paid in respect of attendance at meetings of the Board, such transport, subsistence and other allowances as determined by the Minister in consultation with the Minister for Finance.
- (6) The Board may co-opt any person or persons to attend any meeting of the Board as adviser or advisers. However, no person so co-opted shall have the right to vote on any matter coming before the Board for decision.
- (7) The validity of any proceedings of the Board shall not be affected by any vacancy amongst the members thereof, or by any defect in the appointment of a member thereof.
- (8) Any member of the Board who has any interest in any company or undertaking with which the Authority proposes to make any contract or has any interest in any contract which the Authority proposes to make shall disclose in writing to the Board the nature of his interest and shall, unless the Board otherwise directs, be disqualified from participating in any deliberations of the Board on the contract and shall, in any case, be disqualified from voting on any decision of the Board concerning such contract and any member who violates the provisions of this subsection shall be liable to be removed from the Board.

Section 8- Land Management Committee

- (1) A Land Management Committee (LMC) based at GIDA headquarters shall be established as a collaborating vehicle to address the bottlenecks/challenges in land acquisition, tenure and security in irrigated agriculture. Membership of the LMC shall comprise:
 - The CEO of GIDA or his representative as the chair;
 - a representative each from;
 - MoFA,
 - the Lands Commission,
 - the WRC and
 - the district assemblies in which the scheme lies or land is to be acquired. (These, as planning authorities will be coopted in each appropriate case).
- (2) The functions of the LMC shall include:
 - oversight of LACs at Scheme sites;
 - identification of suitable lands for commercial irrigation;
 - creation of land banks for allocation to farmers;
 - consideration and approval of applications for land in GIDA irrigation schemes or lands;
 - resolution of problems/bottlenecks in the registration of acquired lands from GoG/GIDA lands; and
 - any activity reasonably or incidental to the foregoing

Section 9—Funds of the Authority

The Government may provide to the Authority as working capital and as money required for carrying out its functions, such sums as the Government may determine. Other sources of funding shall include:

- Annual Parliamentary appropriations

- Revenue from GIDA's operations
- Loans
- Grants and Gifts
- A percentage of revenue accruing from agricultural exports as determined by Government.

Section 10—Borrowing Powers

- (1) In order to enable the Authority to meet expenditure of a capital nature for the discharge of its functions, the Authority may obtain loans and other credit facilities on the guarantee of the Government from such Banks and other financial institutions as the Minister responsible for Finance may approve.
- (2) The Authority may borrow temporarily, by way of overdraft or otherwise, such sums as it may require for meeting its current obligations or discharging its functions.
- (3) The Minister responsible for Finance may on behalf of the Government guarantee the performance of any obligation or undertaking by the Authority under this section.

Section 11—Reserve Fund

The Authority shall establish and maintain by annual payments from its earnings a depreciation fund for the replacement of fixed assets which have become worn out or become obsolete, and shall establish such capital sinking funds as may be required for expansion and development financing.

Section 12—Staff of the Authority

- (1) The Authority may from time to time engage such employees as may be necessary for the efficient and proper discharge of its functions under this Act.
- (2) The Authority may also engage the services of such consultants and advisers as the Authority may, upon the recommendations of the Chief Executive Officer determine.
- (3) The Board shall on the advice of the CEO be responsible for the appointment, promotion, discipline and removal of the employees of the Authority other than the Deputy CEOs.
- (4) The Board, acting on the recommendation of the Chief Executive Officer shall be responsible for the discipline and removal of the employees of the Authority other than the Deputy Chief Executives.
- (5) Public Officers may be transferred or seconded to the Authority and may otherwise give assistance thereto.
- (6) The employees, consultants and advisers of the Authority other than the Deputy Chief Executives shall be engaged on such terms and conditions as the Board may on the recommendations of the Chief Executive Officer determine.

Section 13—Secretary of the Authority

- (1) The Authority shall have an officer to be re-designated as Solicitor Secretary. He will be head of the Legal Services unit and in addition oversee the operations of the Estate Unit. He will report to the CEO.
- (2) The Solicitor Secretary shall act as Secretary to the Board and shall, subject to the directions of the Board, arrange the business for and cause to be recorded and kept minutes of all meetings of the Board.
- (3) He/she shall also perform such functions as the Board may by writing direct or as the Chief Executive Officer may by writing assign to him.

Section 14—Internal Auditor

- (1) The Authority shall have an Internal Auditor.
- (2) Subject to the provisions of this Act, the Internal Auditor shall be responsible to the Chief Executive Officer for the performance of his functions.
- (3) As part of his functions under this Act, the Internal Auditor shall, at intervals of three months, prepare a report on the internal audit work carried out by him during the period of three months immediately preceding the preparation of the report, and submit the report to the Chief Executive Officer.
- (4) Without prejudice to the general effect of subsection (3) of this section, the Internal Auditor shall make in each report such observations as appear to him necessary as to the conduct of the financial affairs of the Authority during the period to which the report relates.
- (5) The Internal Auditor shall send a copy of the report prepared by him to each of the following:
 - The Minister for Food and Agriculture
 - The Minister for Finance
 - The Auditor-General
 - State Enterprises Commission
 - The Chairman and each of the other members of the Board.

Section 15—Budget

- (1) The Chief Executive Officer shall, not less than three months before the commencement of each financial year, cause to be prepared and submitted to the Board for its approval, proposals for an annual budget of expected revenue and expenditure for that financial year.
- (2) The Board shall consider the proposals for the annual budget submitted to it by the Chief Executive Officer and shall, subject to any modifications determined by the Board, approve the annual budget of the Authority for that financial year.

Section 16—Authority to keep Proper Accounts

The Authority shall keep proper books of accounts and other records; and the account books and records shall be in such form as the Auditor-General may approve.

Section 17—Financial Year of the Authority

The Financial Year of the Authority shall be same as determined by Government.

Section 18—Audit

- (1) The books of accounts of the Authority shall be audited each year by the Auditor-General or an auditor appointed by him.
- (2) The Authority shall pay in respect of such audit such fee (if any) as the Auditor-General and the Board may agree or in case of failure to agree the Minister responsible for Finance may prescribe.
- (3) A copy of the Report shall be forwarded by the Board to the Minister for Food and Agriculture.

Section 19—Annual Report

The Authority shall not later than six months after the end of each financial year submit to the Minister an annual report of its operations during the preceding financial year and such report shall include the statement of accounts and the Auditor-General's report.

Section 20—Transfer of Assets and Liabilities

There shall be transferred and vested in the Authority such assets and liabilities as the Government may by executive instrument determine.

Section 21—Regulations and Bye-laws

The Minister may on the advice of the Board by Legislative Instrument make regulations for:

- Prohibiting, restricting or regulating the use of any reservoir created for any irrigation project taking the national interest into consideration;
- Fixing water rate and land improvement charges; and
- For carrying into full effect, the objects and functions of the authority.

Section 22—Exemption

The Authority shall be exempted from the payment of such taxes, rates and duties as the Minister responsible for Finance may in writing approve.

Section 23—Minister to give Directions

Subject to the provisions of this Act the Minister may give directions to the Authority on matters of policy and the Authority shall comply with such directions.

Section 24 – Interpretation

GIDA means The Ghana Irrigation Development Authority established under section 1 of this Act

Minister means The Minister responsible for Food and Agriculture

Public Private Partnership (PPP) means a contractual arrangement between a public entity and a private sector party, with clear agreement on shared objectives for the provision of public infrastructure and services traditionally provided by the public sector. Usually, in a PPP arrangement, the private sector party performs part or all a government's service delivery functions, and assumes the associated risks for a significant period. In return, the private sector party receives a benefit/financial remuneration (according to predefined performance criteria), which may be derived entirely from service tariffs or user charges; entirely from Government budgets, which may be fixed or partially fixed, periodic payments (annuities) and contingent; or a combination of the above. Source: GoG/MOFEP National Policy on Public Private Partnership (PPP) (June 2011).

Section 25- Repeals/Revocations

Irrigation Development Authority Act, 1977 (SMCD 85) as amended by SMCDs 89, 27. Despite the repeal all acts, actions taken under SMCD 85 as amended shall remain valid.

PART 2. REVIEW OF THE NATIONAL IRRIGATION POLICY, STRATEGIES, AND REGULATORY MEASURES FOR THE IRRIGATION SUB-SECTOR OF GHANA

3.2 EXECUTIVE SUMMARY

- GIDA is currently responsible for the organization and management of public irrigation schemes in the country, including operation and maintenance at certain levels of the conveyance system, determination and collection of water levies (irrigation service charge) and the provision of extension services. A few of the early irrigation schemes (e.g. Tono and Veve) constructed in the early seventies were managed through management contracts with expatriate firms, and fully funded by the government of Ghana.
- Currently there are about fifty-six (56) irrigation schemes all over the country, constructed by the Authority and covering a total area of 10,380 hectares (ha). Most of the schemes constructed under both the Small-Scale Irrigation Development Project (SSIDP) and the Small Farms Irrigation Project (SFIP) remain in different stages of completion.

- A stakeholder analysis undertaken with 15 institutions to identify institutional spheres of influence and impact under the proposed framework in the modernization of the irrigation subsector identified the following as key stakeholders: MOFA (Directorate of Agricultural Extension Services and AESD), EPA, WRC, Lands Commission, GCAP, GIPC and Development Partners, MMDAs, Traditional Authorities and the financial institutions.
- A review of the current GIDA organogram as contained in the modernization document indicated some of the following as its weaknesses: A rigid structure, poor coordination, decision rights, inter-functional politics and positional basis of authority.
- New innovations introduced to ensure flexibility and better response from the structure to potential environmental challenges include:
 - An Information Resource Centre;
 - Irrigation Promotion Centre;
 - 2 sub-organograms in response to Construction Supervision and Scheme Management; and
 - Enhanced Human Resource Management and Administration Department.
 - An Inspectorate Division that would undertake Regulation, to be placed under the Planning and Coordination Department.
 - Research and Development Division to be placed under the Irrigation Technology and Innovation Department.
 - Training and Manpower Division to be clearly identified under the Human Resource Management and Administration Department.
- The thrust of the Modernization is to transform GIDA into an autonomous, flexible, proactive, subsector planner, regulator, advisor, supervisor, facilitator and public service provider.
- To regulate the activities of both public and private stakeholders in the irrigation subsector, the necessary legislation should be put in place as stated in the regulatory framework. This would include, among others, the establishment of an Act to empower GIDA to exercise this regulatory role and the development of standards for the different facets of irrigation/AWM in the country.
- The requirements for operationalizing the modernization of the Irrigation/AWM Subsector are listed as:
 - Institutional development of GIDA, capacity building of WUAs and other service providers.
 - Shift in irrigation management policy and
 - Commercialization of irrigation, with respect to PIM, IMT and PPP arrangements.
- Irrigation management transfer should involve only a limited degree of devolution of authority with some form of joint-management options depending on the prevailing circumstances.
- The 7-step process recommended for best practices in an IMT transfer are: Diagnosis, Promotion, Constitution of the WUA, Acceptance of commitments, concession title, Actual transfer of the facility and Parallel Operation.
- In the proposed management turnover system in table I, a WUA becomes a legal entity and has the authority to make its own rules and sanctions with respect to irrigation, in relation to the size and complexity of the system. The WUA may have full authority over O&M and setting water fees, however, it is recommended here that these responsibilities should be done in consultation with GIDA.
- A proposed model agreement for GIDA irrigation schemes should consider the transfer of user rights for whole small-scale irrigation and drainage schemes as well as the whole or part of a large-scale irrigation and drainage scheme (for instance a secondary or tertiary unit) to the WUAs.
- A WUAs/farming community requires support services to sustain the IMT in order to assume the new responsibilities and tasks as well to overcome constraints and to explore new income opportunities. These services include:
 - Advisory services about institutional arrangements for WUAs,
 - Establishment of organizational and financial procedures and skills,
 - Credit facilities,
 - Legal advice,
 - Marketing and maintenance procedures.

- Training and extension to develop the knowledge and skills of farmers and enable WUA officials to undertake management responsibilities and ensure more profitable irrigated agriculture.
- The basic WUA structure with roles and functions as presented in the WUA Regulations L.I. 2230, would form the basis of any structure/model that would be implemented in the country, but modified with time, based on its successful implementation, to accommodate or cater for other activities.
- The new regulation (LI 2230), was necessitated by two (2) major reasons; i) to give legal rights to farmers in the operation, maintenance and management of public irrigation schemes, which hitherto has been the sole responsibility of GIDA and to respond to GIDA's new mandate in the restructuring and modernization exercise, to undertake oversight and regulatory functions on its irrigation schemes.
- A national communication strategy should be developed to roll out the WUA concept which is to be broadened to include private irrigators.
- Training is an urgent requirement in programmes of management transfer responsibility from government agencies to farmers, and encourage WUAs to take on expanded roles in operation, maintenance and management.
- Technical and management support to WUAs should include; Institutional services to establish sound operational rules, technical support for organizing water distribution, as well as planning, implementing and monitoring maintenance works and providing managerial services for preparation of budgets, accounting and financial statements and reports.
- GIDA as the Supervising Authority, would play the primary role of facilitating the training of WUAs, and to link up with training institutions and NGOs to build the capacities of WUAs in identified areas.
- GIDA should decide on the appropriate PPP transaction models based on what exists for irrigation/agricultural water management.
- This should consider: the sort of entities it wants to participate in a PPP, the financial landscape that would be required (long term equity, equity buy-back, debt, convertible debt, affermage etc) and how any public finances are mobilized and if necessary, the passage of any enabling legislation that may be required.
- The Scheme Management Entity (SME) concept is recommended for the transfer of user rights of the large-scale irrigation schemes to the private sector.
- The success of the SME concept is hinged primarily on the capacity of the scheme to generate enough revenue to cover ISC, which includes fees of SME personnel.
- An initial funding (first 3 years operation) to SMEs to cover O&M activities on schemes would improve on the sustainability of SMEs.

3.2.1 Background and Introduction

The National Irrigation Policy developed in 2010 and promulgated in 2011, with the support of Food and Agriculture Organization (FAO) and the International Water Management Institute (IWMI) sought to address some challenges faced by the irrigation/AWM subsector. This policy however must be reviewed against the background of the Pre-Investment Reform Action Framework of 2012 and the new mandate of GIDA under current reforms.

The modernization of GIDA and the irrigation subsector are strategies for an institutional turn around and a re-ignition of the subsector, leading to a decentralized and commercialized subsector attracting substantial private sector investments.

3.2.2 Objectives and Scope of the Assignment

The general goal of this assignment is to review the National Irrigation Policy to be aligned with the revised mandate for the restructured GIDA, and present a redrafted National Irrigation Policy, Draft an institutional legal framework for GIDA, and Irrigation Management Protocols.

This report seeks to address the institutional arrangements in GIDA's modernization plan, and:

- I. To define the appropriate institutional and organizational structure for the reformed GIDA to support delivery of its mandated responsibilities
- II. To determine the best models and practices for the organization of Water Users Associations to serve the organizations' members and to interact with GIDA and other service providers and
- III. To propose appropriate modalities for outsourcing of management of formal irrigation schemes to private sector entities, including Water User Associations, at scheme level to achieve enhanced performance of irrigated agriculture, improved socio-economic conditions and environmental sustainability.

3.2.3 Study Methodology

The study materials came from both primary and secondary sources. Data collection instruments were used to collect data and information during consultations with key stakeholders in the irrigation and agricultural water management (AWM) subsector and from interactions with farmer based organisations on some selected irrigation schemes. Some baseline documents including the Modernization Document prepared by GIMPA and provided by GIDA also served as a major source of reference material for this report.

3.3 ASSESSMENT OF IRRIGATION MANAGEMENT IN GHANA

3.3.1 Introduction

The Ghana Irrigation Development Authority (GIDA) is the leading Ghanaian public-sector organization set up to promote agricultural growth through the provision of irrigation infrastructure and other Agricultural Water Management (AWM) services.

GIDA had at its inception in the early sixties functioned as a Land Planning and Soil Conservation Unit (LPSCU), of the Ministry of Agriculture. In 1964, the Land Planning and Soil Conservation Unit was upgraded to the status of a division in Ministry of Agriculture known as the Irrigation Reclamation and Drainage Division (IRDD).

In 1974, the IRDD was further transformed into a complete Department (i.e. the Irrigation Department) of the Ministry of Agriculture. The Irrigation Development Authority Decree, 1977 (SMCD 85) was enacted to outdoor GIDA as an autonomous entity.

GIDA's current mandate is to formulate plans and to develop the water resources for irrigation, livestock and fish culture, and to execute comprehensive programmes for the effective use of irrigated lands, in co-operation with other agencies involved in providing extension services to farmers.

Currently, GIDA is responsible for the organization and management of public irrigation schemes in the country, including operation and maintenance at certain levels of the conveyance system, determination and collection of water levies (irrigation service charge) and the provision of extension services.

3.3.2 Evolution of Irrigation Scheme Management in Ghana

In the past, different management structures had been put in place to enable GIDA to fulfil its mandate. Management Contracts have been signed with foreign firms for the operation and management of some GIDA's schemes, notably among these were the following:

i. Tono and Veve Schemes

Tate and Lyle was engaged in 1980 through a Management Contract to train farmers in farm technology and crop production. The management team was made up of a Managing Director, Administrator, Workshop Manager and an Agronomist. They provided farm machinery, facilities and vehicles to manage the schemes over a 2- year period.

Financial resources including payment of salaries to Tate and Lyle and local staff came from the Ghana government. The Tono and Veve schemes registered as a Company (ICOUR) in 1982 after the expiration of the Tate & Lyle contract.

ii. **Weija Irrigation Company Ltd. (WEICO)**

This was financed by the European Union (EU) which took on the operation and management of the scheme after completion. The EU provided farm machinery and technical support to GIDA scheme staff. At the end of the EU contract, GIDA took over the management and financing of the scheme.

iii. **Kpong Irrigation Scheme (KIP)**

The KIP was rehabilitated in 1989, an expatriate project manager was brought in from South Africa to train local counterpart staff for management takeover. After the management contract expiration, local experts were recruited to manage the scheme. The GoG provided funding for the local management staff engaged on contract terms.

iv. **Dawhenya Scheme**

The management contract here was similar to those of KIP and WEICO. An expatriate manager was brought in under a management contract to operate and manage the scheme as well as offer training to staff and farmers. Funding was provided by the GoG.

3.3.3 Current Trends in Irrigation Management in Ghana

In the 1990s, there was a fundamental change in the management of public irrigation schemes in Ghana. Due to the low budgetary allocation for operation and maintenance of public schemes, the government-led management system was sought to be replaced with the Participatory Irrigation Management (PIM). Under this model, beneficiary farmers were encouraged to participate in the management of facilities on the irrigation schemes. With the introduction of PIM, operation and maintenance of irrigation facilities were conducted mostly using funds collected from irrigation service charges (ISC) paid by beneficiary farmers.

To improve its financial resource base in order to be able to operate and maintain public irrigation facilities, GIDA has entered into contractual agreements with some private companies, which use water from the dams/reservoirs under different terms, including payment for water extracted. These include VEGPRO (KIS), Golden Exotics, MDX Ghana Flowers and Greens (Dawhenya) and International Tamale Fruit Company (ITFC) at Libga, which contract involves rehabilitating scheme infrastructure. Such partnerships are largely with export-oriented companies.

