Federation for Environment, Climate and Technology

சுற்றுச்சூழல், காலநிலை மற்றும் தொழில்நுட்ப கூட்டமைப்பு

පාරිසරික, දේශගුණික සහ තාක්ෂණික පදනම

25 Years On...

Federation for
Environment, Climate
& Technology

2002-2025

Federation for Environment, Climate and Technology

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Fédération pour l’Environnement, le Climat et la Technologie

ފެޑަރޭޝަން ފޯ އެންވަޔަރަމަންޓް، ކްލައިމެޓް އެންޑް ޓެކްނޮލޮޖީ

Digana Village, Rajawella & Akurana, Sri Lanka.

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PART I

INSTITUTIONAL PROFILE

Origin & Contributions

The Federation for Environment, Climate, and Technology (FECT) is a group of 7 organizations and two affiliated groups dedicated to developing usable social scientific and technology data for societal well-being and environmental preservation. FECT brings together 31 scientists whose activities cover some of the Indian Ocean Islands (Sri Lanka, Maldives, Comoros, Zanzibar and Chagos) and its littoral (Tanzania, Botswana, India, Thailand) over the past 25 years. We began researching and developing of climate and environmental analysis, computation, monitoring, and prediction technologies in Sri Lanka.

- Developed infrastructure for research
- Implemented climate adaptation projects
- Undertook climate & environmental research

Vision

Our vision is to sustain FECT as a center of excellence in climate, environmental, information technology and related areas where state of the art research is pursued, technological capability is advanced and disseminated and where all of this is combined to execute socially valued projects.

Mission

To sustain a think tank and center of excellence in climate, environment, and information technology with quality research to address societal concerns and ecological protection.

Values

Support societal welfare and prioritize the vulnerable, maintain credibility of research, maintain institutional technological capabilities, free dissemination of knowledge, maintain a culture of valuing non-discriminatory treatment, proactively engage with the most-motivated and most-giving, supporting and engaging staff for developing competencies, team-work and reaching their potential.

Web and Social Media

Websites:
www.fect.lk
www.climate.lk
www.disaster.lk
www.cleanair.lk
www.drought.lk
www.disease.lk
www.tropicalclimate.org
www.awwa.lk

Facebook : htts://www.facebook.com/FECTSLp
Twitter (X) : https://twitter.com/fectlk
: https://twitter.com/climatelk
Instagram : https://www.instagram.com/fect.lk/
LinkedIn : https://www.linkedin.com/company/fectlk/

Contact info

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OVERVIEW

Federation for Environment, Climate and Technology originated at the Natural Resources Management Services (NRMS) of the Mahaweli Authority with a project to study seasonal climate information related to the Mahaweli River Basin in 2000. It was initiated on the work of the computational mathematics group at the Institute of Fundamental Studies in Kandy from 1997 to 1999. Here, we summarize the events, projects, programs, partnerships, personnel, and outputs for the last five year term.

Institutional History: We had been working on a project to use climate information for water management from 2000 under the Natural Resources Management Services (NRMS) which is a company under the umbrella of the Environment and Forest Conservation Division of the Mahaweli Authority. To ensure continuity of our operations and to sustain capacity through new grants, a new organization was essential. The formal registration of the non-profit company Foundation for Environment, Climate and Technology (FECT) took place by the Registrar of Companies on the 31st December 2003.

FECT stationed its first branch at the Mahaweli Authority premises in Digana in August 2005. With the assistance of the Directors and the staff of the Headwork Division of the Mahaweli Authority, we were able to construct and initiate FECT operational work. Since then, we have been executing grants, collaborating on proposals, contributing to scientific and technicalmeetings and conferences and publishing extensively.

Project Work: We have demonstrated the function of hydro-climatic information with projects concerning water resources management, human-elephant conflict, plantation and food crop agriculture, malaria and dengue risk assessment and disaster risk management.

Climate Work: We have undertaken climatic diagnostics, climate prediction, hydro-climatic analysis, modeling, prediction and climate change assessments. We continue to construct a state-of-the-art hydro-meteorological monitoring and prediction system.

Information Technology: We have undertaken IT infrastructure development, website development, interactive map servers and software development for scientific computation. We are developing high-performance computing and web services.

Publishing: We have published information on our operational work in newspapers, scientific journals, magazines, the Internet, posters, newsletters and books.

Education: More than 200 people were employed full-time and part-time since 2000. Internship opportunities were provided to more than 100 internees. Employees have contributed immensely in researches, IT services, administrative services, GIS, writing and accounting services. A similar number are currently pursuing higher education (from bachelor's to Doctoral degrees) after leaving FECT. Further, we partnered with the University of Peradeniya to launch a Master's Degree Program in Sustainable Development Practice.

Training: FECT has offered a considerable number of job training opportunities for qualified individuals who are keen on research, IT, administrative and accounting skills. Moreover, we have provided opportunities for them to obtain training at local workshops, as well as training programs at the International Research Institutes for Climate and Society, New York, International Centre for Theoretical Physics, Italy, Post-Graduate Institute of Agriculture, University of Colombo, Kasetsart University, Thailand, The Bangladesh Centre for Advanced Study, Dhaka, Asia Pacific Climate Centre, Centre in Busan, South Korea and the China Meteorological Administration, International Crop Research Institute for Semi-Arid Tropics (ICRISAT), Hyderabad, India, Agricultural systems modeling, Dubai and Acharya N. G. Ranga Agricultural University (ANGRAU), Hyderabad, India.

Internship opportunities were provided for the students from the Faculty of Agriculture and Science at the University of Peradeniya and technical tertiary institutes such as National Institute of Business Management (NIBM), the Sri Lanka Institute of Information Technology (SLIIT) and the Sri Lanka Institute for Technical Education.

We have conducted workshops for the Mahaweli Authority, the Central Engineering Consultancy Bureau, the Department of Meteorology, the University of Peradeniya, the Post-Graduate Institute of Science, the Department of Geography, the American Corner in Kandy, the Akurana Pradeshiya Sabhawa, the Plantation Human Development Trust, the Maldives National University, the Maldives Meteorological Service, the Hairu Fisheries Company in Comoros and the Botswana Meteorological Service. We have provided lectures and supported thesis researches in water resources management, meteorology, oceanography, environmental science, geographic information systems and disaster management at the Post-Graduate Institute of Sciences, Post-Graduate Institute of Humanities and Social Sciences, University of Moratuwa, University of Peradeniya, University of Colombo, University of Ruhuna, South-Eastern University, the Eastern University and the Open University of Sri Lanka.

Funding: Our work has been funded through grants from International Research Institute for Climate and Society, The Earth Institute at Columbia University, SysTem for Analysis Research and Training (START), Global Environmental Facility (GEF) and the Office of Global Programs at US National Oceanic and Atmospheric Agency (NOAA), National Science Foundation, Sri Lanka, the ProVention Consortium, USA, WHO SEARO project office in Thailand, Food and Agricultural Organization (FAO), International Foundation for Science, Sweden, UNESCO-IHE Institute for Water Education, MacArthur Foundation, Chicago, USA, Agriculture Model Inter-comparison and Improvement Program (AgMIP), US Office of Naval Research, US National Academy of Sciences (NAS), United States Agency for International Development (USAID) and the University of Colorado. We hope to sustain our work through new partnerships and projects.

In later sections, we provide details on our climate adaptation projects, work on climate, hydrology and environment, science, environment and society, our partnerships, staff and list of our outputs.

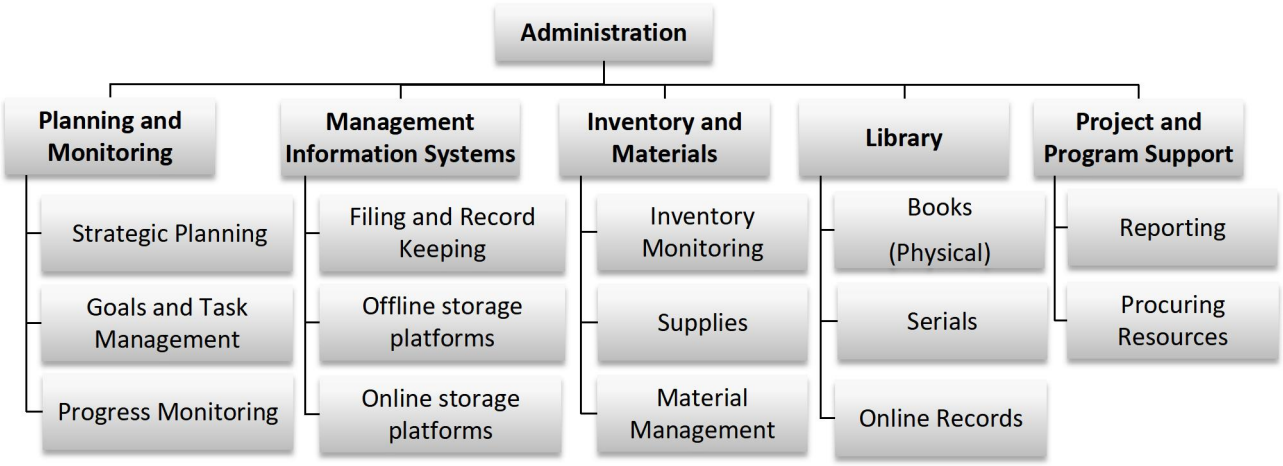
Work overseas: While we initiated our work in Sri Lanka, we had invitations to contribute in other neighboring countries as well. The need for climate and environmental information is dire in the Indian Ocean Islands and there is very little capacity to address it within these countries. Climate Change, sea level rise, ocean acidification and ocean ecosystem changes and mass fish die-offs lead to threats to the existence of life on these islands within a life time. These impacts are early warnings for the rest of humanity. We leverage our capacities to extend and support the work in Maldives, Comoros, Zanzibar and Chagos while also participating in climate change related work for Seychelles and Mauritius and other Indian Ocean Islands.

These contributions are to the benefit of research as the Indian Ocean is the least monitored and understood. For example, sea level studies and ocean warming studies are robust only if data from across the oceans are brought together. Climate and ocean interactions do not consider political boundaries and understanding across the oceans serves all, particularly within the Indian Ocean basin.

HR & ADMINISTRATION

Introduction

The administration of FECT developed over time modelled initially on practices in the organizations that we started with - the International Research Institute for Climate and Society (IRI) and the Natural Resource Management Services (NRMS). NRMS is the for-profit semi-government company of the Mahaweli Authority of Sri Lanka. Human Resources (HR) management such as appointment letters, attendance markings, maintaining stocks of supplies were modelled after NRMS. We adapted HR Practices such as reporting, evaluation and back-to-office reports which were modelled after that from the IRI. The practices were initially done manually and digitized over time. Our administrative work may be categorized under Planning and Monitoring, Management Information Systems, Inventory and Materials, Library and Project and Program Support.



Organization of the administration at FECT

Planning and Monitoring

We regularly hold staff retreats to adapt our Strategic Plans and review our progress towards our goals. Given the complex nature of the goals, we are limiting our Monitoring of organizational practices following the procedures known as 4DX - the four disciplines of execution 1. Spanning Identifying "Wildly Important Goals"(WIGs), 2. Establishing Leading Indicators, 3. Keeping a Scoreboard, and 4. Keeping ourselves accountable through reviews at various levels. We have identified our WIGs as Projects and Publications.

Management Information Systems

We have developed Management Information Systems - this includes the use of Kanban boards to keep track of the progress of themes, programs and projects and infrastructure; the use of cloud storage - via OSF, Google Drives and Dropbox. We have developed a digital catalogue for our 2500 books in standard library formats.

For our digital filing systems, we use the Open Science Framework (OSF), and Google-Drive platforms. These platforms help in organizing and archiving documents. We use wiki pages and internal blogs via OSF to share information and updates within the organization.

We have implemented online Kanban boards and project management software to plan, track, and manage Themes, Projects, Programs and Infrastructure.

We have developed internal documentation that includes staff guidance, rules, and procedures. We have implemented knowledge management practices for organizing and sharing of information. This helps in providing institutional knowledge and makes it accessible to all.

Inventory and Materials Management

We keep records of all physical assets, including equipment and furniture. We monitor inventory to ensure that necessary supplies are always available according to the 5S system which is Sort, Set in order, Shine, Standardize and Sustain. We manage the disposal of damaged or items not in a condition to use in accordance as 5R which is Refuse, Reduce, Reuse, Repurpose and Recycle.

Library

The FECT library is equipped with 2000 books, 100 journals and grey literature. Books are mostly in Akurana with some in Digana and New York. We undertook periodic checks of books according to the Dewey Category Number and Dewey Decimal Specific Number (a similar physical identification method is also in place). The staff continues to use this resource in much of the research, discovery and education tasks of the institute.

Project and Program Support

A significant part of our work support projects - from proposal development, managing its execution, to reporting and knowledge management.

We have supported 15 grants. We support the proposal process, track grant deadlines, and ensure compliance with grant requirements. We maintain records of project activities and outcomes. Prepare reports on program progress and outcomes for internal and external funders.

Making FECT Resilient

After we were sued by one of ex-project worker, we had to duly document (HR practices including appointments, record keeping) establish the charitable status of our organizations. With the founding company under legal threat for the past seven years, we had to develop contingencies and risk management including support a federation of organizations.

We also had threats and investigations by the police after the 2019 Easter Attack due to wild unfounded speculations. Our work was explained to the Police. Two of our staff members were trained on protective practices for small charitable organizations in a workshop.

Now that we have been able to establish our charitable status after the judgement by the Court of Appeal in our favour in 2024, the Department of Labour and Employees Trust fund had to back off their investigations and cease their raids in our office. To learn more of the practices and to aid other organizations, we are asking for accountability from these organizations. Through the use of Right To Information we had to more rigorously observe best practices.

REGULATORY AND LEGAL WORK

Regulatory: Our organization is registered in Sri Lanka with the Registrar of Companies, the Ministry of Social Services, and the Land Registrar; in the Maldives with the Home Ministry, and in the USA, with the state of New York and Delaware. Our diversity of organizations caters to our work orientations and helps minimize risks.

Legal: Our work includes entering into contracts, supporting legal actions for public interest, health and environmental grounds, and facing up to legal actions against the companies and its directors. We have entered into two dozen contracts. We have supported litigation in respect of impacts at coal power plants at Norochcholai, the proposed plant at Sampur and the Aruwakkalu landfill in Puttalam. We have faced up to quasi-judicial inquiries at organizations including the Employee Trust Fund (ETF) Board, the Department of Labour, the Akurana Pradeshiya Sabhawa and the Police. We have faced litigation in Magistrate Courts, Labour Tribunal, District Courts and the Court of Appeal. The Court of Appeal concluded that our organization was in letter and deed charitable and dismissed the actions against us at the Magistrate court and the Department of Labour. We withdrew the case in the District Court due to Covid risks. The case in the Labour Tribunal, which persisted for eight years, was finally concluded in our favor on 25th April 2025.

Regulatory and Legal Research: Our research includes support for public interest work and environmental actions (such as river basin protections, atmospheric, marine and terrestrial pollution), disaster risk reduction and climate governance. We helped assemble evidence in support of legal action for other organizations such as the Environmental Foundation (EFL) and Puttalam Environmental Organization.

Promoting Protection and Governance for the Environment and Charitable Organizations:
After our experiences with improved officials overreach, we found that some officials don't know the laws and regulations or abuse these. Often the impacted small organizations do not have the resources to counter. We seek to address some of these problems and to promote mitigation steps and institutional transparency.

Right-To-Information Act: We use the Right to Information Act (RTI) to obtain information that are otherwise withheld - we filed successful appeals before the RTI Commission successfully against the Department of Labour, the ETF board, the Inland Revenue Department, and the Akurana Pradeshiya Sabhawa.

Support for Legal Education: We supported the internships of six LL.B. qualified candidates awaiting advance in the legal profession. Our personnel have agreed to support curriculum development and support legal clinics for climate governance at the University of Peradeniya.

Legal Personnel: We had support from our Company Secretaries - Ralapanawe Associates and Hidaya Rausdeen. S.B. Sooriyarachchi Esq., and Dinendra De Alwis Esq. aided in dealing with the Department of Labour, ETF, inquiries, and the Magistrate Court hearings. Heshan Thambimuttu Esq. aided with the Labour Tribunal. Faisza Markar, President's Counsel aided with the Court of Appeal. We also obtained support of other lawyers for other actions.

Extract from Judgement of Court of Appeal
(FECT vs The Commissioner of Labour)

"… the objectives of the Petitioner Organization as provided for by its articles which stipules that its primary aim is to provide technical guidance, environmental monitoring, climate and environmental impact assessment, and adaptation, with a focus on social, economic livelihood, and sustainability aspects. The Petitioner is also a company limited by guarantee where no profits are transferred to members as dividends or bonuses. It is also noted that the Petitioner has been actively involved in various charitable and public welfare activities. It has collaborated with government organizations, contributed to poverty relief, promoted education, engaged in environmental protection, and participated in societally relevant research."

