

Africa Centre of Excellence for Water Management (ACEWM)

Addis Ababa University

Ethiopia

Center Leader: Feleke Zewge

Contact

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About ACEWM

Vision

- The vision of ACEWM is to be a leading and internationally recognized teaching and research centre of excellence in water management to ensure equitable and sustainable development and use of water resources for poverty alleviation, socioeconomic development, regional cooperation and the environment in Africa.

Mission

- The mission of ACEWM is to advance multidisciplinary teaching, research and innovation on water issues; generating affordable and sustainable solutions for water-related issues and management with particular emphasis in Eastern and Southern African Countries through broad-based partnership approach.

Objectives of ACEWM

1. To strengthen AAU's teaching and research capacity in water science and technology to train critical mass of human capacity required to address national and regional development needs,
2. To enhance the capacity of faculty and students to conduct state-of-the-art research and scholarly activities in order to help solve regional problems in water management and climate change issues as well as provide trained research scientists and engineers to support national and regional development goals, and
3. To provide training and support for the development and adoption of best-practices in teaching, research, academic administration, and management through regional and international partnerships, coupled with the mobilization of African Diaspora Scientists.

Focus Areas of ACEWM

1. Improving access to safe drinking water and sanitation
2. Improving municipal and industrial wastewater management
3. Enhancing access to fresh water for food security
4. Adaptation to climate change
5. Improving water storage and water shade management to maximize resources and minimize conflict
6. Enhancing the productivity of the water ecosystems
7. Strengthening water quality monitoring and management
8. Enhancing water resources development
9. Renewable energy for water security
10. Improving water governance for socioeconomic transformation

Educational Programs of ACEWM

PhD in Water Management

1. Hydrology and Water Resources Management (HWRM)
2. Aquatic Ecosystems Management (AEM)
3. Water Science and Technology (WST)

5 years plan
51 Students

MSc. in Water Management

1. Hydrology and Water Resources (HWR)
2. Water Supply and Sanitation (WSS)
3. Water Quality Management (WQM)
4. Water and Wastewater Technologies (WWT)
5. Aquatic Ecosystems Management (AEM)

5 years plan
100 students

Short Courses

Demand-driven courses in the area of water management and water science and technology will be organized for water sector professionals and governmental professionals.

5 years plan
200 Trainees

Accreditation of quality of education programs

- National Accreditation of 5 Master's and 3 PhD Programs completed
- International Accreditation Process (to be started soon)

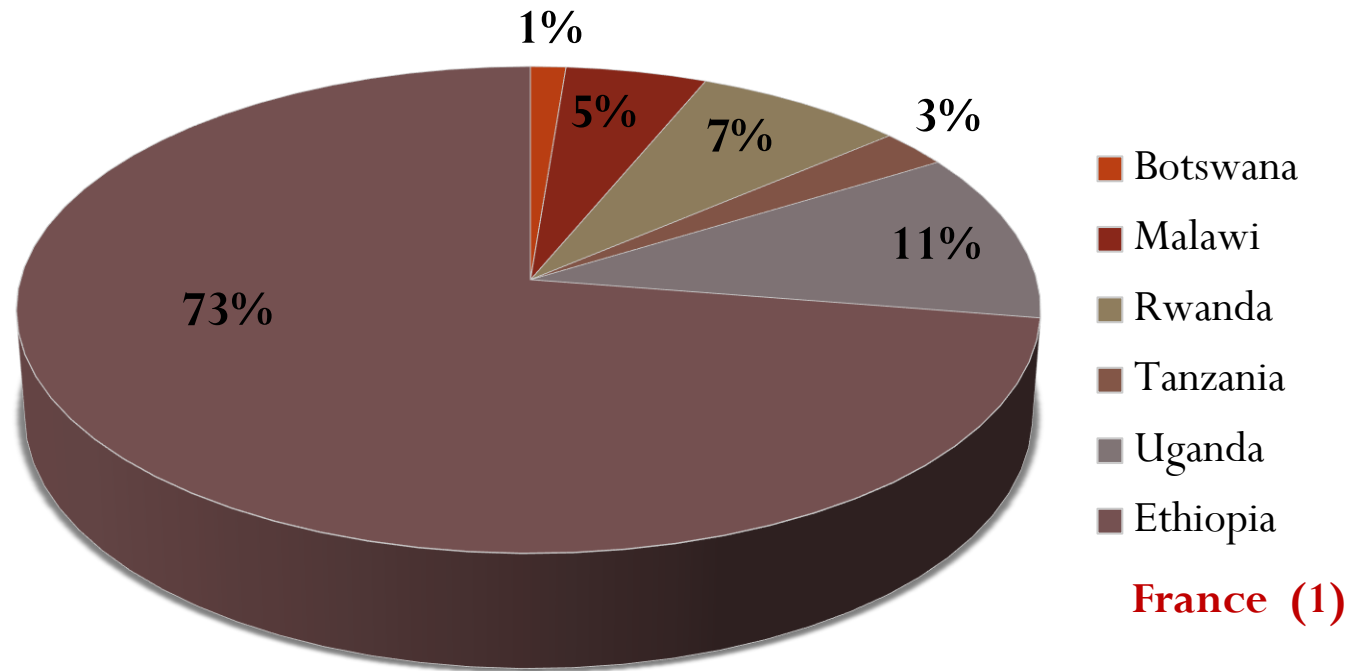
Research Priorities for ACEWM (under preparation)