3.3.4 Overview of Existing Irrigation Systems in Ghana

GIDA's current mandate is to formulate plans and to develop the water resources for irrigation, livestock and fish culture, and to execute comprehensive programmes for the effective use of irrigated lands, in co-operation with other agencies involved in providing extension services to farmers.

Currently there are forty- five (45) irrigations schemes all over the country, constructed by the Authority and covering a total of 10,380 hectares (ha). However, most of the 28 schemes constructed under both the Small- Scale Irrigation Development Project (SSIDP) and the Small Farms Irrigation Project (SFIP) remain in different stages of completion, while the few that are fully completed remain in a state of disuse due to operational challenges.

The main beneficiaries of these Irrigation schemes are the indigenous small-scale farmers from beneficiary and neighbouring communities. The lack of maintenance of the existing schemes has made most of them underproductive. Efforts to revamp the schemes (rehabilitation) and to complete the construction of the uncompleted ones under the SSIDP and SFIP have resulted in their repackaging and being taken over by different donor funded projects e.g. Northern Rural Growth Project for completion.

3.4 INSTITUTIONAL AND ORGANIZATIONAL STRUCTURES FOR PUBLIC IRRIGATION SUBSECTOR

3.4.1 Introduction

There is the need for a national institutional framework responsible for Planning and implementation of irrigation/AWM schemes with particular focus on the smallholder farmer. Essentially, GIDA's role should be that of a policy implementing agency of the irrigation sub-sector. The policy should be directed at development, among other things. As a focal point public sector policy implementation agency in the sector therefore, GIDA should be a developer, undertaking activities that would include planning, implementation, facilitation, regulation, advising and supervision. GIDA would therefore be required to provide services and to exercise oversight responsibility for the management of irrigation schemes in the system, whether such schemes are managed directly by the GIDA or by some other body or persons.

3.4.2 Review of Proposed GIDA Organizational Structure

A review of the current GIDA organogram as contained in the modernization document indicated some of the following weaknesses in the structure:

- The structure is organized based on inputs with little consideration for outputs. Deliverables are not easily identified apart from the fact that it does not align with the new mission and corporate strategy of GIDA. The current regulatory function of GIDA is not also reflected in the current structure.
- In terms of coordination, it is rigid, has many levels, and admits little flexibility. There is also inadequate intra- and inter-departmental coordination.
- Decision rights are highly centralized and most decisions are made using the top-down approach. There is no avenue for shared partnership and responsibility.
- The structure lends itself to inter-functional politics which could be dysfunctional. This situation does not promote inter-departmental communication and the shared services concept.
- The basis of authority is essentially positional. The current pyramidal structure, where almost everybody reports to the two DCEs, creates a blockade of escalating information to the top.

Based on the new vision, mission, core values of the new GIDA, a revised structure that adds value to the previous structures have been proposed by the modernization document. The new organogram addresses the following:

- Board of Directors;
- Corporate Planning, Regulation, Monitoring and Evaluation Department; and
- Management Information Systems Unit.

New innovations introduced to ensure flexibility and better response from the structure to potential environmental challenges that were added on include:

- Information Resource Centre;
- Irrigation Promotion Centre;
- 2 sub-organograms in response to Construction Supervision and Scheme Management; and
- Enhanced Human Resource Management and Administration Department.

Further key details of the proposed structure include:

- A compact 7-member Board of Directors at the apex of the structure. The board is served by a Solicitor Secretary who heads the Legal Services unit and oversee the operations of the Estate Unit as well.

- The Solicitor Secretary works through the Chief Executive Officer (CEO) because of added functions such as the preparation of Scheme Management Entities (SMEs) contracts and the supervision of estates.
- The second layer is made up of the CEO and two deputies. The CEO will be supported by a small Management Information Unit as well as an Information Resource Centre.
- An Internal Audit Unit as well as a new Human Resource Management and Administration department complete the offices under the CEO.
- The two main divisions, namely Engineering and Oversight of Scheme Management, are to be headed by two Deputy Chief Executive Officers (DCEOs).

The following are also recommended for inclusion in the final organogram for clarity in the divisional roles and responsibilities to be performed.

- The Inspectorate Division that would oversee Regulation, should be placed under the Planning and Coordination Dept.
- Research and Development Division which is 'missing' from the Organogram, is to be placed under the Specialist Department. (GIDA would be expected to undertake 'Adaptive Research' and this is to be handled by the Research department.
- Training and Manpower Division should be clearly indicated under the Human Resource Management and Administration Department.

3.5 MODERNIZATION OF IRRIGATION MANAGEMENT SUBSECTOR IN GHANA

3.5.1 GIDA's Current Mandate

The objects of GIDA as spelt out in the Strategic Plan are as follows:

- Provide efficient technical services in irrigation infrastructure development to enhance water and soil conservation best practices;
- Assist farmers and other clients in irrigation and other AWM technology transfers; and
- Provide consultancy services in irrigated agriculture.

The functions of the Authority as defined in the SMCD 85 are as follows:

- To formulate plans for the development of irrigation in the country;
- To develop the water resources of the country for irrigated farming, livestock improvement and fish culture;
- To execute comprehensive programs for the effective use of irrigated lands in co-operation with other agencies involved in providing extension services to farmers;
- To carry out land use planning in areas earmarked for development in order to conserve the soil and water resources in those areas;
- To lay out the environs of each project area for housing purposes and for the provision of other social amenities;
- To cooperate with other agencies for safeguarding the health and safety of all people living within and around irrigation project areas; and
- To undertake such other activities as are incidental or conducive to the discharge of its functions as defined by the decree.

3.5.2 Modernization of GIDA

The Modernization of GIDA can be referred to as the process by which GIDA is enabled to provide cost effective service delivery to an agricultural water management sector, made up of both public and private sector stakeholders. It is aimed at developing a set of proposals to support the realization of the modernization objectives of GIDA.

It also signifies a shift from subsistence to high-value added agriculture that contributes to economic growth. The process includes the introduction of a more demand driven, service oriented approach and increased financial and operational autonomy.

The thrust of the Modernization is to transform the Authority into an autonomous, flexible, proactive, sub-sector planner, regulator, advisor, supervisor, facilitator and public service provider.

The final Modernization Document captures four strategic clusters namely:

- a. The need for an enabling environment (including modernized institutional design and mandate for GIDA);
- b. AWM service delivery (by both the public and private sector);
- c. Improved financial sustainability of GIDA; and
- d. On-going state investments in infrastructure, including leveraged infrastructure.

The Modernization Plan had been designed to bring about a change which will transform the Authority into an autonomous, flexible, proactive, sub-sector planner, regulator, advisor, supervisor, facilitator and public service provider.

3.5.3 The Way Forward for GIDA/Irrigation Sector Modernization

The key objectives of the Modernization exercise can be captured as follows:

1. Enhancement of opportunities for commercial investment in AWM/irrigation;
2. Development of the market potential for irrigation agribusiness;
3. Development of Human Resource Capital to position GIDA as a leader in the public provision of AWM and irrigation services in Africa;
4. Mobilization of resources for modernized AWM/irrigation;
5. Adoption of new AWM approaches to deliver effective service to clients;
6. Growing GIDA to become a “center of excellence” for information gathering and communication on best practices in irrigation;
7. Provision of avenues for research and technology in the development and management of irrigation facilities and services; and
8. Promotion of institutional collaboration for sustainable management and use of agricultural water, land and the environment.
9. Building the capacities of the private sector, WUAs and other key players for transfer of management responsibilities of public irrigation/AWM schemes
10. Provision of improved technology for operation of the main and distribution systems through advanced water control structures.
11. Development of technologically efficient and user-friendly systems for effective water delivery to users.

3.5.4 GIDA's Regulatory Function in Private Sector Irrigation

According to the Modernization Plan, GIDA is to become a Regulator in the irrigation/AWM sector, in addition to other key functions. This regulatory role is expected to cover both public and private sector irrigation/AWM practitioners. The additional role to GIDA's functions shall therefore be:

- To regulate the activities of both public and private stakeholders in the irrigation Subsector.
- To operationalise this, the necessary legislation should be put in place as stated in the regulatory frameworks report by the legal expert.

The following activities should be undertaken by GIDA to fulfil this regulatory role:

- I. Establishment of an Act to empower GIDA to exercise a regulatory role covering both public and private sector irrigation/AWM.

2. Development of Standards for the different facets of irrigation/AWM in the country. This should include irrigation machinery and equipment.
3. Operationalization of a 'Regulatory Unit' under the GIDA Organizational Structure to be responsible for this.
4. The Research and Development Unit of GIDA should be expanded to undertake activities that deal with Standards Setting.
5. Build the capacity of personnel assigned to this Unit for this new role.
6. Develop and establish clear procedures/guidelines for regulation, including sanctions for default.
7. Establishment of collaborative linkages with institutions and private irrigators/AWM operators on regulatory duties and responsibilities.
8. Establishment of a monitoring framework for surveillance in collaboration with stakeholder institutions.
9. Issuance of permits based on accepted specifications and standards on irrigation equipment, materials, designs etc. to Subsector players.

3.5.5 Requirements for Operationalizing the Modernization of the Irrigation Sector

Institutional development

- Firstly, there should be a national institutional framework responsible for planning and implementation of schemes with particular focus on smallholder farmer.
- The restructuring of GIDA should be done in line with the current decentralization policy, which is already in place.
- There should be the establishment of district irrigation units under the decentralized system to address AWM issues, including the government's concept of 'one village one dam'.
- GIDA should provide policy formulation and guidance, its implementation, regulatory oversight and provision of some technical services to irrigators/WUAs. The O&M roles could then be handled by the WUAs.
- GIDA could engage in infrastructural developments under PPP arrangements
- Building the capacity of the various actors (service providers, consultants, technical people and the WUAs as well as farmers) who would come into the management stream after devolution of management functions, should be a key concern of GIDA.

Shift in irrigation management policy

In the modernization which involves a shift in irrigation management policy, due consideration should be given to the following issues:

- Functions that would be devolved from GIDA and outsourced to the private sector.
- Selection of entities with adequate knowledge in O&M of irrigation systems
- Training the private sector to obtain the requisite skills in O&M of irrigation systems
- Training private entities to be able to deliver appropriate services to WUAs

Commercialization of irrigation

The Concept of Irrigation Management Modernization is premised on the following:

Participatory irrigation management (PIM)

The search for improved investment and institutional models in irrigation and drainage has been driven by the need to resolve these three problems:

- low water use efficiency,
- a high reliance on government financing, and
- poor standards of management and maintenance.

One solution that has been tested over the last two decades has been Participatory Irrigation Management (PIM) involving Water Users' Associations (WUAs) in the financing and management of schemes. This solution has its logical culmination in irrigation management transfer, the handover of management responsibility for scheme operation and maintenance (O&M) to farmers and their organizations. PIM also sought to relieve governments of both the fiscal burden and the responsibility for asset management and maintenance and to improve efficiency by empowering farmers. PIM has made impressive strides.²⁹

However, efficiency may rise only marginally, and there are many schemes where O&M is beyond farmers' capacity - for example, the management of headworks and major distribution systems. In addition, major irrigation & drainage investments are often simply beyond the financial capacity of farmers. Furthermore, evidence from a study carried out in Ghana (Dawhenya Irrigation Scheme) suggests that with the transfer of management to a farmers-driven scheme, the overall cropping intensity has been significantly reduced.³⁰

Farmer participation in irrigation management (FAPIM)

The project for the promotion of Farmer Participation in Irrigation Management was a 2-year technical cooperation support from the Japanese Government to the Government of Ghana, and implemented through a JICA – GIDA/MOFA collaboration. Project implementation lasted over a 2-year period (October 2004 - September 2006).

The project's objectives were to:

- Establish the foundation for farmers participation in irrigation facility management of schemes under GIDA based on regulations and agreements and
- Strengthening GIDA's capacity in service delivery in irrigation farming technology.

By the close of the project in 2006, 10 GIDA-managed schemes had concluded a Joint Agreement Paper on Farmer Participation in the operation and maintenance of the schemes. The degree or level of responsibilities varied depending on the complexity of the scheme. Operation and maintenance costs for the individual schemes were computed to inform both GIDA and the farmers associations of their obligations as far as the O&M aspects of the facilities were concerned.

FAPIM brought to the fore, the handover and devolution of power to the farmer-based organizations on the schemes. The study came up with the roles and responsibilities for both farmers and GIDA, with respect to the O&M of facilities.

Scheme management entity concept – The Torgorme experience

The Torgorme Irrigation Scheme, constructed under the Millennium Development Authority (MiDA), in line with 'Conditions Precedent' for funding under that programme, was to be managed under a form of PPP arrangement. A private entity (Post Agric. Associates) was appointed as the Scheme Management Entity (SME) to handle the operation, maintenance and management of the scheme.

A Stakeholder Governing Body (SGB) was put in place, and was responsible for the governance and policy oversight of the Torgorme irrigation scheme. It was composed of FBO representatives, an anchor and midsize farmer, GIDA and MOFA representatives and a private sector member. The SME was headed by a scheme manager who also served as secretary to the Board. Post Agric entered into service contracts with the farmers and facilitated service contracts between mid-size farmers and scheme FBOs.

The operations of Post Agric had serious challenges which led to the failure of the SME concept, and subsequent disengagement of Post Agric from the scheme. Some of the challenges faced were:

²⁹ World Bank, Emerging Public-Private Partnerships in Irrigation Development and Management, Washington May 2007.

³⁰ L.K. Sam-Amoah; J.W. Gowing; The experience of irrigation management transfer in Ghana: a case study of Dawhenya Irrigation Scheme, in Irrigation and Drainage systems, 2001.

- Absence of an operation and maintenance annual for delivering the core functions of the SME.
- No formal handing over of the scheme to the SME by MiDA after project closure
- Poor ISC collection model, leading to non-payment of ISCs by farmers, and thus lack of funds to run the scheme.
- Financial support expected from MiDA to support O&M activities was never released.

Irrigation management transfer (IMT)

Irrigation Management Transfer can be defined as the transfer of responsibility and authority for irrigation system management from government agencies to water user associations, or other private sector entities.

It is a decentralized management system developed to address the situation that public funding for operation and maintenance of irrigation systems has been declining because of other competing demands for government support, and to improve the performance of the irrigation sector.

The concept of Irrigation Management Transfer (IMT) has been defined by the FAO (1999) as “the relocation of responsibility and authority for irrigation management from government agencies to non-government organizations such as WUAs. It may include full or partial transfer of management functions and may also include:

- Transfer of decision-making authority (or governance).
- Transfer of ownership of scheme infrastructure (which is normally considered privatization).
- Transfer of water rights from government to water user’s associations (as in Mexico).
- Or turning over to water users, partial management responsibilities, such as water delivery, canal maintenance and paying for irrigation services (as in Sri Lanka or the Philippines),

To undertake a successful IMT therefore, GIDA would have to follow the processes outlined below:

- Changes in legislation related to water resources and irrigation management. This has been done with the establishment of the new WUA regulations L.I. 2230
- Formation of WUAs and transfer of management, operation, and maintenance functions from government to WUAs. This activity is currently on-going with the formation of WUAs
- Restructuring of government agencies responsible for water resources and irrigation management. GIDA is also currently undergoing a restructuring exercise, which would cover different phases.

3.5.6 Establishment of Government Policy on Irrigation Management Transfer

There is need for a framework on turnover of irrigation management, with clear mandates to:

- Turnover management of all public irrigation systems to WUAs/private sector.
- Enforcement on payment of irrigation service fee by farmers on public irrigation schemes.
- Introduction of more efficient O&M procedures in public irrigation systems
- Implementation phases of turnover, depending on size and complexity of the system.
- Responsibility of WUAs for O&M of infrastructure, water delivery and drainage from the intake to fields and drains after turnover.
- For small-scale irrigation schemes, the irrigation agency’s role, to change from direct management to the provision of technical and physical assistance and regulatory support.
- The agency’s restricted role in direct management to larger-scale irrigation systems.

Recommended best practices of irrigation management transfer

The on-going Irrigation Management Transfer (turnover) is a national program and the basic functions and powers devolved should be the same between different schemes. However, due to differences in scale and complexity of structures, variations can occur between systems in the amount of the service

area transferred to farmer control. In West Java for instance, the irrigation agency continued to control the intakes after turnover and in some countries, the agency may even continue to exercise partial control over the main canal systems (Planditan, Kaliduren and Cinangka II) after turnover. Irrigation management transfer is therefore not a singular phenomenon and often involves only a limited degree of devolution of authority with some form of joint-management.³¹

The following sequential steps are recommended in the transfer process:

- **Diagnosis:** To initiate transfer, a thorough study is made of the irrigation scheme to assess the feasibility of transfer and the willingness of users to participate in the transfer process.
- **Promotion:** A large number of meetings should be held with the members and private farmers to promote the transfer program, to determine the boundaries of the facility, and to appoint the water delegates to represent the users in the assembly of delegates.
- **Constitution of the WUA:** There should be a charter of the WUAs, constituting it as a civil association.
- **Acceptance of commitments:** The WUA would sign an agreement in which it accepts the conditions of transfer and commits to increasing fee levels and maintaining them to achieve financial self-sufficiency.
- **Concession Title:** A comprehensive legal contract between the irrigation agency (government) and the WUA is drawn up, detailing the rights and obligations of both, concerning the transfer.
- **Actual transfer of the facility:** Where the government intends to transfer the facility (infrastructure) to the WUA/Private Entity, this is done at an official ceremony where the Concession Title is signed and the facility is handed over to the WUA. In this instance however, there would be no transfer of the infrastructure, as GIDA would still be expected to hold these in trust for the government of Ghana.
- **Parallel operation:** After the transfer, it is proposed that the irrigation agency (GIDA) manages the scheme together with the WUAs for at least twelve months, after which the WUA becomes fully responsible for the management of the facility.

Table 2 summarizes the powers that may be vested with WUAs and the functions turned over to them in the different systems operating in the country.

Table 2: Recommended Powers for Devolution and Functions to be Turned Over to WUAs

| Arrangement and Function | <50 ha | 51-250 ha | 251-500 ha | 501- 1000 ha | >1000 ha |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| WUA as legal entity | Yes | Yes | Yes | Yes | Yes |
| Authority to make rules and sanctions | Yes | Yes | Yes | Yes | Yes |
| Maximum sanction available to WUA | Yes | Yes | Yes | Yes | Yes |
| Authority for O&M plan and budget | Yes | Yes | partial | partial | Partial |
| Authority to set water fees | Yes | Yes | partial | partial | Partial |
| Authority to hire or release staff | Yes | Yes | Yes | Yes | Yes |
| Legal water right at level of system or farmer organization | No. Govt. allocation | No. Govt. allocation | No. Govt. allocation | No. Govt. allocation | No. Govt. allocation |
| Control over intake | Partial | Partial | Partial | Partial | Partial |
| Control over main canal system | Yes | Yes | Yes | Partial | Partial |
| Control over subsidiary canal system (Secondary and tertiary) | Yes | Yes | Yes | Yes | Yes |
| Responsibility for future rehabilitation | Partial | Partial | Partial | Partial | Partial |
| Transfer of ownership of infrastructure | No | No | No | No | No |
| Canal rights of way | Yes | Yes | Yes | Yes | Yes |
| WUA right to contract and raise funds | Yes | Yes | Yes | Yes | Yes |
| WUA right to make profits | Yes | Yes | Yes | Yes | Yes |

In the recommended system above, a WUA becomes a legal entity and has the authority to make its own rules and sanctions with respect to irrigation, in relation to the size and complexity of the system as shown in table 1 above. In practice, the WUA has full authority over O&M and setting water fees,

³¹ Research Report. An Assessment of the Small-Scale Irrigation Management Turnover Program in Indonesia. IWMI, Colombo, Sri-Lanka.

however, it is recommended here that these responsibilities should involve GIDA for schemes bigger than 250 ha.