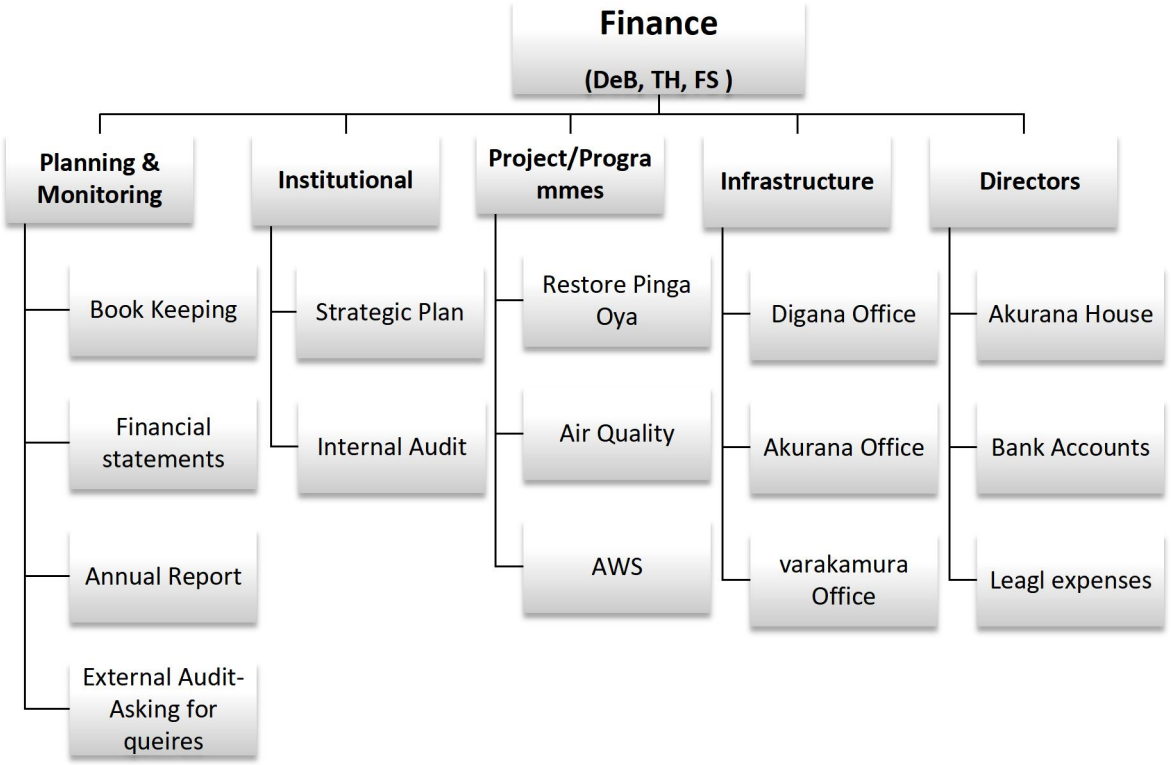
Case No: 511/2019: Judgement Date: 23.01.2024

FINANCE

The main areas of work in Finance at FECT are Record Keeping, Book Keeping, Maintaining Project and Institutional accounts and auditing their reports corresponding with the auditor and company secretary. The purchasing needed for projects and keeping record of services, utilities and other expenses are also done, giving proper accounts to the auditor and secretary with query responses. In addition, identification of deficiencies, opportunities and cost saving is a vital part of operation.

Finance Strategy

Finance overall structure



Record Keeping

Until 2005, accounts were prepared briefly. Then as project collaboration with Columbia University saw light, after 2006, accounting work increased in intensity. Rimza Zacky, the part-time accountant based at Akurana at the time, helped set up and maintain books of accounts for each of the three companies separately such as Cash book, Bank book, Petty cash summary, Journal book & Ledger book.

Projects

Our work has been funded by grants from international, national, government, and non-government organizations. We aim to sustain our work through new partnerships and projects. We have over 20 projects which are noted separately. We have also undertaken many proposals for these activities. We have to generate budget and justify how the received grant was being used. Therefore, we had to regularly submit expense reports and final amount. Diversifying grants to include consultation, training programs, instrumentation, and internet-based revenue.

Purchasing

When making a purchase, we identify our needs, obtain quotations, and ensure cost-effectiveness within the

organization's budget. Additionally, we consult with supervisors when purchasing office supplies and equipment.

Banking

FECT had to expand its banking ventures to cater to the evolving demand from projects, Peoples' Bank and Hatton National Bank took the role of housing accounts. After a time, accounts were started at Commercial Bank and Bank of Ceylon.

Accounting

Over time, manual procedure of book keeping were complemented with digital spreadsheet platforms. For payroll, we have adapted bank account payment and direct pay. The accounting work includes book-keeping, company and project accounts, and annual reports.

Auditing

The auditing work includes compilation of our final accounts, records and books for inspection of the auditor. Therefore, we have to respond to the queries and report to the board including the company secretary.

We have audited the financial statements for the financial year from March to April. Audits for the years 2014 - 2018 for the Foundation for Environment Climate & Technology (FECT), 2019 - 2021 for Disaster Services (DS), and 2017 - 2021 for Tropical Climate Guaranty (TCG) were conducted by Anzari and Company. FECT, DS, and TCG audits are in progress for the year 2022-2023.

INFORMATION & COMMUNICATION TECH.

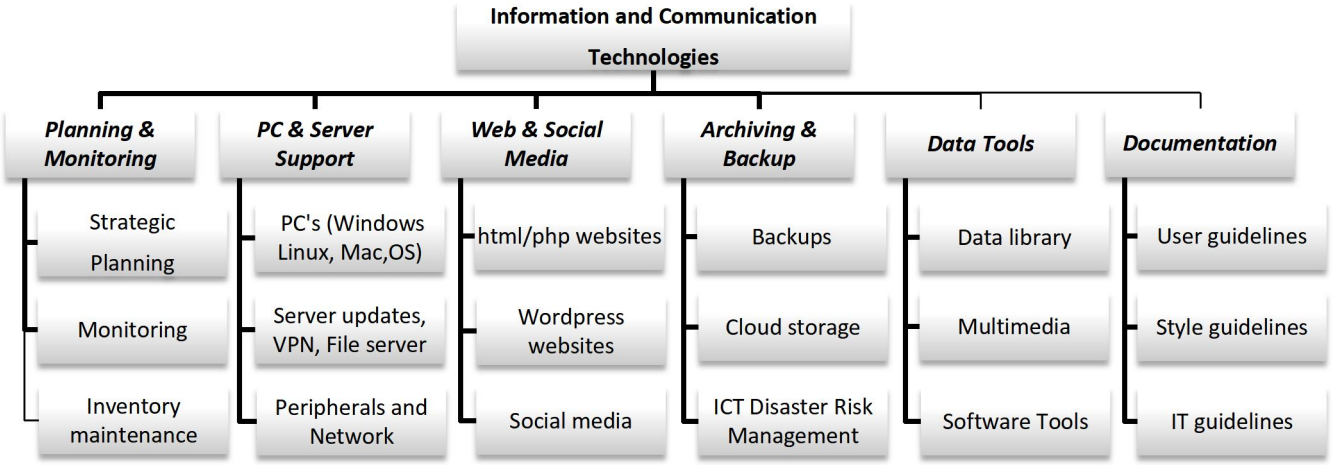
Summary

FECT maintains computers, hardware, instruments, web services, social media, data services and manages information systems. Nearly all of our Information and Communication Technology (ICT) work is done in-house. We have established a "data library" locally for data management in collaboration with International Research Institute for Climate and Society (IRI). Our websites have been awarded by the Information and Communication Technology Agency of Sri Lanka (ICTA).

Introduction

FECT develops skills in ICT, especially web development, publishing, programming, instrumentation, CCTV, data management, communication services, visual communication, spatial analysis, management of information and publishing scientific papers. Our ICT staff also support research and undertaken publishing. FECT websites have been recognized the best in category by ICTA in recent years.

Organization of the ICT Theme at FECT



Areas of IT Work

- Web Development
- Mobile Application Development
- Instrumentation and IoT Networks
- Server and PC Maintenance
- CCTV Maintenance
- Scientific Data Management
- Communication of Information
- Scientific Programming
- Graphic Design, Multimedia and Visual Communication
- Remote Sensing, GIS and AutoCAD
- Management of Information System
- Publishing including Multimedia

Senior ICT Staff

Dr. Lareef Zubair: Has developed programs for data acquisition, data processing, data compression, image processing, computer vision, and various scientific analysis using Fortran and C languages. His doctoral thesis was on "Use of Wavelet Analysis for data compression and scale separation".

Mr. Tuan Hadgie: Oversees IT work including graphics, system management, hardware, and IoT.

Ms. Dilrukshi Kulasooriya: Coordinates the ICT work, Data Library and Web Development.

ICT Advisors of FECT

Eng. Neil Devadasan: Collaborates with FECT in producing an interactive map server for Sri Lanka and in establishing the Tsunami assistance portal. He helps in designing our IT and web-based systems.

Eng. Zain Iwais: An Electronics and Computer Engineer who specialized in Robotics and control systems with signal processing. He supports the work on electronic hardware, IOT system and Data Library.

Dr. Vidura Ralapanawe: Supports ICT systems, Data Library and visual communication.

Mr. Sanjaya Ratnayake: Advises us on web, data, app development and IT systems.

EXTENDED TIMELINE

Category of Work	Title	Year														
		2000	2001	2002	2003	2004	2005	2006	2008	2010	2012	2013	2014	2015	2017	2021
Proposals	Proposal with Directors of the MASL (Dr. H. Manthrithillake and Dr. R.D. Wanigaratne) and Director of the IRI (Dr. Antonio Divino Moura)															
	Seed-funding, formal start of project through Natural Resources Management Services (NRMS) affiliated with MASL.															
Workshops/ Conferences	Dr. L. Zubair - Eco Health Workshop in Merida, Mexico.															
	Lareef Zubair - Indo-Gangetic Plains regional meeting of the Climate Change Adaption to Agriculture and Food Security (CCAFS) program, New Delhi.															
	Lareef Zubair - Eco Health Conference, London School of Hygiene and Tropical Medicine, UK.															
	Lareef Zubair, Prabodha Agalawatte, Dumindu Herath, Yasas Harischandra, and ErandikaWijekoon, AgMIP South Asia Regional Projects Kickoff Workshop, Colombo, Sri Lanka.															
	Symposium on Pinga-Oya, Foundation for Environment, Climate & Technology and Department of Geography, Faculty of Arts, University of Peradeniya.															
	Lareef Zubair, Prabodha Agalawatte and Janan Viswanathan, Climate and Water Scarcity in the Maldives, Maldivian National University, Malé.															
Trainings and Programs	Program of Research on Weather/Climate, Environment in Tea Ecosystems in Sri Lanka to Dilmah Conservation, Sri Lanka.															
	10 staff members participated in training program to develop Digital Media skills of ten of															
Institutional	Establishment of Climate Assessment, Prediction and Adaptation Group (CAPAG) at NRMS.															
	Establishment of Sri Lanka Portal at IRI (http://www.tropicalclimate.org/~mahaweli/).															
	Transformation of CAPAG into Foundation for Environment, Climate and Technology.															
	Staff moves to Digana and inauguration by Mahaweli Authority's Director of Headworks.															
Visits	Joshua Qian of IRI visit to project site, CAPAG/NRMS and Department of Meteorology.															
	Janaki Chandimala visit to IRI for four months to work on climate and malaria project.															
	Brendan Buckley and Orawan Buckley of the Tree Ring Laboratory, Columbia University visit to CAPAG/NRMS.															
Scientific/ Publications	Weather and Climate of Sri Lanka Impacts and Adaptation: Publication of a reference guide.															
	Land Surface Modelling for Sri Lanka implemented with NASA/GMAO.															
	Publication of High-Resolution Climate Analysis by World Bank.															
	Contribution of two chapters to the Book on El Nino Ready Nations compiled by Mickey Glantz, Center for Capacity Building at the University of Colorado.															
	Publication about FECT collaboration between Maldives and Sri Lanka, N. Gunawardene, Small islands, big impact: Building climate resilience in the Indian Ocean through cross-border scientific collaboration, Good Neighbors book by World Bank.															

TIMELINE OF SPONSORED PROJECTS

Project Category	Colour Code
Climate	
Agriculture	
Health	
Publications	
Education	

Project Name	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Developing a Bibliography on Climate, its Impacts and Adaptation in Sri Lanka, NARESA																										
Developing Seasonal Climate Predictions to Aid in River Basin Management in the Mahaweli Authority of Sri Lanka, IRI/CUEI																										
Climate Impacts on Wildlife, in collaboration with CIESIN and CERC, IRI/Earth Institute at Columbia University																										
A case study on Sri Lanka for the Global Disaster Hotspots project, World Bank/ CUEI																										
Adaptation to and Impact Assessment of Climate Change in Sri Lanka, in collaboration with Sri Lanka Department of Meteorology, Coconut Research Institute, Tea Research Institute, START, Washington, D.C																										
Early Warning Systems for Malaria risk with the Anti-Malaria Campaign, the International Water Management Institute and several partners. NOAA Climate Variability and Human Health Program, IRI, IWMI																										
Assessing Drought and Enabling Adaptation through Rain Water Harvesting, Provention Consortium																										
Assesing Predictability of Seasonal Rainfall in the Kelani River Basin in Sri Lanka, International Foundation of Science																										
Launching a Masters in Sustainable Development Practice at the University of Peradeniya with a focus on Sri Lanka and Maldives, Collaboration with and Maldives Ministry of Environment, MacArthur Foundation																										
Climate Change Impacts on Seasonally and Intermittently Open Tidal Inlets in Sri Lanka and Thailand (CC-SIOTI), UNESCO-IHE Institute for Water Education																										
The Impacts of El Niño Southern Oscillation (ENSO) Events on Cereal Production Area and Yield – FAO; SEARCA																										
Regional and Seasonal variation of Dengue Risk in Sri Lanka and its Relationship to Climate –SEARO – WHO, Anti Malaria Campaign																										

Project Name	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Modeling the Impacts of a Variable and Changing Climate on Rice and Sugarcane Agricultural Systems in Sri Lanka, Agricultural Model Inter-comparison and Improvement Project (AgMIP), Joint DFID, USDA, CU; NASA GISS																										
Intra-Seasonal Climate Prediction for Sri Lanka and Maldives for Water Resources Management, PEER, USNAS / USAID																										
Development, Evaluation and Application of a Toolkit for Regional Crop Yield Forecasting and Climate Change Impact Assessment for Sri Lanka, Contribution to (NRMC), CCAFS Project																										
Developing Monitoring Tools for Managing Drought Risk and Addressing the Riddle of Increased Drought Tendency Amidst the Wetter Climate Change Projections for Sri Lanka and the Maldives, PEER, USNAS, USAID																										
El Nino Ready Nations, , Case Study for Sri Lanka and Maldives, Center for Capacity Building, University of Colorado, USAID Natural Hazards Grant																										
Can Drought, Flood and Landslide Hazard be Skillfully Assessed at Fine Spatial Resolution from Combining Constrained Streams of Observed, Remotely Sensed and Model Predicted Data in Sri Lanka and Maldives? PEER, USNAS, USAID																										
Climate Impacts on Tea Plantations in Sri Lanka, Dilmah Conservation																										
Developing Dengue Risk Predictions from Environmental, Entomological and societal information to aid public health management in Sri Lanka, PEER, USNAS / USAID																										
Air Quality in relation to Norochcholai Coal Power Plant, EFL Sub contract																										
Promoting Climate Literacy Among Youth in Sri Lanka and Support for Renewable Energy Transition in Sri Lanka, British High Commission, Sri Lanka																										
Conflict Dynamics related to the Right to Water Document, Center for Policy Alternatives, United Nations Development Program, CPA, UNDP																										

Legend

USNAS - United States National Academy of Sciences	NASA GISS - The National Aeronautics and Space Administration - Goddard Institute for Space Studies
NARESA - Natural Resources, Energy and Science Authority	SEARO - South-East Asia Regional Office
IRI - International Research Institute	USNAS - United States National Academy of Sciences
CIESIN - Center for International Earth Science Information Network, Columbia University	PEER - Partnerships for Enhanced Engagement in Research Program - Colaboration of USNAS and USAID
CERC - Columbia Environmental Research Center	(AgMIP) - Agricultural Model Intercomparison & Improvement Project
AIACC - Assessments of Impacts and Adaptations to Climate Change	DFID - Department for International Development
NOAA - National Oceanic and Atmospheric Administration	USDA - United States Department of Agriculture
CC-SIOTI - Climate Change Impacts on Seasonally and Intermittently Open Tidal Inlets	USAID - United States Agency for International Development
UNESCO-IHE - United Nations Educational, Scientific and Cultural Organization - International Institute for Hydraulic and Environmental Engineering	NRMC - Natural Resources Management Centre, Department of Agriculture
FAO - Food and Agriculture Organization	CCAFS - Climate Change, Agriculture and Food Security
SEARCA - Southeast Asian Regional Center for Graduate Study and Research in Agriculture	EFL - Environmental Foundation Limited
CU - Columbia University	CPA - Commonwealth Parliamentary Association
CUEI - Earth Institute of Columbia University	UNDP - United Nations Development Program

ACKNOWLEDGEMENT

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Administration: The administration of the company has proceeded smoothly through the cooperation among the management and staff. The Annual reports were submitted via our Company Secretary, Ralapanawe Associates, to the Registrar of Companies.

