

# URAdapt

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

## REPORT

URAdapt Accra Fifth Re-SAP Meeting.

Monday, August 29<sup>th</sup>, 2011



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**Coconut Grove Regency Hotel, Accra.**

**1. Welcome remarks**

The 5<sup>th</sup> URAdapt Research in Strategic Action Platform (Re-SAP) meeting opened with a prayer by Mr. Fredrick Logah. Introduction of participants present followed, after which Dr Barnabas Amisigo gave an overview of the project. He highlighted progress made to date and the follow ups to be undertaken. Dr Raschid Sally acted as the chairperson and facilitator and went through the agenda for the day with participants who were all in agreement.

**2. Research Update**

**2.1. *Community Adaptation to Flooding Risk and Vulnerability.***

Mr Felix Agyei Amakye of the Institute of Local Government Studies (ILGS) gave the first presentation. Mr Amakye's presentation was essentially on the findings and outcomes of the research conducted on community adaptation to flooding risk and vulnerability. He gave a recap of the background introduction on climate change and its impact on flooding, objectives and the research questions used.

According to him, the main issue of concern was the perennial incidence of flooding in the Accra Metropolis. It was therefore imperative to understand how communities most vulnerable to the incidence of flooding, experience and devise flood risk management strategy to help reduce vulnerability in the flood prone areas.

The research questions centered mainly on factors and conditions that enable 'at-risk' and vulnerable communities in flood-prone areas to build and sustain their resilience to perennial flooding events. He also provided a conceptual framework for analysis.

He gave a detailed presentation of the methodology used. According to him, the methods used included reconnaissance visits and observations, use of semi structured interviews and institutional study. He indicated that purpose for using the methods were to enable him identify the hot-spots and understand the communities' daily practices and activities relating to flooding, solicit purposive information on the impacts

of flooding and the capacity to deal with the floods and gain expert opinions and information on the role of institutions in supporting people to cope with flooding. The sources of information for the research included the community, affected household and community members and Accra Municipal Assembly (AMA), National Disaster Management Organization (NADMO) and Town and Country Planning Department (TCPD). The outcome of the research included detailed records of events, behaviors and activities related to flooding, information on the impacts of flooding on households and their coping mechanisms and information on institutional support, strategies and plans for communities.

In his research, several flood prone areas were identified but three were chosen for the purpose of the research. The three were Mataheko, a heterogeneous community with diverse ethnic and cultural background, interests and aspirations; Gbegbeyiese, a homogeneous settlement with similar traditions, culture, values and language and Old Fadama, an illegal community which is not recognized by the authorities.

The results from the research were discussed under socio-economic information of respondents, community experiences with flooding, community adaptation and coping mechanisms, community cohesion and flood coping strategies and public interventions.

The socio-economic background of the respondents revealed 58% male and 42% female, with an age distribution of between 31-60 years forming 78%, a monthly income of household head ranging between GH 80 – GH 300 and duration of stay in community 10 years and above.

Under the community's experience with flooding, 60% and 40% of participants had no knowledge and some knowledge of climate change respectively. On the reasons for living in flood prone areas, respondents cited low cost of housing and Land, family and community ties, no settlement permit, livelihood opportunities, proximity to work location and accessible social amenities. They also cited indiscriminate dumping of waste materials, poor physical planning inadequate drainage facilities, and continuous rainfall in low-lying areas as some perceived causes of flooding. On the effects of flooding, participants pointed out the dire complications on lives and properties, their economic activities, drinking water sources and sanitation, health, education and emotional stress and trauma.

Mr. Amakye stressed that, ability to cope with flood incidents is essential in protecting people's lives, livelihoods and development. As such, the communities' adaptation and

coping mechanisms to flooding were also assessed under tangible mechanisms and intangible mechanisms. Some tangible mechanisms included rising of door and window levels, raising of building heights, construction of flood protective walls, blocking flood flow with sand bags, the use of furniture with high stands, construction of high shelves in rooms and construction of flood diversion trenches. Some intangible mechanisms include words of encouragement from neighbors.

Under community cohesion and flood coping strategies, respondents recognized the role of their Assembly members in achieving this. Also apart from Old Fadama, there was no community Associations in the other communities which made mobilization difficult and again respondents did not see any hope in their religious bodies in times of flooding.