Again, hiring of staff, canal rights of way, entering into contracts, and making profits should have the full authority of WUAs. No water rights are granted to the association or to individuals. The government allocates water according to administrative rules and priorities. Again, ownership of the irrigation infrastructure remains with the Irrigation Agency (GIDA), which holds these in trust for the government.

Procedures for irrigation management transfers

Irrigation Management Transfers would be formalized by a Transfer Agreement. Transfer Agreements specify the basic long-term roles, decision-making authority and obligations that Water Users Associations and government agencies have, relative to irrigation systems. This would be normally drafted and signed by representatives of the WUA and government agency which implements the IMT.

The main objectives of a model agreement are:

- To secure the long term legal rights of a WUA on the use of the irrigation infrastructure for which it is responsible, and
- To define the legal obligations of the WUA and the supervisory role of the Transferor to secure a sound utilization of and prevent damage to the transferred irrigation and drainage infrastructure.

A proposed model agreement for GIDA irrigation schemes should consider the transfer of a whole small-scale irrigation and drainage scheme and the transfer of a part of a large-scale irrigation and drainage scheme (for instance a tertiary unit) to the WUAs.

The following are elements that may be included in a Transfer Agreement:

- Inventory of infrastructure and equipment transferred to the WUA,
- Service area and membership of the WUA,
- Role and jurisdiction of the WUA,
- Basic rights, authority and obligations of the WUA,
- Terms and conditions for transfer to occur or be revoked,
- Protocol for interaction between the WUA to government,
- Rights, authority and obligations of the government toward the WUA,
- Procedure for dispute resolution,
- Procedure and purpose of Irrigation Management Service Agreements and Audit.

The WUAs/farming community would also require support services to sustain the IMT in order to assume the new responsibilities and tasks as well to overcome constraints and to explore new income opportunities. These services would include the following:

- Advisory services about institutional arrangements for the WUA,
- Establishment of organizational and financial procedures and skills,
- Credit facilities,
- Legal advice,
- Marketing and maintenance procedures.
- Training and extension to develop the knowledge and skills of farmers and enable WUA officials to undertake management responsibilities and ensure more profitable irrigated agriculture.

Management Options

Table 3 below shows some joint management options that may be adopted depending on the prevailing circumstances.

Table 3: Joint Management Options

| Activity | Agency O&M (User Input) | Shared Management | WUA O&M | WUA Ownership (GIDA Regulation) | Full WUA control |
|--------------------------------|-------------------------|-------------------|---------|---------------------------------|------------------|
| Regulation | GIDA | GIDA | GIDA | GIDA | WUA |
| Ownership of Structures, water | GIDA | GIDA | GIDA | WUA | WUA |
| O&M Responsibility | GIDA | Both | WUA | WUA | WUA |
| User Representation | WUA | WUA | WUA | WUA | WUA |

3.5.7 Water User's Associations (WUAS)

The need for water institutions

Due to the interconnected nature of the hydrologic cycle, one person's use of water generates externalities for others. As long as water is abundant relative to its use, these interaction effects may not be noticeable. But in dry climates, or as water use and scarcity rise, the externalities become problematic without institutional arrangements to clarify rights and responsibilities.

The spatial dimensions of water management create further needs for coordinating institutions. A well that supplies one farm can be built and operated by an individual. Small-scale irrigation systems supplying a group of farmers require coordination at the group or even up to the community level.

Larger water systems cut across communities; some even cross international boundaries.

Coordination functions can be supplied by the state, collective action among users, or combinations of them.

The precise institutional arrangements to adopt, depends on a number of factors, including the scale of the system, with greater advantage of private or collective-action institutions at smaller scales and more local levels.

The WUA model

The WUA model emerged in the 1970s, as an alternative to state-run irrigation systems, increasingly perceived as underperforming (Rap, 2006; Meinzen-Dick, 2007). Decentralization of operation and maintenance tasks to WUAs has been promoted as a way to reduce overhead costs and increase efficiency (Smet, 2003; Suhardiman and Giordano, 2014). A similar assumption is made on revenue collection: not only are local farmers better placed to collect revenue, but this organizational form is also likely to increase willingness to pay within the association (Smet, 2003; Manor, 2004).

The WUA model is designed around desired characteristics of collective management, empowerment and participation, and goals of efficiency and full cost recovery (Watson et al, 1997; Smet, 2003; Rap and Wester, 2013; Suhardiman and Giordano, 2014).

A World Bank study (Watson et al, 1997) states that the establishment of WUAs leads to:

- Achievement of 'more efficient water delivery services'
- Ensuring that projects are 'better adapted to local needs and constraints'.
- Development of common joint experiences and social norms over time by members of the association jointly, which form the basis for decision making within the association.

The model is therefore based on the assumption that user participation will not only lead to more democratic and equitable water allocation, but also empower farmers, allowing for increased autonomy and direct control over the resource. WUAs are seen as a way to give ‘people at the grass roots greater influence over decisions that affect them’ (Manor, 2004, p. 194; see also Uphoff, 1992).

The mandate of WUAs is the provision of irrigation water to its members for agricultural purposes. In accordance with this mandate, the tasks of WUAs are strictly limited to management, operation and maintenance of an irrigation and drainage system.

WUAs operate on a non-profit/non-commercial basis and provide services to their members, namely, the provision of irrigation water, on a paid basis. Their tasks are all related to operation and maintenance of the irrigation and drainage system located within the service area. WUAs may therefore not engage in any other activity such as marketing of produce or the provision of agricultural inputs.

Transformation of Irrigation Farmers Cooperatives (IFCs) to Water Users Associations (WUAs)

The Irrigation Development Authority Regulations, LI 1350 of July 1987 was enacted to regulate the functions of GIDA. This instrument gives direction as to how public irrigation schemes should be managed. It describes the management functions on the schemes including the process of land allocation, formation of Farmers Associations and the obligations of both GIDA and the farmer associations. This regulation absolves farmers from participating in the management of irrigation schemes. It also mandates all farmers on public irrigation schemes to join farmers associations registered under the Cooperative Societies Decree, 1968 (NLCD 252), which regulates farmer activities on the schemes.

Recently, a new regulation titled “Irrigation Development Authority (Irrigation Water Users Association) Regulations (L.I. 2230, 2016)” has been enacted under the Irrigation Development Authority Act of 1977 (SMCD 85). These draft regulations revoke most of the provisions contained in the earlier regulations (L.I. 1350) and authorize farmers to participate jointly, in the operation and management of irrigation infrastructure together with GIDA.

The new regulation (LI 2230), was necessitated by two (2) major reasons;

- To give legal rights to farmers in operation, maintenance and management of public irrigation schemes, which hitherto has been the sole responsibility of GIDA.
- To respond to GIDA’s new mandate in the restructuring and modernization exercise, to undertake oversight and regulatory functions on its irrigation schemes.

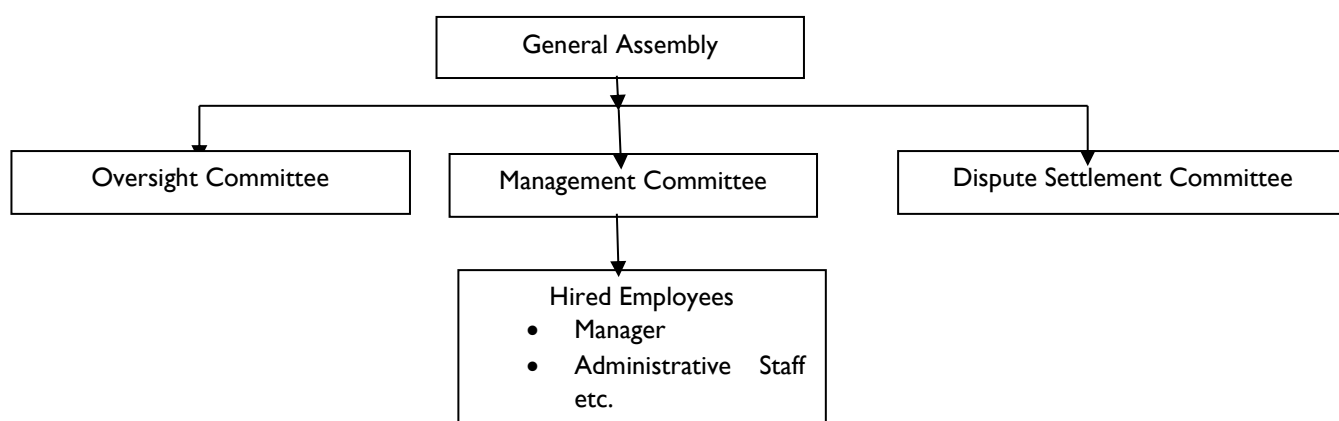
The new regulations elaborate the structure and procedures for the formation of Water Users Associations, their management functions and their operational roles on the irrigation schemes. The regulations also prescribe the constitution of various committees, such as the General Assembly, Management Committee and the Dispute Settlement Committee, needed to run the WUAs. In addition, the regulations stipulate the functions of the Supervising Authority (GIDA), and define rules and procedures to be followed in the discharge of responsibilities. Some of the objects of the WUAs are:

- to manage an irrigation and drainage system, wholly or partly, in its service area;
- to provide irrigation water and drainage services timely and equitably to members of the association;
- to make internal rules for the use of irrigation water;
- to collect fees from its members for the services provided; and
- to facilitate the training of members in irrigation techniques, irrigation farming methods, water saving methods, and new irrigation technologies.

Structure of a WUA

Based on the new WUA legislation, L.I. 2230, a typical WUA structure is shown in figure 1 below. The WUA is governed through the General Assembly, which is the supreme organ, with membership constituted from the various units. In addition to the General Assembly, each WUA has a Management Committee which implements decisions taken by the General Assembly and is also responsible for the operations, management and maintenance of the service area. An Oversight Committee ensures that the management committee is discharging its responsibilities properly, and oversees that funds of the association are properly utilized. A Dispute Settlement Committee ensures that disputes arising out of the operations of the WUA are amicably settled.

Figure 4: The WUA Structure



There is no blueprint of a successful WUA as each one has its own strengths and weaknesses. Social engineering plays a dominant role in successful functioning of WUAs. Therefore, applying the successful WUA model of a given country may not necessarily lead to success in another. The WUA structure therefore, must be tailored, giving due consideration to service area, political, economic, social and cultural circumstances of the area.

Formation of Water Users Association (WUA)

The L.I. 2230, elaborates how Water Users Associations should be formed on public irrigation schemes. It goes further to recommend how different WUAs can be brought together under an umbrella body called a Federation. It also sets out procedures and processes for the formation of WUAs as follows:

1. Organize sensitization workshops for stakeholders on the need for WUA (its benefits, organizational structure, roles and responsibilities etc.).
2. Identify Service Area of each WUA
3. Register/update farmers list in Service Areas
4. Facilitate the establishment of the Founders' Committee of WUA
5. Establish the draft rules and regulations, the annual work plan and budget
6. Convene a General Assembly meeting
7. The General Assembly meeting approves WUA rules and regulations, bye-laws, annual work plan and budget
8. Election of Provincial Management Committee members at the General Assembly meeting
9. Register WUA at GIDA Head Office and Registrar General's Department
10. Prepare training manuals for farmer organization, WUA LI 2230, operation and maintenance, water management etc.
11. Organize capacity building/training for WUAs
12. Supervise, monitor and evaluate WUA activities

Communication strategy to roll out the WUA concept

The Irrigation Development Authority (Irrigation Water Users Association) Regulations (L.I. 2230, 2016), enacted under the Irrigation Development Authority Act of 1977 (SMCD 85), is limited to operations of public irrigation schemes. The scope of L.I. 2230 however, should be widened to cover private irrigators as well, and therefore, the need for an amendment of this L.I. if the WUA concept is to be applied to all irrigators.

A national communication strategy to roll out the WUA concept should follow the following steps and procedures:

1. Prepare and distribute handouts, brochures, leaflets and pamphlets on the new L.I. 2230 to relevant bodies, institutions and private sector.
2. Engagement with the media (print and digital) to communicate the L.I. to the public.
3. Post the new L.I. onto the GIDA website for dissemination and feedback.
4. Organize a WUA sensitization workshop for all irrigators (public and private) in the country (its benefits, organizational structure, roles and responsibilities etc.).
5. Establish a feedback mechanism to evaluate level of dissemination and public acceptance of the proposals.
6. Adopt the use of community score card system for feedback from schemes and communities.
7. Undertake a stakeholder validation workshop for collation of views and comments to guide the implementation of the WUA concept at all levels of operation.

Roles and related tasks of WUAs

The roles and related tasks of WUAs can be sorted into three categories:

Governance: This role relates to the role and responsibilities of the General Assembly: election of members of governing bodies, approval of budgets, action planning, and preparing annual reports, and adoption and amendment of regulations that govern day to day activities of a WUA.

Operation and maintenance (O&M): This role includes all activities that deal with planning, implementation and monitoring of water distribution and maintenance works, controlling soil erosion and soil fertility, and training WUA members in irrigation techniques and/or water saving methods.

Management: This role relates to the administration of the WUA including the financial management.

WUAs interaction with service providers

To sustain production at the farm level, WUA activities should be complemented by those of other service providers in the provision of the following services:

- Farm machinery and equipment
- Credit facilities
- Supply of farm inputs (fertilizers, agrochemicals, protective clothing etc.)
- Transportation
- Postharvest management
- Marketing
- Information/data management etc.

The provision of these services would require that WUAs enter into Service Contracts/MOUs with specific service providers. Each service contract shall spell out the roles and responsibilities of each party, with appropriate sanctions and avenues for redress in case of default of any of the parties involved.

Strengths, weaknesses, opportunities and threats of WUAs

A WUA may achieve sustainability depending on 'internal' as well as 'external' factors. A WUA that is well organized, well run by capable, dedicated staff and has full support of its members, can within itself be sustainable. However, even a 'perfect' WUA organization cannot be sustainable if external forces act against their interests. Presented below is a SWOT analysis of existing Farmer-Based Organizations/Cooperatives operating on GIDA schemes viewed against the proposed WUA model.

Strengths

- Already operating as co-operative bodies
- Good knowledge base in 'co-operative' activities.
- Knowledge in participatory O&M activities of irrigation facilities

- Good number of dedicated membership

Weaknesses

- High illiteracy levels of membership
- Poor record of ISC repayment
- Unwilling to undertake crop diversification
- Low financial capabilities

Opportunities

- Expansion of existing scheme areas
- Availability of adequate water resources
- Program for rehabilitation of irrigation/drainage facilities
- Technical support from GIDA and development partners
- Proposed private sector involvement in irrigation/AWM activities

Threats

- Interference in WUA internal affairs from traditional/local authorities.
- Lack of government support in providing guidance and advice, and facilitating WUA activities.
- Lack of access to quantity, quality, timely and reasonably priced inputs, lack of extension services and marketing services, appropriate machinery and credit facilities.
- Small plot sizes
- Encroachment on scheme lands
- National AWM/Irrigation strategies.
- Funding to rehabilitate the irrigation/drainage system.

Potential models of WUAs

The WUA concept which is quite new to irrigators in the country, should therefore, be applied with some caution, even though farmers have a lot of 'co-operatives' experience.

In this respect, the basic WUA structure with roles and functions as presented in the WUA Regulations L.I. 2230, should form the basis of any structure/model that would be implemented in the country (fig. 1). At the initial stages of implementation, however, WUAs should be strictly governed by these basic roles and functions, devoid of any other commercial activities, as these would divert attention from their core business of water delivery and O&M of the irrigation system. Here, the group would have to rely on the services of private sector entities for the provision of essential services at a cost, even though the WUAs may find some difficulty in paying for these services.

However, the roles and functions of the WUAs could be expanded with time, to include some commercial activities. They can take on some cooperative activities including sale and marketing of farm inputs, produce marketing, provision of farm mechanization services etc. These functions could be added on after a period, when the groups are well established and have had adequate training in the relevant areas to place them in a position to take on extra responsibilities. Engagement in other commercial service activities would lead to improved financial status of the WUAs, to make them financially independent and be able to support the operation and maintenance activities of the system.

Another level of operation may also come in when some form of modernization of the irrigation system had taken place, for example, installation of efficient water regulation systems or automation or of the water delivery system. This may require the appointment of some technical and management staff to manage the system, and to free the WUA executives of their roles in management of the facilities.

Technical and managerial support to WUAs

Experience from other countries on the performance of irrigation schemes managed by WUAs, indicate a generally poor performance. This output relates mostly to poor operation and maintenance of schemes. There is the need, therefore, to highlight the issues that lead to the long-term sustainability and good management of WUAs.

The tasks of WUAs require technical and managerial knowledge and skills. Farmers cannot acquire the necessary knowledge and skills in the absence of any training, or only through occasional training or capacity building activities. Adequate utilization of the main management tools (plans and budgets) require knowledge and skills beyond occasional farmer training.

Therefore, the basic role for GIDA as the Supervising Authority, would be to build WUA capacity in the under listed areas or facilitate the establishment of strong public or private entities that will provide

WUAs with the services of qualified professionals in the same areas:

- Institutional services to establish sound operational rules adapted to each particular irrigation system and local social context.
- Technical support for organizing water distribution, as well as planning, implementing and monitoring maintenance works.
- Providing managerial services for activities that includes preparation of budgets, accounting and financial statements and reports

Training and WUAs development

Training is an urgent requirement in programs of management transfer responsibility from government agencies to farmers, and encourage WUAs to take on expanded roles in operation, maintenance and management.

The main areas and skills required for WUA training are:

- A better understanding of technical disciplines related to water users including conflict resolution,
- Operation, maintenance and management of irrigation systems,
- Some knowledge about economics, ecology, legal-social aspects and analysis,
- Aspects of accessing credit facilities and usage, accounting, collection of service fees, and of legal regulations affecting WUAs.
- Technical aspects of irrigation, particularly those related to crop production techniques and related activities along the value chain, the operation and maintenance of irrigation and drainage systems.
- Specialized areas on water management procedures, operation of some specific equipment, including computers, marketing and business affairs, etc.

GIDA as the Supervising Authority, would primarily train or facilitate the training of WUAs in the aforementioned areas by linking up with training institutions and NGOs to build their capacities. The following steps and procedures for WUA training would have to be undertaken by GIDA to affect this aspect of WUA development.

Identification and assessment of WUA training needs:

1. Classification of training needs; General training for all WUA membership and Specialized training for WUA leadership.
2. Further classification of the Specialized training into Technical (agronomic, economic, accounting, equipment and machinery) and Management/Administrative (general administration, meeting procedures and rules, etc.).

