Multiple Use (Water) Services in Ghana

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Presentation outline

- Brief introduction to Multiple Use Services
- Some findings from Ghana and other countries
- Proposed ways forward in Ghana

A brief introduction to MUS

http://www.musgroup.net/page/1461

Rationale for **Multiple Use (Water) Services**

- People require and use water for many purposes

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- These play an important role in livelihoods:
  - Health
  - Income
  - Food production
  - Reducing vulnerability

- However…most water projects and programmes have a limited focus
  - Domestic systems for domestic needs
  - Irrigation systems for field crops
- Small-scale productive uses, particularly at and around ***homestead***, often not provided for, and sometimes explicitly prohibited

What are Multiple Use (Water) Services?

- A **livelihood-based** approach to providing **water services**
  - takes **people's** multiple water needs (domestic, productive) as the starting point
  - with a view to improving **health** and **livelihoods**
  - in an **integrated** manner
  - often combining **multiple sources** for multiple uses
- MUS means maximising effectiveness of investment in water services

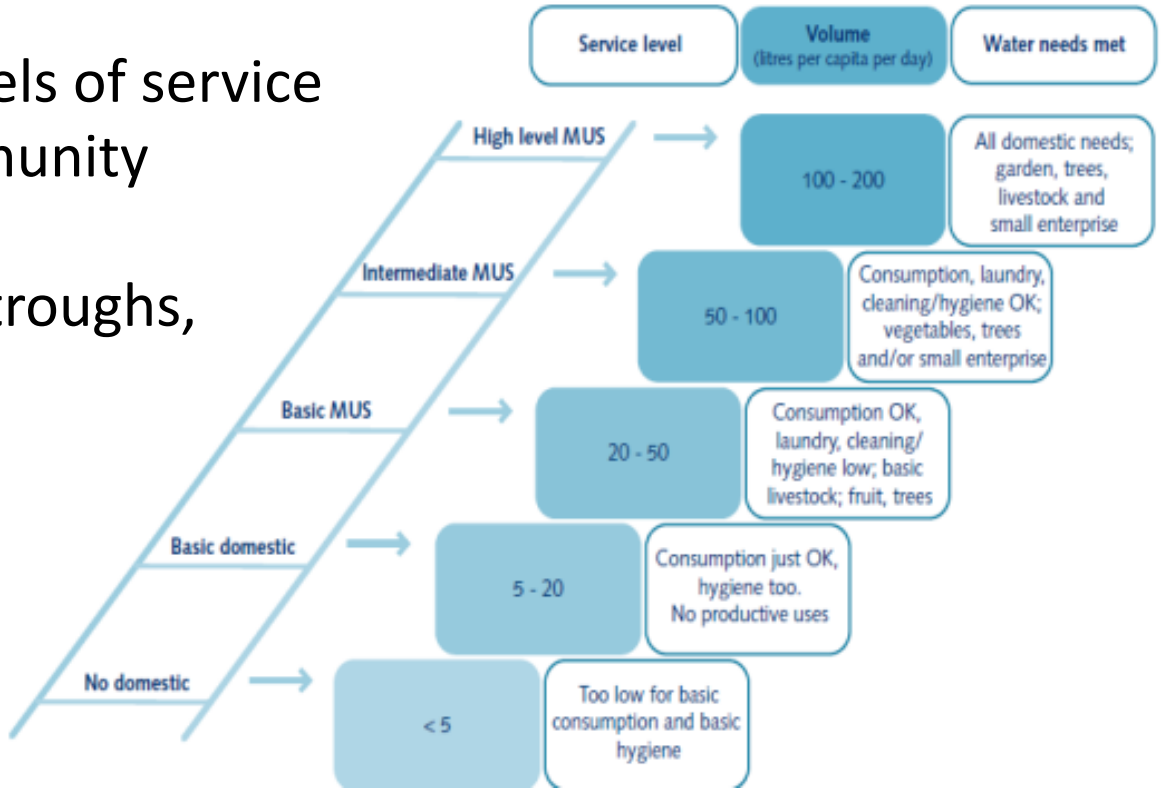
Different entry-points

- Domestic – plus
- Irrigation – plus
- Community-scale MUS

Domestic-plus

Characteristics:

- Providing higher levels of service
- Strengthening community management
- Add-ons, like cattle troughs, community gardens



How to:

- Structured planning approach
- Bringing in livelihoods perspective

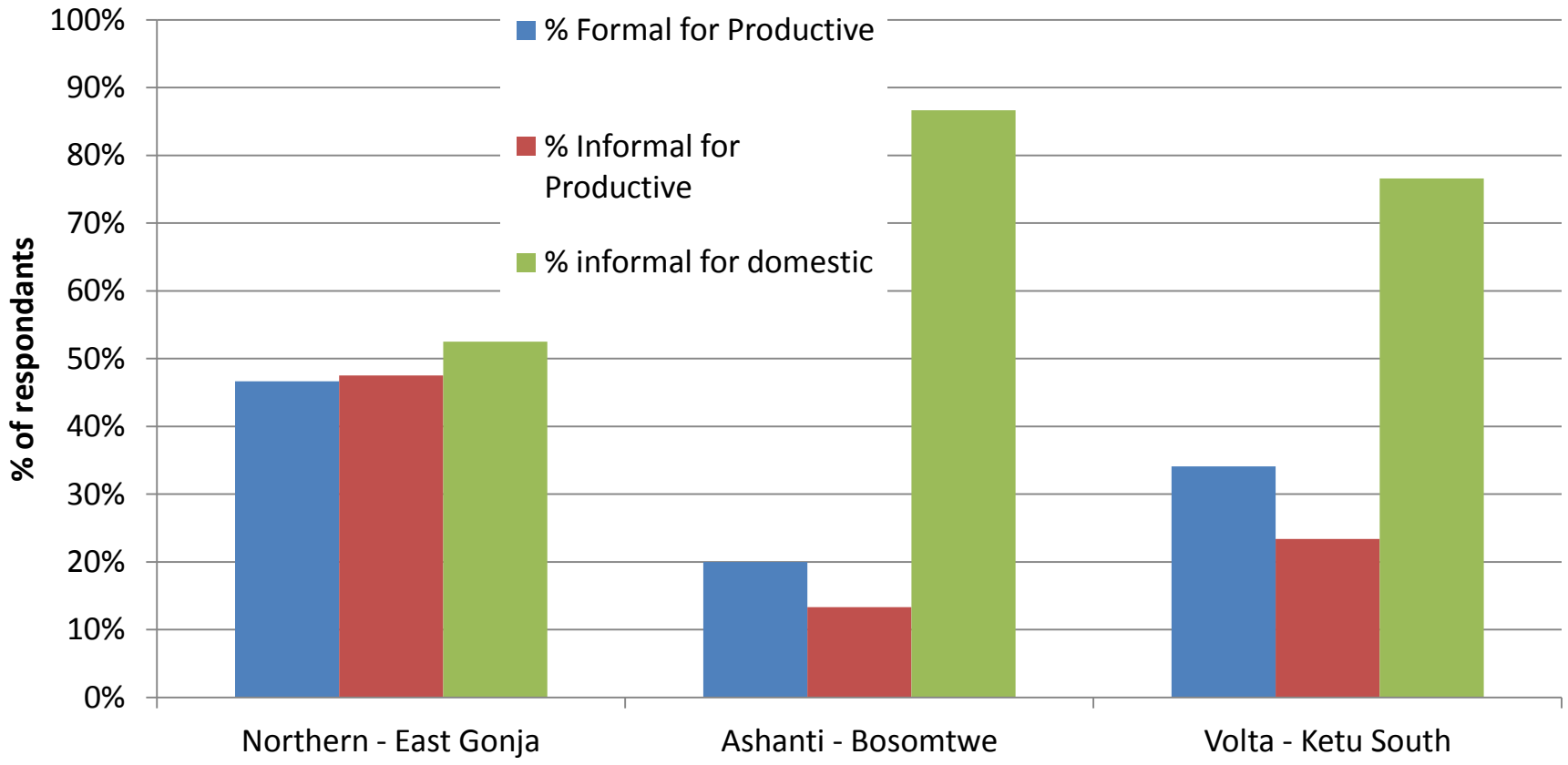
MUS in Ghana (and elsewhere)