He also identified institutions mandated with public interventions. Accra Municipal Assembly which was established under Governance ACT 462, and responsible for the overall development of the metropolis. National Disaster Management Organization established under ACT 517 is responsible for the management of disasters and emergencies and Town and Country Planning Department established under the Ordinance of 1945 to promote sustainable human settlements development based on principles of efficiency, orderliness, safety and healthy growth of communities. In rating the institutions' adequacy of capacity with regard to personnel, technical, logistics, financing and coordination, TCPD was the most under resourced.

The findings also revealed some policy implications which could be effected. For instance urgent address of capacity issues, opportunity for better flood insurance policies, the need for flood emergency and evacuation plans and programs, providing early warning systems, focus on a human settlement policy, enforcement of bye-laws and building regulations and strengthening coordination among the responsible institutions.

Mr Amakye concluded his presentation by highlighting some key findings. He attested to the fact that women and children are mostly impacted by flooding activities. Again, people are not willing to move to flood-free areas because of affordability and family ties. Households undertake some coping mechanisms but do not necessarily make them resilient, community coping mechanisms significantly reduces the impact of flooding on people, the level of income determine the kind of coping mechanisms adopted

inadequate capacity to respond to flood management affects the resilience of affected communities, early warning system is difficult to access and inadequate and poor drainage system in the study communities (narrow choked opened gutters).

**Questions and discussion on community adaptation to flooding risk and vulnerability presentation:**

Dr Delali Dovi of the University of Ghana expressed his delight at the presentation. He said he had however expected some more insights on the conceptual framework as it could be turned into action plans. He noted that the presentation did not also include any policy analysis. He recommended that in discussing policy implication, emphasis should be on whom to target. He also suggested a distinction made between policy implication and recommendation.

Mr Graham Sarbah of AMA Metro Drains Maintenance enquired about whether the people in the flood prone areas are receiving any public education on the impact and potential impacts on them. He was also interested in finding out if findings of the study has been or will be presented to the people in those areas.

Mr Farouk Braimah of People's Dialogue wanted some clarity on the issue of flooding and water scarcity. According to him, the issues seemed a bit contradictory and wanted to know how they were being explained to the people. He suggested educating the people on the role of climate change on the occurrence of these activities and their impact on them. On the issue of Old Fadama, he agreed that although it was not recognized by the city authorities, its negative impacts are felt by the whole Accra.

Mr Felix Amakye thanked all for their comments and suggestions saying that it would be incorporated in the final report. He explained that people in these areas mostly interact with their assembly members and as such they have been targeted to disseminate information on findings of the study. He also pointed out that in most of these flood prone areas, effective planning has been the problem and not necessarily climate change.

Dr Raschid Sally added that it is important to distinguish between what constitutes poor planning and what's not. According to her, further studies would focus on existing non climate drivers, such and poor planning; and how climate change drivers come to exacerbate the situation.

## **2.2. *Water Supply and Demand Situation Modeling using VENSIM.***

The second presentation was done by Edmund Kyei Akoto-Danso of IWMI Ghana on Water Supply and Demand Situation Modeling using VENSIM.

Mr Akoto-Danso started defining Accra as used by the study. He explained that the motivation for the research was based on the fast growing population, urbanization and the expansion of development and economic activities that exert pressure on available water resources, importance of understanding the extent of the existing problems in the water sector and decision makers lacking in a tool that can aid them in planning and management. The aim is to evaluate the existing conditions and other expected future scenarios taking into account different factors (non-climatic and climatic) that affect water supply and demand.

He explained that VENSIM is a visual modeling tool that allows you to conceptualize, document, simulate, analyze, and optimize models of dynamic systems. It has properties such as visualizing relationships between parameters with the ability to change parameters so as to better understand interaction between system components. The model can also produce error messages. He showed the model parameters linking it with projections of urban water demand. He further linked it to Accra population projections, Accra water demand projections and developed scenarios of development. The scenarios showed water supply/demand situation under different demographic and water use scenarios that included climate and socio-economic drivers, waste water generation and management with and without climate change and evaluation of proposed demand management activities using VENSIM.

He provided the model layout, emphasizing on outputs for the modeling which include a comprehensive database, future adaptation scenarios for water and wastewater management and an urban water model which would serve as a decision support tool. He concluded by showing how the model had been used in analyzing the water demand and supply of Addis Ababa city. The results indicated that despite additional water supply development, by 2030 Addis will still have insufficient water supply due to increased temperature and expansion of population and wellbeing.