3. Preparation of a training plan including a training time table.
4. Preparation of training curricula for the different training needs
5. Preparation of a training budget based on the training needs.
6. Preparation of Terms of Reference (TOR) for the training
7. Identification of training institutions and NGOs to undertake the different aspects of the training. (GIDA, MOFA, identified NGOs specialized in capacity building and Department of Cooperatives).
8. Linking up these training institutions to specific subject matter areas.
9. Linking up with these identified institutions and preparation of MOUs/Agreements with them for execution of the program.
10. Implementation of training plan.
11. Evaluation of training and impact assessment.

Characteristics for successful WUA sustainability

Some characteristics of WUAs which play a significant role in promoting sustainability and water productivity are:

- There should be adequate and reliable water supply,
- WUAs should be organized on hydrological basis, not administratively,
- WUAs should be managed by their elected leaders and there should be no government interference in WUA management and decision making,
- Water payments should be based on used/measured quantities,
- Water fees collection rights should reside with the WUAs
- Group characteristics, particularly group size and number of sub-groups, are important factors in water productivity. Large groups tend to have greater difficulties in overcoming problems of collective action and free-riding and should be avoided.
- A high pressure on the water resource caused by a large unmet water demand negatively affects water savings in crop production.
- Appropriate leadership facilitates efficient rules setting.
- WUAs members with a relatively high degree of common homogeneous identities and interests are more likely to have common concerns and joint interests in say agricultural production and water savings.

3.6 PROPOSED MANAGEMENT OF LARGE SCALE IRRIGATION SCHEMES

3.6.1 Introduction

The GCAP in consultation with the Ghana Irrigation Development Authority (GIDA), has selected four (4) large public irrigation schemes for rehabilitation and modernization. These are the Kpong Left Bank Irrigation Scheme (Torgorme), Kpong Right Bank Irrigation Scheme, Tono and Veia Irrigation Schemes. These schemes after rehabilitation and modernization, are to be handed over to private companies under some form of PPP arrangement. The three (3) Consultants undertaking these studies, are expected to come up with suitable management options for these schemes, to ensure that in the event of the eventual management turnover of these schemes to private sector entities, the proper management and operational guidelines would have been put in place for the sustainability of these schemes.

As indicated in Annexure 6 of the Draft Policy Document ('some thoughts on Public Private Partnerships'), different PPP transaction models exist for irrigation/agricultural water management, each with its own regulatory framework. It is therefore up to the Government of Ghana to decide on:

1. What sort of entities it wants to participate in a PPP;
2. What sort of financial architecture would be required (long term equity, equity buy-back, debt, convertible debt, affermage etc.); and

3. How any public finances are mobilized and if necessary, to pass any enabling legislation that may be required.

So far, reports of the consultants propose the use of the Scheme Management Entity (SME) concept. The SME shall be a private entity with professional expertise and experience in irrigation and/or agribusiness management. It shall be headed by a Scheme Manager who will be supported by all or a selected team of professionals and technicians comprising Planning and Production Manager, a Post-harvest and Marketing Manager, Operation and Maintenance engineers and Financial/Office Managers. The Scheme Manager who heads the SME, shall be responsible for delivering the overall mandate of the SME, and will be the contact person in the SME. He/she shall report to a GIDA Scheme supervisor and shall represent the SME in all meetings and consultations. Detailed deliberations have been undertaken by consultants on this management option and what this section of this report seeks to do is to highlight the major issues raised and the recommendations for ensuring the success of the concept. The structure of the management options under which the SME shall operate have been given in the individual reports of these consultants.

3.6.2 Functions and Roles of the SME

The main function of the SME shall be the operation, maintenance and organization of the scheme through:

- Provision of services for maintenance of scheme infrastructure.
- The day-to-day management and maintenance and water management.
- Transparent financial management including collection of irrigation service fees and management of funds.
- Monitoring operations and reporting to the Supervising Authority and Stakeholder Governing Board where this exists and
- Establishment of contractual relationships with other stakeholders on the scheme.

The SME is also expected to:

- facilitate access to inputs and finance for farmers,
- facilitate extension services for production support and capacity building,
- Plan and facilitate labor and equipment for operation and maintenance and
- Negotiate with buyers and marketing agencies for the purchase of produce on schemes.

Reports submitted by consultants on the SME concept indicate that all three (3) consultants share common views on a basic SME structure, with slight differences in the mode of operation. The consultant for Tono and Vea schemes proposes using the core staff of ICOUR as the Scheme Management Entity while the two (2) other consultants for the Kpong Left and Right Bank schemes propose the recruitment of an entirely new staff to form the SME. The SME concept, while appearing as the most suitable form of management for these large-scale irrigation schemes may have their shortfalls, which would have to be addressed to make their operation successful. In all these instances, the structure indicates the supervisory role of GIDA as being key to the successful implementation of the SME concept.

3.7 RECOMMENDATIONS FOR SUCCESSFUL & SUSTAINABLE SMES

3.7.1 Ability to Generate Revenue to Cover O&M Activities

The success of the SMEs will primarily be hinged on the availability and level of funds raised through different means to undertake operation and management activities. Secondly, addressing some of the major challenges that plagued the Togorme SME, leading to its failure under the MiDA program would also improve sustainability issues.

Based on revenue inflows towards the financial sustainability of the four large schemes, three (3) categories are identified.

Category 1: This applies to both Tono and Vea Schemes. Here, all lands have been allocated to farmers. The main revenue sources would therefore be the ISC and land rent, except where the government constructs drying floors and/or warehouses, which could also serve as revenue source for the SMEs. Under this system, all operational costs will be borne by farmers. The sustainability of this SME would be challenged if fees set as annual ISC becomes very high. Fees of staff recruited onto the SME should be realistic.

Category 2: Applies to the Kpong Irrigation Scheme (KIS), Asutsuare, and is considered as a sort of Joint Commercial group. Here, there is cost sharing between the WUAs and the large-scale operator, Golden Exotics, which draws water from the scheme and pays for the metered water, based on the capacity of each group. The scheme's sources of revenue would thus cover ISC, land rent, water charge from Golden Exotics, warehousing and drying floors. Well managed revenue flows to this scheme would enhance sustainability of the SME.

Category 3: This also applies to the Kpong Left Bank Irrigation Project (KLBIP), another instance of Joint Commercial group. Here, VEGPRO (Anchor farmer) and other mid-size farmers would be supplied 'metered' water from the scheme. Cost sharing based on the capacity of each player shall be taken into account. The scheme's revenue sources from the proposed design shall be; water charges from Vegpro, mid-size farmers, WUAs, revenue from drying floors, warehouses and vegetable sorting and grading facilities. There would be a good stream of revenue inflows to improve the sustainability of the SME in addition to other enabling conditions.

3.7.2 Initial Subsidy for Irrigation Service Charge (ISC)

The SME concept under the Torgorme Scheme, proposed a 3-year subsidy on ISCs, to cover O&M of facilities, marketing costs, cost recovery, technical service fee for the SME etc. during the initial years of operation. This proposal was generally approved, but the funds were never released. It is recommended that this initial ISC subsidy, vital to SME operations during the period when the WUAs gain enough experience in cultivation of new crops and the WUA concept, be made available to 'kick start' the scheme operations.

Other conditions that would lead to successful SME operations on the schemes are the following:

1. Availability and implementation of an operation and maintenance manual for delivering the core functions of the SME. This should spell out the roles and responsibilities of all hired staff engaged on the scheme, by the Scheme Manager.
2. The size of hired staff whose fees would be borne by the WUAs through ISC payments, should be limited to only the performance of very essential functions.
3. ISC collection mechanisms should be efficient to avoid 'free riding' by some members.
4. Appropriate sanction should be put in place and enforced. Application of sanctions should be swift against defaulting farmers.
5. Payments to GIDA from the annual ISC charges to cover its functions as the oversight entity should be established.
6. The GIDA Scheme Supervisor assigned to each scheme should be technically knowledgeable in irrigated agriculture/AWM.
7. Provision of extension services from MOFA, NGO or other source for good agricultural practices.

3.8 CONCLUSIONS AND RECOMMENDATIONS

1. The key stakeholders identified during the stakeholder consultations, and whose sphere of influence impact positively on GIDA's modernization process are the Water Resources

Commission, Environmental Protection Agency, GIPC, Lands Commission, MOFA, traditional authorities, MMDAs, GCAP and the financial Institutions.

2. Innovations introduced to ensure flexibility and better response from GIDA's Organizational structure include: Information Resource Centre; Irrigation Promotion Centre, 2 sub-organograms in response to Construction Supervision (which will also be in charge of Regulation) and Scheme Management and an enhanced Human Resource Management and Administration Department.
3. The Innovation and Technology Development Department (Specialist Department) is responsible for research while the Human Resource and Administrative Department is in charge of Training and Manpower;
4. GIDA's modernization signifies a shift from subsistence to commercial/high-value added agriculture that contributes to economic growth. The process includes the introduction of a more demand driven, service oriented approach and increased financial and operational autonomy.
5. To regulate the activities of both public and private stakeholders in the irrigation Sub sector, the necessary legislation should be put in place as stated in the regulatory frameworks report by the legal expert. This would include among others, the establishment of an Act to empower GIDA to exercise this regulatory role, development of Standards for the different facets of irrigation/AWM in the country.
6. To modernize the irrigation/AWM Subsector, there should be Institutional Development, a shift in Irrigation Management Policy and the commercialization of Irrigation/AWM.
7. Commercialization of irrigation/AWM entails participatory irrigation management (PIM) involving WUAs in financing and management of schemes, leading eventually to irrigation management transfer (IMT). IMT may be partial or full transfer of management functions.
8. Irrigation management transfer should involve only a limited degree of devolution of authority with some form of joint-management options depending on the prevailing circumstances.
9. The 7-step process recommended for best practices in an IMT transfer are: Diagnosis, Promotion, Constitution of the WUA, Acceptance of commitments, concession title, Actual transfer of the facility and Parallel Operation.
10. A proposed model agreement for GIDA irrigation schemes should consider the transfer of user rights of whole small-scale irrigation and drainage systems and the whole or partial transfer of large-scale irrigation and drainage systems (for instance the secondary and tertiary units) to the WUAs.
11. The new regulation (LI 2230), was necessitated by two (2) major reasons; i) to give legal rights to farmers in operation and management of public irrigation schemes, which hitherto has been the sole responsibility of GIDA and to respond to GIDA's new mandate in the restructuring and modernization exercise, to undertake oversight and regulatory functions on its irrigation schemes.
12. The scope of L.I. 2230 should be broadened to cover private irrigators (amendment of the law required).
13. A national communication strategy should be developed to roll out the WUA concept which is to be broadened to include private irrigators.
14. The WUA structure should have four (4) management bodies; A General Assembly, the Management Committee, the Oversight Committee and Dispute Settlement Committee.
15. Procedures and processes required for formation of WUAs are:
 - Organize sensitization workshops for stakeholders on the need for WUA (its benefits, organizational structure, roles and responsibilities etc.).
 - Identify Service Area of each WUA
 - Register/update farmers list in Service Areas
 - Facilitate the establishment of the Founders' Committee of WUA
 - Establish the draft rules and regulations, the annual work plan and budget
 - Convene a General Assembly meeting

- The General Assembly meeting approves WUA rules and regulations, bye-laws, annual work plan and budget
 - Election of Provincial Management Committee members at the General Assembly meeting
 - Register WUA at GIDA Head Office and Registrar General's Department
 - Prepare training manuals for farmer organization, WUA LI 2230, operation and maintenance, water management etc.
 - Organize capacity building/training for WUAs
 - Supervise, monitor and evaluate WUA activities
16. The basic WUA structure with roles and functions as presented in the WUA Regulations L.I. 2230, should form the basis of any structure/model that would be implemented in the country, but modified with time, based on its successful implementation, to accommodate or cater for other activities.
 17. WUAs should be formed, based on 'Service Area' or hydrological unit on any irrigation/AWM scheme.
 18. To sustain production at the farm level, WUA activities should be complemented by those of other service providers in the provision of essential services.
 19. Technical and management support to WUAs should include; Institutional services to establish sound operational rules, technical support for organizing water distribution, as well as planning, implementing and monitoring maintenance works and providing managerial services for preparation of budgets, accounting and financial statements and reports.
 20. GIDA as the Supervising Authority, would play the primary role of building capacities of WUAs and/or facilitate the training of WUAs by linking them up with training institutions and NGOs to build the capacities in identified areas.
 21. For GIDA to decide on the appropriate PPP transaction models based on what exist for irrigation/agricultural water management, it should decide on: i) What sort of entities it wants to participate in a PPP, the financial landscape that would be required (long term equity, equity buy-back, debt, convertible debt, affermage etc.) and how any public finances are mobilized and if necessary, to pass any enabling legislation that may be required.
 22. The Scheme Management Entity (SME) concept is recommended to the transfer of the large-scale irrigation schemes to the private sector.
 23. The success of the SME concept is hinged primarily on the capacity of the scheme to generate enough revenue to cover ISC, which includes fees of SME personnel.
 24. An initial funding (first 3 years operation) to SMEs to cover O&M activities on schemes would improve on the sustainability of SMEs.

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ANNEX I. CALL FOR EXPRESSIONS OF INTEREST

Chemonics seeks three (3) Experts for the review of the current National Irrigation Policy in support of the Ghana Irrigation Development Authority. Chemonics is implementing USAID's Ghana Feed the Future Agriculture Policy Support (Ghana FtF-APS) Project in Accra, Ghana. The project aims to increase the capacity of the Government of Ghana, the private sector, and civil society organizations in evidence-based policy formation, implementation, research and advocacy, and in rigorous monitoring and evaluation of agricultural programs under the Medium-Term Agriculture Sector Investment Plan.

Expert No. 1: Irrigation/Agricultural Water Management Polices (AWM) and Institutions Expert

The expert will review the current National Irrigation Policy to align it with the revised mandate of the restructured Ghana Irrigation Development Authority (GIDA). The Expert will among other responsibilities undertake the following:

- Prepare a new typology suitable for Ghana's irrigation/Agricultural Water Management(AWM) sub-sector
- Assess the expectations of typical investors in irrigation/AWM
- Identify new guiding principles for the reviewed irrigation/AWM policy, paying particular attention to risk mitigating measures such as insurance and revenue mobilization
- Identify opportunities, including incentives, to increase Ghana's competitiveness with respect to commercial investments in irrigation/AWM including investments predicated on crop production and added value
- Advise on the allocation of risks involved in irrigation/AWM
- Advise on appropriate government financing instruments, paying specific attention to the Infrastructure Finance Facility scheme proposed in the National Public Private Partnership (PPP) Policy
- Advise on appropriate processes for establishing sustainable irrigation/AWM PPPs

Qualifications:

- A Master's degree in relevant Engineering discipline.
- An exposure and/or training in irrigation policy analysis.
- A minimum of 25 years working experience in agriculture water management, at least 5 of which in senior management position.
- Experience working in other developing economies with successful irrigation policy environment, especially in Sub-Saharan Africa.
- Excellent writing and presentation skills

Expert No. 2: Corporate Law, Regulatory Frameworks and Institutions Expert

Responsibilities include:

- Identify guiding principles for irrigation and agricultural water management, paying particular attention to regulatory and contract enforcement mechanisms
- In collaboration with the experts in irrigation/AWM policies & institutions and irrigation management, advise on appropriate government financing instruments paying specific attention to the infrastructure finance facility scheme proposed in the national PPP policy document
- In collaboration with the experts in irrigation/AWM policies & institutions and irrigation management, advise on appropriate legal measures for sustainable irrigation/ AWM
- Advise on the appropriate legal obligations of partners in an irrigation/AWM projects
- Advise on all aspects of legal jurisdiction concerning irrigation/AWM projects

- Review the law that established GIDA, SMCD 85 (1977) and indicate what is needed to support and operationalize an irrigation/AWM in Ghana in the light of the new mandate of the authority and including all land tenure issues
- Draft specification for the legal measures and instruments needed to support the policy and regulatory functions of GIDA

Qualifications:

- At least 20 years of post-qualification practice.
- Registered membership with the Ghana Bar Association (GBA) for at least 10 years.
- Evidence showing exposure and/or training in irrigation policy analysis.
- Extensive experience working on legal matters relating to drafting Agriculture/Irrigation Bills, Regulations, Agriculture Land Administration, Corporate Contracts.

**Expert No. 3:
Irrigation Management Expert**

- Facilitate development of stakeholder analysis to identify spheres of influence and impact
- Facilitate participatory development and definition of reformed mandate for GIDA
- Advise on options for institutional and organizational structures for reformed GIDA
- Develop with key stakeholders, an appropriate theory of change and implementation plan for the transition to a reformed irrigation sub-sector, including reform of GIDA
- Advise on potential models for Water Users Associations (WUA)/ organizations, including an assessment of strengths, weaknesses, opportunities and threats to the stakeholders in the proposed options
- Advise on capacity development requirements and strategies to enable implementation of the recommended WUA models
- Undertake a short review of experiences of transfer of public sector irrigation infrastructure to private sector operation under different ownership models
- Facilitate stakeholder consultations to assess the likely acceptability of alternate transfer and ownership models

Qualifications:

- At least a Master's degree in the appropriate discipline.
- A minimum of 20 years working experience in assessment of participatory irrigation management, irrigation management transfer and development of water user associations.
- At least 5 years in senior management position.
- Experience working with Water Users Associations (WUAs) in organizational development and change management will be an added advantage.
- Experience working in other developing economies with successful irrigation policy environment, especially in Sub-Saharan Africa.