Financial Management: Auditors, Anzari and Co., has reported a healthy state of financial management in each of our annual audits since inception.

PARTNERS

Primary Partners

MASL **NRMS** **IRI** **UoP** **EI**

- Mahaweli Authority of Sri Lanka (MASL)
- Natural Resources Management Services (NRMS)
- International Research Institute for Climate and Society (IRS)
- University of Peradeniya (UoP)
- Earth Institute at Columbia University (EI)

Sri Lanka Government Institutions

DoM **NRMC** **CRI** **TRI**

AMC **CEB** **Irrigation Department** **NIFS** **DWLC**

- Department of Meteorology (DoM)
- Natural Resources Management Centre, Department of Agriculture (NRMC)
- Coconut Research Institute (CRI)
- Anti -Malaria Campaign (AMC)
- Tea Research Institute (TRI)
- Uva Province Health Ministry
- Central Province Health Ministry
- Department of Wildlife (DWLC)
- Ceylon Electricity Board (CEB)
- Department of Irrigation
- National Institute of Fundamental Studies (NIFS)

Sri Lankan Universities

UoP

UoR

UoM

UoC

SUSL

OUSL

EUS

UoK

UoSJ

SEUSL

- University of Peradeniya (UoP)
- Open University of Sri Lanka (OUSL)
- University of Moratuwa (UoM)
- University of Colombo (UoC)
- Sabaragamuwa University of Sri Lanka (SUSL)
- University of Ruhuna (UoR)
- Eastern University of Sri Lanka (EUSL)
- University of Kelaniya (UoK)
- University of Sri Jayawardhenapura (UoSJ)
- South Eastern University (SEUSL)

Regional Universities

TNAU

IISc

UoK

Cochin University

- Tamil Nadu Agricultural University (TNAU)
- Indian Institute of Science (IISc)
- University of Karachi (UoK)
- Cochin University of Science & Technology

Maldivian Partners

- Ministry of Environment & Energy
- Marine Research Centre
- Ministry of Tourism Arts and Culture
- Disaster Management Centre
- Maldives National University
- Renewable Energy Maldives
- UNDP Maldives
- LaMER (Pvt) Ltd
- Maldives Meteorological Service

International Collaborators

IITM **NASA** **FRSGC** **IWMI** **UMBC**

LDEO **CIESIN**

- Indian Institute of Tropical Meteorology, India (MFIITM)
- National Aeronautical and Space Agency, USA (NASA)
- Frontier Research System for Global Change, JAMSTEC, Japan (FRSGC)
- International Water Management Institute (IWMI)
- University of Maryland, Baltimore County *(*UMBC)
- Lamont -Doherty Earth Observatory *(*LDEO)
- Columbia University (CU)
- Center for Environmental Research and Conservation *(*CERC)
- Center for International Earth Science Information Network *(*CIESIN)
- MacArthur Foundation, Chicago, USA

Sources of Financial Support

START

NOAA

UNDP

ICTP

NSF

Provention

NSFIDRC

IDRC

IFS

APCC

CGIR

USAID

- Global change System for Analysis Research and Training, USA. (START)
- National Oceanic and Atmospheric Administration, USA. (NOAA)
- United Nations Development Programme (UNDP)
- International Centre for Theoretical Physics, Trieste, Italy (ICTP)
- Ministry of Science and Technology, Sri Lanka. (MOST)
- International Foundation for Science, Sweden. (IFS)
- National Science Foundation, Sri Lanka. (NSF)
- International Development Research Centre, Canada. (IDRC)
- UNESCO-IHE
- US National Academy of Sciences
- Agricultural Model Intercomparison and Improvement Project
- APCC- APEC Climate Center
- Climate Change, Agriculture and Food Security program (www.ccafs.cgiar.org)
- USAID

CLIMATE, HYDROLOGY & ENVIRONMENT

We have undertaken hydro-climate data management, climatic diagnostics, climate change assessments, hydro climatic analysis, climate modeling and climate prediction. The Research and development we advance are essential for understanding of the climate, disaster and environment risks at fine scales locally – social and technology issues around climate extremes, climate change and environmental risks, vulnerability and resilience.

To face the challenges from Climate, Disaster and Environmental Risks, we need to understand the risks at the fine spatial and temporal scales that matter to people. We develop such fine scale information through assembling pertinent data, through modeling and diagnostics of climate at fine scales, and understanding the impacts of, and adaptation to, and mitigation options.

- **Data Management**: We acquired and organized data and undertook quality assessment.
- **Climate Assessment and Research**: We have characterized climatology of all meteorological variables over Sri Lanka. We developed a climate calendar which is a representation of the seasonality of climate.
- **Climate Diagnosis**: We diagnosed seasonal, inter-annual, decadal, multi-decadal and long-term trends. In particular, we investigated the impact of two of the principal modes of regional inter-annual variability, the El Niño-Southern Oscillation and the Indian Ocean Dipole.
- **Climate Modeling**: We developed a meso scale model for capturing topographically induced rainfall. We also developed a high-resolution wind climate model ignoring the rainfall mechanisms. We collaborated on Regional Climate Modeling focused on Sri Lanka with the IRI and the International Center for Theoretical Physics (ICTP).
- **Seasonal and Intra-Seasonal Climate Prediction:** We have investigated the skill of seasonal predictions from global climate models. We have collaborated to implement a statistical methodology to correct the biases for predictions of global models for rainfall over Sri Lanka and to make it available at high resolution. We have collaborated with SUNY-Albany to predict daily rainfall estimates from satellite cloud images over the Indian Ocean for up to 30 days.
- **Climate Change Assessments**: We have investigated the trends in climate from observations over Sri Lanka. We have contributed to downscaling exercises for climate change using statistical methods and land surface models.
- **Hydro-climatic Diagnosis**: We have published studies on the Pacific and Indian Ocean influences on the Kelani and Mahaweli stream flow.
- **Hydro-climatic Modeling**: We have developed a water resources system simulation model for Walawe. We have calibrated a land surface model for small catchments and collaborated to produce an island-wide land surface model that mimics hydrological features at high resolution. We collaborated with NASA & GMAO to simulate land surface features over Sri Lanka at a high resolution based on re-analyzed climate data.
- **Hydro-climatic Monitoring**: We are working towards a near real-time hydro-meteorological monitoring system which combines surface and satellite-based observations.

SOCIETY, ENVIRONMENT AND TECHNOLOGY

Our contribution towards science and technology is complemented by researches that have implemented on environmental, technological, historical and socio-economical settings. We have researched environmental hazards and policies on science and technology, history, energy conservation, renewable energy, climate and climate adaptation in Sri Lanka. Here, we report some aspects of work mentioned above.

- **Traditional Agriculture and Sustainability**: We have discussed regarding the useful counterpoint of the indigenous irrigation system that has many favorable attributes in a paper that appeared on Science, Technology and Society in Sri Lanka.
- **Environment Impact Analysis**: Our work on EIA has led to an understanding of environmental history, law and protection. A summary was reported in the Journal of the Institution of Engineers in Sri Lanka and in Environmental Impact Analysis.
- **Technology and Communication:** Frequent failures of communication could be detected between metropolitan climate forecasts centers and peripheral users. We have analyzed the reasons for miscommunication during the El Niño of 1997 and the successful communication during the El Niño of 2002 in Sri Lanka.
- **Valuation of Climate Variability Impacts on Coconut Production**: We collaborated with Dr. Neil Fernando and others of the Coconut Research Institute on assessing the valuation of climate impacts on coconut production. This work was published as an AIACC technical report.
- **Valuation of Climate Impacts on the Economy:** We worked with Peter Epilla Public Policy Professional of the School of International and Policy Affairs, Columbia University to assess the impacts of climate on GDP (Gross Domestic Products) in Sri Lanka.
- **Economic valuation under AgMIP**: With the use of the "Trade off Analysis Model for Multi-Dimensional Impact Assessment (TOA_MD)", we analyzed and compared a reference scenario with climate change, socio-economic and rice in Sri Lanka using a common set of key drivers to assess plausible futures for agricultural markets and global food security.
- **Socio-Economic Scenarios under CCAFS**: We provided weekly hydro-meteorological advisories to the Mahaweli Authority where they could use the scenarios to explore the feasibility of strategies, technologies and policies towards improved food security, environments and livelihoods under different socio-economic and governance conditions.

CAPACITY BUILDING

We have provided job training's and have conducted workshops both formally and informally. We supported the National Steering Committee on Seasonal Climate Predictions and trained Mahaweli Engineers in climate analysis and predictions for water management. Moreover, we were able to provide a series of lectures at the Department of Meteorology and training for meteorologists.

We have supported, lectured and provided resources for research to students in post-graduate courses in meteorology, oceanography, water resources and disaster management at the University of Peradeniya, University of Moratuwa, University of Colombo and The Open University of Sri Lanka. Providing lectures and supporting thesis research had become our functions in water resources management, meteorology, oceanography, environmental science, geographic information systems and disaster management at the Post-Graduate Institute of Sciences, University of Moratuwa, University of Peradeniya, University of Colombo and the Open University of Sri Lanka. Our Principal Scientist serves as the External Examiner for the M.Sc. in Meteorology at the University of Colombo.

We contributed at a Panel Meeting of Water Management Secretariat in Sri Lanka with decision making on water allocation by providing them with our weekly Experimental Climate Services for Water Management.

FECT contributed to the workshop on Mainstreaming Climate Information Application for Enhancement of Agro-ecosystem Services and functions in the Nilwala Basin, organized by the Asian Disaster Preparedness Center and the Faculty of Agriculture of the University of Ruhuna to initiate a program on technology interventions to meet the challenges associated with climate change in paddy ecosystems in the downstream of Nilwala River.

FECT provided training for its staff on Climate, Crop (APSIM, DSSAT, STICS and SRI-CANE) and Economics (TOA-MD) modeling on Rice and Sugarcane Farming Systems in Sri Lanka, under the Agricultural Model Inter-comparison and Improvement Project.

In view of creating awareness on the impacts of environmental pollution, FECT organized an Environmental Day Program along with an exhibition in Akurana. This program was conducted with the support of the Akurana Pradeshiya Sabhawa. School children, employees from the government, private sector and community groups live near the Pinga Oya catchment area participated and contributed to this program.

We conducted a workshop along with a poster exhibition on “Climate and Water Security” in the Maldives at the Maldives National University with the aim of bringing together expertise on climate and water, to introduce the issues involved, to identify and address critical gaps in knowledge, and to identify research priorities to meet emerging societal needs. Undergraduates, faculty members, researchers from various organizations and teachers in secondary schools participated in this workshop.

Reference Guide: One thousand five hundred citations on climate related topics were organized into a Reference Guide. This effort was supported by the NSF Sri Lanka and the IRI.

Training and Education: Seasonal Climate Predictions (March 2003) - Neil Ward of IRI visited Sri Lanka. He met all the Directors at the Meteorological Department and had a presentation at the National Steering Committee on Seasonal Forecasting and Applications at BMICH Senate Room and a talk at the University of Peradeniya that was arranged by Center for Environmental Studies.

CHARITABLE ACTIVITIES

We work with financial donations or grants from individuals and organizations that fund scientific and development work. What makes our activities consequential far beyond what our budgets imply is the voluntary sharing of expertise, skills and energy of the dedicated efforts of volunteers, visitors, scientists and administrators and the unstinted support of a local and international network of experts and supporters. We have sponsored and conducted educational programs at school and University level and sponsored 60 internships, studentships and training programs. For example, at the request of the Mahaweli Authority officials, we have been providing a weekly bulletin of monitored and prediction climate to aid national water management for the last decade. We provided our outputs freely and have never charged for services.

Charitable Contributions: Charitable work is defined in Sri Lanka under the guidelines provided by the Inland Revenue Acts in five categories. We have contributed to 1. Promotion of Knowledge and Education, 2. Environmental Protection, 3. Relief of Poverty and 4. Other Activities of benefit to Mankind.

1. **Promotion of Knowledge and Education:** All of our research work, building of research capacity, and promotion of research activities falls squarely under Promotion of Knowledge. We have undertaken research programs in the sectors of Water Resources, Health, Agriculture, Disasters, Energy, Coastal Conservation and Policy. This work is underpinned by our research on Climate, Hydrology and Environment. We also work to advance environmental monitoring – for example, we sustained a national campaign to protect the Colombo Meteorological Observatory grounds from encroachment. Our effectiveness and quality are evidenced by over 50 research peer-reviewed journal papers and proceedings and sustained garnering of competitive peer-reviewed grants from organizations such as the National Academy of Sciences.

Under Advancement of Education, we can include efforts directed at primary school to training of experts. It includes our promotion of STEM (Science, Technology, Engineering and Mathematics) education at middle and senior level schools and contributions to school environmental programs, University lecturing at Masters and Undergraduate level and our collaborative initiation and establishment of a trans-disciplinary Master's in (Sustainable) Development Practice at the University of Peradeniya. This master's program has now graduated 7 cohorts. In addition, we have supported environment day and other activities in schools in our localities on multiple occasions addressing topics such as dengue risk, solid waste management, protecting wells and rivers, disaster and environmental risks. We have supported the education of our staff (45 Bachelors students and 11 Masters students) through supporting internships, providing research guidance, providing resources for research and even financial assistance. We have also supported the admission of our staff and collaborators to coveted post-graduate programs such as at Columbia University, Yale University, Ohio University, University of Waterloo, Australian National University, University of Melbourne and Universities in Korea.

2. **Environmental Protection:** All our work is to identify threats and identify mitigation and adaptation steps.

    - With the support of the Environmental and Forest Conservation Division of the Mahaweli Authority and the Department of Wildlife Conservation, we identified a climate sensitivity to the likelihood of Human Elephant Conflict in Sri Lanka. This work enabled justification for funding and the better targeting of catchment enrichment programs so that elephants obtain water and forage in drought periods. A report and conference papers have been published on this and presentations have been provided.

    - We are addressing Flooding and Pollution in Pinga Oya, and supporting the work of the Akurana Pradeshiya Sabhawa and Akurana Divisional Secretariat to prevent siltation, flooding and encroachment by identifying causes, mitigatory steps and monitoring of weather.

    - Our work on monitoring and managing Air Pollution and Health Impacts in Western Sri Lanka helps with protection of people, ecosystems, fauna and our hydrological cycle even in the rest of Sri Lanka.

Our work on impacts of air pollution impacts from coal power plant has included 5 feature articles, support for journalists, presentations to experts and support for the Environment Committee of the Public Utilities Committee of Sri Lanka and submissions in an expert panel to the Supreme Court.

3. **Relief of Poverty:** Our direct assistance provided during disasters such as the Tsunami, Flooding, Riots and Mob Violences are appreciated by those affected as the material contributions leveraging our networks are matched by organizational, knowledge based and documentation support for the afflicted. Disasters and Diseases can tip the impacted to poverty levels and stymie the efforts of the poor. Our work in aid of dengue and malaria risk reduction with the public health communities and with local officials, communities for flood, drought and landslide disaster risk management helps the vulnerable in this sense.

4. **Other activities of benefit to mankind in Sri Lanka or Outside**

- **Climate Services for Risk Management:** We provide a weekly climate bulletin for national water management in Sri Lanka and a monthly bulletin in the Maldives for environmental protection. For Comoros and Zanzibar, we have a portal for identifying risks related to sea bound fisher folks. In Sri Lanka, this information guides, choices on releases of water from reservoirs and across basins. We helped improve the Yield Prediction Programs of the Coconut Research Institute and that helps with policy decisions on subsidies, imports, and pricing.
- **Quantifying Climate Change for Adaptation:** We have quantified the risks of climate change for rice farming and documented the inputs of farmers in Ampara, Kurunegala, Matara. We have quantified the likelihood of saltwater intrusion into lagoons due to changing patterns of stream flow and breaking of seasonal coastal barriers due to climate change across Sri Lanka.
- **Disaster Risk Management:** Having initiated this work early, we supported UN and national organizations. As the fruition of this work, we have set up a portal to appraise the public of air pollution, heat stress, drought, climate change risk monitoring and mitigation steps.
- **Protection of Coasts and Seas:** We sustained a campaign to stop the construction of a channel in-between Sri Lanka and India called Sethusamuduram through news features, lectures and collaboration with groups across the Palk Straits as this shall lead to massive environmental problems. Our work on seasonally-open coastal inlets helps guide lagoon management.
- **Aiding Small Community Organizations:** We have helped develop a website for the Community Service Movement in Akurana and a web portal for the Akurana Women's Welfare Association. In addition, we assisted a regional newspaper obtain a grant to Upgrade Tamil Journalism in Central Sri Lanka. We supported communication among a network of scientists called the Sri Lanka Meteorology, Hydrology and Oceanography Network.