**Questions and discussion on Water Supply and Demand Situation Modeling using VENSIM presentation:**

Dr Delali Dovi suggested scaling down on factors influencing the water environment to focus on a matrix which clearly defines such factors as population growth, demand management and economic development. Also an interface which links all these factors to the outcome. He said this would help to better explain that not all problems are as a result of climate change.

Mr Wellins-Mensah of Ministry of Works and Housing pointed out that climate driven factors does not have a significant influence on the study. According to him, the problem of portable water has to do with lack of investment in the water sector not climate change. He suggested concentration in investment as crucial in alleviating the water problem.

Mr Farouk Braimah also agreed that the focus of government should be on investing in the water sector as the current situation is not necessarily as a result of climate driven factors. He hoped that a clarification on water availability and impacts of climate change was necessary to enable people best understand the situation.

Dr Barnabas Amisigo of CSIR-WRI explained that the problem is not with availability of water as there was enough water. He hoped to explain better with his presentation.

Mr. Akoto-Danso thanked the participants for their contributions and said he will consider investment factors in building the model. Dr Raschid-Sally added that the task at hand is how to encapsulate all ideas and suggestions into simple scenarios to achieve results. She asserted that non climate drivers are varied and extensive and are sometimes difficult to make assumptions on. She however pointed out that the project seeks to capture the potential problems and find ways of sharing results.

### **2.3. *Climate and Hydrological Modelling.***

Dr. Barnabas Amisigo reaffirmed the main objectives of the climate and hydrological modeling which are to assess the impact of climate change on rainfall in the Densu Basin, assess the impact of climate change on surface water availability or renewable water in the Densu Basin, determine the implications of upstream water use on downstream water availability, particularly at the Weija Dam and assess the impact of climate change on flooding in the city of Accra. He also gave a recap of the climate and

hydrological modelling with a baseline period of 1961-2000 and a scenario period of 2001-2050. He showed the outcomes of both periods, emphasising on the outcomes of the climate modelling for the scenario period 2001-2050. The results showed that there had been a general decrease in annual rainfall amounts over the entire basin and depending on the scenario considered, reduction are between 11% and 16 % by 2050. However some windows could account for rainfall equal or higher than the 1961-2000 averages.

According to the model, using the standardized precipitation index after McKee *et al* (1998) to analyse annual rainfall under the various classifications show a significant shift of normal years to moderate and severe drought years, while moderate and extreme wet occurrences may remain unchanged. It again showed an 8% reduction in flows over the 1961-2000. He referred to the current surface abstraction in the basin which showed that total upstream abstraction is rather small. This he explained implies water scarcity; which in this instance means limiting ourselves to other uses of water.

He showed that the current situation in the Volta basin indicate a total water generation of about 62% in Ghana. This means that there is enough water generated in the country. However the situation in Densu basin is a bit worrying when moving downstream. This is because although there is water available in the basin currently, climate change could lead to a decrease in rainfall which is its main source of water. He explained that with the about 63% current water abstraction upstream Densu basin, the reservoirs (Weija) downstream could be greatly affected. He advised that to conserve water downstream at the reservoirs, stakeholders upstream should engage in integrated water resources management. This he said was inevitable as projections show climate change leading to more droughts which would mean more abstraction.

In concluding, he posited that using the model to explain flooding had its setbacks as rainfall alone could not adequately explain the issue. He indicated that using the flood risk modeling to demarcate high flood risk zones in Accra gave different results from the situation on the ground. The team therefore has to look at the other drivers causing flooding.



### **Questions and discussion on Climate and Hydrological Modelling presentation:**

Dr Delali Dovie commended Dr Amisigo on the simplicity and clarity of his presentation. He enquired about the extent to which teak plantations and other high water consuming plants located around the upstream of the Densu basin were affecting the situation of water abstraction. He also suggested consideration in plant water use as a form of correcting the abstraction. Dr Amisigo agreed with Dovie on this and indicated that the abstraction by these plants were not as much as the other activities. As such more studies would have to go into it as it could also be a potential research subject.

Dr Raschid Sally commented that other types of research are needed to better examine and understand these issues. She suggested that it could be interesting subject areas which would require further studies.

