### Water Supply and Demand Situation in GAMA.

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## URAdapt

Managing Water at the Urban-Rural Interface: The key to climate change resilient cities

### Introduction Research Objective Methodology: Development of Scenarios Findings





 Urbanization and the expansion of development and economic activities exert pressure on available water resources:

(Non-Climatic drivers) : population growth x per capita water demand

 Rainfall and Temperature changes (Climatic drivers) affect water availability and water use

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<sup>2/28/2012</sup> Improving water and land resources management for food, livelihoods and nature



- We cannot predict with certainty these parameters : we can only make assumptions
  - 1. Non-Climatic Drivers
    - Population (GSS, 2002)
    - Per Capita Water Demand (GWCL, 2006; Adank et al, 2011)
  - 2. Climatic Drivers
    - Precipitation change
    - Temperature change

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### **Scenarios Of Development**

	Growth Rate (%)				
Area	1960	1970	1984	2000	2010
GAR	541,933	903,447 <b>5.1%</b>	1,431,099 <b>3.3%</b>	2,905,726 <b>4.4%</b>	3,909,764 <b>2.8%</b> **
GAMA	449,430	804,834 <b>5.8%</b>	1,296,470 <b>3.4%</b>	2,715,805 <b>4.6%</b>	Not Available

**\*\*Provisional** 

Source: GSS,1995; 2002;2005;2010 ||





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### Water Demand



Improving water and land resources mar

\* Population graph not to scale\*



### Water Supply

Institute	Supply (MGD)				
Source	2010	2013	2030	TOTAL (Cumulative)	
Weija	54 MGD		?	54 MGD	
Volta	40MGD	40 MGD	?	80 MGD	
GW	0.43 MGD		?	0.43 MGD	
TOTAL (Cumulative)	96.4 MGD	134.4 MGD	?	134.4 MGD	
	0.43 MCM/day	0.61 MCM/day		0.61 MCM/day	
	157 MCM/yr	223 MCM/yr		223 MCM/yr	

Physical Loss: 25-30%



### Water Supply





#### Demand

#### Supply



### Supply – Demand GAP Situation







### **Scenarios Of Development**

### **Climatic Drivers**

		Temperature Change			
Prec		Low (L)	Moderate (M)	High (H)	
ipitati	Low (L)	LoLo (Low)	LoMo	LoHi	
on Cha	Moderate (M)	MoLo	MoMo (Middle)	MoHi	
Inde	High (H)	HiLo	HiMo	HiHi (High)	



- 1. Planned water supply development is inadequate to meet the minimum water demand in Accra.
  - Addition water supply development necessary (but where?)
  - 2. Need for investment
- 2. A shift in any driver of the non-climatic factors will increase the supply-demand GAP of Accra.
- 3. People seem to be managing the GAP through various strategies
  - 1. Buffer storage
  - 2. Study adaption to the supply-demand GAP to give pointers on adaption to Climate change. www.iwmi.org



- 4. Water saving and management measures with respect to high water consumer (Rich or industries) can contribute to bridging the GAP.
  - 1. Identify high water users and see relevant measures
  - 2. Future increase in water consumption should be managed
- 5. The high physical losses if controlled can contribute to bridging the GAP
- 6. Different policy instruments to reduce water consumption
  - 1. **Pricing mechanism (Pro-poor)**
  - 2. Legislation for water saving devices

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# Addition water supply development (WHERE?)

Weija Abstraction	91.3MCM/yr	Kpong Abstraction	65.7MCM/yr
% Flow	33	% Flow	0.3
CC Impact	10% reduction	CC Impact	(Annual flow of 24BCM/yr under dry CC scenario
% flow under CC	40%	% flow under CC	<5%

Densu must maintain a buffer capacity for climate responsive planning purposes implying that <u>future water abstractions could focus more on</u> <u>the Lower Volta and other rivers such as the Pra.</u>



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