Partnerships: We have aided the work of government organizations and for the public welfare. These include the Mahaweli Authority of Sri Lanka, Department of Meteorology, Department of Agriculture, Anti Malaria Campaign, National Dengue Control Unit, Tea Research Institute, Coconut Research Institute, Sugarcane Research Institute, Public Utility Commission of Sri Lanka, Local Government Authorities, and the Ministry of Water Resources, Mahaweli and Irrigation, Foreign Affairs, Disaster Management, and Science and Technology. We have collaborated with national universities (Peradeniya, Moratuwa, Ruhuna, Sabaragamuwa, Eastern, South-Eastern, Rajarata, Jaffna, and Open University) and two dozen overseas Universities in India, Pakistan, Maldives, Japan, Zanzibar, Comoros, United Kingdom, Italy and USA. We have collaborated with three dozen community-based organizations, private sector organizations and similar charitable organizations.

CLIMATE ADAPTATION PROJECTS

River Basin Management in the Mahaweli River

We collaborated with Mahaweli Authority of Sri Lanka (MASL) and International Research Institute for climate and society (IRI) to explore the use of climate information for river basin management. We also worked with Irrigation Department, Ministry of Water Resources and NASA Global Modeling and Assimilation Office. We have studied climatic tele-connections with rainfall and stream flow, investigated drought and flood indices, applicability of climate information for agricultural, water resources, environmental and disaster management at basin level. We provided weekly updates on hydro-meteorological monitoring and predictions to MASL.

Climate Variability and Rice Production in Sri Lanka

Our research has indicated a significant relationship between rice production in Sri Lanka and **El Niño-Southern Oscillation (**ENSO). These findings are useful to reveal the applicability of seasonal climate predictions for agricultural management and policy making as the ultimate result of the collaboration maintained with colleagues at the Institute of Fundamental Studies and Department of Agriculture.

Climate Change, Variability and Tea and Coconut

This project was a 3-year collaborative task undertaken among five Sri Lankan organizations: Department of Meteorology, Tea Research Institute, Coconut Research Institute, University of Peradeniya and IRI, funded by the Global Change SysTem for Training, Analysis and Research (START). We engaged in climatic analysis, impact assessment, development of adaptation strategies and capacity building. We have developed climate change assessments and contributed in providing operational prediction schemes for coconut production in Sri Lanka.

Climate and Human-Elephant Conflict

The project on Climate and Human-Elephant Conflict was taken place in collaboration with the IRI, Center for Environmental Research and Conservation (CERC), Environment and Forest Conservation Division of the MASL and the Department of Wildlife Conservation in Sri Lanka. We established precipitation and NDVI climatology, undertook downscaling of climate predictions and identified a proven connection between drought in the first half of the year and elephant deaths.

Climate and Natural Disaster Hotpots

We identified disasters and hazardous risks spatially and seasonally for Sri Lanka at fine scales along with the combined impacts. Moreover, vulnerability of disasters was studied at a great length. These studies resulted in a proposal for disaster risk management. Our partners were the Center for Hazards and Risk Research (CHRR), Center for International Earth Science Information Network (CIESIN), and The Earth Institute at Columbia University. Project was funded by The Earth Institute at Columbia University with a grant from the World Bank. Later, the project was published by the World Bank.

Climate Variability, Malaria and Dengue

We studied the reciprocal connection of dengue and malaria with the climate in Sri Lanka. We collaborated with the International Water Management Institute (IWMI), the Anti-Malaria Campaign (AMC), NASA/GSFC land surface group, University of Kelaniya and the IRI. The project was funded by NOAA/NSF/EPRI/NASA Climate Variability and Human Health program. Scientists attached to the University of North Carolina and University of Victoria; Canada collaborated with us in research on climate impacts on Dengue Fever.

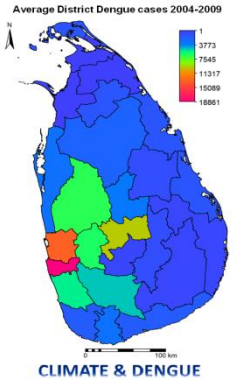
Assessing Drought and Enabling Adaptation throughRainwater Harvesting

In collaboration with University of Peradeniya we developed a systematic basis to assess drought and design a Rainwater Harvesting (RWH) system based on climate data and developed a proposal for the installation of a RWH unit in Idamelanda, Hanguranketa. Using regional, seasonal, and long-term indicators, we developed a computer program to generate estimates for the collector and storage sizes to a given reliability. We focused on RWH unit for domestic, home gardening purposes and developed a draft proposal for implementation of an RWH unit with the participation of the community. This effort was funded by the ProVention Consortium.

Assessing Predictability of Seasonal Rainfall in the Kelani River Basin in Sri Lanka

We investigated the improvement of skills obtained in predicting the stream flow in the Kelani River by using factors other than ENSO such as sea surface temperature indices, Himalayan snow cover, Quasi- Biennial Oscillation and the influence of volcanic eruptions. This effort was funded by the International Foundation for Science, Sweden.

Regional and Seasonal Variation of Dengue Risk in Sri Lanka and its Relationship to Climate



This project characterized the spatio-temporal aspect of Dengue risk in Sri Lanka, to evaluate its relationship with climate and environmental precursors for the peak incidence seasons and test a model for predicting Dengue risk in Kandy District. Through the project, we were able to evaluate the potential for a Dengue early warning system that relates climate and environmental variables with dengue risk. This project was supported by WHO SEARO project office in Thailand.

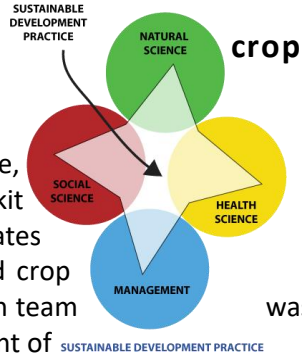
Climate Change Impacts on Seasonally Intermittently Open Tidal Inlets

Above project was funded by UNESCO – IHE Institute for water management. We developed a Comprehensive description on the production process of stream flow fluxes to Maha Oya and Negombo lagoons in Sri Lanka, and Songkhla Lagoon in Thailand for the Climate Change Impacts on Seasonally and Intermittently Open Tidal Inlets project.

ENSO Impacts on Cereals in Sri Lanka

We assessed the relationship of Sri Lankan rice production; area harvested and yields with rainfall and El Nino – Southern Oscillation (ENSO) to characterize the climate impact better and to help develop seasonal predictions. This project was collaboratively funded by FAO and Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) through the University of Philippines. The project was conducted in 11 countries including Bangladesh, Cambodia, China, India, Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam simultaneously.

South Asia Strategy Development for CCAFS andToolkit for crop yield



This project was a component of the South Asia Program of the Climate Change, Agriculture and Food Security (CCAFS) programme. The goal was to develop a toolkit based on a crop simulation model and apply this for Sri Lanka. The toolkit integrates spatial data of weather, soil, crop management practices, crop distribution and crop parameters to provide qualitative and quantitative crop status spatially. Sri Lankan team was led by the Director of the Natural Resources Management Centre of the Department of

Agriculture and the collaborators included staff from the Rice Research Development and Training Institute and the University of Peradeniya. The Federation for Environment, Climate and Technology (FECT) played a supporting role by providing the weekly hydro meteorological advisories to the Mahaweli Authority (MASL). This was sponsored by IRI, Mahaweli Authority and IFS (Sweden).

Masters in Development Practice (MDP)at the University of Peradeniya

The Masters in Development Practice was launched by the University of Peradeniya in collaboration with FECT, Columbia University, Open University and other educational institutions. FECT was engaged in curriculum development, teaching, research and field placements for the MDP programme. We also undertook research projects and capacity development in Sri Lanka and Maldives. This project was funded by MacArthur Foundation, USA as a node in a global network of 22 universities that are offering MDP.

Intraseasonal Climate Predictions for Sri-Lanka and Maldives for Water Resources Management

The overall goal of the promoted project was obtaining a better understanding on intra-seasonal variability of rainfall around Sri Lanka and Maldives, refine prediction schemes, translate information to water management and upgrade local capacity for climate science and climate services. This project was done in collaboration with the University of Peradeniya, Mahaweli Authority of Sri Lanka (MASL), Malé Water and Sewerage Company (MWSC) and Maldives Meteorological Service (MMS). It was sponsored under the PEER program of the US National Academy of Sciences and USAID program in Sri Lanka and Maldives.

Modeling the Impacts of a Variable and Changing Climate on Rice and Sugarcane Agricultural Systems in Sri Lanka

The Agricultural Model Inter-comparison and Improvement Project (AgMIP) was a major international effort linking the climate, crop and economic modeling communities with cutting-edge information technology to produce improved crop and economic models and the next generation of climate impact projections for the agricultural sector. The objective of the project was to substantially improve the characterization of world food security due to climate change and to enhance adaptation capacity in both developing and developed countries. The project was done in direct collaboration with University of Peradeniya, University of Ruhuna and the Sugarcane Research Institute.

Can Drought and Flood Hazards be Skillfully and Robustly Assessed at Fine Spatial Resolution in Maldives and Sri Lanka?

Through this project we implemented a hazard analysis framework to combine multiple terrestrial indicators from satellite observations and climate/hydrological model simulations to assess hazard risks and impacts of climate variability. These assessments were evaluated to utilize in decision supporting for disaster management. The project was partnered with Goddard Space Flight Center-NASA (NASA-GFSC) and the Maldives National University (MNU). It was sponsored under the PEER program of the US National Academy of Sciences and USAID program in Sri Lanka and Maldives.

Monitoring Drought and Assessing Climate Change in Next Decades in Sri-Lanka and Maldives

Scientists from the Federation for Environment, Climate and Technology, Maldives National University, Maldives Meteorological Services, Columbia University worked to develop monitoring and predictive tools for drought risk and to address a riddle in climate change projections which predict a wetter climate although what has been experienced was sustained drying. This project was sponsored under the PEER program of the US National Academy of Sciences and USAID program in Sri Lanka and Maldives.

Remote Sensing of Atmospheric Waves and Instabilities (RAWI)

The Remote Sensing of Atmospheric Waves and Instabilities project over the Equatorial Indian Ocean was undertaken by the University of Notre Dame in partnership with Massachusetts Institute of Technology, and National University of Singapore to capture and study intra seasonal phenomena by observing across the equator with measurement stations at eastern atolls of Seychelles, Sri Lanka and Singapore; spanning time scales from minutes to months. For this project FECT contributed through analysis of data on atmospheric waves around Sri Lanka including the MJO phenomenon and also support post-graduate education.

El Niño Ready Nations

FECT contributed to the International Project on El Nino Ready Nations conducted by Dr. Mickey Glantz of the Center for Capacity Building at the University of Colorado, Boulder, USA. We have contributed an evaluation of climate, impacts, communication and outcomes on Sri Lanka and Maldives during the 2015/2016 El Nino. This International project which has contributors from 16 countries was sponsored by the USAID Office of Foreign Disaster Assistance of grant to Dr. Glantz.

Promoting Literacy on Climate, Climate Change, its Impacts and Mitigation through Awareness of Potential Transition to High Renewable Energy in Sri Lanka

In order to provide basic localized information on climate change, its impacts authoritatively so as to support youth action and understanding and to reach climates impacted and vulnerable communities, Disaster Service Centre launched a project with the British High Commission of Sri Lanka in December 2020. We targeted the youth audience, community-based organizations, institutions, local leaders. The targeted locations were in the Central, North-Western, and Sabaragamuwa Province with impacts on disasters, ecosystem services and disease risk (dengue, TB) and to build awareness of the global renewable energy transition, and the potential in Sri Lanka to transition to a high renewable future (80% by 2030 as proposed by National Policy Framework).

Impacts of Climate Variability and Change on Tea Plantations in Sri Lanka

This was a collaborative initiative between the Federation for Environment, Climate and Technology and University of Peradeniya which aimed to assess the impacts of climate on the Tea Plantation System in Sri Lanka, with the focus on the impacts on tea production, yield. This was a one-year project sponsored by the Dilmah Conservation Sustainable Agriculture Research Centre – DCSARC, Sri Lanka. The objectives of the project were to outline the needs of assessment and knowledge resource including metadata, Climate Analysis on tea data, identification of climate data for tea sector needs, climate Diagnostics, and analysis of Climate Impacts on Tea.

Climate Sensitivity of Dengue in the Central Province, Sri Lanka

With the support of the Central Province Department of Health, Sri Lanka, Tropical Climate and Federation for Environment, Climate and Technology are undertaking a project to characterize climate and dengue linkages in Sri Lanka, focusing initially on the Central province. The project sets goals of characterizing climate and dengue relationships in the Central Province at a fine scale, and to develop early warnings for dengue risk. The project shall lead to capacity building opportunities for researchers and government officials as well as educational opportunities for students.

FECT HISTORY WITH USAID

Summary

Here, the two-decade engagement of the Federation with Sri Lanka's water resources, climate, hydropower and other renewable energy is summarized. After introducing FECT, we explained our data in water resource management in Sri Lanka and our engagement in the provision of climate information for systems management. Then we describe some of the key climate change issues in Sri Lanka and relate it to this project and USAID priorities.

In 2023 CEB suffered Losses as it did not Account for Climate Predictions

The CEB operations has led to massive losses lately due to not taking account of recent climatic events such as El Nino and Indian Ocean Dipole, that FECT and partners have documented over two decades. As the Ministry of Power & Energy has requested USAID for support in incorporating such support, here we provide an account of relevant work undertaken by FECT and International partners (Mudugamuwa, 2023).

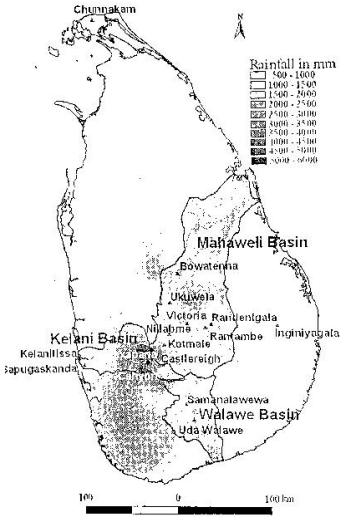
Proposal and USAID Programmatic Priorities

Federation for Environment, Climate and Technology (FECT) is proposing this work in the context of long engagement in climate and water and adaptation/risk management projects in Sri Lanka. The principal researchers had been working at Environmental Impact Assessment (EIA) training for Sri Lanka under NAREPP Project in 1990 at the University of Peradeniya. FECT principals have worked on climate diagnosis, monitoring and prediction work since 1996 at the University of Peradeniya and the Institute of Fundamental Studies (IFS) in Kandy and thereafter at the International Research Institute for Climate Prediction (IRI) in New York.

FECT researchers have been working on the projects sponsored by the International Research Institute climate prediction collaborating with the Mahaweli Authority of Sri Lanka (MASL) in 2000. The IRI was primarily funded by National Oceanic and Atmospheric Administration (NOAA) to focus on climate predictions and its applications choose Sri Lanka as one of its pilot sites in 2000. This work led to the formalization of FECT in 2003. IRI and FECT also received sponsorship from USAID, NOAA and other federal agencies.

Water Resources Management in Sri Lanka

The Mahaweli Authority of Sri Lanka (http://www.mahaweli.gov.lk/) manages the largest river basin in the island and six other adjacent river basins. The Mahaweli river basin has five large reservoirs and five hydropower stations in the upstream and a dozen reservoirs in the downstream for irrigated agriculture along with options for trans-basin diversion to adjacent water-deficient basins (TAMS, 1980, Acres, 1985, Zubair, 2005). The system simulations include the Kelani and Walawe basins as well. A simulation of this system developed by ACRES International is typical for multi-reservoir systems. It uses monitored water storages in reservoirs and weather and stream flow observations to evaluate the impacts of water releases and of trans-basin transfers. These simulations guide "expert assessment" on a weekly basis for routine and tactical water releases. Hydro- climatic predictions at the weekly, seasonally and annually water resources allocation decisions



Hydroelectricity is generated principally in sites of main Hydropower Stations of Mahaweli, Kelani and Walawe River. All these basins are managed through the MASL.

Use of Climate Information for Systems Management

Few water managers have incorporated predictions of climate into operational system models due to the modest skill of seasonal forecasts and difficulties in integrating forecasts into existing decision support systems and due to social, legal, management and political disincentives - in light of their understandable reticence, real world demonstrations are needed.

For interpretations by users, climate predictions have to be not only skillful but be also put in the context of climatological history, the immediately prior observations and of longer-term change. The climate information has to be translated to variables of interest that are directly relevant for decision making (e.g. in

the case of water managers, Streamflow, soil moisture, evaporation, evapotranspiration) at the appropriate spatial scale (e.g. the sub-catchment rainfall) and lead times along with information on the confidence in these predictions.

Climate Issues in Sri Lanka

Sri Lanka's threats from climate change, both natural and anthropogenic, are severe. They impact marine and coastal resources, freshwater, land, and biota. Threats to marine and coastal resources include warming seas, rising sea levels, diminished coastal resilience, changing wave dynamics, and saltwater intrusion upland in rivers. Threats to water, land, and biota include diminishing stream-flows, rising evaporation, warming temperature, and changes in the range of experienced climate, i.e., dry season rainfall declines punctuated by floods and increasing air pollution. Not only does air pollution directly affect human health, increasing air- pollution from the industrialized West Coast can interfere with the formation of mountain-induced clouds necessary for precipitation and can also contaminate tea grown in the highlands. The loss of rainfall in the western hill slopes may be one of Sri Lanka's most economically and socially significant climate change phenomena. This leads to a drop in hydropower production and availability of water for agriculture, human consumption and ecosystems in more than half the island.