Mr J. Welling-Mensah commented on the issue of reduced rainfall. He intimated that focusing on annual rainfall values could be misleading especially in managing the Weija reservoir. Instead, a monthly or values from rainy periods could be used. Dr Amisigo explained that in assessing the impact of the Densu basin, focus should not only be on Weija as upstream activities do affect this reservoir. He intimated that findings from available data clearly recommend the use of the Volta basin as reservoir, giving the activities that take place upstream Densu basin. This would take the pressure off the reservoirs downstream.

Dr Raschid-Sally added that the type of analysis being done would determine the type information needed. So that in advising Ghana Water Company on spillage, analysis of monthly values may be relevant.

Mr Farouk Braimah asked for clarification on ground water use and whether it was captured in the modelling. Dr Amisigo explained ground water is being considered. He indicated its consideration in the Volta basin but was however quick to add that there is not much distinction made between the use of ground water and surface water in the country in general. He suggested some further research into ground water and surface water interaction.

Dr Raschid-Sally got clarification that the water flows in Densu and Volta basins reflect the current scenarios and that there already exists a climate change report on these areas.

Mr. J. Wellen-Mensah suggested a critical look at hydro power generation as it has the penchant of affecting our internal water generation levels.

Dr Raschid-Sally agreed with this and suggested the project would suggest developing scenarios to examine how existing water use could affect internal water generation in future studies.

The morning session was adjourned for tea break.

#### **2.4. *Process and main findings of the SWITCH project in Accra.***

Dr Patrick Moriarty of the SWITCH project presented on the process and main findings of the SWITCH project in Accra.

Giving a background on SWITCH, Patrick Moriarty indicated that it is an EU-sponsored project on Integrated Urban Water Management. It is consortium of 33 partners from 13 countries which carries out research and demonstration on Urban Water Management in a number of large cities, including Accra. Its objectives are promoting sector coordination through learning alliances, promoting social inclusion and supporting the development of an Integrated Urban Water Management plan. For the process, the SWITCH city coordinator brings together wide range of actors – city and national – in SWITCH ‘learning alliance’, the SWITCH team carries out research – feeds information into learning alliance and learning alliance discusses findings, makes decisions, takes action. In practice, the ability of stakeholders to take meaningful decisions/actions extremely limited due to lack of finance, weak enforcement, lack of coordination and weak capacity.

The findings from SWITCH RIDA were categorized under Water, Sanitation, Drainage, Solid Waste and Institutional.

For water, findings showed the various sources of water resources available, the total infrastructural capacity and the total production. It also revealed the demand with

amount of water sold and amount of water used. In sanitation, it showed the infrastructure available, estimated waste water production and access to all forms of sanitation. In drainage it showed the resources and infrastructure available, the demand on drains and the actual situation on the ground.

It again became evident that nearly half of the solid waste in Accra is not collected; a large part of this uncollected waste finds its way to storm drains and many houses are built in flood plains. Cross-cutting institutional issues such as weak institutional framework and inadequate coordination, weak enforcement of bye-laws, ineffective implementation of policies and ambiguity of administrative and service-delivery boundaries are problems identified. Challenges from these incidents include poor water supply, low sanitation, open defecation, pollution of water bodies, use of contaminated water for agriculture and flooding.

Recommendations from SWITCH Learning Alliance Stakeholders were done under Water Supply, Sanitation and Institutional Issues. For water supply, it suggested improving supply through GWCL system by enhancing the capacity of the piped system to increase water quantity, improving management in order to decrease physical and commercial losses, increasing decentralized storage to improve continuation of flow in the piped system and rehabilitation and expansion of the piped distribution network. For sanitation, by promoting different options for sanitation for different areas, rehabilitation and upgrading of existing sanitary infrastructure and the use of natural systems for waste water treatment; advanced treatment options as a final resort. For institutional issues, the creation of a “Greater Accra Metropolitan” coordination platform which entail city wide planning for the development of water and sanitation services, promoting interaction among key city level stakeholders and a platform to coordinate, harmonise and monitor the overall strategic vision for the city. Also inter-Municipal level planning should be encouraged and resolution of ambiguities on responsibilities for service provision.

Accordingly, adaptation to climate change or any other change implies the ability to carry out both rational and integrated planning, enforce laws, budget and spend, monitor and analyse. It also encompasses the ability of city stakeholders to work with ‘scientific’ data including user friendly information that can help to make ‘real-world’ decisions and narrative scenario building to go with computer based scenario building. There’s the need for slow but steady ‘bottom up’ facilitation heavy approach.