1. **Water Management(Understanding, Managing and conserving our Water Resources)**
 - Water and Food Security, Basin Water Management, Urban Water Management
 - integrated approach to water management by improving our understanding of the impact of pressures on water quality and quantity, looking at adaptive water management approaches,
2. **Water supply and sanitation**
3. **Ecosystem Services and Sustainability**
 - functions and processes, and safeguard natural resources for future generations by identifying measures to help the adaptation and reaction to current and future pressures on the aquatic environment, enhancing fish productivity
4. **Water and Climate**
 - Climate Impact Modeling, Downscaling and Prediction of Climate Change, Vulnerability Assessment, Adaptation Research, Mitigation Research, Risk Assessment
5. **Innovative Water Technologies (safe water, wastewater etc.)**
 - development of sensor networks and real-time information systems in the water cycle and improved water treatment technologies.
 - new materials and processes, new management tools, Information and Communication Technology (ICT), energy efficiency, and small-scale water storage.
 - sensor networks and real-time information systems
6. **Emerging and Cross-cutting Issues**
 - Strengthen socio-economic approaches to conserve our water resources, covering governance issues such as public participation and decision support systems (DSS) as critical tools to integrate scientific knowledge into decision-making, and facilitating buy-in/ policy acceptance from the public.

Institutional Arrangements To Build Research Excellence (In Progress)

1. Research Units/Groups and Favorable Research Environment at ACEWM
2. Partnerships, Collaboration and Networking Interaction
3. Profile of Researchers and Affiliated Experts and Interlinkage of Research Activities with Masters/PhD Programmes
4. Research Infrastructure, Potential Instruments and Tools for the Implementation of the Research