ANNEX 2. STAKEHOLDERS MET WITH DURING THE COURSE OF THE STUDY

| AFFILIATION | TITLE |
|--|--|
| DAWHENYA IRRIGATION SCHEME | |
| Agritop | Managing Director |
| MDX Ghana Flowers and Greens | Manager |
| Dawhenya Irrigation Farmers' Cooperative | President |
| Dawhenya Irrigation Farmers' Cooperative | Vice President |
| Dawhenya Irrigation Farmers' Cooperative | Executive Member |
| KPONG IRRIGATION SCHEME | |
| Vegpro Ghana Limited | Manager |
| Kpong Irrigation Scheme | Lateral Leader, C/6 |
| Kpong Irrigation Scheme | Interim Executive Committee member. Lateral CI Rep. |
| Golden Exotic | Dep. Managing Director, Admin. & Corporate Affairs |
| WEIJA IRRIGATION SCHEME | |
| Weija Irrigation Scheme | Cooperative Chairman |
| Weija Irrigation Scheme | Executive Member |
| Weija Irrigation Scheme | Farmer |
| Weija Irrigation Scheme | Farmer |
| Weija Irrigation Scheme | Farmer |
| Weija Irrigation Scheme | Farmer |
| Weija Irrigation Scheme | Farmer |
| Weija Irrigation Scheme | Farmer |
| Weija Irrigation Scheme | Farmer |
| CENTRAL STAKEHOLDERS | |
| Ministry of Agriculture | Minister of Food and Agriculture |
| Feed the Future Ghana Agriculture Policy Support Project | Chief of Party |
| | Senior Policy Adviser |
| | Operations Director |
| GIDA | Chief Executive |
| GIDA | Director, Planning Dept. |
| GIDA | Sociologist |
| GIDA | Director, Legal, Administration & Finance |
| Agriculture Development Bank | Head, Ag. Finance |
| Agriculture Development Bank | Group Head, Ag. Finance |
| Agriculture Development Bank | Relationship Manager |
| Agriculture Development Bank | Relationship Manager |
| Water Resources Commission | Executive Director |
| Agricultural Engineering Services Directorate | Director |
| Environmental Protection Agency | Ag. Director, Environmental Assessment and Audit Division |
| Ghana Commercial Agriculture Project | Project Coordinator |
| Japan International Cooperation Agency (JICA) | Project Formulation Advisor |
| Japan International Cooperation Agency (JICA) | JICA Agricultural Programme Coordinator |
| Savannah Accelerated Development Agency | Chief Executive Officer |
| International Water Management Institute | Head of West Africa Office |
| International Water Management Institute | Economist |
| International Water Management Institute | Economist |
| International Water Management Institute | Hydrologist |
| MOFA Directorate - WIAD | Deputy. Director |
| MOFA Directorate - WIAD | Asst. Director |
| International Food Policy Research Institute | Senior Research Fellow |
| Korea International Cooperation Agency | CEO, Biodiv, Easy Biodiversity |
| Korea International Cooperation Agency | Professor, Hankyong Nat. University |
| Korea International Cooperation Agency | Professor, Dept. of Biosystems Machinery Engineering, Chungnam National University |

| AFFILIATION | TITLE |
|--------------------------------|------------------------------------|
| Lands Commission | Director |
| Lands Commission | Senior Land Administration Officer |
| Lands Commission | Director |
| Ministry of Lands and Forestry | Director |

ANNEX 3. BASELINE LITERATURE

| TITLE | DATE | SOURCE | AUTHOR(S) |
|---|-----------|---------------------------------------|--------------|
| Project for Promotion of Farmers' Participation in Irrigation Management completion report | 2006 | JICA | leizumi |
| Ghana Shared Growth and Development Agenda (GSGDA) II 2014-2017 | 2014 | Government of Ghana, NDPC | not declared |
| National Irrigation Policy, Strategies and Regulatory Measures | 2012 | Ministry of Agriculture - GIDA | not declared |
| Consulting Services to Provide a Range of Human Resource Technical Services In View of Modernization of Ghana Irrigation Development Authority | 2015 | GIMPA Consultancy Services | not declared |
| FAPIM in Retrospect | 2006 | not known | not known |
| Towards Irrigation Management Transfer (IMT) - Issues for Farmer Participation in Irrigation Management (FAPIM) & Joint Irrigation Management System (JIMS) On Gida Schemes | not known | not known | not known |
| Project for Promotion of Farmers' Participation In Irrigation Management | 2006 | JICA | Ogawa |
| Joint Irrigation System Management in Ghana | not known | not known | not known |
| Ghana Agriculture Sector Investment Programme - Design Report | 2014 | IFAD | not declared |
| Medium Term Agriculture Sector Investment Plan | 2015 | MOFA | not declared |
| Development of Irrigation Policy Strategies and Regulatory Measures - Synthesis Report | 2006 | Government of Ghana, FAO | not declared |
| Ghana's Intended Nationally Determined Contribution and Accompanying Explanatory Note | 2015 | Government of Ghana | not declared |
| National Policy on Public Private Partnership (PPP). | 2011 | Min. of Finance and Economic Planning | Not declared |

ANNEX 4. LESSONS LEARNED FROM THE FIELD VISITS

Visits were made to three schemes, where it was possible to discuss issues of concern to seven different stakeholders. As will become clear below, a very relevant and largely consistent story emerged from these valuable consultations.

DAWHENYA IRRIGATION SCHEME

Agritop Greenhouse Project

Agritop is an Israeli company engaged as a Government of Ghana/ private sector initiative in the development of a training center for young graduates (from tertiary education facilities) with respect to the production of high value horticulture in fabric greenhouses intended to establish phytosanitary conditions. Its business model is eventually to generate some commercial revenues from the production and sale of lettuces, bell peppers and cucumbers on some 5 ha (of a total 16 ha available land) and to use the cash to finance the training service and to establish/top-up a fund to support its trainees ex-post as they start up their own operations.

At the time of visit, the scheme was still under preparation, and the Dawhenya pumps – the scheme's intended source of irrigation water - were not working because GIDA has reportedly not paid the energy bill. Agritop is therefore importing potable quality drinking water to maintain supplies to the greenhouses so far constructed.

The eventual market chain will be as follows: post-harvest chilling; grading; cold room storage, sale/transportation to market.

Important here is that according to Agritop's representative, the market for its crops "can be educated" and includes both supermarkets and open markets. Quality, which has not yet been a major issue, is now beginning to emerge as an issue in line with demonstrable increases in market sophistication.

MDX Ghana Flowers and Greens

This 30ha scheme was established in 2005 by an existing company in The Netherlands wishing to expand its production of foliage greens and considered locations in Africa, Asia and Latin America. Based on the recommendations of other growers; time zone similarities with Europe; favorable investment climate; proximity to Europe and hence transportation costs; political stability and other factors including the fact that English is spoken here, Ghana was selected where several locations were first considered by the company before the final choice was made.

Facilitation was provided by GIPC, and was found to be satisfactory. The land is being leased from the Government and no problems were encountered.

Nonetheless and despite successful emergence into black ink territory after 5 years of operation, concerns remain about weather variability; encroachment; and its energy costs (for pumping and chilling).

Other than an awareness that some grant support was provided by the Netherlands Government, nothing was known about the due diligence process followed by the investors, which is regretted because of its relevance to the establishment of an enabling environment for commercial investments of this sort.

No problems were reported with respect the achievement of export quality produce (they have a grading shed) and no problems were expressed with respect to GIDA, even though GIDA was initially somewhat worried about the crop choice. As an entity operating under the free zone scheme it is enjoined by law to export 70% of its produce. It is a good training ground for horticulture students

from tertiary institutions. In fact, the scheme supplies annual training to around 100 individuals on attachment.

The scheme is a member of any trade association, but it did grow vegetables early on. The production was satisfactory, but marketing proved difficult.

Dawhenya Water Users and Service Providers

At the time of visit, power had been cut from the electrically driven main pumps due to non-payment of the energy bill. Nonetheless, some farmers had made their own arrangements in the form of individual pump sets taking water straight from the lake. Such farmers take two rice crops annually and account for 200 ha of the total 450 ha scheme, on the remainder of which no farming is currently taking place.

Farmers met with had no idea about the Irrigation Development Authority (Irrigation Water Users Association) Regulations 2016 (LI 2230) and are thus operating as the Dawhenya Irrigation Farmers' Cooperative on the basis of the old LI 1350. The management is headed by a 9-member executive (7 male 2 female) under the guidance and supervision of the project manager. Reservations were expressed about the idea of a total transfer of management of the scheme to the farmers. Farmers consider GIDA's technical and managerial support to be very crucial for their operations, although lateral leaders already ensure maintenance of laterals and their delivery of water. These arrangements for water distribution are reportedly satisfactory to the farmers who pay their irrigation services in cash or kind. Nonetheless, the farmers met with would welcome the idea of transfer of irrigation facilities to the WUA and already claim to have members that would be up to the management challenges. However, presence of an overall management entity for technical advice and direction would remain crucial.

Every farmer is legally obligated to be a member of the WUA, but the overall group is sub-divided into individual groups operating at the lateral canal level where they undertake all operation and maintenance activities, while the group provides additional services such as inputs supply, to the individual farmers.

Notwithstanding the unpaid energy bills, the farmers had not considered/were unaware of ways by which to: i) reduce pumping costs (SRI rice, re-use of drainage water); ii) to use alternative energy sources (rice husks) or iii) to reduce their net offtake¹ from the grid (wind or solar).

Although a gravity dam is intended for some unspecified time in the future and will avoid the need for energy, there are other equally prohibitive costs. One comprises high interest rates paid for seasonal production credits – but when pressed for details, the farmers did not even seem to know what rates they have actually been paying. But see below, where a figure of approximately 30%/season is cited. This is extremely prohibitive.

Marketing costs were also cited as excessive, while the farm gate prices were claimed to be low. In fact, it was claimed that the scheme's go-down is storing a great deal of rice, waiting for the price to go up. However, there is no marketing committee in place. Accordingly, the farmers cannot take advantage of vibrant rice markets that seem to work well elsewhere in the country. Similarly, attempts to grow vegetables (75% rice, 25% vegetables) were reportedly unsuccessful for the same reasons.

On the other hand, awareness of ways by which to reduce water and increase yields was non-existent, as were energy saving/added value opportunities concerning the rice husks. Both of these measures would contribute to the achievement of Ghana's INDC² commitments with respect to the Paris Agreement (on climate change mitigation and adaptation – December 2015).

¹ Net because it may be possible to sell surplus off-grid power to the grid
² Intended Nationally Determined Contribution

The land itself is threatened by: i) urban encroachment which is a growing problem and is not helped by the complexities of land ownership; and ii) salinity which would appear to be a result of inadequate and/or poorly maintained drainage.

KPONG IRRIGATION SCHEME

Vegpro

Vegpro is a foreign, commercial sector producer of – in theory – a wide range of high value horticultural commodities for export to the EU and operates under the auspices of the Free Zones Board. However, because of certification difficulties with respect to EU imports, in practice, baby corn is the only crop currently grown on the estate that can be exported. The total area available is some 1,000 ha, but of this, only 250 ha is currently under production where it is irrigated using center pivot equipment. In addition to baby corn, Vegpro's management thinks that the following have potential if the non-tariff EU barriers could be overcome: asparagus, sweet potatoes, butternut and beans (there is a technical problem with the latter however, due to the growth aspect which the crop assumes in Ghana for some reason).

The project itself draws water directly from the Kpong reservoir and was established by a Kenya based parent company which chose Ghana because of its: vast water resources; political stability; available land (but see below); functional export infrastructure; suitability for a range of short season crops, and the availability of skilled staff.

Problems faced largely revolve around regulatory enforcement and comprise the risk of i) side selling from out growers, a risk which was confirmed when the estate tried an out-grower pilot with just 10 participants; ii) squatter and land encroachments the risks of which are perceived to be considerable; and iii) crop destruction by pastoralists' livestock. As a result of these threats, Vegpro's trust in the regulatory system is compromised.

With respect to irrigation service charging, none are currently being paid. This is because as mentioned, Vegpro has its own pipeline from the lake. But if/when it draws water from the Kpong canal system, then there would be a willingness to pay.

Kpong Water Users and Service Providers

The Kpong Irrigation scheme provides gravity supplies to small rice producers occupying some 2,000 ha. These farmers are organized into 15 "interim" Water User Associations which themselves are federated under a single cooperative – the Kpong Irrigation Farmers' Cooperative. The component WUAs are themselves established under LI 2230 which marks a departure from the co-operative set up under GIDA control to one of farmer organized entities with GIDA's technical/managerial support. Apparently, this is a preliminary step towards organization under the new Guidelines number 2230 of 2016. But although awareness of the GIDA Act was all but non-existent, awareness of the new guidelines and of the additional operation and maintenance responsibilities it represents was confirmed. In fact, piloting already underway on a 50ha block is propelling its participants speedily along the learning curve.

Members expressed approval of irrigation management transfer, but would nonetheless still prefer some GIDA presence for the provision of oversight. Scheme management has been partially decentralized with a service charge equal to some \$40/ha/year being paid for the aspects of service that are still provided by government. But irrigation service charge recovery rates are low at a reported 38%. Farmers think they need to retain a bigger share of the ISC because they handle the bulk of the work involved.

Four out of 12 of the management committee are women and there is a land Allocation Committee (AC) in place.

The overwhelmingly predominant farming system comprises double cropped rice with average per hectare yield estimated to be 5.5 tons per season. Average land holding is about 1.2 hectares per farmers. The identified challenges/constraints include:

- Despite encouraging yields and double cropping, the combination of high production costs (especially labor and machinery) and an apparently unreliable market means that these high levels of production do not translate into any socio-economic transformation.
- Very limited awareness of value chain possibilities with all the producers paying to have their paddy milled at any one of the myriad private mills situated all over the command area.
- Prices, about which producers claimed that imported rice is cheaper than locally produced rice³ and that unacceptably low prices are paid by the national buffer stock.

Other problems of a physical nature include poor land development and a lack of farm roads to both drying floors and markets. And as already mentioned moreover, concerns were also raised with respect to irrigation charges which farmers think are too high; unaffordable interest rates for seasonal credits; and political interference in matters such as land allocation.

Finally, when asked for their estimate of what the full recurring costs would be if GIDA support were to be withdrawn, members in the meeting thought they would be \$4,100/ha/year and as such unaffordable. This is clearly incorrect; but serves nonetheless to illustrate the low awareness with respect to what recurring costs comprise. However, when pushed further, the possibility emerged that they included rehabilitation costs with the recurring costs. This of course is not valid; but is a reminder nonetheless, that GIDA will have to ensure that any public scheme transferred to farmer management should be rehabilitated and handed over in full working order and provided with water management infrastructure which is consistent with the farmer skills at the time of hand-over.

Golden Exotic

Golden Exotic is a subsidiary of a multinational African business with interests also in the Ivory Coast and other places. The decision to establish a venture in Ghana was necessitated by the need to relocate following the outbreak of the civil war in La Cote d'Ivoire. The business already had an interest in Ghana before buying off an already existing company (Paradise Farms) for pineapple production. The project itself was established in early 2005 on 1,600 ha of land made available by Government for a 25 year- lease. Even though the land is leased from Government, its registration remains problematic. To date no land title certificate has been issued to the company by the Lands Commission despite several requests.

Of the total area, some 1,200 ha are considered cultivable and are planted to bananas. Since its establishment however, the company has acquired some 1,000 additional hectares via private acquisitions and employs a total labor force of approximately 2,600 individuals.

Despite the unresolved paperwork with respect to the lease, the investors do nonetheless consider the project area very suitable because of its proximity to the port; good infrastructural network; favorable soil and climatic conditions and water availability and more generally because of the favorable political environment in Ghana. There are currently 1,200 ha under banana production, the project has acquired a further 1,200 ha from traditional leaders in the area.

The project's main export markets are the UK (major), France and other European countries where currently there are no phytosanitary restrictions for imported bananas.

With respect to Irrigation Management Transfer (to the private sector), the project's representative's expressed views were as follows:

- Golden Exotics would be greatly interested in the turnover of the KIS management to the company under a PPP agreement.

³ Which suggests the possibility that there are powerful vested interests embedded in importation cartels.

- It would set up a subsidiary company to manage the scheme
- It would be in a position to provide water to the KIS farmers at a reduced rate/charge
- Would not encourage the handover of management responsibilities of the main distribution system to the WUAs, although the WUAs could usefully take charge of the laterals and other minor structures.

With respect to the role of GIDA/Government going forward, the project's representative's expressed views were as follows:

- GIDA's ongoing participation is necessary to affirm the ownership of the scheme, which belongs to the government.
- A regulator is needed to set targets, supervise operations and mediate in matters of concern on the scheme.
- GIDA should put in a small management staff under a management contract with the private investor.
- Clear guidelines on GIDA's management responsibilities are needed, not least with respect to the resolution of issues arising on the scheme.
- The company endorses the PPP concept and considers that irrigation scheme management could be transferred to commercial entities on the basis of management contracts with GIDA as a regulator.

And more generally:

- The GIDA Board which currently comprises mostly institutional membership, should be revised to bring in more private sector representatives
- A policy review is needed to legitimize and establish stepped-tariffs with respect to the supply of electricity for agricultural production
- A national land bank is needed to facilitate the entry of more private sectors into the ag. Sector.

WEIJA IRRIGATION SCHEME

At the time of the visit, 195 ha of this 220-ha scheme⁴ were under year-round production of a variety of high value horticulture including: okra, tomatoes, melons, aubergines, marrows and miscellaneous Asian vegetables. Its farmers are organized into four groups operating under a single WUA, itself being established under the auspices of LI 2230. The Association is responsible for scheme management, but with technical direction/support from GIDA, especially with respect to water management. Farmers, whose average holding is around 1.25 ha, nonetheless and despite 90% illiteracy have reportedly been trained in irrigation scheduling by the World Resources Institute. The need for further training was nonetheless expressed by the members met with.

All production is for the market, either export or local, with between 20% and 50% being grown under contract at any one time. Although the users do not utilize costly formal credit services, partly because of collateral difficulties, some farmers producing for the local market are extended credit in cash and kind by so-called "market queens" who prevent side-selling by constant monitoring of "her" crops' progress. Users of such credit facilities are usually required to accept lower output prices from their creditors.

Production costs are also high due to the need for double pumping. The first stage lifts water to a night storage reservoir while the second delivers water to the farms, using a rotational supply system. But the pumps have been poorly maintained and their efficiencies have reduced as a result. One reason cited for this concerned difficulties in obtaining suitable spare parts for the electro-mechanical equipment. Also, the delivery system pumps are less powerful than needed for 100% service delivery.

⁴ The remaining 25 ha are out of commission due to pipe damage accruing to vandalism and encroachment.

This is to avoid excessive energy charges, but it means that distribution efficiencies are less than desirable although - and notwithstanding the risk of higher tariffs - farmers would like larger pumps that would provide 100% coverage.

Land is allocated to members on a yearly basis by a land allocation committee based on availability, with priorities given to any original land owners whose lands were acquired for the purposes of the scheme. Renewal is automatic as long as fees are paid. When they are not, legal measures – including the courts - are brought to bear after the defaulter has been given a reasonable amount of time and warnings to pay up.

When asked about total handover to themselves they were adamant that GIDA should remain involved because without its ongoing participation in the scheme prior land owners would perceive it as no longer Government's, but rather theirs to reclaim. In fact, encroachment is already a problem, but has been solved by vigilance, the forceful eviction of trespassers and even demolition of offending buildings.

Farmers also felt that the outsourcing of repair and maintenance responsibilities to local contractors may be prohibitive. This was based on their assumption that such works would include scheme rehabilitation – but is addressed in the draft policy revisions presented below in Annex 6.

Summary of lessons learned from the scheme level consultations

Key lessons learned with respect to WUA regulations and management transfer **on public irrigation schemes** are as follows:

- There are examples of strong farmer groups (Cooperatives) on irrigation schemes, duly registered with the Dept. of Cooperatives, and operating with the cooperative by-laws.
- Farmer groups undertake all O&M activities as well as assisting with input supply and marketing.
- There is awareness among farmers on the prevailing WUA policy created, but they see this more as a change in name of the groups but with same responsibilities as a cooperative society.
- Farmers generally welcome the idea of irrigation (scheme) management transfer to WUAs in terms of the operation and maintenance of facilities for which they claim to have much expertise to handle.

Lessons learned with respect to WUA structure are as follows:

- Farmer groups all operate under the cooperative law
- The law binds every farmer to be a member of the Cooperative.
- Diverse groups formed on basis of laterals, farm units etc., and report to an umbrella/apex body, in the case, the cooperative society.
- Groups undertake all O&M activities in addition to provision of some services to farmers (input supply).