To conclude, Dr Patrick Moriarty indicated that solving the general problem of planning for water service delivery will provide a basis for adaptation to climate change; but this is a long term process. The central challenge is therefore finding an institution with the technical and facilitation skills in which to embed knowledge on research – and on facilitation

### **3. Moving towards a strategic agenda.**

Dr Raschid-Sally started the ball rolling on questions and clarifications by asking the types of powers which were recommended to the various stakeholders. Dr Patrick Moriarty explained that the Accra learning alliance did not make strong recommendations about powers but the minimum was that of institutional coordination. This was to ensure limiting powers to the various projects and institutions. This would bring different municipals together to form better coordination and alliance. Dr Raschid-Sally said she was interested in how the recommendations were done giving that, the project was coming to an end and recommendations would have to be made. For her, this is essential in deciding whether to make large generalized or specific pragmatic recommendations as interventions.

Dr. Sean Doolan of DFID commented that Patrick's presentation seemed to focus on institutional coordination instead of focusing on adaptation capacity. He said this was not a once off thing but done on a ranking scale. He noted that it's a long term process that needed to be looked at. He also sought clarification on issues of current planning and investment in areas particularly vulnerable to floods. He wanted to know whether special treatment plants or resilient equipment are going to be used.

Dr Raschid-Sally concurred with Dr Doolan and added that some non climatic drivers are very strong in flooding and in responding to them, attention may have to be given to climate change adaptation pointers.

Dr Patrick Moriarty explained that his organization was not a climate change skeptic but was concerned with what climate change adaptation adds to good infrastructural and management development especially in Accra. For him it all rests with the authorities' ability to deal with non climate drivers.

Dr Sean Doolan pointed out that the key issue about climate change is the additional stress on existing non climate drivers which make people unable to handle the extra pressure it comes with.

Dr Patrick Moriarty agreed with Sean and alluded to the fact that planning at the various institutions and local government levels and in addition enforcement, was the only way of countering the dire effects of climate change.

Mr Tagoe of AMA opined that the issue of enforcing bye-laws of the AMA and other regulatory bodies has been difficult due to the activities of some human rights advocacy groups. He explained that this put the AMA in serious dilemma when it comes to removing people from unauthorized places. He touched on the issue of waste management. He recommended that pragmatic steps would have to be adopted in solving these issues.

*Dr Raschid-Sally wanted to know the extent to which the project can respond to these problems.*

Dr Delali Dovie indicated that it was important to define the term 'institutions' to also encompass decision making and roles of individuals at household levels. For him the problem is with the failure of the institutions on a large scale and their hierarchy.

Mr Oppong Boadi of EPA also concurred with Delali. He opined that institutional change and coordination are necessary for development. Although there's the National Planning Commission the problem still exists. He cited weak coordination among the institutions as a major problem. He indicated that Ministry of Finance has made recommendations for the districts levels to respond to climate change adaptations. He suggested awareness creation and capacity building for the people at the grass root level as a form of education. He again commented on the expensive nature of adaptive programs and encouraged district assemblies to allocate funds to address them.

Dr Raschid-Sally enquired about how AMA has integrated climate change issues into the mainstream system. Mr Graham Sarbah explained that aspects of the local government laws specify integrating these issues. He however bemoaned the lack of enforcement as a major setback.

*Dr Raschid-Sally solicited views from participants regarding what could be done to ensure implementation of recommendations from this project.*

Dr Patrick Moriarty referred to pragmatic solutions as the only way. He gave the instance of what increase in abstraction can cause the Densu basin. He also pointed out the pragmatic nature of flood risk mapping.

Mr J. Wellen-Mensah pointed out that climate change only aggravates the situation. As such institutions should be funded and resourced to deal with non climate drivers. He encouraged doing the basic things to prevent floods and then consider the climate drivers. On the issue of the abstraction in Densu basin, he suggested a form of interconnection to bring fresh water from the Volta basin for treatment and storage at Weija as it already has the facilities.

Dr Delali Dovie agreed adaptation can be costly but necessary in building community resilience. He opined that building community resilience would be more effective as it is specific to the needs of the people there. He was sceptical about whether the approach should be nationalistic or communal.

Dr Barnabas Amisigo added that in climate change adaptation the issue is to increase the resilience of the people or community to the situation and decrease their vulnerability. He suggested that the new paradigm of water management is for communities to manage their own resources.