Newly enrolled students in the ACEWM



Total Students at ACEWM
78

Regional
PhD: 28%
MSc: 28%

Female
PhD : 17%
MSC: 43%

Few of the PhD Students Research Topics

1	Aquatic Invasive Weed (Water Hyacinth) and Its Effect on Fish and Fisheries of Lake Tana, Ethiopia
2	Carbon Storage and Fluxes in Tropical Freshwater Wetlands: Implications for Climate Change Mitigation, Uganda
3	Hybrid Fe-Al Electrocoagulation Technology for Simultaneous Removal of Arsenic and Fluoride from Water
4	Biodesalination and Lipid Production using Microalgae from Natural Habitat of Hypersaline Lakes of Ethiopia
5	Developing an Integrated Catalyzed Wet Air Oxidation-Anerobic Digestion Technology for Distillery Wastewater Treatment
6	Development of an Integrated Deflouridation and Solar Still Desalination Technology: Data Optimization Through Response Surface Methodology
7	Effect of Tillage Systems on the Hydrologic Processes in a Common Bean (<i>Phaseolus Vulgaris</i>) Farm in Mukono District, Uganda
8	Characterization of Groundwater Recharge and Surface Water – Groundwater Interaction in Karamara Fault and Ogaden Basin, Ethiopia
9	Integrating Hydrological Modeling, Remote Sensing, and Geostatistics for Understanding the Spatiotemporal Hydrological Variability in the Bilate River Watershed, Rift Valley Lakes Basin, Ethiopia
10	Algae-sludge Bacteria Membrane Bioreactor for the Degradation and Removal of Pharmaceuticals from Domestic Wastewater

ACEWM Affiliated Faculty

- Total of 29 actively engaged Faculty
 1. **Water Science and Technology (9)**
 2. **Hydrology and Water Resources (10)**
 3. **Aquatic Ecosystems Management (6)**
 4. **Cross-Cutting (4)**

