FLOOD DISASTERS PREVENTION, MITIGATION & MANAGEMENT

The Climate Change and Disaster Risk Reduction Working Group (CCDRR WG) of the Global Young Academy (GYA) in conjunction with the Institute of Global Health and Health Security (IGH&HS), Federal University of Health Sciences, Otukpo (FUHSO), Nigeria organised a two days' workshop of flood disasters prevention, mitigation and management which held between 18th and 19th February 2025. The workshop was hybrid-both at the Multipurpose Hall of FUHSO GRA Campus and zoom. The workshop gathered participants from all works of life including those from the academia, government, policy makers, NGOs, media, students and the local communities.

The workshop objective was hinged on Sustainable Development Goal (SDG) 11: Sustainable Cities and Communities, and SDG 13: Climate Action with the sole aim of training participants on developing strategies to prevent, mitigate, and manage flood dissasters. Such efforts are essential to ensure the sustainability of our natural environment and the well-being of all living organisms.

The workshop commenced with a brief opening ceremony, presided over by the Acting Vice Chancellor of FUHSO, Nigeria, Prof. Stephen O. Abah, who was represented by the Director of Academic Planning and Control, Prof. Sylvanus Edache Okpe. Following the ceremony, a brief survey was conducted to assess participants' knowledge of flood disasters, including their prevention, mitigation, and management, and climate change impacts.

Five distinguished speakers participated in the event, including GYA alumnus Patrick Cobbinah (University of Melbourne, Australia); GYA members and co-leads Ovie Edegbene (University of Coimbra, Portugal; IGH&HS, FUHSO, Nigeria) and Wilson Alavia Medina (Disruptive Sustainable Technologies for Positive Change SpA, Chile); GYA member and Executive Committee member Hiba Baroud (Vanderbilt University, USA); and Senior Programme Officer Sharon Orako Otumala (IGH&HS, FUHSO, Nigeria).

After all the talks were delivered, a brief survey was conducted to assess participants' knowledge of flood disasters, including their prevention, mitigation, and management, and climate change impacts.

The workshop featured insightful presentations from distinguished speakers, each addressing critical aspects of flood disasters, their causes, impacts, and mitigation strategies.

PATRICK COBBINAH: URBAN FLOODS IN AFRICA – DESIRING NATURE-BASED SOLUTIONS

Patrick Cobbinah presented on the topic "Urban Floods in Africa: Desiring Nature-Based Solutions," highlighting key issues related to urban flood challenges across the continent. His presentation covered the following aspects: i) Urban flood challenges in Africa, ii) Climate risks as flood risks, iii) Nature-based solutions for flood prevention and management, iv) Advantages

and limitations of nature-based solutions, v) Case studies of nature-based solutions in selected African cities.

Cobbinah emphasized that climate change exacerbates both the severity and unpredictability of weather events, making flood risks increasingly complex. He explained that climate risks are multifaceted, affecting water resources, health, livelihoods, food security, human security, and economic growth. The impacts of climate change and variability have intensified over recent decades and are projected to worsen with global warming.

Regarding the scale of flooding in Africa, he noted that floods and droughts affect more people than any other hazard. Over the past decade, floods have surpassed droughts in terms of the number of affected individuals. He revealed that climate-related disasters have caused approximately US$1.4 trillion in damage globally over the last ten years. Many cities and urban centres in Africa are now classified as flood disaster risk hotspots, with poverty being a significant contributing factor.

As a potential solution, Cobbinah advocated for urban forest restoration as an integrated approach to flood management. He cited a case study in Dar es Salaam, Tanzania, demonstrating the effectiveness of this strategy.

OVIE EDEGBENE: EXPLORATION OF FLOOD DISASTERS – TYPES, CAUSES, IMPACTS, MITIGATION, AND MANAGEMENT

Ovie Edegbene delivered a presentation titled "The Exploration of Flood Disasters: Types, Causes, Impacts, Mitigation, and Management." His presentation outlined: i) An overview of floods and flood disasters, with case studies from selected Nigerian regions, ii) Types and causes of floods, iii) Impacts of flood disasters, iv) Structural and non-structural flood mitigation measures, v) Flood disaster management strategies.

Edegbene identified lack of maintenance and destruction of dams and reservoirs, along with negligence, as major causes of flood disasters. He highlighted the impacts of flooding, including: i) Loss of human lives and property, ii) Damage to infrastructure, iii) Increased erosion, iv) Risk of landslides, v) Destruction of agricultural produce (crops and livestock), vi) Spread of diseases.