MUS in Ghana

- Various studies have looked for evidence of MUS
  - WASHCost
  - Triple-S
  - Rockefeller
- MUS as a formally applied or tested approach has yet to take place in Ghana

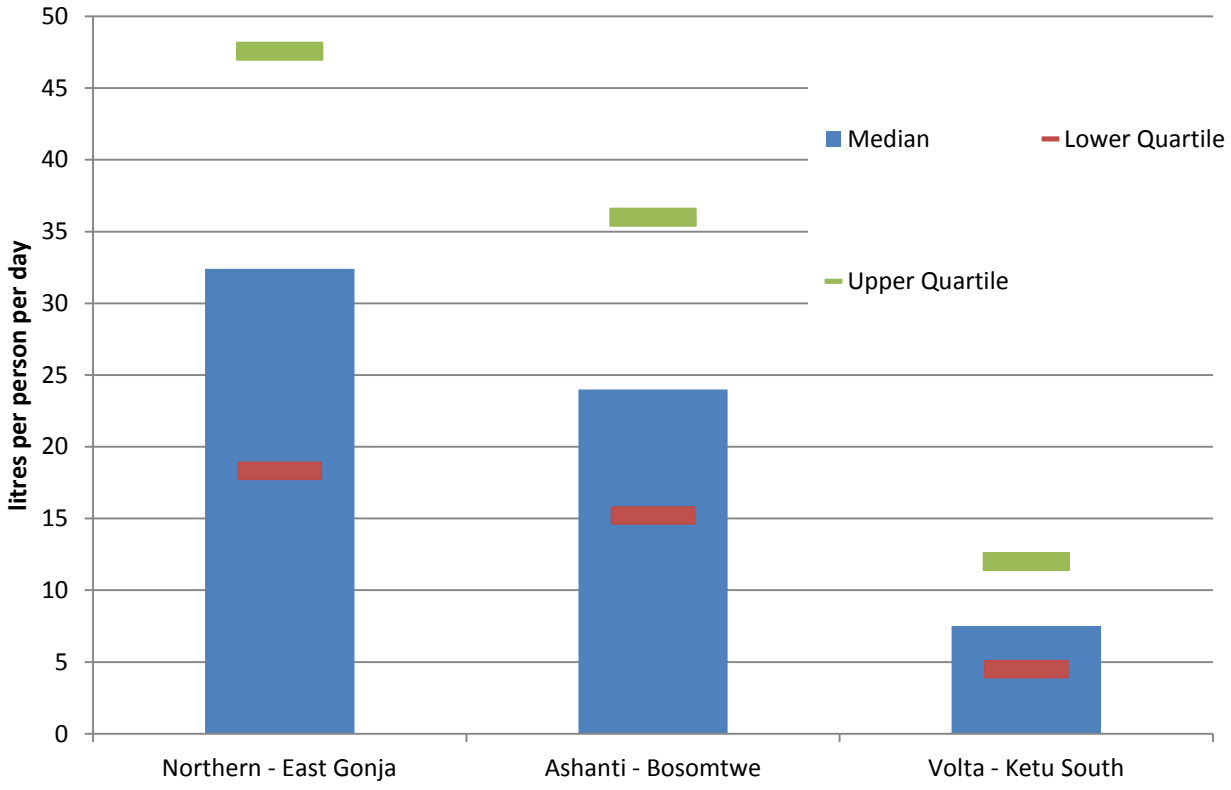
MUS in Ghana – domestic plus (*de-facto*)