Faculty: Water Science and Technology



Dr. Adey Feleke (PhD), Environmental Biotechnology



Dr. Birhanu Assefa (PhD),
Wastewater Technology



Yonas Chebude (PhD), Catalysis
for water treatment



Dr. Beshah Mogesse (PhD), Water Supply
Engineering



Prof. Esayas Alemayehu (PhD), Water Treatment



Dr. Beteley Tekola (PhD), Environmental Catalysis



Dr. Feleke Zewge (PhD), Environmental Engineering

Faculty: Hydrology and Water Resources Management



Dr. Alemseged Tamiru (PhD), Hydrologic Modeling



Prof. Asfawossen Asrat (PhD), Geachemistry



Dr. Dessie Nedaw (PhD), Hydrogeology



Dr. Seifu Tilahun (PhD), Water Resources Engineering



**Dr. Seifu Kebede (PhD), Hydrogeology,
Isotope Hydrology**



**Dr. Tena Alamirew (PhD), Water shade
Hydrology**



**Prof. Tenalem Ayenew (PhD),
Groundwater Hydrology**

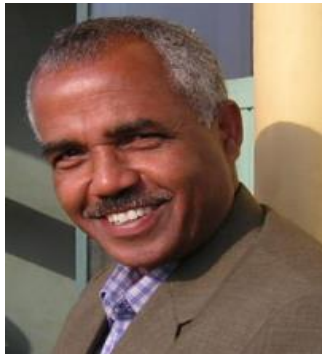
Faculty: Aquatic Ecosystems Management



Prof. Abebe Getahun (PhD), Fisheries



Dr. Tadesse Fetahi (PhD), Aquatic Ecosystems Management



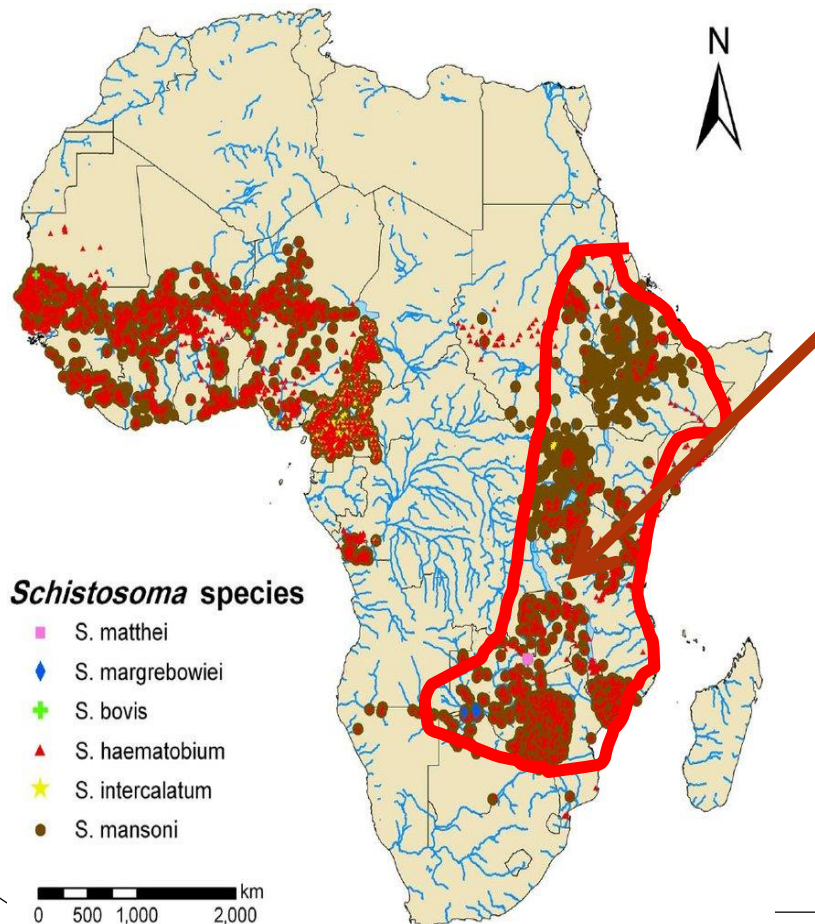
Prof. Brook Lemma (PhD), Aquatic Science



Prof. Seyoum Mengistu (Ph D), Aquatic Ecology

Collaboration and Partnerships for applied research and training

WISER is funded by the UK Government's [Engineering and Physical Sciences Research Council \(EPSRC\)](#), [Grant reference: EP/P028519/1](#)
(UK, Ethiopia, Tanzania)