Two Decades of USAID Sponsored Climate Research Projects in Sri Lanka

AID has been supporting the National Academy of Science PEER program to capitalize on federally sponsored science for international development, and has supported projects in Sri Lanka that focuses on:

a) Intra-Seasonal Climate and Water; long-term climate change and drought
b) Near-term climate change and related hazards
c) Developing Monitoring Tools for Managing Drought Risk and addressing the Riddle of Increased Drought Tendency amidst the Wetter Climate Change Projections for Sri Lanka and the Maldives
d) Climate and vector borne diseases such as dengue
e) STEM Education and Capacity Building for Resources and Risk Management in Remote Outposts capitalizing on PEER projects on water, drought and hazards: Gaafu Dhaalu Atoll in Southern Maldives

FECT will build on this long experience supporting science in Sri Lanka (*Table 1*)

Providing Sri Lankan Stakeholders with Climate Information over Decades

FECT has been providing monthly and weekly climate bulletins over the last decade in partnership with the Mahaweli Authority of Sr Lanka. Timely information has been provided to enable interpretation of ongoing climate risks to support decision making in both countries. Typical end users who take up the information for planning purposes include the Mahaweli Water Engineers who among others, regularly review the bulletins to anticipate water management needs.

Further compounding these difficulties, extreme weather events, excessive rains and storm surges lead to increased risks to critical infrastructure such as road networks, power plants, and hydro-electric production. Warming temperatures coupled with urbanization have contributed to the spread of dengue to increasingly higher elevations, with vulnerability exacerbated due to high population densities, lack of resilient infrastructure, and conflict for over three decades particularly in the north and east. Vulnerability is also exacerbated by inadequate institutional coordination among local governments, the central government, the private sector, and community organizations.

Climate Change Threat to Water and Natural Resources

Climate change (CC) threats to water and terrestrial systems are having a dramatic impact on the western hill slopes in Sri Lanka where stream flows have been declining over the last three decades, reducing the benefits that had been anticipated from the river basin development schemes including the Gal Oya and Mahaweli which were supported by USAID. Sri Lanka is only able to sustain a population of 23 million in its area of 65,610 square km through high rainfall that reaches 5.5 meters per annum on its western hill slopes. However, since 1970, this rainfall has declined by 20% during the January to September period leading to diminished streamflow, with significant economic consequences including those on hydroelectric generation. As a result, the contribution of hydroelectricity to the national electric grid has diminished, increasing the need to import fossil fuels.

An Online Data Library is Installed at FECT

An offline version of the IRI/LDEO data library has been installed by FECT in its offices in Sri Lanka and has been migrated to its servers in Kandy (www.climate.lk/DL) and www.tropicalclimate.org/DL. The local installation enables developing local capacities. It also enables customization for local needs, as local data is more readily accessed to meet the uptake needs of data providers and the other end users.

USAID Programmatic Priority in Climate, Water and System Management

The work proposed is in line with the USAID programmatic priority of climate change (climate process and modeling, hydrology, water sustainability) directly and indirectly to agriculture, renewable energy, and disaster risk management. This work builds on past USAID support: it has sponsored an Environmental Impact Assessment to better manage the Mahaweli river basin and downstream environment.

Pioneering Climate Research for Water Management by FECT in Sri Lanka

FECT principals have a two-decade long history of documenting the research into global climatic drivers of Sri Lankan (Zubair and Chandimala, 2007, Zubair and Ropelewski, 2006, Zubair et al., 2003a) rainfall, streamflow and soil moisture in collaboration with global experts (Qian and Zubair, 2010, Mahanama and Zubair, 2011, Aloysius and Zubair, 1998). The work has led to over 30 publications in international literature. They have also conveyed deep understanding of the historical and social context of the Sri Lanka's WRM (Zubair, 2005, Zubair et al., 2003b).

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Table 1: Projects Completed by FECT under Contract from USAID

Title of Contract/ Subcontract	Year	Grantor
Developing IntraSeasonal Climate Predictions for Sri Lanka and Maldives for Water Resource Management	2012 - 2014	US National Academy of Sciences, USAID
Developing Monitoring Tools for Managing Drought Risk and addressing the Riddle of Increased Drought Tendency amidst the Wetter Climate Change Projections for Sri Lanka and the Maldives	2014 - 2018	US National Academy of Sciences, USAID
El Nino Ready Nations, Case studies for Maldives and Sri Lanka	2015	Center for Capacity Building, University of Colorado USAID
Can drought and flood hazard be Skillfully Assessed at Fine Spatial Resolutions from Combining Constrained Streams of Observed, Remotely Sensed and Model Predicted Data in Sri Lanka and Maldives?	2015 - 2020	US National Academy of Sciences, USAID
STEM Education and Capacity Building for Resources and Risk Management in Remote Outposts capitalizing on PEER projects on water, drought and hazards: Gaafu Dhaalu Atoll in Southern Maldives	2018 - 2020	US National Academy of Sciences, USAID

PROGRAMS

Air Quality

At FECT, we help understand the risks by undertaking monitoring, relating it to weather and climate, modeling and diagnosis and impact analysis. We also provide information on sources of air pollution and its transport, impacts of air pollution on health, ecosystems, agriculture and the atmosphere and mitigation of air pollution. FECT has setup air quality monitoring devices in seven locations around Sri Lanka and in Maldives. We obtain real-time data through these instruments and carryout monitoring and analysis based on these data. Hourly particulate measurements have been obtained by lower costs sensors (IQAir Node & Purple Air II) at seven locations. These instruments had been assessed well by California's Southern Coast Air Quality Management District. PurpleAir sensors measure airborne particulate matter which are solid particles suspended in air; this includes dust, smoke, and other organic and inorganic particles. Air Visual operates a real time air quality information platform which measure airborne particulate matter (pm2.5), CO2, temperature and humidity using professional-grade laser sensors (https://cleanair.lk/).

Climate Services

We have undertaken climatic diagnostics, climate prediction, hydro-climatic analysis, modeling, prediction, and climate change assessments. We continue building a state-of-the-art hydro-meteorological monitoring and prediction system. We provide services for risk management, adaptation and recovery, drought and rainfall monitoring, variation of heat index, real time weather monitoring and forecasting and weekly climate bulletin (https://disaster.lk), (https://fect.lk/climate-bulletin-for-sri-lanka), (https://drought.lk/).

Data Management

High quality data is needed for climate analysis with sufficient spatial coverage and duration. For climate applications projects, demands of meteorological data in terms of coverage, frequency and immediacy are more stringent than for climate analysis. Over the years, we have sought to acquire and organize data for our research in climate and climate risk management. We have carried out quality assessment of key data. We obtain and manage data resources including meteorological, hydrological, sectoral and societal data in suitable databases. Quality controls ensure the Quality assessment of meteorology and agriculture measurements.

Pinga Oya

Pinga Oya catchment is an ill-regulated urbanizing region spanning Katugastota, Akurana, Ambatenne, and Alawatugoda. Lately, there are frequent undue flooding leading to risk of diseases, rise in floods and landslide disasters while leading to destruction of natural habitats including in the river. There is much information that is available but not accessible, and information that is not readily available and there are knowledge gaps. We work on,

- The flood occurrence in Pinga Oya as a man made disaster.
- Plastic Pollution in the Pinga Oya clearly visible during the floods.

Through our work we aim to aid those affected by environmental mismanagement and disaster, the concerned and the youth to be better informed of the scientific background behind the disasters and to better understand the governance and its shortcomings. Additionally, we are establishing a communication (https://disaster.lk/pinga-oya-floods/) on these subjects and welcome news articles and multimedia content associated with the Twitter, Facebook, WhatsApp, Instagram, and YouTube social media platforms (#RestorePingaOya).

Mahaweli Authority

- Presentation on Use of climate information for river basin management at the Environment and Forest Conservation Division office in Polgolla under the patronage of Dr. H. Manthrithillake and Mr. R. Herath.
- Presentation on the use of climate information, Headworks Administration and Operations Maintenance Division of the Mahaweli Authority in Digana Village, 2004 and a poster exhibition in 2005.
- Two seminars at the Head Office of the Mahaweli Authority in 2004 and 2014 under the patronage of Dr.

H. Manthrithillake.

- Director of MASL visited IRI in 2003 and Prof. C.M. Madduma Bandara, Chairman of Natural Resources Management Centre visited IRI in 2006.

OUTREACH

Outreach: We created websites, distributed newsletters and provided feature articles for mass-media. The South Asian Climate News - a quarterly newsletter, one of the crucial productions of us reached 1500 scientists and policy makers by email and postal mail. FECT sponsored the distribution of the Asian Climate Digest in Sri Lanka until 2006. Since then, we have been producing a detailed annual climate summary for Sri Lanka which is available in our flagship website www.climate.lk.

Posters: We have prepared more than forty posters presenting facets of our work which is organized as a permanent poster exhibition at our office in Digana.

WORKSHOPS

Ministry of Water Resources (2003)

Two presentations were held at the Ministry of Water Resources and Mahaweli Development under the patronage of the Minister, Gamini Jayawickrama Perera. Heads of departments under the Ministry attended the presentations. The Minister also visited our office and had discussions with our staff.

Dendrochronology (December 2004)

We helped Dr. Brendan Buckley and Dr. Orawan Buckley of the Tree Ring Laboratory, Columbia University, USA to scope out the prospects of carrying out dendrochronological studies todevelop estimates of climatic and hydrological variability in the past centuries in Sri Lanka. Presentations were conducted by them at the Arts Faculty Seminar Room, University of Peradeniya, on 'Tree Ring Reconstruction of Asian Monsoon Dynamics' and held a workshop at the Post Graduate Institute of Science.

Regional Modeling (September 2004)

We organized a presentation at the University of Peradeniya and Sri Lanka Association for the Advancement of Science with the participation of Jian-Hua (Joshua) Qian, a Research Scientist of Columbia University.

World Water Day (2004)

At the Invitation of a US Embassy's Environment Officer, Lareef Zubair, conducted a seminar for the World Water Day for the invitees of Kandy branch of the American Center in 2004.

Malaria Workshops (September 2007)

A workshop on Analysis of Impacts of Climate Variability on Malaria Transmission in Sri Lanka and Development of An Early Warning System was held at the International Water Management Institute, Colombo, which was organized by IWMI, AMC, IRI and FECT. One-Day Workshop on Malaria Risk Management using Climate Information was jointly organized with the Post Graduate Institute of Science, University of Peradeniya, FECT and the International Research Institute for Climate and Society, New York, USA.

Ministry of Environment, Maldives (2009)

Lareef Zubair presented a seminar on capacity building programs for the Maldives Ministry of Environment at the invitation of the Minister of Environment.

Symposium on Pinga-Oya (February 2013)

Symposium on Pinga-Oya was organized by the Foundation for Environment, Climate & Technology and hosted at the Department of Geography, in the University of Peradeniya. The symposium was attended by scientists, researchers, teachers, undergraduates, school students, members of women's associations, and journalists. The papers presented at this symposium were published as a proceeding.

Fisheries Training Program, Comoros (February 2014)

Lareef Zubair was an Invited Expert to the Comoros Ministry of Fisheries and Hairu Fisheries Development Project (Comoros) and contributed lectures to the Fisheries Training program where 20 fishermen were being taught advanced techniques.

SOCIAL SERVICES AND ADVOCACY

Tsunami Relief

After Tsunami on 26th December 2004, two websites were developed to find ways to contribute to recovery effort. They provided topical information about Tsunami disaster, Sri Lanka, disaster management and health care, updates on the evolving situation on the ground, requests for assistance, offers of assistance, maps, information on regional weather and climate, networking tools and information on organizations that were involved in relief particularly, small community-based organizations, which contain links to related websites and efforts. It provided a GIS based interactive mapping tool that can help contextualize relief work spatially.

Emergency Water Treatment System

Among the aftermath of Tsunami, a pressing problem for the affected was the lack of potable water. There was a request for water treatment equipment, from Prof. Raveendranath the Acting Vice-Chancellor at the Eastern University to Dr. M.C.M. Iqbal and Dr. Zubair. This request came after tests proved that almost all the wells, even those were located inland have been contaminated by the Tsunami and was unsuitable for human consumption. We fabricated and installed a prototype unit at the Eastern University Disaster Management Center with instructions on reproducing it.

Air Pollution and Coal Power Plants

The need of climate expertise in evaluating the impact of air pollution due to coal and other industries encouraged us to contribute in reports submitted to the Supreme Court on hearings on the Environmental Impact Assessment at Sampur, Trincomalee. Our Principal Scientist contributed in the Environment Committee of the Public Utilities Commission of Sri Lanka which was charged with regulating electric utilities. Further, we undertook dissemination through the national newspapers, popular news websites and social media.

Sethusamudram

The project Sethusamudarum was proposed by the Defense Minister of India in 1999, George Fernandez includes a canal that is to be excavated through the Palk Straits. This had raised many questions in Sri Lanka about the impact of the project on Sri Lanka. The aim of this project was to reduce the travel time of Indian

ships that have to circumnavigate Sri Lanka. However, this project was regarded with alarm by the people of Sri Lanka and coastal Tamil Nadu as it poses grave environmental risks. In this regard, we communicated about the social and environmental impacts on Tamil Nadu and Sri Lanka to the relevant authorities through articles published in the newspapers.
See: http://www.climate.lk/sethu/

Preserving the Colombo Meteorological Observatory

Systematic Meteorological Data Collection in Sri Lanka was started by Colonel Fyers of the Royal Engineers in 1852, in Colombo. Data since 1853 was available at the headquarters of the Department of Meteorology where the most careful meteorological measurements have been conducted in Sri Lanka. It is also the only site from which radiosonde measurements were carried out. However, in 2004 the British High Commission wanted to acquire a part of the land from the east end of the Department of Meteorology, which was adjoining the residence of the British High Commissioner. The Department had been resisting this move initially, but when the order came from the highest authority, the government protocol prevented the Department officials from making any objection. In accordance to this issue on behalf of the scientific community in Sri Lanka an extensive attempt was made by our staff by appealing to stop the takeover of this land by the British High Commission, through letters addressed to relevant authorities and newspaper articles.

Tri-lingual website for Akurana Women's Welfare Association

As service, we set up and funded a trilingual website for Akurana Women's Welfare Association. We continued updating the website of Akurana Women's Welfare Association - We rehabilitated a building which was damaged due to the mob violence and was in disrepair and used it as our office for six months before handing it back to a family who moved back in from rented premises in Madawala. - Dr. Lareef Zubair delivered two speeches on the Pinga Oya floods in Akurana.

Helping soil conservation with climate information

We have worked with the Environment, Forest and Conservation Division of the Mahaweli Authority and we have assisted in the interpretation of soil erosion and deposits in river beds with a view to understanding its character.

Relief in Times of Man-Made Disasters

We have responded to the Mob Violence in Kandy which affected our staff to address immediate needs of the affected. We helped document the events of March 2018, its drivers and address the factors that led to conflagration and assess the failures and successes in ameliorating conflict. Such documentation, assessments and diagnosis shall help assess the drivers of conflict, help us identify the risk factors and eventually come up with community-based risk prediction.

TRAINING AND EDUCATION

Environment Day Programs for middle school children

Contributed to Environment Day Programs for middle school children in schools close to our office. Seminar was held for the students and teachers of Mowbray College, Kandy. Environmental Day Program was held in collaboration with Akurana Pradeshiya Sabhawa for the students of Akurana Balika Vidyalaya.

Environment Day for Schools in The Pinga Oya Catchment

An environment day program was organized for the school children in and around Akurana on 12th June

2013 at Azhar Central College, Akurana. The program was conducted with the assistance of the Akurana Pradeshiya Sabhawa. Children from seven schools in the area, employees from the government and private sector and community groups participated and contributed to this program. The aim of this event is to raise an awareness to take positive environmental actions to protect nature and the planet earth. This was an enriching event which included environmental speeches by the participated organizations, student's programs and exhibition in reference to the environment day.

Awareness Program for Students on Coexistence and Harmony in Society

FECT and Mowbray College, Kandy organized an assembly for the students on March 27 2018. The aim of the event was to understand the impacts of mob violence on school children and see how it can be mitigated and abated through education. The keynotes were delivered by Rt. Reverend Keethisiri Fernando, the Bishop of Kurunegala and by Prof Jude Fernando, from Clark University, USA. There was a distinguished panel where the issues in question were addressed

COMOROS

FECT undertook climate and adaptation related work in Comoros at the invitation of the Hairu Group and the Ministry of Fisheries in Comoros. Consequently, we focused on setting up available weather predictions, development of customized predictions and the translation of these for cyclone, high wind speed, heavy rain and inundation forecasting, to provide Hydro Meteorological Monitoring and predictions for Comoros and Weather and Hazard outlooks for fishing operations. The work has been supported by personnel in departments in charge of meteorology, agriculture, fisheries, environment, surveys, census, water resources, energy, disaster management and the University of Comoros.