Challenges and constraints identified during the consultations were as follows:

- Extremely limited access to affordable seasonal loans for production.
- Advantageous marketing of produce
- Crop diversification, which is not perceived as attractive due to challenges in post- harvest handling; marketing and limited awareness of and access to value chain opportunities.
- Poor markets for produce on schemes producing rice, where small farmers would welcome support from GIDA in produce marketing
- High cost of electricity on pump schemes.

- Insecure or unenforced land tenure arrangements.

Key lessons learned from the **private operators** were as follows:

- There is an investment friendly climate for agri-business establishment
- There are attractive concessions for private investors and operators and these include access to Free Zones.
- Contractual arrangements with GIDA are satisfactory.
- Ghana is a good investment target for agriculture/agribusiness because:
 - It enjoys a good infrastructural network
 - Weather conditions are generally conducive to profitable farming as are the soils and water resources
 - It enjoys political stability
 - It provides convenient access to international markets with good reliable air cargo services, thus lower marketing costs

ANNEX 5. SOME THOUGHTS ON PUBLIC PRIVATE PARTNERSHIPS

Conventional wisdom includes a range of possible financial or transaction models for PPPs in agricultural water management and allocates them to three broad categories: Public Contracts, Public Service Delegation and Co-Investment in Production.

Despite often being lumped together with PPPs, Public contracts are actually a form of outsourcing and comprise⁵:

- **Service Contracts:** which are usually immediate term arrangements under which the public sector engages the services of a private entity to undertake tasks such as system maintenance, fee collecting etc., that are difficult to undertake with the administrative means available to the relevant public-sector institutions.
- **Management Contracts:** are similar to service contracts but transfer responsibility to the service provider for a fixed term. Such arrangements vary in complexity and sometimes involve the secondment to, or management by, the private entity of public employees.

Public Service Delegation (PSD) comprises:

- **Leasing:** which is an arrangement whereby the service provider is responsible for operating and maintaining a scheme usually in return for users' AWM service fees, but is not responsible for its capital financing (although this is a somewhat blurred distinction in the case of rehabilitation and upgrading). Under lease arrangements, the contracting authority is paid a fixed rent by the service provider meaning that the service provider therefore carries all the commercial risk⁶. Under this arrangement the capital financier is essentially a form of partner because of the capital risked, and in the case of a Government the expectation of some sort of economic or socio-economic benefit.
- **Affermage:** which is an arrangement similar to a lease: but since the rent payable depends on AWM service fees which depend not only on a users' willingness but also ability to pay⁷ there is a revenue risk beyond the control of both service provider or user. Affermage is an arrangement whereby the commercial risk is shared in some way between the service provider and the contracting authority, meaning that the contracting authority indemnifies the service provider against revenue losses beyond its control. Affermage arrangements are particularly relevant and useful when Governments are actively trying to reduce sub-sector activities and costs by commercializing service delivery – exactly as is that of Ghana. The assumption of risk and expectation of economic or socio-economic benefits on the part of government qualifies this also, as a genuine partnership.
- **Concessions:** which give the service provider full responsibility not only for O&M of an AWM scheme, but also its capital financing. Under a concession, ultimate ownership of the assets is vested in the Government and full use of the assets reverts to Government when the contract ends. As such concession arrangements represent considerable risk to the private interest.
- **Build Operate and Transfer (BOT):** although at first glance this is similar to concession, is actually quite different because the service provider receives a fixed amount from the contracting authority regardless of what actually happens in terms of water availability and

⁵ The difference between a service contract and a genuine partnership seems well understood by Ghanaian stakeholders, including the incumbent Minister for Food and Agriculture – but this difference seems unclear to some of Ghana's development partners.

⁶ In some nomenclatures, this would be known as "Lease-On" because the capital infrastructure is funded by one party (usually the public sector) and leased on to the operator. But there is also Lease Back whereby the private investor constructs a scheme which the public sector then leases it to the public sector or its delegated operators. At the time of writing, this has not emerged as a realistic option for Ghana so is not included in this analysis.

⁷ Which, in absence of affordable insurance options, could be compromised in the event of unfavorable weather, flooding, disease, pestilence or even market shock.

use. In this respect, a BOT is more similar to a service contract than a PSD: but there are several variations on the BOT theme:

- *BOO (Build-Operate-Own)*, under which the assets remain indefinitely with the private interest
 - *DBO (Design-Build-Operate)*, under which public and private sectors share responsibility for capital investments
 - *ROT (Rehabilitate-Operate-Transfer)*, which is sometimes favored where infrastructure needs major work.
 - *Divestiture*: in this context is basically the sale of a public asset to a private entity and can hence be thought of as privatization.
- **Co-Investment in Production:** which - although in some ways can be thought of as a subset of DBO whereby the public and private sectors co-invest not only in infrastructure and service delivery, but also production - is listed separately here however, because the revenue risks are shared between the two players according to equity, rather than contractual formulation. An excellent example of this would be the Sudan's highly successful 33,000 ha Kenana Sugar Project – see text box.

THE KENANA SUGAR PROJECT

The Kenana Sugar Project, which is situated some 20km across the Nile to East of Kosti – in the Sudan - is the world's largest irrigated sugar plantation. It was constructed in the 1970s, equity financed by a combination of the commercial sector and Government of Sudan (see <http://www.kenana.com/>)

Before going further, it is also necessary to understand that a typical AWM scheme has four service oriented components:

- **Water Management:** which concerns the interception and management/timely release of the water in a regulated fashion. Sometimes this component involves storage.
- **Water Conveyance:** which concerns the movement of water from its source to the border of the scheme along with the infrastructure and applicable operating rules. Sometimes this will involve a main/feeder canal or pipeline, other times it may involve the natural river itself if a dam is involved and dam releases are conveyed by means of the river.
- **Water Distribution:** which concerns the delivery of water to the fields and includes the secondary, tertiary and sub-tertiary systems. This may involve rotating the supplies and should be carried out in accordance with any rights system that may apply.
- **Drainage:** whereby the operator ensures that excess water is drained from the field - regardless of whether or not it derives from the irrigation scheme or from a flood event – and does so mindful of the environment consequences of excessive farm chemical effluent.

Similarly, it is possible to identify five categories of function that engage AWM stakeholders:

- **Investment:** included within this category are scheme identification, planning, appraisal, financing, design and implementation.
- **Regulation and Control:** including water allocation, bailiff functions, maintenance audit and price setting/regulation.
- **Operation, Management and Maintenance (OMM):** including water allocation, water delivery (system operation) and system management (accounts, customer liaison etc.) and system maintenance.
- **Agricultural Production:** which is self-explanatory.
- **Service fee setting and recovery:** which itself can be undertaken as a PPP⁸.

The significant range of PPP models has already been noted that as have the very real sub-sector specific revenue risks to mitigate. There is also a need to understand that the term “Public” lacks precision and definition in the context of PPPs. As with transaction models and investor classes,

⁸ As for instance in Bangladesh where irrigation service fee and domestic water supply fee collection have been privatized under a form of PPP arrangement.

there is potentially a range of entities that could become the public partner in an AWM PPP. These could include:

- A government ministry or department
- A parastatal
- An authority
- A civil administrative entity at the decentralized agency
- A financial instrument such as a fund.

Each will be more suited to a particular kind of PPP and is likely to have its own regulatory framework, so Government of Ghana will have to decide i) what sort of entities it wants to participate in a PPP and ii) what sort of financial architecture is required (these could be long term equity, equity buy-back, debt, convertible debt, affermage etc.) and how any public finances are mobilized (from the coffers general, bond issues, ministry votes – in which case which ministry, blended finances etc.) and if necessary to pass any enabling legislation that may be required.

At this juncture, it is vital to understand that a commercial investor's interests in a PPP are not likely to be the same as Government's. Hence it is necessary to take a brief look at the factors which might attract an investor to enter a PPP. In an ideal world, these factors would simply comprise:

- Financial rates of return, which should obviously be high
- Discounted Net Present Values (NPVs), *ditto*
- Capital growth, *ditto*
- Exit value EBITDA⁹, which should be attractive at industry standard multipliers¹⁰
- Risk, which does not have absolute limits but rather is related to the investor's expectations of benefits: i.e., high risks mean larger portions of equity or higher interest rates (in the case of the debt investor).

The relevance of these parameters is pretty much self-evident; but when assessing them, the investor will consider not just the venture's likelihood of success **per-se**, but rather its likelihood of success in Ghana. In other words, the investor will want to know the extent to which Ghana offers what is often called an "enabling environment" or otherwise.

Opinions differ about what makes a suitable enabling environment for investment. Some experts, still apply the Washington Consensus, which assesses a country's suitability in terms of its:

- fiscal discipline
- redirection of public expenditure towards fields offering high economic returns and the potential to improve income distribution
- tax reform
- interest rate liberalization
- competitive exchange rates
- trade liberalization
- liberalization of FDI flows
- privatization
- abolishment of entry and exit barriers
- secure property rights

But the Washington Consensus has become discredited in recent years, not least because it is often associated with the neo-conservative agenda and the less favorable aspects of globalization. Critics

9 "Earnings Before Interest, Tax, Depreciation and Amortization": a measure of the value of a business's trade and goodwill
10 Typically, around 3.5 of the last three years' gross revenues.

include significant public figures such as Henry Kissinger as well as highly regarded researchers such as Maxwell and academic activists such as Stiglitz.

Because the matter is so fiercely debated, we will keep it simple and focused on the likely needs of potential investors in Ghana's irrigated agriculture sub-sector. On this basis, it is suggested that the following features characterize an enabling environment (some features are more relevant to international as opposed to national investors – but the principles are nonetheless sound):

- ***The ability, with supporting mechanisms, to resolve contractual issues according to internationally recognized standards and procedures***, because these represent a level playing field and a transparent game. Furthermore, acceptance of such standards and procedures are i) an indication of a regime's acknowledgement of the need for objectivity and ii) evidence of its participation in the community of nations. And finally, it must be remembered that liability under such standards and procedures is incumbent not only on the investor and any contracted producers, but also where exporters are concerned, on those that undertake to buy those exports, thereby protecting the interests of sellers who in this case may include risk averse, hitherto subsistence farmers.
- ***Transparent and straightforward access to land***, because land is crucial not only as the basis of production, but also as a potential capital asset. There is a significant risk therefore, that once land values have been elevated; perhaps by land clearing or cultivation; the attachment of a water right; improved physical access, physical infrastructure or by the establishment of permanent crops (such as in sugar cane, cocoa etc.), that spurious claims on the land might be made and supported by equally spurious or vague legal structures. Any investment model that is predicated, on an early or medium-term exit strategy will almost certainly require that access to land as an appreciating asset is securely held, regardless of whether that is by freehold, leasehold, rental agreement or partnership.
- ***The existence of an effective investment facilitation institution***, ideally a one-stop shop. Unlike the preceding criterion however, this cannot be described as a precondition, but rather as an advantage because when the nuts and bolts of business registration, tax exemption, partnership formation and land allocation etc. are taken over by a unit designed to do just that, and furthermore with established linkages to the various government institutions that will be involved, the investor can get on with crafting and implementing the deal itself, hiring the best possible team to make it happen and undertaking convincing rural facilitation measures.
- ***Straightforward company registration procedures***, for much the same reasons as above.
- ***The ability to repatriate capital and profits***, which is absolutely crucial to the foreign investor because of the opportunity it opens up for crops targeted at domestic food security and import substitution. In the absence of an ability to repatriate capital and profits investors in African agriculture has been historically locked into high value export or industrial crops. And even where basic foods can be exported, their bulk tends to introduce logistic nightmares. The ability to repatriate capital and profits is therefore commensurate with the ability to succeed in the local agricultural markets, these of represent potential food security and added value benefits to the host government.
- ***An effective commercial banking sector*** is crucial for several reasons, not least because available banks should be able to undertake international financial transactions in a straightforward and cost-effective manner. That much is relevant to any type of investment involving overseas players, especially for instance where international letters of credit and the like are required for machinery procurement etc. But for the investor in agricultural production, effectiveness has two other dimensions. First is that the bank's credit risk assessment ability and flexibility should be appropriate for an innovative agricultural sector rather than safe and traditional cropping lines. When this is not the case, then ridiculously high interest rates are applied on non-traditional agricultural business. The second dimension is an ability on the bank's side to understanding the importance of timing when it comes to seasonal loans, the reasons for which will be self-evident. There may also be Commercial Investment dimensions in bank effectiveness. Where out growers are encouraged or assisted

to take responsibility for their own financing arrangements, mobile banking may be more appropriate while social collateral¹¹, when correctly designed and applied may be a sound alternative to physical collateral. And an effective bank in this context will therefore be one that is able to innovate in like measure with the impact investor and any out growers involved in the business model.

- **A functional transportation system** is needed to ensure that inputs can be delivered to a venture safely and in a timely fashion; and so that produce can be shipped to the market at the right time and in good shape. Where high value is involved, the transportation system would probably have to include cold chains and reefer trucks as well as reliable roads, railways and ports. Of course, there will be much that the investor can do to take control of elements such as cold chains and the like, but it is the entire system from farm gate to market that must be reliable.
- **Tax and work permit incentives;** but like the one stop shop and straightforward company registration procedures these are advantages not conditions. But that being said, some commentators are beginning to question the developmental value of tax breaks, suggesting rather that other incentives may be more appropriate in the emerging market situations – it is possible for instance, that investment risk mitigation via a suitable form of blended capital, might be a suitable alternative.
- **Policy space for commercial investment in the agricultural sector;** because it is clearly essential that commercial investment is facilitated not frustrated by the prevailing policy framework. But for the investor in agriculture, it goes beyond that basic pre-requisite. For him or her, the ideal policy framework will include space for social and commercial investment innovations, while building service oriented public institutions and allowing producers more choice over their farming systems (as compared with the old style of target driven, commodity based self-sufficiency policies). Even better though, is if the policy framework facilitates or encourages such innovation and better still if it commits government to the proactive engagement of such things.
- **Secure property rights;** the need for which is self-evident not least because many agricultural investments involve significant lead times. The investor will want to be assured that the venture is still theirs once it reaches full productivity. And this does not just refer to real estate – it also refers to water rights. Some countries limit these to time horizons that may be less than investors' comfort levels would like when considering permanent crops, as well as being potentially counterproductive when trying to allocate water on economically meaningful terms.
- **The importance given to equitable social development and environmental sustainability** by the government because the responsible investor would rather support the agenda of a benign, well intentioned government rather than work against the agenda of the opposite type. This does not mean however, that such an investor should be afraid to leverage advocacy opportunities and enhance capacity at the official level where governments commitment to these cross cutting values is nascent or could be improved or refined.

The relevance of these important considerations to the Ghanaian situation will be obvious to the reader.

11 Or other innovative forms of collateral such as a water right, as has been suggested in Swaziland for instance.

ANNEX 6. FOREWORD TO CHAPTER 2 (FOR PRINTED VERSION)

It has been estimated by a variety of expert international organizations that the achievement of global food security by 2050 will require approximately 10% more functional irrigation globally than is currently the case. In addition, new irrigation schemes will be needed to replace existing schemes that will no longer be functional due to sea level rise, salinization and/or irredeemable dilapidation. In addition, consensus is emerging in the same constituency with regard to the need for trade based pathways towards global food security and for a more commercial concept of small holder production.

Focus will naturally tend towards countries that benefit from large undeveloped land and water resources, especially those with well-established market economies. Ghana is one such country. Given this, it is difficult to understand why Ghana has, since independence, failed to take full advantage of its irrigation potential, diversified economy and practical access to a wide range of export markets.

The reason cited for this in the foreword to the existing National Irrigation Policy is that “irrigation development has been dictated and effected by ad-hoc governmental agricultural strategies and programs”. This is why the existing policy was prepared and promulgated. But even if this had not been the case, a new sub-sector policy is still required nonetheless, if Ghana is indeed going to address the new challenges and take advantage of the new opportunities that will increasingly characterize irrigation both nationally and globally: challenges and opportunities that are captured by the Sustainable Development Goals, the Paris Agreement (on climate change) and the changing architecture of the global agriculture sector.

In addition, the Ghana Poverty Reduction Strategy which inspired the existing policy has been superseded by the Ghana Shared Growth Development Agenda which among others represents a high-level response to the challenges which this revised irrigation policy is intended to address in sub-sector specific detail – especially with respect to the need for a more commercially oriented agriculture in the country. But these structural changes represent challenges and opportunities not just for the sub-sector, but also for its stakeholders who additionally face a range of constraints that arise from these changes as well as other factors.

Against this background, the revised sub-sector policy presented herein represents a domestic step-change which not only responds philosophically to the global step-change in progress, but also responds in practical terms to the need to open up the investment space for intensified and diversified irrigated agriculture and its associated value chains for crops and locations where Ghana has clear comparative and competitive advantage. To this, the revised policy calls for:

- i) a significant divestiture of government responsibility in the sub-sector, leaving GIDA with a more regulatory/faciliatory role;
- ii) innovative sub-sector financing; and
- iii) reduced financial exposure in the sub-sector on the part of the state.

It is my hope that with the implementation of this policy, Ghana can look forward to overcoming the sub-sector’s lingering challenges in a way that also contributes to economic growth, socio-economic transformation and the sustainable, productive use of natural resources.