Sources and Uses of Water



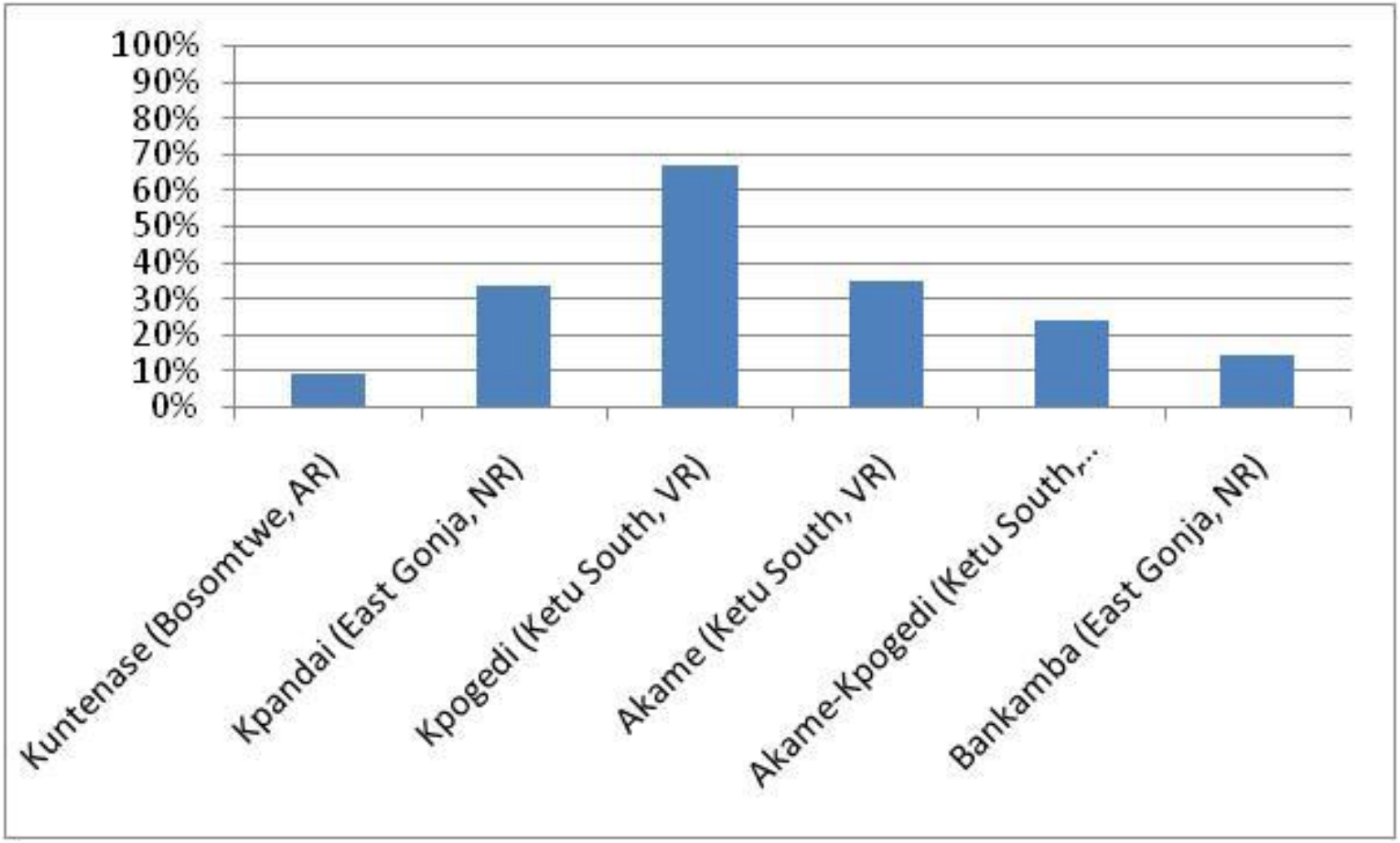
Source: WASHCost

Dry season water use



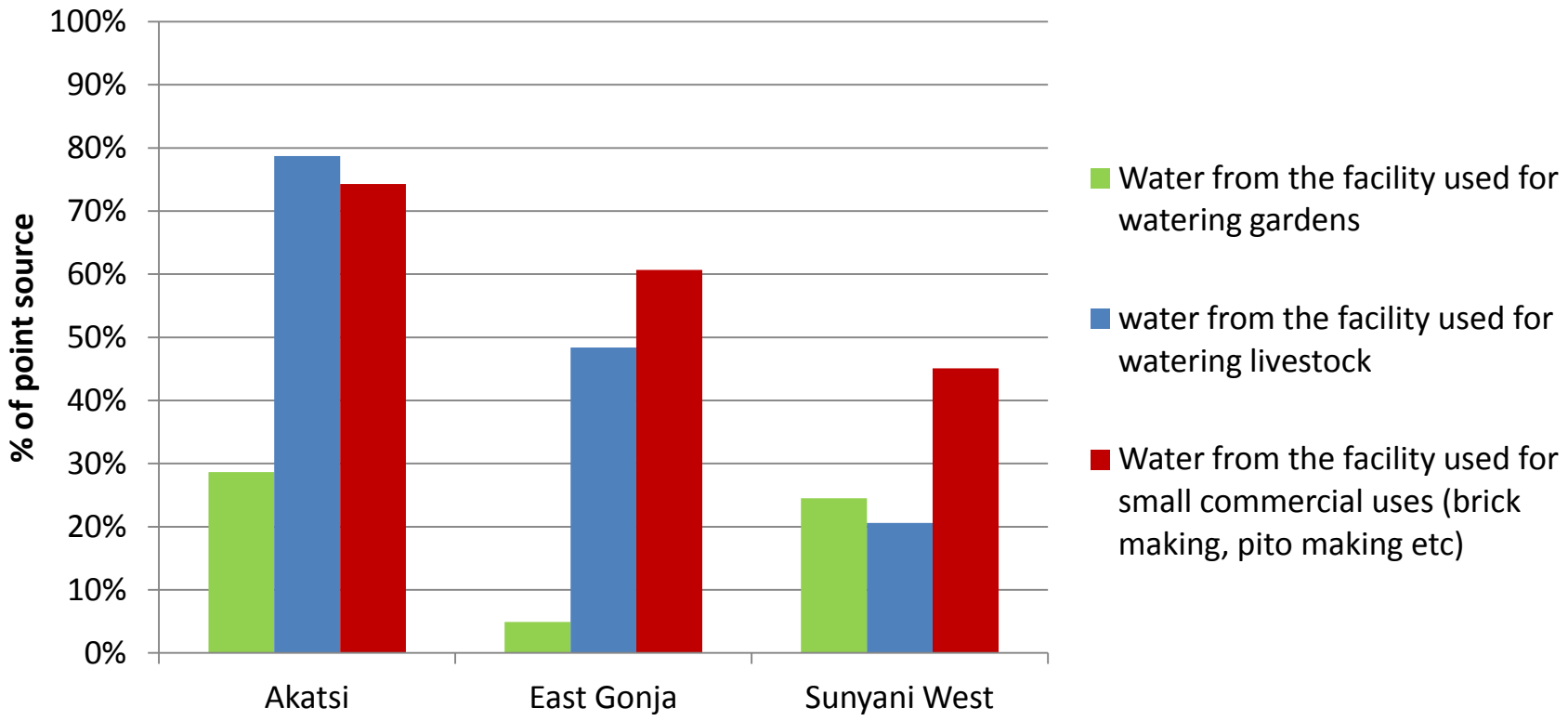
Source: WASHCost

Use of water from piped network for productive activities



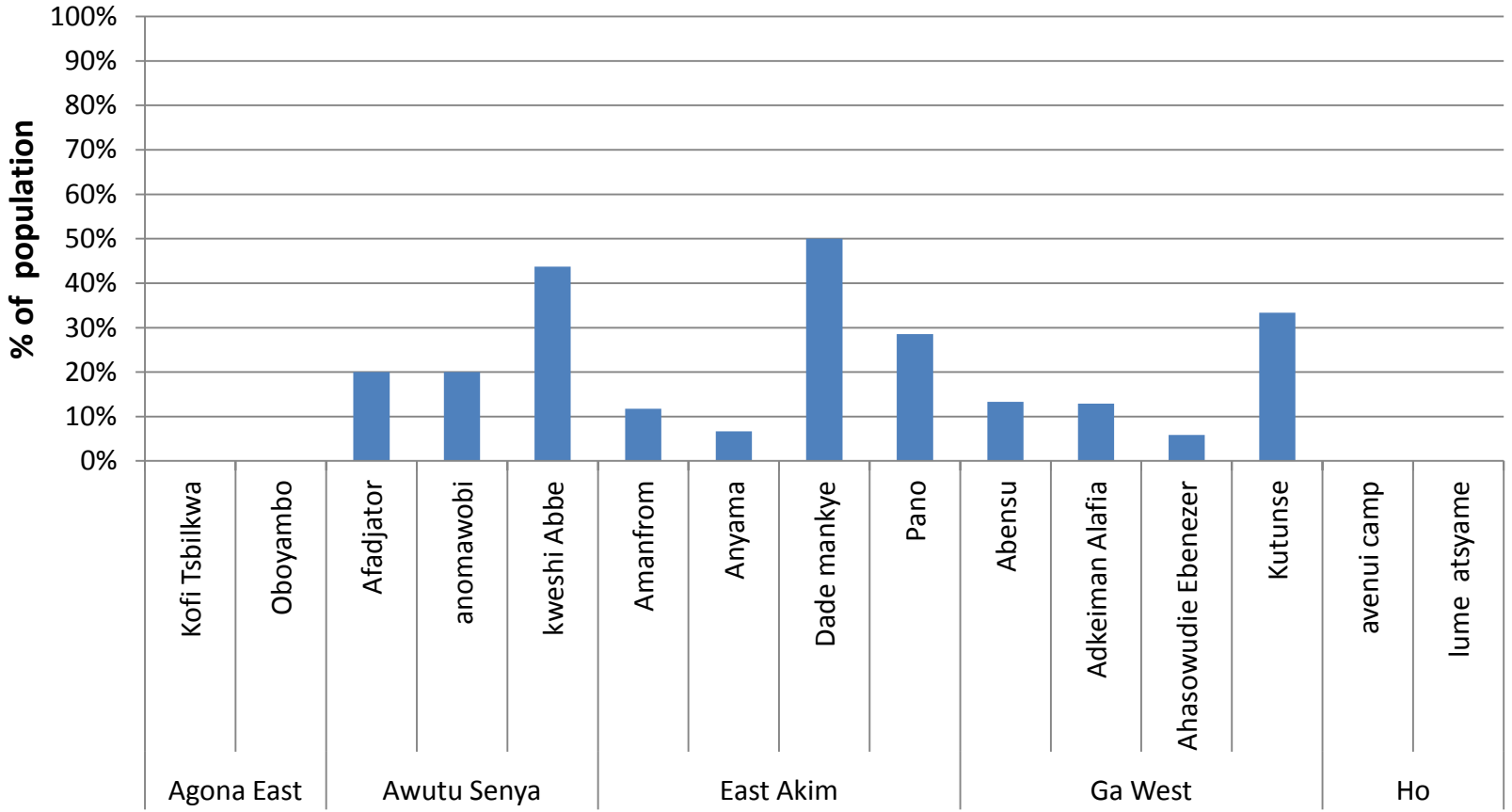
Source: WASHCost

Productive use of water from domestic point sources



Source of data: Triple-S (2012)

% of population using water from community-managed point source for productive uses



Source of data: IRC/ Aquaconsult (Rotary/USAID sustainability check (2012)

Other MUS in Ghana

- 3,392 Small dams and dugouts – many supporting de-facto MUS
- Widespread use of wastewater around cities for urban agriculture

Emerging findings about cost/benefits of MUS (not from Ghana)

Benefits of MUS: services

- High correlation between the extent of MUS and performance and sustainability of water services:
  - no damage of unplanned uses, anticipating competition between users
  - income for cost-recovery and professionalization of service providers
  - if more water is more reliably available, more incentive to use it productively
  - Ownership and maintenance in case of self-supply
- Senegal: high productive use systems had, on average, greater technical sustainability than low systems, but similar financial sustainability
- Chicken or egg?

Benefits of MUS: services

In Senegal, extent of productive use associated

- ↑ Greater # of duties undertaken by water committee
- ↑ More experienced water system operators
- ↑ Greater % of HHs making upfront cash contributions for system construction
- ↑ Greater likelihood that community initiated construction of water system

Source: Hall et al. 2012

What are the costs?