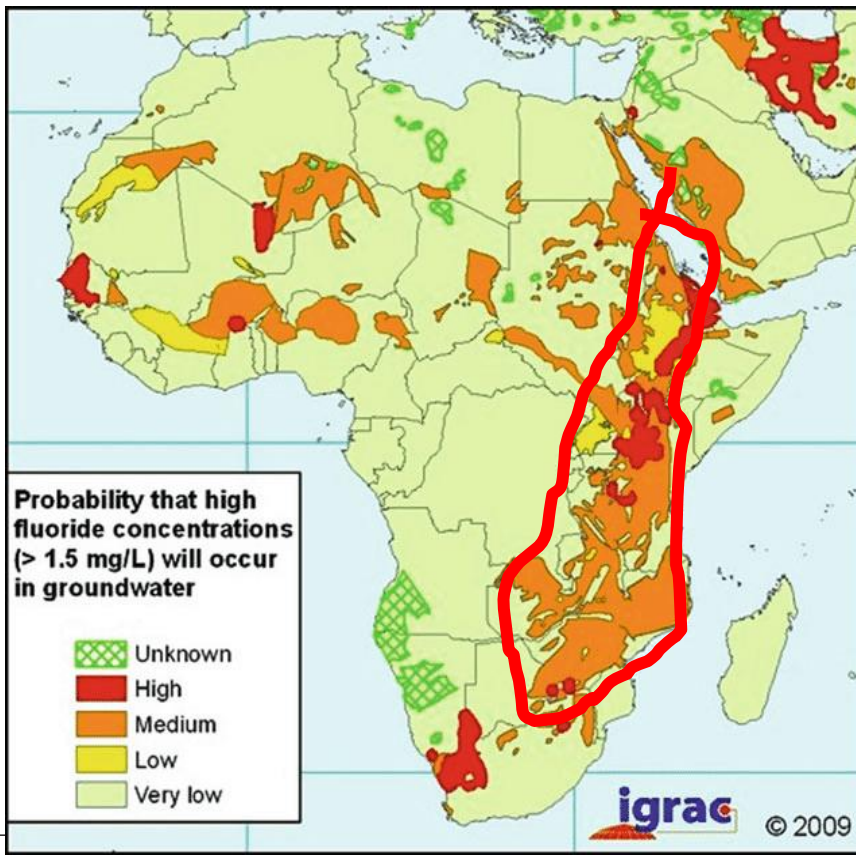


Water Infrastructure for Schistosomiasis Endemic Regions Team

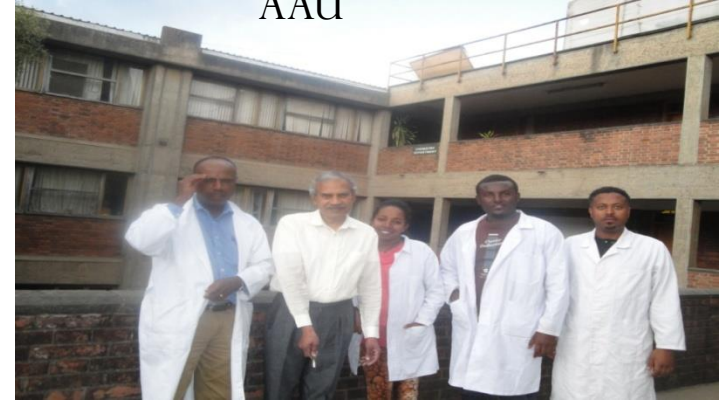


Collaboration and Partnerships for applied research and training

Tackling The Challenge of High Fluoride in Water in Eastern and Southern African Countries



AAU



Dr. Pawan Labhasetwar
NEERI, India



Prof. David Sabatini
OU: USA



Access to Teaching and Research Facilities

- Teaching and research labs within the involved academic units
 - **Department of Chemistry**
 - Multipurpose laboratories with state-of-the art equipments
 - **School of Earth Sciences**
 - Isotope Hydrology Lab
 - Water Chemistry/Geochemistry Lab
 - GIS and Remote Sensing Lab
 - **Centre for Environmental Sciences**
 - Environmental Analysis Lab
 - **Molecular and Cellular Biology**
 - Applied Microbiology Lab
 - **Zoological Sciences**
 - Limnology and fisheries Lab

ICT Facilities

- The ACEWM is working to integrate ICT into its teaching programs using the following strategies:
 1. Teaching and learning initiatives that include redesign of selected academic programmes/ modules, assessment for and of learning, interactivity during the lecture, e-learning content and copyright, as well as ICT applications in short courses.
 2. Empowering the students to utilize ICTs in their learning activities
 3. Support for lecturers, including workshops, and discussion forums
 4. Enabling technologies that include technology devices available to students and lecturer

Library Facilities



AAU Institutional Repository

AAU-ETD Home

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Colleges in AAU-ETD

Select a College to browse its collections.

- [Addis Ababa Institute of Technology](#)
- [College of Business and Economics](#)
- [College of Development Studies](#)
- [College of Education and Behavioral Studies](#)
- [College of Health Sciences](#)
- [College of Humanities, Language Studies, Journalism & Communication](#)
- [College of Law and Governance Studies](#)
- [College of Natural Sciences](#)
- [College of Performing and Visual Arts](#)
- [College of Social Sciences](#)
- [College of Veterinary Medicine & Agriculture](#)
- [Ethiopian Institute of Architecture, Building Construction and City Development](#)
- [Institute for Peace and Security Studies](#)
- [Institute of Educational Research](#)