Hon. Dr. Owusu Afriyie Akoto,
Minister of Food and Agriculture

APPENDIX I. POLICY MATRIX

The following matrix **summarizes** the detailed provisions specified in Section 5 and presents combinations of these summaries as the strategic actions needed to address each of the ten problems faced by the sub-sector.

| PROBLEM STATEMENT | POLICY THRUST (sub-objectives) | STRATEGIC ACTIONS | IMPLEMENTING UNIT | COLLABORATING ENTITIES | SUPPORTING REGULATIONS |
|--|--|--|---|---|---|
| 5.1 Low rates of agricultural productivity and sector growth | 5.1.1 To increase the coverage of agricultural water management infrastructure | <ul style="list-style-type: none"> • A National Irrigation Development Master Plan (NIDMAP) will be formulated • The area under economically advantageous irrigated agriculture will be expanded • Land will be consolidated wherever practical and equitable • Improved drainage service delivery will be provided where needed across the sub-sector typology | <ul style="list-style-type: none"> • GIDA • MOFA • Lands Commission • Traditional Authorities | <ul style="list-style-type: none"> • Dev. Partners • Min. of Finance • DAs | <ol style="list-style-type: none"> 1. Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995) 2. Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016 (LI 2230) 3. Amended* GIDA Act. 4. Regulations* pursuant to the Amended GIDA Act. 5. Land Bill** 6. Guidelines on Large Land Acquisition** 7. Water Resources Commission Act, 1996 (Act 522) 8. EPA Act, 1994 (Act 490) 9. Environmental Assessment Regulations, 1991 (LI 1995) 10. Local Governance Act, 2016 (Act 936) |
| | 5.1.2 To increase total factor productivity of the sub-sector | <ul style="list-style-type: none"> • Water delivery precision will be increased and sustained as a result of improved operation and maintenance and full recurring cost recovery • State of the art agricultural practices will be required on all irrigation schemes • Land levelling will be undertaken where needed in order to increase physical water use efficiency • Awareness and capacities will be raised with respect to ways, including value addition, by which total factor productivity can be maximized in irrigated agriculture | <ul style="list-style-type: none"> • GIDA • WUAs • MOFA (AESD) | <ul style="list-style-type: none"> • Research Institutions • NGOs • SRID • MOFA (Extension) | |

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|---------------------------|---|--|---|---|---|
| | | <ul style="list-style-type: none"> • Collaboration will be improved with other sector ministries and agencies and the research and private sector (NGOs and Farmer Based Organizations) • A system of productivity based metrics, supported by adequate data resources, will be developed and maintained for sector monitoring purposes | | | |
| | 5.1.3 To establish innovative financial instruments that promote diversification and investment in high input/high output farming systems | <ul style="list-style-type: none"> • Existing agricultural production subsidies will be replaced with stepped and time-bound subsidies that reduce the perceived risks of crop diversification and sector commercialization • The Ghana Incentive Risk Sharing program will be expanded to cover small farmers • Small farmers will be encouraged as assisted to adopt of high value farming systems and enabled to access better markets and participate in value addition | <ul style="list-style-type: none"> • GIDA • Local Banks • MOFA | <ul style="list-style-type: none"> • NGOs • Agric. Insurance | |
| 5.2 Financial Constraints | 5.2.1 To establish innovative financial instruments for improved agricultural production | <ul style="list-style-type: none"> • Collaborate with other sector ministries, agencies, the research and private sectors, credit sector and development partners for the purpose of identifying and evaluating innovative production financing instruments and collateral systems • Establish innovative production financing and collateral systems • Increase small farmer adoption of high value farming systems and enable them to access better markets and participate in value addition | <ul style="list-style-type: none"> • GIDA • GIPC • MOFA | <ul style="list-style-type: none"> • NGOs • Agric. Insurance (GISR) • Local Banks • Research Institutions • MOFA | <ol style="list-style-type: none"> 1. Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995) 2. Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016 (LI 2230) 3. Amended* GIDA Act. 4. Regulations* pursuant to the Amended GIDA Act. 5. Land Bill** 6. Guidelines on Large Land Acquisition** 7. Water Resources Commission Act, 1996 (Act 522) 8. EPA Act, 1994 (Act 490) 9. Environmental Assessment Regulations, 1991 (LI 1995) 10. Local Governance Act, 2016 (Act 936) |

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| | 5.2.2 To reduce costs and increase the profitability of agricultural production | <ul style="list-style-type: none"> • Raise awareness and capacities with respect to ways by which to reduce recurring and production costs in irrigated agriculture • The Ghana Incentive Risk Sharing program will be expanded to facilitate the development and promotion of risk mitigating instruments such as crop insurance and better market intelligence | <ul style="list-style-type: none"> • GIDA • MOFA (GIRS) | <ul style="list-style-type: none"> • MOFA (Extension) • NGOs • WUAs | |
| | 5.2.3 To reduce the need for and scale of state financing to the sub-sector | <ul style="list-style-type: none"> • GIDA will study, assess and adopt financing options that allow it to become financially autonomous • Innovative financial instruments that facilitate self-financed irrigation infrastructure/equipment and small farmer participation in value chains will be identified, adapted and developed | <ul style="list-style-type: none"> • GIDA • Min. of Finance • MOFA | <ul style="list-style-type: none"> • MOFA (AESD) • Private Sector • NGOs • WUAs | |
| 5.3 Poor socio-economic engagement with Land and Water Resources | 5.3.1 To achieve socio-economic transformation in the sub-sector | <ul style="list-style-type: none"> • Increase small farmer adoption of high value farming systems and enable them to access better markets and participate in value addition • Government will facilitate the transition to higher value farming systems by sharing the perceived risks during the transition period • Collaboration will be improved with other sector ministries and agencies and the research and private to identify reliable markets for high value crops and potential value chains, preferably domestic value chains • Awareness and capacities will be raised with respect to ways, including value addition, by which total factor productivity can be maximized in irrigated agriculture • Access to safer ground water or safer irrigation practices will be promoted in areas characterized by otherwise marginal-quality water is available. • The irrigated agriculture sector will be provided with support or leverage infrastructure such as roads, cold chains and public go-downs etc. | <ul style="list-style-type: none"> • GIDA • MOFA (GIRS) • Min. of Finance | <ul style="list-style-type: none"> • Export Promotion Council • Research Inst. • WRC • Dev. Partners | <ol style="list-style-type: none"> 1. Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995) 2. Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016 (LI 2230) 3. Amended* GIDA Act. 4. Regulations* pursuant to the Amended GIDA Act. 5. Land Bill** 6. Guidelines on Large Land Acquisition** 7. Water Resources Commission Act, 1996 (Act 522) 8. EPA Act, 1994 (Act 490) 9. Environmental Assessment Regulations, 1991 (LI 1995) 10. Local Governance Act, 2016 (Act 936) 11. Fisheries Act, 2002 (As amended). • 12. Fisheries Regulations, 2010 (LI 1968) |
| | 5.3.2 To reduce state responsibility | <ul style="list-style-type: none"> • A holistic understanding of service delivery and capacity building will be strengthened across the board | <ul style="list-style-type: none"> • GIDA • MOFA | <ul style="list-style-type: none"> • WUAs | |

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| | for scheme operation and maintenance | <ul style="list-style-type: none"> • Communities, including women, youth and the vulnerable, will be fully represented at all stages of an irrigation scheme development cycle, including leadership of WUAs • Water user capacity for irrigation management transfer will be strengthened • WUA capacity for estimating recurring costs and for setting and collecting service charges will be strengthened • WUA rules and regulations will be better enforced | <ul style="list-style-type: none"> • NGOs • Training Experts | <ul style="list-style-type: none"> • Commercial Service Providers | |
| | 5.3.3 To make the best use of farmer managed irrigation | <ul style="list-style-type: none"> • Management responsibilities will be transferred to WUAs/commercial service providers • Participatory rehabilitation/upgrading of existing schemes will be undertaken as part of IMT to WUAs | <ul style="list-style-type: none"> • GIDA • WUAs/Private Sector • Min. of Finance | <ul style="list-style-type: none"> • District Assemblies • Traditional authority | |
| 5.4 Poor security of tenure and difficult access to land | 5.4.1 To facilitate and expedite access to land for irrigation and other forms of agricultural water management | <ul style="list-style-type: none"> • The supply of land for irrigation development will be increased by a combination of several institutional measures including the establishment of a "land bank". • The land bank will be regularly updated for use with potential commercial investors • Irrigation schemes, across the sub-sector typology will be given a fast track with respect to land allocation | <ul style="list-style-type: none"> • GIDA • Land Commission • Traditional Leaders | <ul style="list-style-type: none"> • GIPC • MOFA | <ol style="list-style-type: none"> 1. Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995) 2. Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016 (LI 2230) 3. Amended* GIDA Act. 4. Regulations* pursuant to the Amended GIDA Act. 5. Land Bill** 6. Guidelines on Large Land Acquisition** 7. Water Resources Commission Act, 1996 (Act 522) 8. EPA Act, 1994 (Act 490) 9. Environmental Assessment Regulations, 1991 (LI 1995) 10. Local Governance Act, 2016 (Act 936) |
| | 5.4.2 To increase security of tenure | <ul style="list-style-type: none"> • Leases and land rights will be better enforced | <ul style="list-style-type: none"> • GIDA • Lands Commission | <ul style="list-style-type: none"> • Traditional Authorities • Min. of Forestry, Lands and Nat. Resources | |

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| 5.5 The Irrigation Support Services need modernization | 5.5.1 To improve the nature and scope of service delivery in the sub-sector | <ul style="list-style-type: none"> • A holistic understanding of service delivery and capacity building will be strengthened across the board • Linkages with MOFA will be strengthened, especially at the district level | <ul style="list-style-type: none"> • GIDA • Training Institutions • MOFA | <ul style="list-style-type: none"> • MMDAs | <p>Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995)</p> <ol style="list-style-type: none"> 2. Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016 (LI 2230) 3. Amended* GIDA Act. 4. Regulations* pursuant to the Amended GIDA Act. 5. Land Bill** 6. Guidelines on Large Land Acquisition** 7. Water Resources Commission Act, 1996 (Act 522) 8. EPA Act, 1994 (Act 490) 9. Environmental Assessment Regulations, 1991 (LI 1995) 10. Local Governance Act, 2016 (Act 936) |
| | 5.5.2 To improve and better enforce the regulatory framework | <ul style="list-style-type: none"> • Service delivery will be regulated in terms of quality, timeliness, accountability, adaptability and value for money • Quality standards with respect to the provision of all services will be revised, strengthened and enforced • A transparent system of water rights and entitlements with rational durations will be established. • An evolving and adaptable regulatory framework will be applied across the typology as a component of service delivery • All commercial schemes, including PPPs will be subject to the same regulatory framework as any other irrigation scheme | <ul style="list-style-type: none"> • GIDA • GIPC • WRC | <ul style="list-style-type: none"> • EPC • MOFA | |
| | 5.5.3 To better define and finance GIDA's role in service provision | <ul style="list-style-type: none"> • The GIDA Board and its responsibilities will be revised to reflect a more commercialized modus operandi, more in line with a commercializing agriculture sector. • The revised GIDA mandate will be fully implemented • GIDA's future activities at scheme level will be included in the scheme's operational cost budget and remunerated directly from scheme finances on a cost-plus basis | <ul style="list-style-type: none"> • GIDA • MOFA | <ul style="list-style-type: none"> • WUAS • Private sector • MMDAs | |

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|---|---|--|---|---|---|
| <p>5.6 No Public Private Partnerships and limited other Forms of Private Section Investment in Irrigation Service Delivery and Production</p> | <p>5.6.1 Public Private Partnerships (this policy thrust and its strategic actions effectively comprise the sub-sector specific PPP policy)</p> | <ul style="list-style-type: none"> • Prepare and promulgate a Legislative Instrument to define the nature and scope of the services to be provided by GIDA's along with its mode of performance and the scale of fees/charges for such services. • GIDA will be responsible for representing Government throughout a PPP's implementation and operational cycle as defined in Section 5.6 of this policy) • GIDA will be the Public equity holder in sub-sector PPPs and will share as such all associated risks and benefits in proportion to its equity • GIDA will establish and regularly update a dossier of PPP opportunities, including estimates of pre-appraisal performance indicators • GIDA will establish a dedicated PPP Unit within its Planning and Coordination Unit where it will maintain close and continuous liaison with the same unit's Irrigation Promotion Team • Stronger links will be established between the Ghana Investment Promotion Centre and GIDA's Irrigation Promotion Center • GIDA's PPP Unit will meet with representatives of the Ghana Investment Promotion Centre every time the dossier is updated to alter its staff to any new entries and to review progress (if any) with respect to prior entries. • GIDA's access to natural resources as a partner in a PPP will be subject to the same regulations as any private entity • As a cross-cutting measure smart incentives will be offered to potential investors in PPPs | <ul style="list-style-type: none"> • GIDA • GIPC | <ul style="list-style-type: none"> • MOFA • Traditional Authorities • Lands Commission • EPA • Water Resources Commission • Min. of Trade & Industries • MMDAs | <ol style="list-style-type: none"> 1. Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995) 2. Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016 (LI 2230) 3. Amended* GIDA Act. 4. Regulations* pursuant to the Amended GIDA Act. 5. Land Bill** 6. Guidelines on Large Land Acquisition** 7. Water Resources Commission Act, 1996 (Act 522) 8. EPA Act, 1994 (Act 490) 9. Environmental Assessment Regulations, 1991 (LI 1995) 10. Local Governance Act, 2016 (Act 936) |
| | <p>5.6.2 Increased other commercial investments in irrigated production</p> | <ul style="list-style-type: none"> • In association with the GIPC, GIDA will assist potential investors to identify, register, develop and implement their proposed ventures and will receive a fee for providing this service • The irrigated agriculture sector will be provided with leverage and/or support infrastructure such as bulk water infrastructure or roads, cold chains and public go-downs respectively etc. • GIDA will establish and regularly update a dossier of investment opportunities, including estimates of pre-appraisal performance indicators • As a cross-cutting measure smart incentives will be offered to potential investors in irrigated production | <ul style="list-style-type: none"> • GIDA • GIPC • Min. of Finance • MOFA | <ul style="list-style-type: none"> • Potential Investors • Min. of Roads & Highways • Private Service Providers • MMDAs • | |
| | <p>5.6.3 Increased other commercial investments in sub-</p> | <ul style="list-style-type: none"> • Government will welcome any form of well-regulated commercial irrigation service provision | <ul style="list-style-type: none"> • GIDA • MOFA • GIPC | <ul style="list-style-type: none"> • Min. of Trade & Industry • Potential Investors | |

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| | sector service delivery | <ul style="list-style-type: none"> • Sub-sector service provision contracts can be given to commercial sector entities with respect to the operation and maintenance of publicly financed infrastructure • Private sector awareness will be created for private investors not only with respect to scheme operation and maintenance but also along supply and market chains • As a cross-cutting measure smart incentives will be offered to potential investors in sub-sector service delivery | • | <ul style="list-style-type: none"> • Ghana Export Promotion Council • MMDAs • Traditional Authorities | |
| 5.7 Environmental Degradation Associated with Irrigated Production | 5.7.1 To avoid or mitigate the risks of environmental degradation | <ul style="list-style-type: none"> • An evolving and adaptable suite of environmental regulations will be applied across the typology in terms of both production and service delivery • All commercial schemes, including PPPs, will be subject to the same regulatory framework as any other irrigation scheme • Engineering designs will be consistent with the need for efficient and sustainable natural resource use • Participatory catchment area protection will be introduced and required in vulnerable systems | <ul style="list-style-type: none"> • GIDA • MOFA • EPA | <ul style="list-style-type: none"> • EPA • Private sector • Min. of Forestry, Lands & Natural Resources • WRC | <ol style="list-style-type: none"> 1. Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995) 2. Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016 (LI 2230) 3. Amended* GIDA Act. 4. Regulations* pursuant to the Amended GIDA Act. 5. Land Bill** 6. Guidelines on Large Land Acquisition** 7. Water Resources Commission Act, 1996 (Act 522) 8. EPA Act, 1994 (Act 490) 9. Environmental Assessment Regulations, 1991 (LI 1995) 10. Local Governance Act, 2016 (Act 936) |

APPENDIX 2. REVISED INSTITUTIONAL AND LEGISLATIVE FRAMEWORK FOR GIDA

APPENDIX 2A1. BACKGROUND

It will be recalled that this revised policy is intended to address the range of new challenges and opportunities faced by Ghana's irrigation sub-sector. These include international initiatives such as the Sustainable Development Goals; the Paris Agreement (on climate change) and the anticipated global shift towards a more trade based concept of water, food and nutrition security.

The general goal of this assignment is to review the National Irrigation Policy to be aligned with the revised mandate for the restructured Ghana Irrigation Development Authority (GIDA), and present a re-drafted National Irrigation Policy, an institutional legal framework for GIDA, and irrigation management protocols. In sum, the assignment seeks to provide a new direction for irrigation development and management and for the expansion of irrigation infrastructure development, access and use in Ghana.

In the light of the foregoing, this part of the Report examines the enactments governing the institutional and legislative frameworks for GIDA and proffers recommendations for amendments to the legislation in consonance with the requirements of a restructured GIDA and the PPP policy.

The major piece of legislation is the Irrigation Development Authority Act, 1977⁴³. This, together with the Irrigation Development Authority (Irrigation Water Users Association) Regulations, 2016 (LI 2230) and the Irrigation Development Authority (Amendment) Regulations, 2011 (LI 1995) provide the institutional and legal frameworks for GIDA and the irrigation sub-sector.

APPENDIX 2A2. THE IRRIGATION DEVELOPMENT AUTHORITY ACT, 1977

The Act as amended is fairly comprehensive but requires a further revision/update in order to meet the requirements of a restructured GIDA and its sub-sector specific PPP policy. In particular, the Board as presently constituted is considered rather unwieldy and does not adequately provide for private sector and women's participation.

The functions of GIDA and other provisions of the Act also require to be amended to cater for the organization's new role under a restructured GIDA, the implementation of the PPP policy in the irrigation sub-sector, the current constitutional arrangements for the appointment of public officers and ministerial responsibility and dedicated sources of funding⁴⁴.

The revised Bill maintains GIDA's current status as a body corporate with perpetual succession, capable of suing and being sued. Additional functions have been assigned GIDA under the Bill in line with the PPP Policy. Further, the current 12-member Board which is considered unwieldy has been reduced to 9 to cater for adequate private sector participation (4 representatives - 2 Commercial Farmers, a small-scale farmer and a woman engaged in irrigation farming or irrigation sub-sector).

The new Bill introduces board membership based on qualification. Accordingly, a member shall be a person knowledgeable and/or experienced in areas relevant to the work of GIDA. The tenure of the Board is revised from 2 to 4 years. A member shall be eligible for re-election only once.

⁴³ (SMCD 85) as amended by SMCDs 89, 127 (to be amended to read **Ghana Irrigation Development Authority Act**; hereafter, GIDA Act)

⁴⁴ In the light of this, a section by section review of the Act has been undertaken; and proposed amendments proffered to cater for the needed amendments/changes to the law (see Annexure 8 – section by section review and Annexure 8a – Draft GIDA Bill).

The Chief Executive (designated Chief Executive Officer under the Bill) and his 2 Deputies are appointed by the President in consonance with appointment of public corporation officials under Article 195 of the Constitution.

The Bill provides for 6 prescribed sources of funding: funds provided by GoG as working capital, annual parliamentary appropriations, revenue from GIDA's operations including a percentage of revenue from agricultural exports as approved by GoG, loans, grants and gifts.

In line with the current constitutional dispensation, GIDA is placed under the policy direction of the sector Minister. Accordingly, the Minister for Agriculture is given powers to give directions to GIDA on matters of policy for GIDA's compliance; and also make regulations by legislative instrument for carrying into full effect the objects and functions of GIDA.

APPENDIX 2A3. PROPOSED AMENDMENTS TO LI 2230

A new instrument, the **Irrigation Development Authority (Irrigation Water Users Associations) Regulations, 2016** (LI 2230) has been passed to provide for Water Users Associations (WUAs) as a framework for the organization of farmers on irrigation infrastructure constructed by government and other parties on behalf of or in concert with the government, in place of farmers' associations under the Irrigation Development Authority Regulations, 1987 (LI 1350). The WUAs are now to operate as guarantee companies under the Companies Act, 1963 (Act 179). Provision is made for the adoption of Bye Laws by the WUAs under Regulation 29 to address their respective peculiarities.

The organization of WUAs as guarantee companies is perfectly legitimate. There is, however, no basis for limiting the organization of WUAs solely as guarantee companies. Under the PPP policy, WUAs could collaborate with potential investors or land-owning communities/traditional authorities to enhance their operations. In that regard, there should be no legal impediment in the way of WUAs to incorporate such ventures as limited liability companies, for example, in order that such ventures could be run along purely commercial lines. Accordingly, a proposed amendment is made to **Regulation 10** of LI 2230 for other forms of association in addition to guarantee companies.

Further, as couched, the provisions on membership of WUAs is made mandatory. The notion of compulsory membership of farmers in WUAs is inconsistent with the current constitutional dispensation on freedom of association enshrined under article 21 of the 1992 Constitution of the Republic of Ghana (the Constitution). It should be possible, in principle, for a non-member farmer to enjoy facilities on the schemes albeit under different terms and or conditions from that of WUA members. In the circumstances, provision is also made for such non- members' participation in the scheme by a proposed amendment to **Regulation 11** of LI 2230.