- Incremental costs:
  - Higher levels of service
  - Transaction costs of more participatory approach
  - Opportunity costs: more for some, or some for more
- Evidence:
  - Particularly for piped systems, the incremental costs are low (5-15% additional costs) – e.g. Bolivia, Honduras, Senegal, Nepal

Cost-benefits

- For the majority of systems, the theoretical financial benefits from piped-water-based productive activities are greater than the estimated incremental costs of system upgrade
- If all the potential net benefits were used to repay the incremental costs, these would be recovered in approximately 1-2 years (Senegal, Kenya)

Summing up

- MUS is not formally practiced in Ghana
- However, evidence that de-facto MUS is widespread in rural areas and small towns
- Growing body of evidence from outside Ghana of benefits of MUS

Potential and possible models for MUS in Ghana

Possible MUS models identified:

- Domestic plus approaches:
  - Communal productive uses of point sources
  - Productive use of piped systems in small towns and cities
  - Upgrading point sources to limited mechanical schemes with higher levels of service
- Irrigation plus
  - Rehabilitation and retrofitting small reservoirs
  - Promoting self-supply for irrigation, even though not MUS
  - MUS in public surface irrigation schemes – not analysed because in disarray
- Community-driven MUS:
  - Promoting self-supply alongside formal domestic supplies
  - Integrated local level planning
  - Improving conditions of reuse of wastewater

Domestic plus around point sources

- **Description of model and scaling pathway:** promoting cattle troughs and communal gardens around handpumps. Work through domestic sector agencies (CWSA, DAs and WATSANs), making their staff aware of MUS and include in project cycle. Needs some piloting to showcase it
- **Potential:** 10 million of people relying on point sources; less when zooming in to Northern belt and coastal zone where there are less open water sources
- **Policy and legislation:** CWSA water use regulations are not a limitation; move to higher levels of service is in fact encouraged
- **Water resources implications:** depends on yield of boreholes
- **Institutional arrangements:** can be done from within domestic sector; requires setting local regulations, which means technicians need to support communities in this
- **Financing:** can be done at minimal incremental costs, as no major hardware costs are involved. Piggy backing on investments in rural WASH
- **Technical issues:** can be first step in going for higher levels of services. However a bigger step will require change in technology

Commercial use of piped systems in small towns and cities

- **Description of model and scaling pathway:** use existing model of differential levels of services, may need further adjustments. Through domestic sector agencies. Also market mechanisms: users will only pay for it if they can make a return. Need for extension support
- **Potential:** # of people in small towns. Mainly in the Northern region. could be temporary when there are no other sources available
- **Policy and legislation:** as for point-sources - bye laws and CWSA guidelines
- **Water resources implications:** probably minor, possible limitations in bigger cities
- **Institutional arrangements:** as for point sources
- **Financing and cost recovery:** payment of tariffs. Are people willing to pay tariff for productive uses or prefer to develop alternative sources?
- **Technical issues:** straightforward

Upgrading point sources to limited mechanical schemes

- **Description of model:** upgrading to higher level of service on existing boreholes with handpumps using motorised pumps and small distribution network. Through domestic sector agency, including it in manuals and DWSPs. Requires pilot projects
- **Potential:** # of boreholes per region and # of people served and to be served. Doubling
- **Policy and legislation:** supportive through drive for increasing service levels and de facto priority for small towns. MUS not explicit though
- **Water resource implications:** only possible on higher yielding boreholes
- **Institutional arrangements:** via CWSA, DAs, WATSANs
- **Financing:** estimated increase from 30 US$/cap with some 5-6 US$, so 20% incremental costs
- **Technical issues:** there are already standardised designs, needs new design for community garden and cattle trough. What is the project cycle?

Potential of different approaches

- Domestic-plus approaches: low risk, potential to reach large numbers of people but with small per capita impact.
- Rehabilitation of small reservoirs: high risks with higher potential impact
- Self-supply for irrigation. High potential, but less tangible pathway
- self-supply to complement formal sources and local integrated water resources planning, have low potential at the short term to reach scale
- Reuse of wastewater: too complex intervention with unclear impact

What next?