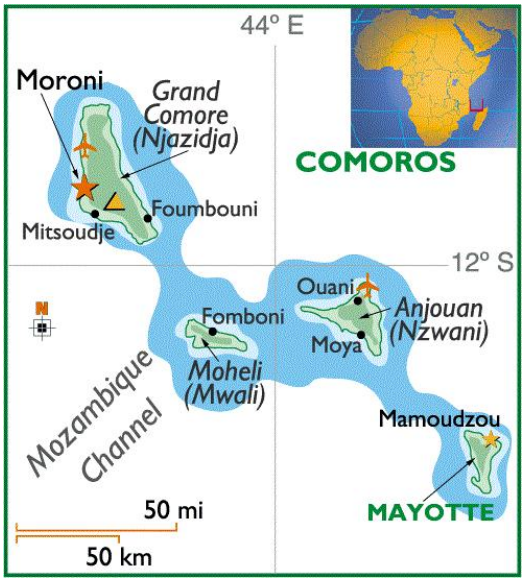
Left: L. Zubair is seen with local partners on a visit to a farm in Grand Comoros
Right: Fisheries Training Workshop where Dr. L. Zubair contributed at a meeting hosted by the Hairu Group in Mo- roni, Comoros.

Projects

- Climatological analysis
- Climate Predictions for Comoros
- Weather and hazard outlooks for fishing operations
- Fisheries outputs

Partners and Affiliated Institutions

- ANACAM - Associazione Nazionale Imprese Di Costruzione Manutenzione Ascensori
- I'INRAPE
- Service Topographique – Comoros
- DERE – Comoros
- University of Comoros
- Hairu Fisheries Management

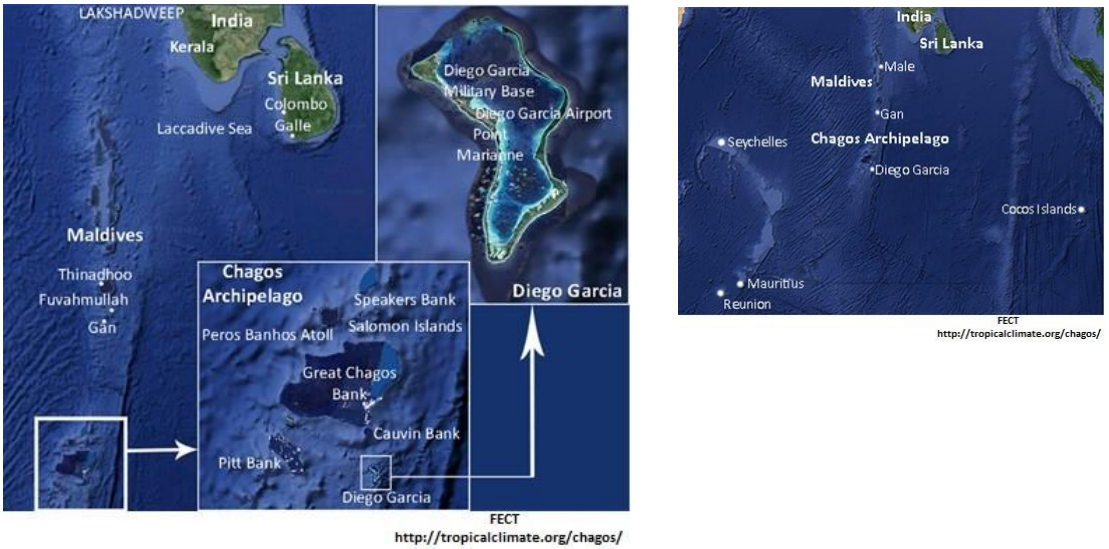


Topography of the Comoros archipelago

For further info regarding our work in Comoros visit: *http://www.tropicalclimate.org/comoros/*

CHAGOS

FECT Chagos was initiated as part of the program on climate of Indian Ocean Islands at the Columbia University. Currently, Satellite based rainfall monitoring; Climatological analysis from ground and satellite observations and studies of the influences of ENSO and MJO are being carried out in Chagos by FECT.



Satellite Images of the Central Equatorial Indian Ocean Region
Inset left: Diego Garcia Atoll, from Google Earth and inset right: The Chagos Archipelago,

Projects

- Decadal Sea Level Rise Projections (2016 onwards): We are planning on making observations using Tidal, Satellite and Coral based methods to measure Sea Level Rise in the next 20 years if our proposal on this topic is granted.
- Satellite Rainfall Monitoring Tool (2016)
- Climatological Analysis (2016)

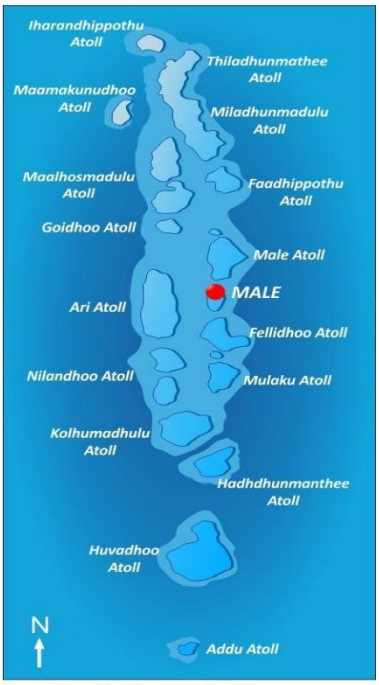
For further info regarding our work in Chagos visit: *http://tropicalclimate.org/chagos/*

THE MALDIVES

Workshop on Climate & Water Security in the Maldives (2015)

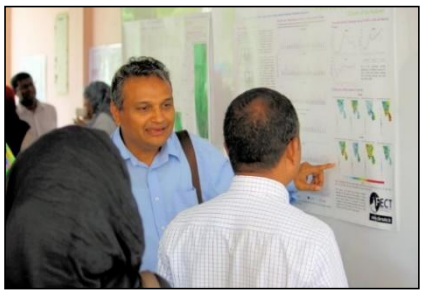
FECT and MNU (Maldives National University) organized a workshop in Male' on the 13th of September 2015 at the Auditorium of MNU on climate and water security in the Maldives. The goals of this workshop include expertise on climate and water, review the state of knowledge and identify research priorities and educational needs.

The presentations focused on sustainability of water resource management, climate and water resources linkages, climate monitoring and predictions for water management, the Climate Advisory forMaldives and lessons learned from ongoing programs and projects. And there was a poster session alongside the workshop.



Atolls of Maldives


Audience in the Workshop on Climate and Water Security


Dr. L. Zubair explaining about a Poster- El Niño & LaNiña influences on the Climate of the Maldives to a member of the audience

Projects

- Can drought and flood hazard be skillfully assessed at fine spatial resolution from combining constrained streams of observed, remotely sensed and model predicted data in Sri Lanka and the Maldives? (August 2015 – July 2018)
- Developing Monitoring Tools for Managing Drought Risk and addressing the riddle of Increased Drought Tendency amidst the Wetter Climate Change Projections in Sri Lanka and Maldives
- Intra-seasonal climate predictions for Sri Lanka and Maldives for water resources management
- Assessing Water Scarcity and Alternative Mitigation options for the Maldives
- Masters in Development Practice (MDP)
- Climate and Dengue in the Maldives - 2014 Onwards
- Climate Predictions for Maldives (2011 onwards)
- Planning for Capacity and Science Development in Climate in Maldives (2009-2011)
- Climatological Analysis (2010-2011)
- Launching a Master's Degree Program in Sustainable Development Practice at the University of Peradeniya (2010- onwards)
- Satellite Rainfall Monitoring Tool (2009-2010)
- Columbia Dynamo Project
- Columbia Marine Biology Project in the Arabian Sea

Partners and Affiliated Institutions

- Ministry of Environment
- Maldivian National University
- Marine Research Centre
- Disaster Management Centre
- Male Water and Sewerage Company
- Renewable Energy Maldives
- Health Protection Agency
- UNDP Maldives
- LaMer Pvt. Ltd
- Ministry of Tourism, Arts and Culture
- Ministry of Fisheries and Agriculture

For further info regarding our work in the Maldives visit: *http://www.tropicalclimate.org/maldives/, http://www.climate.mv/ and http://www.fect.mv/*

Publication about FECT collaboration between Maldives and Sri Lanka by Nalaka Gunawardene, (a science writer widely experienced as a journalist across print, broadcast and web outlets in Sri Lanka and internationally) in GOOD NEIGHBORS, ADVANCING REGIONAL INTEGRATION, COOPERATION & ENGAGEMENT IN SOUTH ASIA published by the WORLD BANK.

Summary of Case Study of Publication: *South Asia's vulnerability to climate change -related disasters cannot be overstated. The fourth case study elaborates a successful collaboration that has involved climate researchers at the Foundation for Environment, Climate and Technology (FECT), a non-profit research institute in Sri Lanka, working closely with Maldivian scientists, environment officials, resource managers and educators for years. The institute's multi-disciplinary approach brings together experts in meteorology, hydrology and oceanography to study climate-change trends and how these impact the northern Indian Ocean region covering Sri Lanka and Maldives, and, in some cases, all of South Asia*

N. Gunawardene, Small islands, big impact: Building climate resilience in the Indian Ocean through cross-border scientific collaboration, Good Neighbors book by World Bank.

Small islands, big impact: Building climate resilience in the Indian Ocean through cross-border scientific collaboration

– Nalaka Gunawardene

2022

More than 80 percent of Maldives, an archipelago of about 1,200 coral islands in the Indian Ocean, is less than one meter above sea level.[1] According to the UN's Intergovernmental Panel on Climate Change (IPCC)[2], global sea levels could rise by about 50 centimeters by 2100 even if the emission of planet-warming greenhouse gases are reduced in line with the upper end of combined pledges under the Paris Agreement, a legally-binding treaty on climate change between nearly all the world's countries. For Maldives, the world's lowest-lying country, this high vulnerability to climate change could be devastating.

Maldives has been raising the alarm about this existential threat for decades. Maumoon Abdul Gayoom, Maldives' president from November 1978 to November 2008, first highlighted the concern at the UN General Assembly in 1987. He was instrumental in drawing global attention to it.

His successor, Mohamed Nasheed, took climate advocacy to new depths. Notably, in October 2009[3], Nasheed held a meeting with Maldives' vice-president and 11 cabinet ministers underwater, where they signed a resolution calling for global cuts in carbon emissions.

In November 2021[4], Ibrahim Mohamed Solih, Maldives' president since November 2018, told the 26th UN climate change conference (commonly referred to as COP 26) that his people "are already living the steady onset of this reality". He explained, "Just this past month, I was travelling within the Maldives. Of the six islands I visited, all of them were experiencing severe erosion. This is just one example of how our people are having to live with the harsh realities of climate change. Our islands are slowly being inundated by the sea, one by one."

While drawing global attention to Maldives' plight, the country's leaders have been pursuing strategies to adapt to and mitigate climate change, and building local capacity to do so, at diplomatic, technical, and community levels.

A foundation for collaboration

Technical expertise is needed to study and understand the atmospheric and oceanographic processes that shape Maldives. As only a limited pool of suitable experts exists among the++ 557,000-odd inhabitants – including at least 145,000 migrant workers — of these equatorial islands, successive Maldivian governments have encouraged international research collaborations.

One such collaboration has involved climate researchers at the Foundation for Environment, Climate and Technology (FECT)[5], a non-profit research institute in neighbouring Sri Lanka, which has worked closely with Maldivian scientists, environment officials, resource managers, and

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For further info regarding our work in the Maldives visit: *http://www.tropicalclimate.org/maldives/, http://www.climate.mv/ and http://www.fect.mv/*

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INFORMAL PUBLICATIONS

Websites for Publications

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	Daily Mirror (**www.mirror.lk**)
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	Sunday Observer (**www.sundayobserver.lk**)
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- January 27 2005: The Tsunami, Science and Disaster Management, The Island.

BIOGRAPHIES

SENIOR SCIENTISTS

Dr. Lareef Zubair - Physical Science and Engineering

Dr. Lareef Zubair is the principal scientist of FECT from its inception. Previously, he was a Post-Doctoral Associate in Mathematics and Engineering at Yale University, and in Climate Monitoring and Applications at the University Consortium for Atmospheric Science. He has also been a Senior Lecturer in Engineering at the University of Peradeniya, Sri Lanka and a Research Fellow at the Institute of Fundamental Studies, Sri Lanka. He worked as a scientist at the International Research Institute for Climate and Society (IRI) and is attached to the Columbia University Water Center. His undergraduate education was at the University of Peradeniya, Sri Lanka and postgraduate work was at Yale University, U.S.A. He is interested in tropical climate, climate impacts and adaptation, in the application of climate information and colonialism and modernization.

Dr. P.H.D. Kusumawathie - Senior Research Scientist

Dr. Kusumawathie, is the Regional Malaria Officer covering Kandy and Nuwara Eliya Districts. She works on entomological surveillance of dengue while being seconded to the National Dengue Control Program. She has obtained her B.Sc. in Zoology with honors from the University of Peradeniya and her M.S and Ph.D. from the same University in Parasitology and Epidemiology. She also has received a Master's in Health Economics from Chulangakon University in Thailand. She has worked for three decades in monitoring and control of infectious diseases and has maintained an active research program.

Prof. P. Wickramagamage - Senior Research Scientist

Prof. Wickramagamage is an Emeritus Professor of Geography at the University of Peradeniya. He obtained his B.A in Geography at the University of Peradeniya and his Ph.D. in Physical Geology from the University of London. His main areas of research include GIS, soils, hydrology, climate and EIA on all of which he has published extensively. He has been a partner, collaborator and Principal Investigator at FECT on several proposals and grants such as the Rain Water Harvesting Project (Provention), Master's in Development Practice Project (MacArthur), AgMIP project (DfID) and the PEER projects on Water and Hazards (National Academy of Sciences, USAID).

CURRENT AFFILIATE SCIENTISTS

Prof. Ranmalee Bandara - Geomatics and Land Surface Modeling

Prof. Ranmalee Bandara obtained a B.Sc in Surveying at the University of Sabaragamuwa in 2005 and M.Sc in Environmental Soil Science from the University of Peradeniya in 2008. She obtained her PhD in Civil Engineering in 2014 from Monash University in Melbourne, Australia. She had supported the work on the project on rainwater harvesting.

Dr. Manjula Siriwardhana – Environmental and Energy Engineering

Dr. Manjula Siriwardhana obtained a B.Sc. in Chemical and Process Engineering at the University of Peradeniya Sri Lanka in December 2003 with honors. She worked on the FECT project "Assessment of Impact of an Adaptation to Climate Change in the Plantation sector in Sri Lanka" and the "Climate and Malaria Project". She obtained her M.Sc. at Asian Institute of Technology, in bio fuels and an M.Sc in Chemical Engineering specializing in energy at the University of Western Ontario.

CURRENT ADVISORS

Prof. Jude Fernando - Social Scientist

Prof. Jude Fernando is an associated professor at Clark University, Massachusetts in International Development and Social Change. While he has had interactions with our senior staff members for three decades, he is presently collaborating with FECT on proposals.

Prof. Ajith Gunaratne - Applied Mathematics

Prof. Ajith Gunaratne is an Assistant Professor in Mathematics at Florida A&M University. He holds a B.Sc. from the University of Peradeniya and a Ph.D. in Mathematics from Iowa State University. He was a member of the computational mathematics group with L. Zubair at the Institute of Fundamental Studies previously. He collaborates with FECT on wind modeling and diagnostics.

Dr. Vidura Ralapanawe - IT and Corporate Social Responsibility

Dr. Vidhura Ralapanawe received a B.Sc. (Eng) from the University of Moratuwa, Sri Lanka in 1996 and M.Sc. in Responsibility & Business Practice from the University of Bath, U.K.in 2000 and is completing his Ph. D at Ashbridge Business School in UK. He has worked for IBM in New York and later as a consultant to the corporate sector in Sri Lanka on social and environmenta l risk management & business strategy. He is interested in sustainable development, technology and application of climate information. He handled the Sri Lanka case study of the Natural Disaster Hotspots Project for FECT. He serves as General-Manager – Sustainability Initiatives at MAS Holdings Ltd.

Dr. Herath Manthrithilake – Water Resources Engineering

Dr. He earned his PhD in Water Resources Engineering from the Civil Engineering Institute, Moscow in 1983. As Director of the Environmental and Forestry division of the MASL, Dr. Manthrithillake was our initial principal collaborator at the MASL on Water Resources Management and Human Elephant Conflict. He guided our work through.project formulation, staff recruitment and project implementation in the initial years and later on the establishment of FECT. He is currently the Head, of the Sri Lanka Program at the International Water Management Institute (IWMI). He was previously the Head of the Regional Office in Central Asia, International Water Management Institute (IWMI), Tashkent, Uzbekistan.