Many participants at the wrap-up workshop⁴⁵, however, did not endorse the Consultant's recommendation for voluntary membership of the WUAs as opposed to the current compulsory membership prescribed under LI2230; on grounds that the present arrangement would instill discipline on the schemes and ensure performance of obligations by members. The proposed amendment to the LI2230 is however presented in this report for probable future consideration. In that regard, it is proposed that if the existing compulsory membership arrangement is to be retained, then the membership of WUAs should apply to all users of the infrastructure, including for instance, fisher folk.

⁴⁵ 9th February 2017

A proposed amendment is also made to **Regulation 59** on definition of **Supervising Authority** to explicitly provide for GIDA or its authorized officers as the responsible authority. The proposed amendments are as set out below.

| EXISTING TEXT IN LI 2230 | PROPOSED AMENDMENT |
|--|---|
| <p>Legal personality and liability 10. An association formed in accordance with these Regulations and registered in accordance with the Companies Act, 1963 (Act 179) is a body corporate limited by guarantee as of the date of its registration</p> <p>Membership of Association (11)1. A person who has user rights over land which is located within the service area of an association in accordance with the appropriate land holding system shall be a member of the association.</p> | <p>Legal personality and liability 10. An association formed in accordance with these Regulations and registered in accordance with the Companies Act, 1963 (Act 179) is a body corporate limited by shares, guarantee or other form of association as of the date of its registration</p> <p>Membership of Association (11)1. A person who has user rights over land which is located within the service area of an association in accordance with the appropriate land holding system may apply to the management committee to be a member of the association.</p> |
| <p>2. A person who acquires user rights overland located within the service area of an association by succession or any other legal means shall become a member of that association upon payment of any outstanding contributions and fees due to the association from the previous user of that land.</p> <p>4. A person who uses land located within the service area of an association on the basis of a lease or more than three years shall become a member of the association for the duration of the lease.</p> <p>5. A person who leases out land located within the service area of an association for a period of not more than three years shall continue as member of that association but the lessee a. shall comply with the laws of the association. b. may exercise the membership rights of the lessor in the association by written authorization of the lessor.</p> | <p>2. A person who acquires user rights overland located within the service area of an association by succession or any other legal means may apply to become a member of that association upon payment of any outstanding contributions and fees due to the association from the previous user of that land.</p> <p>4. A person who uses land located within the service area of an association on the basis of a lease or more than three years may upon application become a member of the association for the duration of the lease.</p> <p>5. A person who leases out land located within the service area of an association for a period of not more than three years may continue as member of that association but the lessee a. shall comply with the laws of the association. b. may exercise the membership rights of the lessor in the association by written authorization of the lessor.</p> |
| <p>Supervising Authority “supervising authority” means a body designated by Government as being responsible for organizing and facilitating the registration of associations, providing training and other technical assistance to associations or undertaking other activities specified in these Regulations.</p> | <p>Supervising Authority “supervising authority” means GIDA, its authorized officers, or a body designated by Government as being responsible for organizing and facilitating the registration of associations, providing training and other technical assistance to associations or undertaking other activities specified in these Regulations.</p> |

APPENDIX 2A4. LAND TENURE, CONSTRAINTS AND PROSPECTS IN THE IRRIGATION SUB-SECTOR

Background and Justification for proposed amendments to the Legislation on GIDA

The visits to the Dawhenya, Kpong and Weija schemes revealed a troubling situation in the sub-sector: limitation of acreages available for cultivation by farmers; lack of clarity or certainty about land ownership;

tenure insecurity as a result of encroachments on acquired lands and the GIDA/ Lands Commission's inability to ward off intruders; destruction of crops by cattle herds and the inability of commercial farmers to obtain land title certificates or conveyances for lands acquired from GoG for irrigated agriculture etc.

Despite these challenges, the visits also revealed that these areas provide opportunities for large scale commercial irrigation that could be relied upon as catalysts to attract investment to the sub-sector. These include:

- Access to reliable source of water
- Proximity to the ports (air and sea)
- Good infrastructure
- Good soil and climatic conditions
- Ghana's favorable political environment.

The resolution of the challenges is thus not only critical for the very survival of irrigated agriculture in Ghana; but would also enhance the attractiveness of the sub-sector as an investment destination. GIDA officials have blamed the Lands Commission for its non-cooperation or inability to resolve some of these challenges; in particular, the non-issuance of certificates to farmers for acquired lands. The Commission however is of the view that the problem of encroachments is the primary responsibility of first line agencies like GIDA acting in collaboration with the district assemblies and the Commission; and that the problems can be resolved through collaboration. GIDA would also have to involve the Commission at the very onset of such allocations for all the necessary requirements such as valuation, and ascertainment of quantum of compensation to be resolved to quicken the allocation process.

There is thus the need for a closer inter sectoral collaboration between GIDA and The Lands Commission. In that regard, two instruments, the **Land Bill** and **Guidelines for Large Land Acquisition Transactions** have been prepared by the commission. Even though the Land Bill and the Guidelines are yet to be enacted as legislation, they now provide the basis for the Lands Commission's execution of large scale land acquisition transactions. They thus constitute the norms or benchmarks that must be followed in such transactions. Any acquisition or disposition of interest in lands by GIDA would thus have to be carried out within these frameworks.

The land tenure problems are hydra-headed. However, their solution lies at the heart of the implementation of the PPP policy and the very survival of irrigated agriculture as a whole. The proposed Land Management Committee (LMC) under the GIDA Act would enhance and/or engender a closer collaboration between/among GIDA, the Commission and other land delivery agencies in the irrigation sub-sector. The following additional proposed amendments to the GIDA Act are thus proffered to address the land tenure problem and the implementation of the PPP policy.

Establishment of Land Management Committee at GIDA headquarters

As part of a restructured GIDA, there could be established an LMC at GIDA headquarters as a collaborating vehicle to address some of the bottlenecks/challenges in the sub-sector. Membership of the LMC could comprise:

- The CEO of GIDA or his representative as the chair;
- a representative each from;
 - MoFA,
 - the Lands Commission,
 - the WRC and

- the district assemblies in which the scheme lies or land is to be acquired. (These, as planning authorities will be coopted in each appropriate case).

Their functions could include:

- oversight of LACs at Scheme sites;
- identification of suitable lands for commercial irrigation;
- creation of land banks for allocation to farmers;
- consideration and approval of applications for land in GIDA irrigation schemes or lands;
- resolution of problems/bottlenecks in the registration of acquired lands from GoG/GIDA lands; and
- any activity reasonable or incidental to the foregoing

APPENDIX 2A5. ESTABLISHMENT OF LAND BANKS ON TRADITIONAL OR COMMUNITY LANDS

In addition to the foregoing, and as part of the implementation of the PPP policy, GIDA acting in close collaboration with traditional authorities or communities, could create land banks for allocation to commercial farmers. These traditional authorities or communities would provide the land. GIDA will in turn survey and prepare same for allocation to the farmers. These prepared lands in turn will be leased to farmers on payment basis or could be used as equity in the ventures (PPCP). Further and/or in the alternative, GIDA could prepare such traditional/community lands for such communities to be used as land banks at a fee.

These recommendations could be embodied in the proposed GIDA Act and LI 2230 to give them force and effect in law. In this regard the Irrigation Development Authority (Amendment) Regulations, 2011 on provision of infrastructure for schemes that require rehabilitation (LI 1995) shall continue in force. LI 1995 amends Regulation 4 of LI 1350. The said Regulation 4 is not affected by the provisions of LI 2230.

APPENDIX 2A6. FISHERIES

General

The governing legislation on Fisheries is the Fisheries Act, 2002 (Act 625) as amended by the Fisheries (Amendment) Act, 2014 (Act 880). Act 625 seeks to provide for the regulation and management of fisheries, to provide for the development of the fishing industry and the sustainable development of fishery resources and to provide for connected matters. Section 1 of the Act establishes the Fisheries Commission as a body corporate with perpetual succession; manage the utilization of the fisheries resources of Ghana and co-ordinate the policies in relation to them. The Fish Health Unit of the Fisheries Commission is responsible for aquaculture regulation, co-ordinates and implements food borne disease surveillance and serves as WTO focal point. Specifically, the Commission has been established, inter alia to:

- Prepare and keep under continual review plans for the management and development of fisheries in waters under the jurisdiction of Ghana.
- Ensure the monitoring, control and surveillance of the fishery waters.
- Correlate fisheries with other water uses and environmental protection particularly with respect to the fish resources and food chain in the rivers, lagoons, lakes and the continental shelf along the coast of the country.
- Make recommendations to the Minister on grant of Licenses for fishing.
- Hear and determine complaints from persons aggrieved in respect of matters arising from or related to fishing activities and the fishing industry generally.

- In collaboration with District Assemblies with fishing communities, ensure the enforcement of the fishery laws including bye-laws made by the relevant District Assemblies.

Fisheries Regulations, 2010 (LI 1968)

LI 1968 amplifies and/or provides a basis for the implementation of the Fisheries Act. The Regulations, inter alia, prescribe measures for: the conservation, management, development, licensing and regulation of fisheries or a particular fishery; standards relating to aquaculture; and rules relating to the control, inspection and conditions of operation of fish processing establishments.

The following provisions of LI 1968 are significant for present purposes:

- **Regulation 52.** The Commission shall issue a permit for commercial aquaculture after an environmental impact assessment has been conducted by the competent authority. The Water Resources Commission shall also issue a permit for water usage. The Commission shall not allow exotic species to be introduced in fish farming unless the Commission has adequate knowledge of the biology and life history of the species indicating low risk of negative impact.
- **Regulation 53. Approval of aquaculture establishments.** The management of an intensive or semi-intensive production type of aquaculture establishment shall, before constructing, reconstructing or adapting, an aquaculture facility, submit an application to the Commission for approval; a plan of the establishment, and a list of the activities to be carried out by the establishment.
- **Regulation 54. Refusal to approve an aquaculture establishment.** The Commission may refuse to approve an aquaculture establishment if the approval is not in the public interest. A person aggrieved by the refusal of the Commission may appeal to the Minister within thirty days from the date of refusal.
- **Regulation 55.** Regular monitoring and inspection of aquaculture establishments. The Commission shall ensure regular monitoring and an unlimited access to farm facilities for the inspection of aqua culture establishments.
- **Regulation 61.** Responsible aquaculture practices. A person or establishment shall not carry out aquaculture production in a manner that: degrades the environment without mitigation, introduces new species apart from those approved for that area, and **compromises the safety of food fish**. A person who contravenes this regulation commits an offence and is liable on summary conviction to a fine of fifty penalty units or to a term of imprisonment of not more than three months or to both.
- **Regulation 67.** Aquaculture record keeping. A person or establishment involved in aquaculture production shall keep records and regularly compile an annual fish farm data and submit same to the commission in a format as prescribed by the Commission annually. The Commission shall revoke approval granted to an establishment where the management of the establishment fails to keep and avail accurate aquaculture production records to the Commission.

The competent authority on fisheries in the aqua culture sector is the Fisheries Commission. GIDA would have to collaborate with the Fisheries Commission and the WRC on matters appertaining to fisheries on the schemes

APPENDIX 2A7. WOMEN, PERSONS WITH DISABILITY AND THE YOUTH IN IRRIGATED AGRICULTURE

As noted from the visits to the irrigation sites, the physical demands of irrigated agriculture pose a challenge to women's active participation in the sub-sector. However, as regards the irrigation value chain as a whole, women play critical roles especially in the marketing of irrigated agricultural produce. Accordingly, and in consonance with the current irrigation policy, women should enjoy equitable access

to the benefits of irrigation services while participating fully in the activities and leadership of water user associations. In that regard, it is recommended, in acknowledgement of their central role in the provision, management and safeguarding of water that there must be women's representation on the proposed 9-member GIDA Board.

Similar constraints are faced by persons with disability in the irrigation sub-sector on account of the physical challenges they face. However, there is no reason why they, like women, cannot participate in irrigation activities in areas like sorting of produce after harvesting, marketing of farm produce or clerical/administrative functions on the schemes. A physically challenged person ought not be declined the opportunity to be allocated an irrigated plot, for instance, if the person expresses that desire or interest to acquire a farm plot. Such a person can be supported by members of his/her family to cultivate such plots of land.

Indeed, for the physically challenged, legislative intervention by way of Persons with Disability Act, 2006 (Act 715) has been enacted to grant them rights to participate in the social, political, economic, creative or recreational activities. Among the rights and incentives accorded the physically challenged are that:

- A person shall not discriminate against, exploit or subject a person with disability to abusive or degrading treatment.
- An employer shall not discriminate against a prospective employee or an employee on grounds of disability unless the disability is in respect of the relevant employment.
- The Government shall grant a person who employs a person with disability an annual tax rebate of the taxable income in respect of each person with disability employed.
- The Government shall grant special incentives to persons with disability engaged in business and to business organizations that employ persons with disability.
- A person who employs a person with disability shall provide the relevant working tools, and appropriate facilities required by the person with disability for the efficient performance of the functions required by the employment.
- Where a person in employment suffers a disability as a result of the employment, the employer shall counsel, re-train and re-deploy the person to another section more suited to the person with disability and this shall be in addition to any other relief which the employee is entitled to under the Workmen's Compensation Act, 1987 (PNDCL 187). (Sections 1-12).

There are thus sufficient enough bases and/or incentives for the employment of the physically challenged in the irrigation sub-sector.

With regard to the youth, the irrigation sub-sector provides an excellent avenue for employment. However, the youth like other members of the society desirous of entering into farming face many constraints including but not limited to lack of land, capital and a conducive environment for farming. Incentive packages and innovative approaches to farming are thus necessary to make farming attractive for the youth.

The recent introduction of a training program for graduates from tertiary institutions in green house technology at the Dawhenya scheme points to the direction for proceeding to address the subject. Provision of start-up capital and guarantee markets for produce -for example from the school feeding program -could go a long way in getting the youth interested in irrigated agriculture.

APPENDIX 2A8. CONCLUSIONS AND RECOMMENDATIONS

The GIDA Act and LIs 1995 and 2230, subject to the foregoing proposed amendments, could provide for the regulatory and institutional bases for the restructured GIDA and the implementation of the PPP policy within the framework of a restructured GIDA. A proposed GIDA Bill is attached as Annexure 7. Unlike the GIDA Bill, the proposed amendments to LI2230 could be effected within the existing framework without the passage of a new regulation.

The enactment of the proposed legislation must be backed by the necessary regulations for the implementation of the law; particularly regarding GIDA's functions. The competent authority on fisheries in the aqua culture sector is the Fisheries Commission. GIDA would have to collaborate with the Fisheries Commission and the WRC on matters appertaining to fisheries on the schemes. Women, persons with disability can, and ought to be included in a restructured irrigation regime in Ghana.

APPENDIX 3. IRRIGATION POLICY IMPLEMENTATION PLAN

| PATH | SUGGESTED PROGRAMMATIC FOCI | PRINCIPAL BENEFICIARIES | TIME FRAME | | |
|--------------------------------|--|---|---|-------------------------------------|------------------------------------|
| | | | Short term 0 to 3 years ¹ | Medium Term 4 to 13 ² | Long Term 14 to 33 ³ |
| The institutional Framework | Ongoing GIDA modernization and restructuring, including financial autonomization and the strengthening of strategic links with other institutions including especially the GIPC and LC | <ul style="list-style-type: none"> the Ghanaian economy as a whole; potential commercial investors | | | |
| | establishment, revision and/or strengthen as appropriate and enforcement of a suitable regulatory framework for land rights, water permits and the sustainable use of natural resources | <ul style="list-style-type: none"> the Ghanaian economy as a whole; small scale farmers potential commercial investors | | | |
| | Establish and apply a system of productivity based metric, supported by adequate data resources, for sub-sector monitoring purposes | <ul style="list-style-type: none"> the Ghanaian economy as a whole; | | | |
| Notes | <p>1 In order for Ghana to position itself better with respect to both investor interest and new market opportunities, the “smooth transition” should be accomplished within 3 years</p> <p>2 Assuming that the necessary changes are initiated in 2018, the medium term takes the sub-sector to 2030 which currently is the SDG final deadline</p> <p>3 The Long Term takes the sub-sector to 2050 which, although largely speculative is widely assumed to coincide (+-) with global “peak population”, by which time the global architecture is expected to be significantly more trade based (commodities and virtual water), with current trade barriers dismantled allowing agricultural commodities to be grown in areas with productive comparable advantage. By this time, Ghana should be supplying global markets with raw and processed staple, high value and industrial crops.</p> | | | | |
| Irrigation Management Transfer | Irrigation Management Transfer, including revision of WUA legislation and across the board WUA capacity building for user managed irrigation services | <ul style="list-style-type: none"> the Ghanaian economy as a whole; small scale farmers | | | |

| | | | | | | |
|-------------------------------|---|--|--|--|--|--|
| | Catalyzation and facilitation of well-regulated, service delivery by WUAs, GIDA or the private sector and financed on a full cost recovery basis. | <ul style="list-style-type: none"> • the Ghanaian economy as a whole; • small scale farmers | | | | |
| | Awareness raising and capacity building for service providers along the supply and market chains | <ul style="list-style-type: none"> • the Ghanaian economy as a whole; • small scale farmers • workers in new livelihoods along agricultural value and market chains • potential commercial investors | | | | |
| Socio-economic Transformation | Awareness raising, capacity building and perceived risk mitigation measures to increase small farmer adoption of high value farming systems | <ul style="list-style-type: none"> • the Ghanaian economy as a whole; • small scale farmers • workers in new livelihoods along agricultural value and market chains • potential commercial investors | | | | |
| | The identification and operation of innovative financial instruments to facilitate self-financed irrigation, value chain participation and reduced production risks | <ul style="list-style-type: none"> • small scale farmers • workers in new livelihoods along agricultural value and market chains • potential commercial investors | | | | |
| Investment and Infrastructure | Improve access to and security of tenure on land for irrigation sub-sector expansion across its typology | potential commercial investors | | | | |
| | Expanded irrigation service delivery across the typology and GIDA's five business lines, including such support infrastructure as necessary | <ul style="list-style-type: none"> • the Ghanaian economy as a whole; • small scale farmers • workers in new livelihoods along agricultural value and market chains | | | | |

| | | | | | |
|---------------------------------------|--|--|--|--|--|
| | | <ul style="list-style-type: none"> • potential commercial investors | | | |
| | Public Private Partnerships in production and well-regulated service delivery | <ul style="list-style-type: none"> • the Ghanaian economy as a whole; • potential commercial investors | | | |
| Economically Advantageous Agriculture | Awareness raising and capacity with respect to ways by which to reduce recurring and production costs in irrigated agriculture | <ul style="list-style-type: none"> • small scale farmers • potential commercial investors | | | |
| | Development and application of smart subsidies | <ul style="list-style-type: none"> • the Ghanaian economy as a whole; • small scale farmers • workers in new livelihoods along agricultural value and market chains • potential commercial investors | | | |
| | Identify and apply measures – including regulatory measures – to increase total factor productivity in the irrigation sub-sector, across the typology and GIDA's five business lines | <ul style="list-style-type: none"> • the Ghanaian economy as a whole; | | | |