To mitigate flood disasters, he proposed structural measures such as embankment strengthening, water retention dams, wetland maintenance, and flood control dam construction. Non-structural measures included land use planning, awareness campaigns, flood simulations, flood control structures, and early warning systems.

Edegbene outlined a proactive approach to flood disaster management, emphasizing: i) Preparedness for prevention and mitigation, ii) Readiness for potential disasters, iii) Emergency response measures, iv) Recovery and rehabilitation efforts.

WILSON ALAVIA MEDINA: CLIMATE CHANGE IMPACT ON FLOODING

Wilson Alavia Medina discussed "Climate Change Impact on Flooding," highlighting global flood disaster trends, with case studies from Spain and Germany. He examined climate change indices, noting that Pakistan and Belize are among the most affected countries. Alavia Medina underscored

the broad impact of flooding across various sectors, including agriculture, health, infrastructure, and the economy. He proposed actions to mitigate flood risks, such as: i) Adoption of renewable clean energy, ii) Tree planting and reforestation, iii) Climate change adaptation strategies, including agricultural initiatives, insurance, and financial tools, iv) Capacity development through education and knowledge dissemination, v) Improved information sharing and awareness, vi) Strengthening institutional capacity for climate resilience

His key takeaways included:

i) According to the Intergovernmental Panel on Climate Change (IPCC), climate change has increased the likelihood and severity of extreme weather events, including floods and droughts.

ii) Rising global temperatures lead to increased atmospheric moisture, resulting in more intense storms and heavy rainfall.

iii) The frequency of heavy precipitation events is expected to rise across most regions in the 21st century, leading to more flooding and drought occurrences.

iv) The proportion of land experiencing extreme drought is projected to increase.

v) Urgent action is required to reduce CO_2 emissions, promote climate change education, and implement disaster risk reduction strategies.

vi) Flood hazard and exposure data must be updated to incorporate climate change projections and land development impacts.

HIBA BAROUD: SOCIAL AND ECONOMIC IMPLICATIONS OF FLOOD VULNERABILITY – CASE STUDIES IN TRANSPORTATION SYSTEMS

Hiba Baroud presented on "Understanding the Social and Economic Implications of Flood Vulnerability: Case Studies of Transportation Systems." She emphasized the importance of vulnerability and resilience assessments in disaster management, which require a multidimensional approach involving both built and social environments.

Baroud demonstrated data-driven analytical methodologies designed to assess the vulnerability of critical infrastructure and communities to flooding. She highlighted the economic benefits of implementing flood-resilient strategies through an integrated model incorporating climate science, data science, risk analysis, and economic evaluation.

Her presentation used case studies of transportation systems in the United States to showcase the practical application of these methodologies.

SHARON ORAKO OTUMALA: FLOODING IN WATER, SANITATION, AND HYGIENE (WASH) SYSTEMS – IMPACT AND MANAGEMENT STRATEGIES

Sharon Orako Otumala delivered a presentation on "Flooding in Water, Sanitation, and Hygiene (WASH) Systems: Impact and Management Strategies." She stressed the critical importance of

maintaining proper sanitation and hygiene following flood disasters and highlighted the need for safe and clean water sources before and after flooding events.

Otumala recommended the use of Ventilated Improved Pit (VIP) toilets for flood disaster victims in rural areas lacking access to proper toilet systems, such as water cisterns. She outlined the correlation between flooding and WASH, emphasizing the negative effects of floods on sanitation and hygiene systems. Her presentation concluded with strategies for flood management and WASH response to minimize health risks.

WORKSHOP CONCLUSION AND POLICY IMPLICATIONS

The workshop concluded with a survey assessing participants' understanding of the topics discussed. The results of the pre- and post-workshop surveys will support the Climate Change and Disaster Risk Reduction (CCDRR) Working Group, the Global Young Academy (GYA), and the Institute for Global Health & Human Services (IGH&HS), FUHSO, Nigeria in formulating an actionable policy brief. This brief aims to serve as a foundation for future policy development on flood disasters prevention, mitigation, and management.