*Dr Raschid-Sally requested Sean to expand on his thoughts on adaptation issues for some more clarity.*

Sean Doolan referred to Patrick's presentation and stated that what is essential is the ability to manage; which includes ability to manage to deliver and accountability to deliver. He noted that Ghana seemed to have a poor track record of implementation. The same basic weakness of lack of implementation is a major problem everywhere. It's therefore important to focus on implementation. He mentioned that there are frameworks for this which include, considering plausible situations for the vulnerable areas and how to manage them. It also includes delivering on development objectives in the face of climate change.

Mr J. Wellen-Mensah concurred with Delali and Barnabas on community based projects. He however added that there should be some cost effectiveness in taking such decisions. To Patrick Moriarty, he wanted to know what recommendation(s) were made by the SWITCH project regarding solid waste management.

Dr Raschid-Sally recommended examining the various forms of building resilience as part of the projects recommendations.

#### **4. Closure of meeting**

A self monitoring exercise was engaged in by participants based on some progress indicators, to show whether or not any progress has been made on the project.

After this, Dr Raschid-Sally requested for final comments from participants. Mrs Christine Young Adjei of WRC commented that the meeting had been very insightful, especially with the revelations from the Densu and Volta basins. Dr Barnabas Amisigo also commented that the meeting had been very inspiring with well researched presentations. He was hopeful that other non climate drivers which exacerbate climate change issues would be tackled. He was also optimistic that, members of the platform would find ways of implementing plans and findings of the platform.

Dr Raschid-Sally requested Dr Henri Lo to give the final remarks.

Dr Henri Lo of IDRC expressed his gratitude to Dr Raschid-Sally and IWMI for the opportunity to attend the meeting. According to him, the most fascinating aspect of the project is its contribution to the evidence base for decision making. He noted that, another important aspect for CCAA and IDRC is to bring together decision makers, technocrats and researchers together, in an interactive and learning process of new discoveries. This he asserted would help better understand and boost the knowledge sharing experience for changing behaviours and attitudes. He commented that the project was at a stage where strategic recommendations are necessary. He posited that, emphasis should not only be on recommendations but on marketing strategies to get to those in influential places.

He ended by referring to the importance of building institutional capacity. He suggested that finding ways to equip institutions (such as IWMI) will go a long way to influence facilitation.

Mr Enoch Ofosu said the closing prayer and the meeting came to a successful end.



**List of Participants**

<b>No.</b>	<b>NAME</b>	<b>ORGANISATION/ LOCATION</b>
1	Fred Logah	WRI
2	Naambuyi Dokurugu	NADMO
3	Sean Doolan	DFID/ Netherlands Embassy
4	Solomon Tetteh	Great Thinkers Club
5	J. Wellens-Mensah	Ministry of Water Resources Works and Housing
6	Farouk Braimah	People's Dialogue
7	Samuel A. Appenteng	Association of Ghana Industries
8	Felix Amakye	Institute of Local Government Studies
9	Elaine Lawson	IESS - University of Ghana
10	Liqa Raschid-Sally	International Water Management Institute (IWMI)
11	Barnabas Amisigo	CSIR-WRI
12	Edmund Kyei Akoto-Danso	IWMI
13	Afua S. A. Prempeh	IWMI
14	Mr. Graham Sarbah	Accra Metropolitan Assembly
15	Claudious Chikozho	IWMI
16	Delali Dovie	RIPS - University of Ghana
17	Patrick Moriarty	IRC
18	Henri Lo	IDRC
19	Eugene Amoako	Ghana Irrigation Development Authority
20	Juliet Adjei-Kyere	Ghana Irrigation Development Authority
21	Ebenezer Allotey	Hydrological Services Department
22	Christian Young Adjei	Water Resources Commission
23	Carl Osei	Ghana Health Service
24	K. Y. Oppong-Boadi	Environmental Protection Agency
25	G. Nii Teiko Tagoe	GAMADA-AMA
26	Diana Owusu	IWMI
27	Hans Koranteng	Accra Metropolitan Assembly
28	Mercy Abena Otibo	Accra Metropolitan Assembly
29	Enoch Ofosu	Ministry of Water Resources Works and Housing
30	Kingsley K. Amoako	MOFA/ DCS
31	A. Amartefio	MOFA/AMA