ADDIS ABABA UNIVERSITY

Libraries

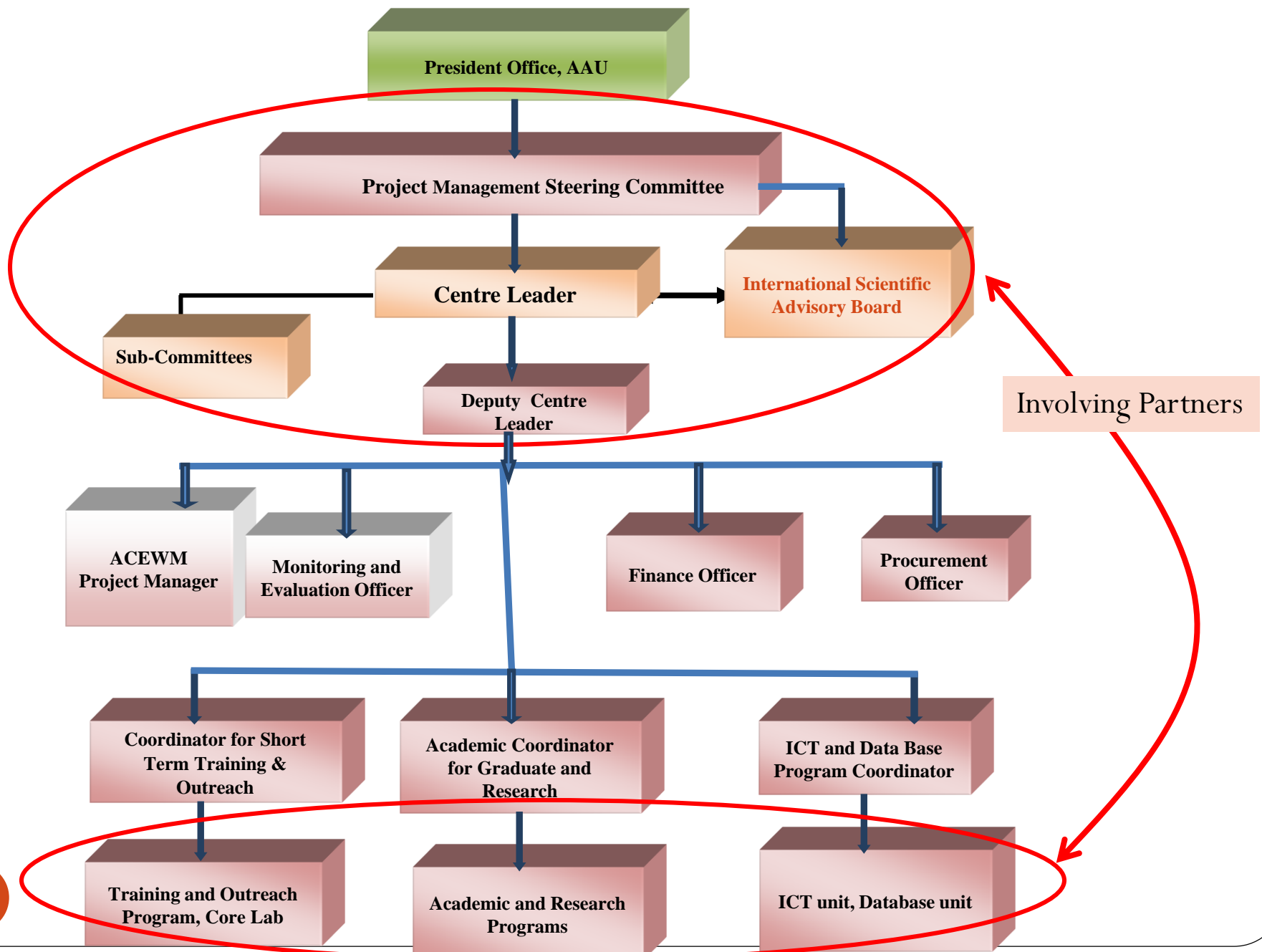
SEEK WISDOM, ELEVATE YOUR INTELLECT AND SERVE HUMANITY !