Dr. Sabry Razick - Scientific Computation

Dr. Sabry obtained his B.Sc. in Microbiology from the University of Kelaniya and after serving there as an Assistant Lecturer, he completed his M.Sc. in Bioinformatics at Chalmers University of Technology in Sweden, his Ph.D. at the University of Oslo and is a post- doctoral scientist at the Norwegian University of Science and Technology. He has supported scientific computation at FECT.

Dr. P.N. Wickramanayake - Environmental/Coastal Engineering

Dr. Nalin Wickramanayake obtained his B.Sc. (Eng) in Civil Engineering from the University of Peradeniya and his Ph.D. from the Massachusetts Institute of Technology. After serving at the University of Peradeniya and the Lanka Hydraulics Institute in senior role, Nalin is now a Senior Lecturer in Civil Engineering at the Open University of Sri Lanka. Nalin has collaborated with FECT with the MacArthur supported Masters in Development Practice and on the UNESCO project on Coastal Inlets.

CURRENT STAFF

Mr. Tuan E. Hadgie - IT Administrator

Tuan Hadgie has been our IT and Administrative Officer since 2017. He previously worked as an administrative officer at the Kandy Gemological Museum and the Institute of International Education Lanka, as well as Branch Coordinator and Lecturer at the Kegalle Gateway Computer Centre (CFICT). He holds an ICDL (International Computer Driving License) System Administrator Certification as well as an International Pedagogical ICT Licentiate (IPICT). He is a Soft Skills Instructor certified at Gateway Skills for Life, Accelerated Skills Aquistion Programme (ASAP).

Ms. M. Z. Fathima Shakira - Administrative Aide

Since 2017, Fathima Shakira has worked as the Secretary. She completed her Personal Secretary Course at the National Apprentice and Industrial Training Authority, Kandy & the Microsoft Office 2007 Package on MCCE. She previously worked as a Trainee Secretary in the Science Dissemination & Education Unit at the National Institution of Fundamental Studies, Kandy. She has also completed the Certificate Course in Human Resource Management at Chartered Institute of Personnel Management, Kandy.

Ms. Nipuni Alahakoon - Research Scientist

Nipuni Alahakoon joined as an intern after earning a BSc (Hons) in Quantity Surveying from the International College of Business and Technology (ICBT). She previously worked for Squire Mech Engineering (Pvt) Ltd as a Trainee QS and Wickramapala Engineering as an Assistant QS.

Ms. Dilrukshi Kulasooriya – Information Technologist

Dilrukshi Kulasooriya holds a Bachelor of Management Studies (Hons) degree from the Open University of Sri Lanka and an Advanced Diploma in Human Resource Management from EIPEL Campus. She joined us in June 2022 to complete her Web Development Internship as part of the Higher National Diploma in Information Technology(HNDIT) at SLIATE. Currently, she is responsible for guiding IT interns, managing IT and web-related tasks, and overseeing other data-related activities at FECT.

Hasini Warapitiya – Research Intern

In July 2023, Hasini joined the Foundation for Environment, Climate, and Technology (FECT) as an intern, focusing on environment, climate, disaster management, and research. She graduated on December 2024 at the Faculty of Technology, University of Colombo, pursuing a Bachelor of Biosystems Technology (Hons) degree in Environmental Technology.

Ms. Devindi Bandara – Account Assistant

Devindi Bandara joined FECT in June 2024. She completed her Higher National Diploma in Accountancy at the College of Technology, Kandy. She is an undergraduate in Bachelor of Management Studies Honors (BMS (Hons)) at the Open University of Sri Lanka.

Ms. Achini Wijesiri – Statistic Intern

Achini Wijesiri joined FECT as an intern in July 2024. She holds a BSc Honors degree in Statistics from University of Peradeniya. She has worked as an intern at Emjay Penguin Pvt.(Ltd.), Palletalawinna. She contributes to Statistical Analysis and Data Library related work.

Ms. Shifani Jaufer – IT Intern

Shifani Jaufer has completed her Bachelor of Engineering (Hons) in Computer Networking at London Metropolitan University. She has completed her undergraduate at the Eastern University of Sri Lanka studying BSc (Hons) in Business Management, majoring in Information Management.

Kaushalya Dissanayake - Research Intern

Kaushalya Dissanayake holds a BSc. (Hons) in Oceanography from the Ocean University of Sri Lanka. She joined the Federation for Environment, Climate and Technology (FECT) on 1st January 2025 and is currently engaged in the preparation of weather and climate products, as well as the analysis of meteorological data.

Vishvanathan Megala - Tamil Literary Intern

Vishvanathan Megala, a graduate with a Special Degree in Tamil from the Sabaragamuwa University of Sri Lanka. With a deep passion for Tamil literature and language development, I am currently serving as a Tamil Literary Intern. I am committed to continuous learning and hope to contribute meaningfully to the advancement of literary.

Nasha Naleer - HR intern

Nasha Naleer joined the Foundation for Environment, Climate, and Technology (FECT) in February 2025 as HR intern. She has completed Higher National Diploma in Business Management (specialized in HR) at Sri Lanka Institute of Advanced Technological Education (SLIATE) in Kandy. At FECT, she is involved in HR, Admin and Legal related works.

Nazma Nazeer - Digital Marketing Intern

Nazma Nazeer, currently serving as a Digital Marketing Intern, with a solid academic foundation in Business Administration and Marketing Management. Passionate about leveraging digital platforms to enhance brand visibility and engagement.

Dilshan Udayanga Amarakoon – Data Analyst Intern

Dilshan Udayanga Amarakoon is currently pursuing a Bachelor's degree in Data Science at SLIIT. He joined the Foundation for Environment, Climate and Technology (FECT) in March 2025 as a Data Analyst Intern. He is involved in data-related tasks and analysis within the organization.

Asitha Lakmal - IT Intern

Asitha Lakmal began working with FECT in June 2025 as a web development intern to complete his bachelor's degree in Information and Communication Technology at the University of Sri Jayewardenepura. He is contributing to web development, social media management, data-related works, Hardware works, infrastructure maintenance, and other IT-related works.

PAST INTERNS

Mr. Kavinda Dissanayake – Web Development Intern

Kavinda Dissanayake joined FECT as an intern in June 2024. He holds a Higher National Diploma in Software Engineering from the National Institute of Business Management (NIBM), Kandy. He is involved in Web Development, Social Media Management, Data Handling and IT projects.

Mr. Dulanga Dasanayake – Hardware Intern

Dulanga Dasanayake joined FECT as an intern in August 2024. He is completing his Higher National Diploma in Information Technology from the Sri Lanka Institute of Advanced Technological Education (SLIATE). He is responsible for managing Hardware Technology and Infrastructure and its maintenance.

Ramidi Wijesinghe - Research Intern

Ramidi Wijesinghe holds a BSc. (Hons) in Oceanography from the Ocean University of Sri Lanka. She joined the Federation for Environment, Climate and Technology (FECT) on 1st January 2025. She contributed to scientific and communication work by providing a weekly climate report and air quality report for Sri Lanka.

Haya Jameel – Administrative Intern

Haya Jameel joined FECT in October 2024. She is a part- qualified in ACCA and holds the ACCA Diploma in Accounting and Business (RQF level 4). She is currently contributing to the Administration, Accounts and Legal divisions.

Ms. Hepzhibah – Admin, HR and Accounts Intern

Hepzhibah joined as an intern to complete her Higher National Diploma in Business Administration at SLIATE (Kandy). She is currently working in Administration, Human Resources and Accounting divisions.

Mr. R.K. Noor Deen – IT Intern

Rishad Khan Noor Deen joned FECT in July 2024. He has completed his Higher National Diploma in Computing and Software Engineering at ICBT, Kandy. He is currently pursuing his Bachelor's Degree in Software Engineering at ICBT. He works on Hardware, Software and Infrastructure related tasks.

Ms. Kavindya Jayathilaka – Web Development Intern

Kavindya Jayathilaka joined FECT as an intern in June 2024 to complete her Bachelor's Degree in Information and Communication Technology specializing in Software Technology at the University of Sri Jayewardenepura. She contributes to Web Development, Social Media Management and other IT work.

Mr. Clever Shawin Perera – Junior Research Scientist Intern

Shawin Perera joned as an intern in June 2024. He is an undergraduate pursuing a BSc in Green Technology at the University of Ruhuna. His interests lie in the fields of Renewable Energy, Climate Change Mitigation and Sustainable Development. He works primarily on Research work and related operations in at FECT.

Ms. Ann Keerthana Mathavan – Data Analyst Intern

Ann Keerthana Mathavan joined FECT as an intern in July 2024. She holds a Higher National Diploma in Information Technology from the Sri Lanka Institute of Advanced Technological Education (SLIATE), Kandy. She is involved in Data Related work, Social Media Management and related IT projects.

Ms. Himaza Mifthah – Mobile Applications and Web Development Intern

Himaza Mifthah joined FECT as an intern in July 2024. She holds a Higher National Diploma in Information Technology from the Sri Lanka Institute of Advanced Technological Education (SLIATE), Kandy. She contributes to projects in Mobile and Web Development, Social Media Management and related IT tasks.

Mr. Fazni Faiz – Web Development Intern

Fazni Faiz joined FECT as an intern in July 2024. He has completed a BSc (Hons) degree in Computer Science in the Asia Pacific Institute of Information Technology (APIIT), Kandy. He currently handles Web Development, Social Media and Graphic Designing in addition to other IT related work.

Kavinda Rathnayake – Research Intern

Kavinda Rathnayaka joined the FECT in December 2024 as an intern researcher. He holds a B.Sc. (Hons) in Oceanography from the Ocean University of Sri Lanka. Currently, he is involved in research, publishing articles and analyzing climate and weather data contributing to the organization's activities in this field.

Mr. Chamath Wickramasinghe – Social Science Writer

Chamath Wickramasinghe joined FECT as an intern in August 2024. He is pursuing his BSc. (Hons) degree in Software Engineering at the Open University of Sri Lanka. He contributes in Publication and Written work.

Ms. Zahra Hilmy - IT Intern

Zahra Hilmy joined as an IT intern to complete her Higher National Diploma in Information Technology at SLIATE, Kandy. Currently, she is working on web development, data-related work, social media publishing, and other IT-related work.

Ms. Maheshika Bandara - IT Intern

Maheshika Bandara Joined FECT in September 2023 as an intern to completed the Higher National Diploma in Information Technology at Hardy Advanced Technological Institute (SLIATE). She is contributing for the web development, data related works, graphic designing and other IT related works.

Mr. Mohommad Thasneem - IT Intern

Mohammad Thasneem is a student of computer engineering at Open University of Sri Lanka. He has completed a higher diploma in IT from University of Colombo School of Computing. He has gained practical experience in electronics through an internship at NIPPON Plastic Sri Lanka. He is interested in embedded systems, IoT & automation and he is doing an internship on instrumentation and IoT at FECT.

Ms. Ishini Jayawardane - IT Intern

Ishini Jayawardane joined FECT in January 2024, as an intern to complete her Higher Diploma in Software Engineering at National Institute of Business Management (NIBM), Kandy. She is currently working on Web Development, social media, Graphic Designing and other IT related work.

Mr. Sajith Hussain - IT Intern

Sajith Hussain joined FECT in January 2024, as an intern to complete his Degree Management and Information Technology, South Eastern University of Sri Lanka. He is currently working on Web Development, Web Designing and other IT related work.

Ms. Udeshika Rathnayake – Intern/ Agriculture

Udeshika Rathnayake is a student at the Faculty of Agriculture, Rajarata University of Sri Lanka, specialized in Agricultural Extension and Economics. She is a committed researcher contributing to global challenges, with a focus on climate action. She possesses the capability to provide solutions to economic issues concerning agricultural economics, international trade, and significant agricultural practices.

Ms. Asvini Senevirathna - Research Scientist

Asvini Senevirathna initially joined as an intern and currently works as a research scientist. She graduated with a BSc (Hons) in Environmental Management and Forestry at the University of Sri Jayewardenepura in 2022. Previously, she completed her internship at the National Botanical Gardens, Peradeniya.

Ms. Dhulmy Bandara - Science Writer

Dhulmy Bandara joined as a science writer in 2023. She graduated with a BSc (Hons) in Environmental Sciences and Natural Resource Management from Sabaragamuwa University of Sri Lanka in 2022. Previously, she has worked as a demonstrator at the same university. She works on the publications and other documentation at FECT.

Ms. Chathuri Ayodya - Account Assistant

Chathuri Ayodya has been working as an Account Assistant since 2023. She completed her Higher National Diploma in Accountancy at the Advanced Technological College in Kandy and passed two stages of the Association of Accounting Technicians of Sri Lanka (AAT). Before joining here, she worked as a Management and Accounting Trainee at the University of Peradeniya.

PAST MEMBERS

Rimza Zacky – Accountant

Rimza Zacky was in charge of the organizations' accounting system. She liaises with the Internal Auditor. She has 20 years of accounting experience and previously worked in the accounting division of Kandy Private Hospitals Ltd for 17 years.

Mr. Janan Visvanathan - Information Technology

Janan Viswanathan has obtained his Information Technology B.Sc. degree from London Metropolitan University (UK) and Diploma in Web Engineering, Linux Administration. He is continuing his studies in Computer Science. He has work experience in Network Administration, IT management and also in IT lecturing at gateway graduate school and other places.

Mr. Ruchira Lokuhetti - Applied Science

Ruchira Lokuhetti joined FECT as an intern Junior Research Assistant after completing his B.Sc. (Applied Sciences) from University of Peradeniya with specialization in Mathematics and Physics. He is enrolled in the Industrial Mathematics program at PGIS.

Dr. Madura Dharmadasa - Agriculturist

Madura Dharmadasa obtained his B.Sc. (Agriculture) in 1982 from University of Peradeniya and M.Phil Degree from Postgraduate Institute of Agriculture, Peradeniya in 1994 and Ph.D. from Lincoln University, New Zealand in 2004. Prior to joining FECT he served as a researcher in the Department of Export Agriculture Board from 1983 to 2014 and had been promoted to the post of Deputy Director in 2013.

Mr. Jonathan Frank - Writing / Communication

Jonathan Frank received his associates degree from Broward Community College, Fort Lauderdale, Florida (United States) liaison with American College of Higher Education, Kandy, Sri Lanka before studying abroad in Truman State University, Missouri, (U.S.A.) for a year. His areas of interests include: literature, creative writing, social commentary, philosophy and visual arts.

Ms. Ashara Nijamdeen - Writing/Agriculture and Natural Resources

Ashara Nijamdeen worked as a Science Writer and Junior Research Scientist at FECT. She has completed requirements for the Bachelor of Industrial Studies-Agriculture at The Open university of Sri Lanka. She has followed the Advanced Certificate course in Human Resource Management and Services at NIBM.

Ms. Hiruni Himanga - Junior Information Technologist

Hiruni Himanga worked as a Junior Information Technologist. She has completed a Diploma in Computer System Designing and Higher Diploma in Computer-based information systems at NIBM. Currently, she is pursuing a BSc (Hons) in Business Information system at ICBT. She completed her internship and then she worked at the Merrill J. Fernando Charitable Foundation as an IT Instructor.

Mr. Chayana Gunathilake – IT / Communication

Chayana Gunathilake obtained his B.Sc. degree in Applied sciences from Wayamba University of Sri Lanka. Industrial management, computing and information systems and Statistics are the key areas covered under his coursework. He also has done graphic creations, video editing, and other multimedia related work.

Mr. Ushan Adithya – IT/ Web Development

Since 2020, Ushan Adithya has worked as a web developer with us. He received his Higher National Diploma in Information Technology from SLIATE, Kandy and his Diploma in Information Technology from ESOFT metro campus, Kandy.

Ms. Azra Munas - IT/ Web Development

Azra Munas worked with us from September 2020 to 2023 as a web developer. She completed her Higher National Diploma in Information Technology from the Sri Lanka Institute of Advanced Technological Education (SLIATE), Kandy. She also completed a Human Resources Management foundation course at the Open University of Sri Lanka.

Mr. Zain Iwais – IT Intern

Zain Iwais completed his Degree in Electronics and Computer Engineering and got the Associate membership at IESL and Engineering Council of Sri Lanka. He is specialized in Robotics and control systems with signal processing. He completed his internship at Sri Lanka Telecom (SLT) and also worked at Dravite labs, Huawei, and Digital Living Pvt ltd.

Ms. Shirin Sasna - Statistician

In 2020, Shirin Sasna graduated with a Bachelor of Science from the University of Peradeniya. She had expertise in operations research and statistics. She worked as a junior research scientist. She engaged in research on infectious diseases and climate.

Ms. Piushani Ellegala - Intermediate Research Scientist

Piushani Ellegala has done her degree in Applied Sciences in 2017. Her interests are in Solid State Physics. She has done her internship at NBRO and prepared a report on Air Quality and Meteorology in Kandy which she presented at the Air Quality Conference organized by the Ministry of Environment. She also worked as an Administrative Coordinator for CAP Green Forest in Gampaha. She worked on Air Quality (data management, checking instruments and their outputs, planning for extending the work) and helped with data extraction/ scraping and climate reporting.