PHOTOS EXCERPT FROM THE WORKSHOP

Plate 1: Livestreamed onsite presentation by Ovie Edegbene (GYA member/co-lead CCDRR WG of the GYA; Deputy Director IGH&HS, FUHSO, Nigeria)

Plate 2: Livestreamed online presentation by Patrick Cobbinah (GYA alumni)

Plate 3: Livestreamed onsite presentation by Sharon Orako Otumala (Senior Programme Officer, IGH&HS, FUHSO, Nigeria)

Plate 4: Cross section of participants on day 1

Plate 5: Cross section of participants on day 1

Plate 6: Cross section of participants on day 2

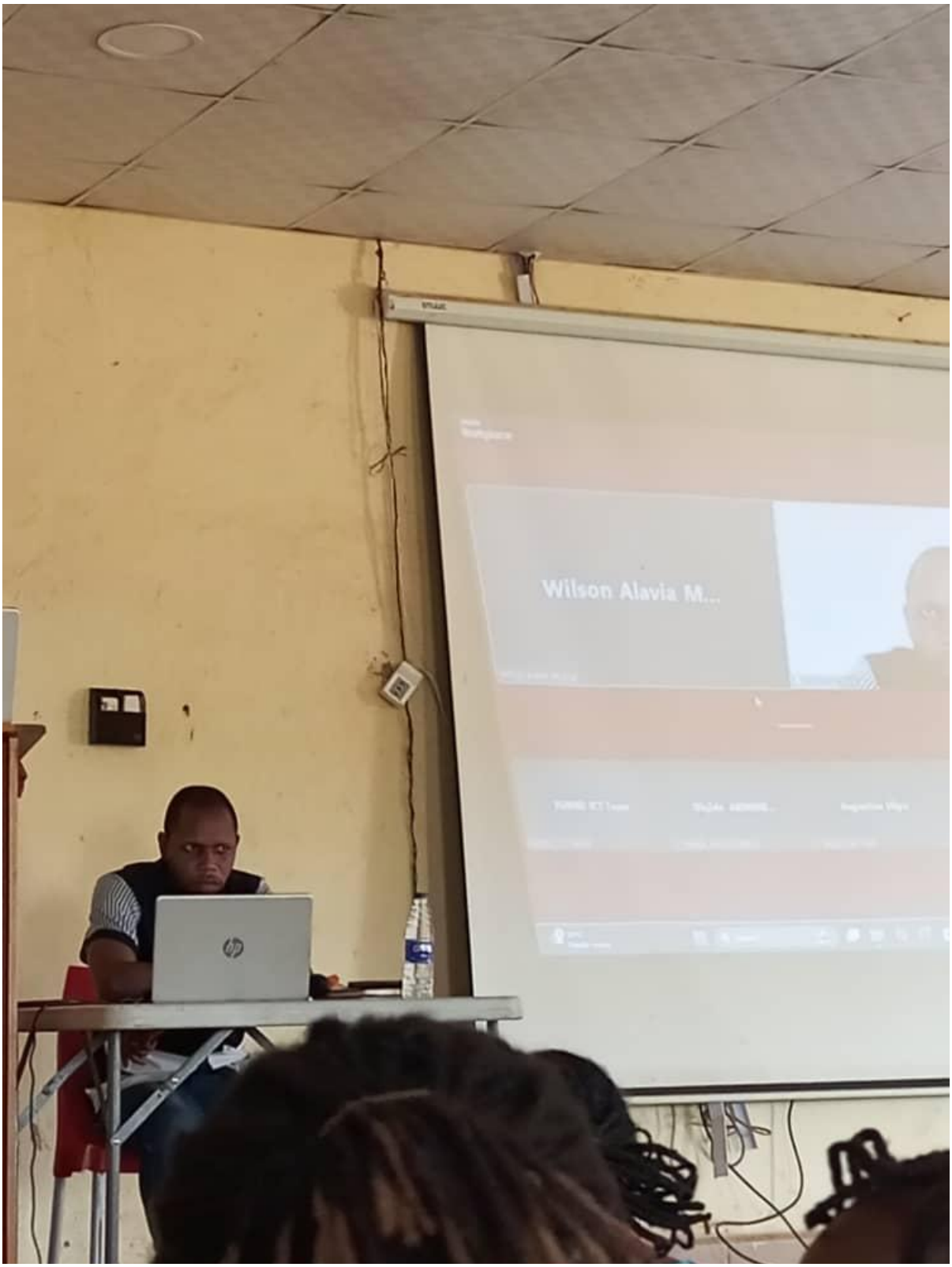

Plate 7: A shot of online participants & the Deputy Director (Ovie Edegbene), IGH&HS, FUHSO, Nigeria

Plate 8: Group photo of selected participants with the two onsite speakers (Ovie Edegbene & Sharon Orako Otumala) after the close of the two-day workshop