- Identify consortium interested to experiment with domestic plus approach to MUS in Ghana
- Work within existing domestic water supply projects and programmes
- Focus on gathering evidence on incremental costs and benefits (and challenges)

Conclusions

- De-facto MUS widely practiced in Ghana
- Global evidence that MUS can lead to higher incomes and more sustainable water services
- High potential to experiment around **domestic plus**
  - Cattle troughs and community gardens with point sources
  - Differentiated tariffs on small piped-networks
  - Upgrading boreholes through mechanisation


Thanks
All about MUS: http://www.musgroup.net
MUS video: http://www.musgroup.net/page/1461

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Additional slides not used in the presentation

Rehabilitation of small reservoirs

- Description of model and scaling pathway: include MUS in rehabilitation of small reservoirs. Specific interventions are site specific depending on de facto uses and ones that are already formally accommodated. Needs also participatory planning cycle and support in establishing institutional arrangements (WUAs). Through GIDA and their donors via pilot project approach. Also via NGOs
- Potential: 786 small dams in the country, mainly in Northern sector and savanah belt in Brong Ahafo region, with 170 farmers per reservoir, but 300-400 people including other users. So some 100.000 people
- Water resources implications: depends on capacity of reservoir. Water quality requires treatment and some infrastructure for other uses
- Policy and legislation: Builds on NIP to increase irrigated acreage. Only including formal domestic supplies may lack policy backing
- Institutional arrangements: WUAs are skewed towards irrigation farmers and needs to be broadened . Needs broader support than MoFA only
- Financing: no community contribute to CapEx, but farmers pay dues for OpEx. Not clear who pays CapManEx. No data on incremental costs.
- Technical issues: treatment (filtration galleries, HH water treatment) and need for standard designs for MUS and capacity building for contractors
- Overall challenge: sustainability

Promoting self-supply for irrigation

- Description of model and scaling pathway: investment by farmers themselves, according to market conditions. But facilitated by market development activities: supply chains, reducing costs of pumping technology
- Potential: only 2% of irrigable area developed. Probably around 10000 in UE. No data from other regions. Would have to be done by satelite
- Policy and legislation: in line with ambition of NIP to increase irrigated acreage, though it doesn't have a specific policy on informal irrigation. Water use regulation of Ghana mentions you only need permit when you irrigate beyond 1 ha. Only use registration when it is less than 1 ha and when you abstract by mechanical
- Water resources implications: relative high water use, because small farm sizes and inefficient water management. But total water consumption is small
- Institutional arrangements: farmer owned, farmer managed. Sometimes associations of groups of farmers, more for marketing
- Financing and cost-recovery: private investment by farmers themselves. Data on costs from Eric's thesis. 1200 US$/ha, permanent ones are 4800 US$/ha
- Technical issues: groundwater potential is not clear. Inefficient technologies and water use

Self supply along formal supplies

- Description of model and scaling pathway: increase service levels through alternative supplies alongside formal ones (wells, RWH, etc). Household investment.
- Potential: households who cannot develop alternate resources on their own
- Policy and legislation: self supply not recognised, though RWH coming up
- Water resources not limited
- Institutional arrangements:
  - Via project and NGOs providing facilities– e.g. RWH
  - Market based
  - Promotion via domestic agencies (CWSA), not likely
  - Promotion via local govt and/or WRC??
- Cost and financing: may be significant otherwise they would be developed already. Potential to leverage household investment. Costs of market development
- Technical issues: ok
- Scaling pathway: first need to clarify institutional mechanism. Need for learning, e.g. working group on self supply

Local integrated planning

- Description of model: community level planning without sectoral entry points. actual implementation may be through sector agencies
- Potential: focus on population without access to domestic, so some 6 million people
- Policy and legislation: no policy backing for this. only sectoral planning is tasks of local government
- Water resources: not likely to be problem
- Institutional arrangements: via DA or WRC, but both have severe limitations. Or, via dedicated integrated project (CBRDP)
- Technical issues:
- Scaling pathway: short term via projects, but limited scalability. Middle to long term via DAs or WRC

Reuse of wastewater

- Description of model: interventions along entire sanitation, wastewater, reuse chain, or only parts of it. can be very big or very small
- Potential: over 12.000 farmers around Kumasi, Tamale, Accra
- Water resources: very complex urban water management issues, including quality
- Institutional arrangements: very complex – see SWITCH Accra
- Technical issue: highly complex
- Financial and costs: very high if a fully integrated approach is followed.
- Scaling pathway: very limited. Only localised solutions