Ms. Milani Tharuka - Research Scientist

Milani Tharuka got her B.Sc. Surveying Sciences, specialized in Surveying & Geodesy from Sabaragamuwa University of Sri Lanka. She completed Master's in LIESMARS, Wuhan University specialized in Photogrammetry and Remote Sensing. She has been an Assistant Lecturer of Sabaragamuwa university of Sri Lanka for four years. She also worked as the chief surveyor in China State Construction Engineering Crp. Ltd. She has engaged with research projects, surveying and geospatial data analysis at FECT.

Ms. Tharani Kalaivasan - Research

Tharani Kalaivasan joined FECT in September 2018 just after completing her Advanced Level in the Biological Science stream. She assisted in communication, research and proposal development. During her time, she contributed for the projects on Dengue, STEM Education and Air Quality, and documentation work. She is a graduate at the Faculty of Science, University of Peradeniya majoring in Chemistry and Zoology.

Ms. Tharushi Ekanayake - Junior Research Scientist

Tharushi Ekanayake graduated with BSc in Physics from the University of Peradeniya, Sri Lanka. She has covered quantum physics, particle physics, Solid-state Nanotechnology and fluid mechanics as university.

Dr. Sewwandhi Chandrasekara - Agriculture/Water Resources

Sewwandhi Chandrasekara obtained a B.Sc. in Agriculture Engineering at the University of Peradeniya in 2007. She completed her M. Phil in Integrated Water Resources Management (IWRM) in the same University in 2011. She worked as the FECT Coordinator of Master's in Development Practice Project implemented at the University of Peradeniya. She undertook work as a research scientist in the areas of Agricultural Engineering, Integrated Water Resources Management, Water Policies and Climate Change.

Mr. Siraj Razick - IT

Siraj Razick undertook system administration and maintenance. He obtained a B. Tech from Curtin University of Technology of Australia while employed with FECT.

Ms. Nushrath Rushda Salih – Environmental Science Intern

Nushrath Rushda is a graduate from Qatar University with a degree in Environmental Science. Her undergraduate thesis was on Removing Boron Traces from Water Using Egg Shells which she has published in Journal of Molecular Liquids. She worked on the Climate Impacts area and PEER dengue in Sri Lanka proposal.

Mr. Heli Bulathsinhala - Civil Engineering

Heli Bulathsinhala has a B.Sc. degree in Civil Engineering from the University of Moratuwa. He joined in 2001 and collected climate data, carried out data analysis, quality control, climate impacts assessments and hydro-meteorological work. He worked on the water resources and climate change components of our work. Heli completed a M.Sc. in Water Resources at the University of Moratuwa.

Mr. Yasas Harischandra - Chemical Engineering

Yasas Harishchandra obtained his B.Sc. in Chemical and Process Engineering at the University of Peradeniya in 2012. He undertook work on IT, climate and statistics.

Ms. Kusalika Ariyarathna - Civil Engineering

Kusalika Ariyarathna holds a First Class B.Sc. (Eng.) degree from the University of Peradeniya. From 2002-2003, she collected climate, maritime and plantation data, carried out data analysis and quality control and climate impacts assessments. She completed her M.Sc. in Oceanography while being attached to the project and later completed her Ph.D. at Texas A&M University.

Mr. Irugal Bandara - Agriculture and Remote Sensing

Irugal Bandara obtained a B.Sc. in Agricultural Engineering from the University of Peradeniya in 1999 and a diploma at the Indian Institute of Remote Sensing, Deharadun, India. Bandara assisted with the project on Tea and Coconut Plantations and worked from December 2002 to May 2004.

Ms. Upamala Tennakoon - GIS

Upamala Tennakoon has been trained in Resource Survey and Mapping, Cartography and GIS. She provided GIS, graphics and presentation support for the project work. She developed an Atlas of Climatology for Sri Lanka and an Information System for the Mahaweli Project.

Ms. Susanthi Liyanaarachchi - Chemical Engineer

Susanthi Liyanaarachchi obtained a B.Sc. in 2005 and a post-graduate diploma in 2007 in Chemical and Process Engineering at the University of Peradeniya. She supported the project on seasonal climate forecasting for the Kelani River basin and Rain Water Harvesting.

Ms. Champika Jayathilaka - Geographer

Champika Jayathilaka completed her B.A in geography at the University of Peradeniya.

Mr. S.A.M. Nasly - Statistician

M. Nasly obtained his B.Sc. Special Degree in Statistics from University of Colombo with Second Class. He worked as an Instructor in the Department of Statistics, Faculty of Science in University of Colombo. At FECT, he undertook statistical analysis for climate prediction projects & for climate-rice analysis.

Mr. Sanjaya Rathnayake - IT/Statistician

Sanjaya Rathnayake obtained his B.Sc. degree from Faculty of Information Technology, University of Moratuwa, in 2009 and M Sc. (Applied Statistics) at the Post Graduate Institute of Science, University of Peradeniya. At FECT, he worked as a statistician and IT specialist from 2012 to 2014.

Ms. Sumudu Adhikari - Mathematics

Sumudu Adhikari obtained a B.Sc. in the Physical Sciences at the University of Peradeniya in 2008 and joined as a Junior Research Scientist in January 2009. She undertook climate data management and diagnostics. She left for employment with the Provincial government.

Eng. Janaki Chandimala -Civil Engineer

Janaki Chandimala obtained a B.Sc. in Civil Engineering at the University of Peradeniya in 1999 and a M.Sc. in Hydrology and Environmental Engineering from Hohai University, Nanjing, China in 2002. She worked on climatic and hydro-meteorological analysis. She commenced work as Junior Research Engineer in January 2003 and was promoted to Intermediate Research Engineer in 2006. She joined the National Water Supply and Drainage Board in 2011.

Mr. Madhura Weerasekera - Natural Resources Management

Madhura Weerasekera obtained a B.Sc. special degree in Environmental Sciences and Natural Resources Management at the Sabaragamuwa University of Sri Lanka and his Master's in GIS and Remote Sensing at the Postgraduate Institute of Science, University of Peradeniya. He supported projects on disaster risk, seasonal hydro climatic monitoring and prediction, and infectious diseases.

Mr. K. Shanmuganathan – Agriculture Consultant

K. Shanmuganathan obtained his B.Sc. (Agriculture) from Faculty of Agriculture, University of Peradeniya in 1975 and M.Sc. in Agriculture- Engineering from the Post Graduate Institute of Agriculture, University of Peradeniya in 1982. He earned his M. Phil (Agric. & Environmental Science) from the University of Newcastle upon Tyne, United Kingdom in 1992. He joined the Sugarcane Research Institute in 1975 as Division Agricultural Officer (Research & Plantation) and became Deputy Director, Research by 2004.

Mr. M.H. Navoda Mihiraj - Agriculture

Navoda Mihiraj has a B.Sc. in Agricultural Engineering from the University of Ruhuna. He worked at the University of Ruhuna as a Research Assistant for the AgMIP project.

Ms. Erandika Wijekoon – Economist

Erandika Wijekoon obtained her B.Sc. Agriculture from Wayamba University in 2008 with the specialization of Agribusiness Management, and her M.Sc. in Agricultural Economics at Post Graduate Institute of Agriculture, University of Peradeniya. She contributed to the AgMIP project.

Ms. Badra Nawarathna - Civil Engineer (MASL)

Badra Nawarathna was seconded from the Mahaweli Authority of Sri Lanka to work on Weather and Climate Diagnostics. She undertook work on satellite rainfall estimates, evaporation and hydrological models. She has qualified as a Civil Engineer through the Institution of Engineers, Sri Lanka. She now serves as a Civil Engineer at Kotmale.

Mr. Dumindu Herath - Physical Scientist

Dumindu Herath graduated from University of Peradeniya with a B.Sc. in Applied sciences in 2008 and a post-graduate diploma from the Post-Graduate Institute for Science, and a Master's degree in Energy and Environmental Management. He contributed to the AgMIP project.

Mr. Prabodha Agalawatte – Physical Science

Prabodha Agalawatte served as Intern, Junior Research Scientist and Intermediate Research Scientist at FECT. He obtained his B.Sc. (Applied Sciences) and his M.Sc. in Industrial Mathematics from the University of Peradeniya

INFORMATION TECHNOLOGY

Ms. Duleeka Madushani - IT

Duleeka Madushani joined as an IT intern after completing her Higher National Diploma in Information Technology from Sri Lanka Institute of Advanced Technological Education (SLIATE).

Ms. Shashini Ratnayake - Computer Scientist

Shashini Ratnayake worked as an Intern Scientist at FECT. She graduated from the University of Peradeniya with a BSc. in Computer Science in 2015 with honors.

Ms. Indika Sandamali - IT

Indika Sandamali worked at FECT as an Intern for her training program at National Institute of Business Management for her Higher Diploma in Computer Based Information Systems.

Mr. Chanaka Wickremasinghe - Data Entry

Chanaka Wickremasinghe undertook data acquisition, entry, scanning and checking.

Mr. Amila Karunaratne - Web Master

Amila Karunaratne maintained FECT websites. He also undertook system administration and maintenance.

Ms. Amal Thilakarathne - Data Entry

Amal Thilakarathne performed data entry tasks before entering the University of Peradeniya to read for a degree in the Physical Sciences.

Mr. Saman Rathnayake - IT

Saman Rathnayake undertook undergraduate education in Physical Sciences at the University of Peradeniya. He served as an Information Assistant for Disaster Management.

Mr. Raashid Zubair - IT

Raashid Zubair provided IT and administrative support. He has a Bachelor's degree from the School of Audio Engineering (Singapore).

Ms. Rushda Ameen - Data Science

Rushda Ameen served as a Trainee Administrative Assistant at FECT from December 2014 to May 2015. She has completed her General Certificate of Education (Advanced Level).

Mr. Akram Kamiss - IT

Akram Kamiss joined FECT as a trainee Programmer/ Data Analyst. He undertook Programming, Climate Data Analysis, Data illustrations and worked on Hydro-meteorological reports for Sri Lanka.

Mr. Yoosuf Ashraj - Data Management

Yoosuf Ashraj obtained a degree in Chemical Engineering from the University of Moratuwa. He joined in July 2005, and has been working for FECT from time to time. He managed data resources.

ADMIN

Ms. Wasantha Samarawickrema - Administration

Wasantha Samarawickrema joined as an Administrator. She has experience in project management, administration, and organizational development in the State, NGO, and INGO sectors.

Ms. K. Shobana — Administration

K. Shobana has passed NVQ Level IV (National Vocational Qualification) for Information & Communication Technology. She has completed the Diploma in Computerized Accounting at ESOFT Kandy and her previous work experience includes Data Entry Operator at Department of Animal Production & Health.

PAST ADVISORS

Prof. C.M. Madduma Bandara - Environmental Science

Prof. Madduma Bandara is an Emeritus Senior Professor of Geography at the University of Peradeniya, obtained his B.A from University of Peradeniya, and PhD from Cambridge University. He is a Fellow of the Royal Society of Geographers, Adviser to the Government of Sri Lanka on the Mahaweli Authority, and author of numerous works related to climate, water and agriculture.

Dr. Neil Fernando - Agricultural and Environmental Economics

Dr. Neil Fernando obtained his B.Sc. in Agricultural Economics from the University of Peradeniya and his Ph. D from the University of Aberdeen, UK. After serving at the Coconut Research Institute as an Economist, he moved to the UNDP regional Centre as an analyst. Neil has collaborated with FECT through the AIACC project on climate change in the plantation sector.

Dr. Sarith Mahanama - Land Surface Modeling/Meteorological Remote Sensing

Dr. Sarith Mahanama obtained his B.Sc. in Civil Engineering from the University of Peradeniya and his Ph.D. from the University of Hong Kong. He has been attached to the NASA Land Surfacing Modeling group at Greenbelt, MD since 2001. Sarith implemented the Catchment Land Surface Model for Sri Lanka in collaboration with FECT. He led the project on Coastal Tidal Inlets for FECT.

Dr. Sanjeewa Maithripala - Computational Mathematics

Dr. Sanjeewa Maithripala obtained his B. Sc and M. Phil in Engineering from the University of Peradeniya and his Ph. D at the Texas Technological University. He has collaborated with FECT on the Tsunami work, and in developing a proposal for masters in sustainable development.

Dr. Mizna Mohamed — Environmental Science

Dr. Mizna Mohamed has expertise on Environmental Sciences, Oceanography and Meteorology acquired at Flinders University of South Australia & the University of Canterbury in New Zealand. She is a specialist in coral reef resources and management with field work in the Maldives for her Ph.D. She has undertaken work related to community engagement for the protection of coral reefs. She has contributed to planning interventions on climate change such as the first national communication, reviewing the Maldives National Adaptation Program of Action for Climate Change, National Project Manager for the Integrated Climate Change Strategy project executed by Ministry of Environment, Energy and Water, Maldives from 2005-2006 & as a Project Manager for National GHG Inventory & Vulnerability Assessment for the Maldives.

Mr. M.F. Nawas - Water Quality

Mr. Nawas is a Senior Lecturer in Chemistry at the South-Eastern University who works among other areas on water quality. He has been collaborating with FECT for the last five years on Pinga Oya clean up, Akurana Environmental Committee, the Pinga Oya Symposium and on Climate Impact Analysis.

Prof. Kanthi Perera - Data Science

Dr. Kanthi Perera received her Bachelors in Mathematics (1982) from the University of Sri Jayewardenepura, Masters in Mathematical Statistics (1988) from and PhD in Mathematical Statistics (1993) from the State University of New York. Currently she is working as a Senior Lecturer in the Department of Engineering Mathematics, University of Peradeniya.

Eng. Ruvini Perera - Water and Environmental Engineer

Ruvini Perera received a B.Sc. from the University of Peradeniya, Sri Lanka in 1995 in Civil Engineering and a M.S in Environ mental Engineering from the New Jersey Institute of Technology in 1999. She has previously been employed at the Coast Conservation Departm ent as a Coastal Engineer and as a Civil and Environmental Engineer at TAMS Consultants, New York and Dewberry, New Jersey. She supports statistical, GIS and analytical work in the Human Elephant Conflict project.

Dr. Sri Ramany Sritharan – Database Management

Dr. Ramany Sritharan received her B.Sc in Agriculture Science from University of Peradeniya and Masters in Irrigation Engineering and Management from the Asian Institute of Technology (AIT), Bangkok, Thailand. She served as a Tutor at the Department of Agricultural Economics, University of Peradeniya, and as an Assistant Lecturer at the Eastern University, Sri Lanka. She worked as a Senior Research Assistant at Columbia University and developed databases for Sri Lanka at IRI for analysis through the data library.

Dr. Chamila Walgampaya - Data Science

Dr. Chamila Walgampaya holds a Bachelor's Degree from the University of Peradeniya, Master's Degree and PhD from University of Louisville, Louisville, KY, USA. Currently he is working as a Senior Lecturer in the Department of Engineering Mathematics, at the University of Peradeniya.

Eng. Ananda Weerasinghe — Water Resource Management

Eng. Ananda Weerasinghe is an advisor for FECT. He is also working as a Lecturer in Kotmale Irrigation Training Institute under the Irrigation Department of Ministry of Water Resources. He obtained his B. Engineering degree from City and Guilds, and Masters of Business Administration from Wayamba University of Sri Lanka. His research includes policy of water resources management and irrigation water management. He served Mahaweli Authority of Sri Lanka from 1972 to 2010.

VISITORS

Ms. S.M. Revathy - Meteorology

Revathy visited FECT for 4 months in 2013. She has obtained her B.Sc. Physics degree from Kerala University, Kerala, India and her Master's degree in Meteorology at Cochin University of Science and Technology (CUSAT) Kerala, India.

Mr. Darshana Nalinda Wijesinghe– Agriculture

Darshana Nalinda Wijesinghe holds a B.Sc. (Special) Agriculture Degree in agricultural Science from the University of Ruhuna. He was recruited for the AgMIP project and worked at the Sugarcane Research Institute from July 2013 – December 2013. During his stay he surveyed at farm level.

GALLERY

Akurana Balika School Program

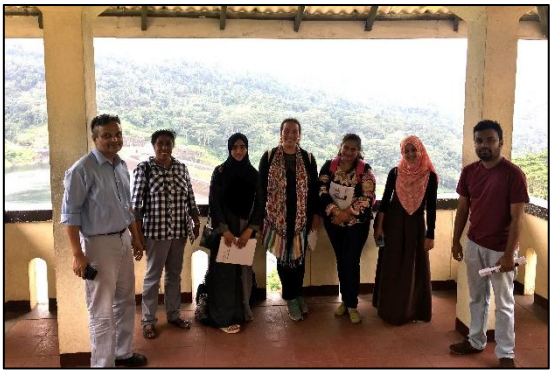
Kurunegala HDSP Visit

Akurana Garbage Matter Discussion with Akurana Women's Welfare Association

Laboratory Experiments at Akurana

Aranayaka Field Visit

Lakshapana Dam Visit



Kothmale Power Plant Visit

Maathodaa School Visit - Maldives

Malaria Workshop

Maldives Visit

Norochcholai Field Visit

Queensberry Weather Station Visit

Review Meeting OTC

Uchchimuni Field Visit

Sammanthurai Visit

IRENE


25th
Anniversary