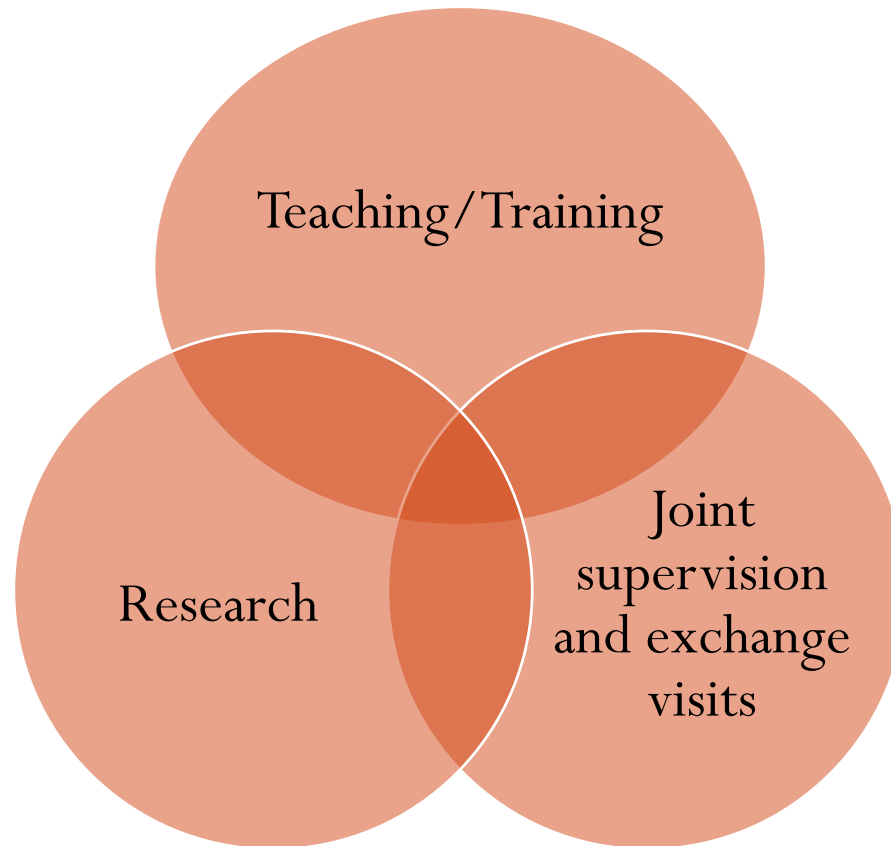
List of Subscribed Electronic Resources

- [African Journals Online \(AJOL\)](#)
- [Access to Global Online Research in Agriculture \(AGORA\)](#)
- [American Astronomical Society](#)
- [American Chemical Society](#)
- [American Society of Agricultural and Biological Engineers \(ASABE\)](#)
- [American Society of Civil Engineers](#)
- [Annual Reviews](#)
- [Cambridge University Press Journals Online \(CJO\)](#)
- [Canadian Science Publishing \(was NRC Press\)](#)
- [De Gruyter Online Journals \(inc LIS\)](#)
- [Duke University Press](#)
- [EBSCO EconLit](#)
- [EBSCO NISC](#)
- [Hinari Access to Research for Health programme](#)
- [Nature Publishing Group](#)
- [Oxford Journals \(OUP\)](#)
- [Royal Society of Chemistry: RSC Journals Archive](#)
- [Taylor & Francis Online Journals](#)
- [Wiley Online Library \(formerly Inter Science\)](#)
- [World Bank e-library](#)

Management and Governance ACEWM)



Partnership with IIT Roorkee and IIT Delhi



Joint research and grant sourcing in the following broad areas

- Hydrologic Modeling
- Groundwater modeling
- Sediment transport
- Climate Change
- Urban water management
- Trans-boundary water resources
- Water storage and rain water harvesting
- Nutrient loading dynamics and invasive species in lakes
- Irrigation water management
- Climate change

- Nano materials for Water Purification
- Emerging Contaminants, Microplastics and Nitrate in the Aquatic Environment
- Water and waste water treatment technologies for resources recovery
- Industrial wastewater technologies (tannery, alcohol distillery, textiles, agro-industries etc.)
- Environmental biotechnology
- Water quality management
- Decentralized wastewater treatment
- Sanitation
- Wastewater reuse
- Resources recovery from solid waste

- Water governance

Thank You!